

April – 2019

Mobile Technology: A Tool to Increase Global Competency Among Higher Education Students

Evan Fox
Purdue University

Abstract

The advancement of mobile communication technology has contributed to an increasingly interconnected world; however, these devices are not being used as effectively as they could be to improve global challenges. One challenging issue is the lack of preparation college graduates receive to positively contribute to the needs of an interdependent global society. Organizations such as the United Nations Educational Scientific and Cultural Organization (UNESCO), the Association of International Educators (NAFSA), and the Organization for Economic Cooperation and Development (OECD) have recently declared the critical need for the rising generation to strengthen their global competence, the capacity to examine societal issues, and work alongside those of various backgrounds to make a change. School instructors are crucial to preparing students to thrive in multicultural societies and address present day issues. With a staggeringly high rate of cellular device ownership among college students, mobile devices could be optimally positioned as a multi-functional tool ready to assist students in gaining these skills. This paper proposes that, while mobile devices may have contributed to a growing need for globally competent individuals, they can also be used to expand these capacities within university students. The PISA global competency framework developed by the OECD is used to propose how instructors can use mobile technology and research grounded practices to strengthen global competence in students.

Keywords: global education, global competency, mobile learning, mobile technology, mobile devices, higher education

Introduction

A glimpse at the status of mobile devices in higher education indicates that a high rate of university students possesses these devices (Krull & Duart, 2017). The advancement of new communication technologies has contributed to a growing interconnectedness and interdependence across the globe (Li, 2013; Poushter, 2016). Handheld mobile technologies may provide anytime and anywhere educational opportunities through a variety of functions (Crompton, 2013); however, as the United Nations Educational, Scientific, and Cultural Organization (UNESCO) declared, mobile devices are not being used as effectively as they could be to improve global issues in education (West, M., 2012).

One current educational concern is the lack of preparation graduating students receive to thrive in an interdependent world. Unpredictable economies, digital advancements, diverse societies, migration, and multicultural work environments demand a graduate with greater capacity to take action (Boix Mansilla & Jackson, 2013). Many people are not prepared to address societal issues in an interconnected world where hate speech, extremist ideas, and perceived misunderstandings are becoming more common (Barrett, Byram, Lazar, Mompoint-Gaillard, & Philippou, 2013). There is great need for students who are more prepared to investigate matters of global significance, understand others perspectives, and live in multicultural societies (Asia Society/OECD, 2018).

Consequently, it is of high importance that educators develop their students' global competence, or "the capacity and disposition to understand and act on issues of global significance" (Boix Mansilla & Jackson, 2013, p. 2). The Council of Europe shared that an "ability to understand and communicate with each other across all kinds of cultural divisions is a fundamental prerequisite for making such societies work" (Barrett et al., 2013, p. 2). Instructors can achieve global competence through practical approaches and innovative strategies using digital technologies (Li, 2013). Due to the high rate of mobile ownership among university students and their lack of global competence, these multifunctional devices are well situated to help instructors with these challenges. Successful use of mobile technology in higher education requires instructors who design learning experiences that harness the affordances of mobile devices (Krull & Duart, 2017). Therefore, the purpose of this paper is to describe how mobile devices are uniquely positioned to nurture global competence and give practical implications for instructors looking to expand these capacities within their university students.

Literature Review

Mobile Communication Technologies

Today's interdependent global society is dominated by information communication technologies that facilitate the exchange of ideas and information instantaneously from any location (Suárez-Orozco & Sattin, 2007). Evolving world technologies now surpass over 1.2 billion personal computers, 1.6 billion television sets, and 3.9 billion radio receivers (Ahonen, 2011). Nonetheless, mobile phones exceed all technologies with a network covering 95% of the global population (International Telecommunication Union, 2016) and a staggering seven billion subscriptions (ITU Key Indicators, 2017). College-age students headline mobile phone ownership levels globally (Brooks, 2016), with some countries such as the United States

approximating 100% (Adams Becker et al., 2017; Pew Research Center, 2018).

Mobile technology yields vast opportunities for university students to culturally engage with entertainment, news, and music or to interact with others through text, social media, and email (Roberts, Yaya, & Manolis, 2014). As a result of these interactions, research focused on the integration of mobile technology in higher education has amplified over the last decade (Hwang & Tsai, 2011; Wu et al., 2012). However, with a worldwide view of education, UNESCO asserts that mobile devices, as the most ubiquitous information and communication technology, are not being used as effectively as they could be to improve global challenges and assist in education across the globe (West, M., 2012).

A Global Issue

One preeminent global problem faced by university-age students today is the lack of preparation they receive for the international challenges that lie ahead of them both as citizens and professionals (Chickering & Braskamp, 2009). The rapidly advancing wave of globalization and global interdependence calls for a rise in the number of students who can recognize global issues and simultaneously engage in effective problem solving in everyday life (Boix Mansilla & Jackson, 2011). These worldwide issues commonly surround environment, development, intercultural relations, peace, economics, technology, or human rights and further emphasize a need for those who are globally educated in interdependence, connections, and multiple perspectives (Hicks, 2003).

Foremost, educational associations such as the Center for Global Education at Asia Society, Organization for Economic Cooperation and Development (OECD), Association of International Educators (NAFSA), and the United Nations (UN) have detailed that establishing global competence in students is critical to live and succeed in today's global economy and multicultural societies (Asia Society/OECD, 2018; West, C., 2012). Global competence can be defined in multiple ways, but is often regarded as:

The capacity to examine local, global, and intercultural issues; to understand and appreciate the perspectives and world views of others; to engage in open, appropriate and effective interactions with people from different cultures; and to act for collective well-being and sustainable development (Asia Society/OECD, 2018, p. 5).

The vital need for these competency skills is confirmed by the latest development of the OECD Program for International Student Assessment (PISA), a global competency framework that assesses these capacities in young people, implemented for the first time beginning in 2018 (Organization for Economic Cooperation and Development, 2018). It is clear that as schools instruct the rising generation on these skills students will be more apt to thrive in local, national, and global civic life (Asia Society/OECD, 2018).

The Role of Instructors

The Association for International Educators affirmed that global competence in students begins with instructors who must learn about existing technologies and how they might be used to enhance international partnerships or cross-cultural learning (West, C., 2012). Furthermore, the Asia Society confirmed that the average instructor can foster global competence in their students by helping them learn how to use present-day technologies (Asia Society/OECD, 2018). It is in part by employing the use of new

media technologies as learning tools that teachers can effectively bridge gaps between theory and application and enhance cultural responsiveness and competency (Ntuli, & Nyarambi, 2018). Sussmuth (2007) shared that students need to strengthen their digital skills in order to help them “communicate and gather information from beyond their immediate environment and help them integrate into a global society” (p 204). Therefore, instructors can create a classroom environment with a global vision and culture that expand student experiences through the employment of technology (West, C., 2012). University instructors can use currently available digital technologies to develop these capacities in their students.

Purpose of Paper

Due to the high percentage of mobile ownership among college students and their lack of global competency, mobile technologies are uniquely positioned to enlarge these capacities within students. The multifunctionality of mobile devices could prove to be beneficial to university instructors, regardless of discipline, in preparing their students to thrive in today's diverse societies. Current research literature surrounding mobile technology integration describes numerous successful strategies to transform learning in higher education settings.

Therefore, the purpose of this paper is to address how university instructors can use mobile technology to improve global competence in their students. The adopted OECD four-part framework for establishing global competence is first described. Next, foundational principles for the four parts are discussed in greater detail with practical implications drawn from current mobile learning research provided for university instructors.

Global Competence Framework

In response to the growing need for students who can address global issues, the OECD proposed the 2018 PISA global competence framework (Asia Society/OECD, 2018). The principles in the PISA framework draw upon years of previous research and a variety of successful frameworks. For example, in 2011 the Council of Chief State School Officers (CCSSO) and the Asia Society commissioned a taskforce to define global competence complex skills. This taskforce, made up of numerous educational scholars, worked to build upon foundational research principles and best practices from numerous scholars such as Hanvey and Reimers (Boix Mansilla & Jackson, 2013). A seminal work by Robert Hanvey (1982) addressed the need for educators to promote the development of planet and cultural awareness. He added that as students increase in their knowledge of others and global dynamics they would develop a global perspective. Reimers (2009) shared that global competence is imperative in that it prepares students to “understand the nature of shared planetary challenges” (p. A29). Overall, this taskforce developed a framework that would help students increase in their “capacity and disposition to act on issues of global significance” (Boix Mansilla & Jackson, 2011, p. xiii). The OECD, recognizing the value of all these principles and previous frameworks, collaboratively constructed an updated framework similarly outlining critical components of global competence. Overall, the PISA framework for global competence draws upon the research of organizations such as UNESCO, Project Zero at Harvard University, the Asia Society, and CCSSO.

The purpose of the PISA framework is to assist in explaining, implementing, and assessing global

competence in young people around the globe (Razavi, 2017). The OECD states that global competence includes combining and applying the foundational elements of students' values, knowledge, skills, and attitudes (Asia Society/OECD, 2018). They further explain that mixing these elements helps young people work with those of differing cultural backgrounds on global issues that can have a serious impact upon the future. The core of the framework is comprised of four dimensions, which when implemented properly, can provide structure for instructors looking to facilitate global competence in their students. The OECD (2018) proposed that global competence is the capacity and disposition to do the following:

- Examine issues of local, global, and cultural significance such as poverty, environmental risk, and conflict.
- Understand and appreciate the perspectives and world views of others.
- Engage in open, appropriate, and effective interactions with others across cultures.
- Take action for collective well-being and sustainable development.

Though these four skills appear to be independent they depend highly upon each other as building blocks in the construction of global competence (Boix Mansilla & Jackson, 2011). Each division of the PISA framework will now be described in greater detail. Following each description will be an explanation of how university instructors can use mobile technologies to support the development of global competence based on current research practices in higher education.

Examining Issues

University students today can benefit by developing the skills to comprehend and appreciate the world outside their own immediate setting (Boix Mansilla & Jackson, 2011). These higher-order thinking skills include effectively weighing evidence on global developments, analyzing information on current events, and arguing a position (Asia Society/OECD, 2018). Students need opportunities to embark on an external investigation of matters beyond their typical classroom environment. They must have learning environments that can facilitate inquiry and encourage them to develop persuasive arguments about issues of the day. As they tackle questions about the world, they will be more prepared for jobs that require them to work and communicate with those of differing perspectives (Boix Mansilla & Jackson, 2013). Students working to understand global issues also develop a state of the planet awareness where they can actively seek to comprehend prevailing conditions, developments, trends, and problems that are faced worldwide (Burnouf, 2004). Effective pedagogical practices should allow for student discovery and creativity (Cochran & Narayan, 2017) as they use their devices to learn more about global challenges wherever they are. Instructors can provide practical opportunities for students to investigate the world with mobile devices through the use of Internet search engines, synchronous or asynchronous communications, digital books, and news applications.

The Internet

Increasing access to the Internet continues to be a highlight of advancing technologies across the globe.

With the goal of enabling economic and social development and fostering an inclusive global digital economy, the International Telecommunications Union recently published that now over 70% of the world's youth between ages 15-24 have Internet access, with mobile broadband subscriptions growing more than 20% annually the last five years (International Telecommunication Union, 2017). College students believe that the ubiquitous access to Internet information mobile technologies provide is a primary advantage of the device (Gikas & Grant, 2013). Anytime access to databases with audio, video, and text information allow examination of the world beyond classroom walls. Internet access through mobile devices unlocks the opportunities for student-generated content and student-directed projects (Cochran & Narayan, 2017) while they seek to investigate problems in the world. However, teachers must help students critically evaluate the material they encounter because of the vast amounts of information accessible (Buckingham, 2007).

Synchronous and Asynchronous Communications

New communication tools such videoconferencing at any location improve international collaboration and create unprecedented opportunities to examine issues of global significance with others around the globe (Boix Mansilla & Jackson, 2011). Instructors can adopt the use of synchronous and asynchronous communications allowing students to interact immediately with contacts across the globe. Information exchange occurs across borders through video, audio, and text mediums. For instance, students learning Chinese could interact directly with native speaking individuals in China. Mobile devices improve universal access to inexpensive applications such as Skype, Facebook Chat, WebEx, WeChat, WhatsApp, or learning management systems. One worldwide online master's program in development management used a learning management system to facilitate online synchronous and asynchronous collaboration between students in various countries as a core element of a course on global education (Rye & Stokken, 2012). Other areas once isolated are now reachable (Valk, Rashid, & Elder, 2010) and may yield critical insights from those experiencing firsthand global challenges such as human rights, economic development, or poverty. Students could gain greater perspective on global and intercultural issues as they hear personal experiences of those outside the classroom.

Digital Books

Some believe the mobile device may replace the textbook as the learning tool of choice for the future (Yu, Ally, & Tsinakos, 2018). Instructors can use electronic textbooks as an inexpensive and practical way to provide improved global access to information for students in both developing and developed areas (West & Chew, 2014). Mobile devices give students the advantage of having a digital textbook that can conveniently be taken with them anywhere they go, making better use of time in accessing course materials (Nie, Bird, & Edirisingha, 2013). An example from research in Austria found that mobile encyclopedias can be effective at helping students learn new concepts when the application suggest articles and information about nearby topics based upon GPS positioning of the phone (Yu, Ally, & Tsinakos, 2018). Simple features such as an encyclopedia article sent to a student's phone could help the student develop an inclination to examine their surroundings wherever they are located.

Instructor provided access to literature about differing cultures, countries, and current events could expand student views and awareness with problems faced worldwide. Currently, hundreds of thousands of people in areas such as Ethiopia, Nigeria, and Pakistan are now reading on mobile devices (West & Chew, 2014).

South Korea recognized the power of flexible and inexpensive access and launched a nationwide movement for schools to provide digital textbooks tailored to students' needs (West, M., 2012). As students use mobile devices to increase their knowledge base via international and multicultural sources, they may ask more informed questions and create coherent responses that could answer issues prevalent to the global society.

News Applications

Instructors could also look to global news options and trusted social media sites to provide reliable information on the most current global trends and issues. In a developed country such as the United States, 70% of those aged between 18-29 prefer to, or only use, mobile devices to access the news (Mitchell, Gottfried, Barthel, & Shearer, 2016). Another study in developing Serbia found that over 60% of college students preferred a smartphone for staying informed about current events (Vulić & Mitrović, 2015). A worldwide network of information accessible through personal mobile devices gives students the chance for constant awareness of global issues, trends, and challenges in greater speed than previously possible. However, media is an area where caution needs to be exercised with forming global perspectives (Burnouf, 2004). With access to almost unlimited information on the Internet, students need to develop information literacy skills that will help them discern between truth and error when investigating various sources (Yarmey, 2011). When students engage these global topics with sophistication, they will be more competent and prepared to succeed in college, professional life, and civil society (Boix Mansilla & Jackson, 2011).

Understanding Perspectives

Globally competent students must be taught to look upon issues from different perspectives and encouraged to appreciate the beliefs and customs of others that are dissimilar from their own (Burnouf, 2004; Chickering & Braskamp, 2009). Boix Mansilla and Jackson (2011) state that the ability to recognize the perspectives of others is not an optional skill for students to learn in the 21st century because they will encounter those of differing beliefs in multi-cultural work environments, academic studies, or personal relationships. Students need to develop a "perspective consciousness" where they realize their outlook is not universally shared and the ideas of others are fundamentally different (Hanvey, 1982). Chickering and Braskamp (2009) summarized this principle stating that there needs to be an "understanding persons who differ widely in their political, religious, and spiritual orientations; in privilege and social class; and in ethnicity and national origin" (p. 28). As students reflect upon those elements that have influenced their own perspectives, it will give them deeper respect for the different positions or beliefs of others (Asia Society/OECD, 2018). Mobile programs that encourage student interaction, collaboration, and reflection can broaden mutual understanding. Instructors can facilitate an expanded student perspective by using mobile polling applications, reflection tools, and collaborative tools.

Polling Applications

Polling programs allow instructors to propose specific prompts and for students to anonymously submit their thoughts from a mobile phone. An application such as PollEverywhere could be used to facilitate discussion on difficult issues. Some researchers have found that using PollEverywhere to create discussion with mobile devices was effective for increasing student engagement and interaction in undergraduate

psychology courses (Walklet, Davis, Farrelly, & Muse, 2016). These tools provide a variety of discussion-based strategies including word clouds, open ended response, or priority ranking. Students can explain their perspectives without being judged for their response and then easily examine the perspectives of others. Instructors desiring to increase global competence may guide students in discussing how perceptions may have been influenced possibly by culture, technology, quality of life, or even access to knowledge.

Reflection Tools

Mobile devices can help the learner's ability to be more mindful and understanding of their own needs as well of those of others in a learning setting (Yu et al., 2018). Moreover, college students can benefit from and perform better with the inclusion of reflection activities that can be delivered through a mobile medium (Martin & Ertzberger, 2016). Reflective thinking encourages students to actively chain together their personal ideas with previous knowledge and beliefs (Hatton & Smith, 1994) and could be aided through digital journaling or having students write notes to themselves. Numerous educational applications that promote meditation could aid global competence by encouraging students to embark on the process of better coming to know oneself, one's emotions, and how they experience the world. Fisher and Baird (2006) share that reflection can be an individual or collective process involving technological tools such as blogs, wikis, Flickr, and other social media platforms. Reflective strategies allow students to ponder those elements that have influenced their views while also allowing them to contemplate the perspectives of others.

Collaborative Tools

A major advantage of mobile technology is the ability to increase the collaborative exchanges of ideas between university students (Gikas & Grant, 2013; James, 2011; Vázquez-Cano, 2014). This is primarily due to built-in collaborative tools such as email, text messaging, audio calls, or downloadable applications that can promote student-to-student conversations. Many countries in Asia are already taking advantage of mobile technology as a collaborative tool to communicate teacher-to-student or student-to-student (West, M., 2012). In Taiwan, researchers found mobile phones effective in implementing a voice-based discussion between students on a collaborative web forum (Wei, Chen, & Wang, 2007). Digital collaboration is not limited by time and place; therefore, students can practice interacting and appreciating viewpoints from others across national borders that may be much different than their own. Students who develop the digital skills needed to harness these instant collaborative mobile technologies may be able cultivate relationships across great distances and gain access to opportunities to improve global issues that may have been previously inaccessible.

Effective Communication

Human communication is at the center of teaching and learning experiences across the globe (Warren & Wakefield, 2013). Vast worldwide differences in culture, faith, ideology, and wealth call for globally competent students who understand how to proficiently use of emerging technologies that are vital elements of communicating ideas in today's societies (Boix Mansilla & Jackson, 2011, Boix Mansilla &

Jackson, 2013). Globally competent students “understand the cultural norms, interactive styles and degrees of formality of intercultural contexts, and can flexibly adapt their behavior and communication to suit” (Asia Society/OECD, 2018, p. 10). There is a constant need for students to think about how various audiences will perceive what they communicate and then use appropriate verbal or nonverbal strategies (Boix Mansilla & Jackson, 2013). Ultimately the ability to communicate openly across cultures and be mutually understood is vital to helping a society progress (Barrett et al., 2013). Communication is the primary purpose of mobile devices (Warren & Wakefield, 2013) and they are advantageous in improving communication skills and fostering a sense of interdependence between college students (Cinque, 2013). Instructors could facilitate respectful and open interactions among students through the practical use of social networking and distance learning tools.

Social Networking

Social networking is a determining factor for those university students who desire to use mobile technology in the classroom (Liaw & Huang, 2015) and could provide practice grounds for complex communication with others across the world. Communication methods for college students have changed over the years and presently focus on connecting with their peers through social media technologies such as Facebook, Twitter, Youtube, and blogs (Khaddage & Knezek, 2011). Topics on social media often surround current real-world issues, creating an environment where instructors can help students recognize the perspectives of others and productively engage in exchanges with diverse groups. Ozan and Kesim (2013) found that social media on mobile platforms create a major impact on the teaching and learning process because of their ability to “create an atmosphere in which individuals can learn from their peers about communication norms and cultures” (p. 174). Integrating mobile social media into a college classroom can strengthen student’s language skills, literacy, and intercultural competence (Yeh & Swinehart, 2018). Students must recognize how various audiences can perceive different meanings from the information they share and instructors can even initiate this thinking process beginning with the diversity in their own classroom (Boix Mansilla & Jackson, 2011).

Distance Learning

Mobile technology has consistently demonstrated its ability to extend educational opportunities into areas that once were not possible (Traxler, 2012). One university in Mozambique found mobile devices were easier, more flexible, and quicker at improving communication between rural students involved in distance learning (Isaacs, 2012). Lee and Chan (2007) found it effective and efficient to communicate ideas with distance learning students via podcasting on mobile technology. A study in Mauritius showed the usefulness of delivering a distance education MOOC with audio learning materials capable of communicating in the native language of different learners (Yu et al., 2018). The rise of online learning programs and even MOOCs often provide discussion areas where student exchanges with various audiences are not limited by national borders. De Waard (2013) emphasized that in a MOOC, students can access a variety of mobile enabled social-media tools that allow learners to learn, communicate, and exchange knowledge with people all over the world about a mutual topic of interest. Instructors who facilitate an environment that involves complex interaction with various cultures could provide a needed push for students to communicate at a higher level of sophistication with differing backgrounds.

Taking Action

Globally competent students seek to courageously make a difference in the world as they reflect upon multiple ways to improve situations and place these ideas into action, either individually or collaboratively, in real life settings (Boix Mansilla & Jackson, 2011). Students must courageously take steps to have their voices be heard as responsible members of society (Asia Society/OECD, 2018) and not hesitate to take initiative, work with others, and solve critical issues in a global society and their community (Boix Mansilla & Jackson, 2013). Instructors can improve a student's ability to make a difference in their community by incorporating authentic and active learning contexts into the classroom (Boix Mansilla & Jackson, 2011; Chickering & Braskamp, 2009). Educational programs can also help students to take global action by harnessing technologies that expand a student's opportunities to learn world languages (Boix Mansilla & Jackson, 2011). Instructors can bolster student's abilities to take action by harnessing the power of mobile technology to implement active learning, create authentic contexts, and support language learning.

Active Learning

Mobile technologies could be used to implement active learning strategies such as situated, inquiry-based, and case-based learning in order to prepare students to make a difference in the global society. Jarvis, Tate, Dickie, and Brown (2016) found that using mobile devices to deliver multi-media based on geographical location was effective for helping undergraduate geography students explore economic, cultural, and social life in Dublin, Ireland. In this setting, students developed their observation skills and were encouraged to take action through active exploration of the city. Mobile assisted case-based learning effectively helped students synthesize, apply, and integrate knowledge in real-life situations (Taradi & Taradi, 2016). Problem-based strategies could assist students in assessing options and planning actions on global issues. This is illustrated by researchers who examined how a mobile assisted inquiry-based approach facilitated active learning (Leelamma & Indira, 2017). As a result, it was discovered that students better understood critical issues in the environment and vowed to make a difference by using their understanding to raise awareness in their community.

Authentic Learning

Mobile technology can support authentic learning contexts where students can engage relevant and interesting real-world problems (Traxler, 2007). Authentic learning is possible because mobiles create a direct link between theory and practice (Cochrane & Narayan, 2017). Harley, Poitras, Jarrell, Duffy, and Lajoie (2016) stated that "a mobile phone can be used to augment one's learning about the world around them, creating new and countless potential opportunities for informal learning as well as guided learning that takes place outside of the classroom" (p. 360). The portability of mobile technology allows students to actively learn by working on tasks and activities authentic to the environment in which they could be used (Crompton, 2013). Mobile virtual reality, augmented reality, and digital games are examples of this principle. Mobile augmented reality also empowers real-world learning for students with different abilities in a larger global society (Tesolin, & Tsinakos, 2018). Some researchers effectively used a mobile application to allow students to document and take pictures of trees while learning outside in nature (Land & Zimmerman, 2015), while others used augmented reality to effectively instruct students about the context of past and present historical locations in the world around them (Harley et al., 2016). Mobile digital games can help students learn about intricate situations in dynamic environments by giving students opportunities

role play (Yu et al., 2018). In these authentic settings, students can practice improving given scenarios or a real-world problem.

Language Learning

Instructors can help students become more prepared to take action by making use of technologies that facilitate language learning (Boix Mansilla & Jackson, 2011). Mobile devices supply numerous language learning applications and significantly impact college students in areas such as comprehension of vocabulary and grammar (Alkhezzi, 2016; Dange, 2018). One university in China found the popular social media WeChat to be highly effective at helping students learn English as a second language (Shi, Luo, & He, 2017). University students in Istanbul significantly improved communication skills and vocabulary by collaboratively practicing English using the mobile application WhatsApp (Avci & Adiguzel, 2016). Popular applications like Duolingo gamify the learning process and are effective with mentoring and modeling by instructors (García Botero & Questier, 2016). Students who explore languages other than their primary language are equipped with essential 21st century skills in an interdependent world.

Conclusion

Ownership of mobile devices among university students is high, nevertheless they are not being used as effectively as they could be to help solve challenges in education. Currently, a notable issue is the lack of preparation students receive on interacting with diverse cultures, ideas, and perspectives in an interconnected global society. The path to increasing these capabilities in students begins with instructors who can harness modern technologies. Instructors can take action to create a classroom environment where global competency is expanded through the use of readily available mobile devices.

More specifically, instructors can help students examine global issues through effective use of the Internet, synchronous and asynchronous communications, digital books, and news applications. A student's ability to understand diverse perspectives can be improved by integrating polling applications, reflection tools, and collaborative tools into course activities. The capacity to communicate effectively with others could be enhanced via social networking and distance learning opportunities. Lastly, instructors can help students take action to improve society by implementing active learning, authentic learning, and language learning approaches. If a goal of higher education is to prepare students to succeed in the world, then strengthening global competency should be a high priority.

References

- Adams Becker, S., Cummins, M., Davis, A., Freeman, A., Hall Giesinger, C., & Ananthanarayanan, V. (2017). *NMC horizon report: 2017 higher education edition*. Austin, Texas: The New Media Consortium. Retrieved from <http://cdn.nmc.org/media/2017-nmc-horizon-report-he-EN.pdf>
- Ahonen, T. (2011). All the numbers, all the facts on mobile the trillion-dollar industry. Why is Google saying put your best people on mobile? (Blog post). Retrieved from <http://communities-dominate.blogs.com/brands/2011/02/all-the-numbers-all-the-facts-on-mobile-the-trillion-dollar-industry-why-is-google-saying-put-your-b.html>
- Alkhezzi, F. (2016). The impact of mobile learning on ESP learners' performance. *Journal of Educators Online*, 13(2), 1547–500. <http://doi.org/10.9743/JEO.2016.2.4>
- Asia Society/OECD. (2018). *Teaching for global competence in a rapidly changing world*. New York: OECD Publishing. <http://dx.doi.org/10.1787/9789264289024-en>
- Avci, H., & Adiguzel, T. (2016). A case study on mobile-blended collaborative learning in an English as a foreign language (EFL) context. *International Review of Research in Open and Distributed Learning*, 18(7), 45–58. <http://dx.doi.org/10.19173/irrodl.v18i7.3261>
- Barrett, M., Byram, M., Lazar, I., Mompoint-Gaillard, P., & Philippou, S. (2013). *Developing intercultural competence through education*. Strasbourg: Council of Europe Publishing. Retrieved from <https://www.coe.int/t/dg4/education/pestalozzi/Source/Documentation/Pestalozzi3.pdf>
- Boix Mansilla, V., & Jackson, A. (2011). *Educating for global competency*. New York: Asia Society. Retrieved from <http://asiasociety.org/files/book-globalcompetence.pdf>
- Boix Mansilla, V., & Jackson, A. (2013). Educating for global competence: Learning redefined for an interconnected world. In H. Jacobs (Ed.), *Mastering global literacy, contemporary perspectives* (pp. 1-24). New York: Solution Tree. Retrieved from <http://www.pz.harvard.edu/sites/default/files/Educating%20for%20Global%20Competence%20Short%20HHJ.pdf>
- Brooks, D. C. (2016). *ECAR study of undergraduate students and information technology*. Louisville, CO: Educause Center for Analysis and Research. Retrieved from <https://library.educause.edu/~media/files/library/2016/10/ers1605.pdf>
- Buckingham, D. (2007). Digital media literacies: Rethinking media education in the age of the Internet. *Research in Comparative and International Education*, 2(1), pp.43-55. <http://dx.doi.org/10.2304/rcie.2007.2.1.43>
- Burnouf, L. (2004). Global awareness and perspectives in global education. *Canadian Social Studies*, 38(3). Retrieved from www.quasar.ualberta.ca/css
- Chickering, A., & Braskamp, L. A. (2009). Developing a global perspective for personal and social

- responsibility. *Peer Review*, 11(4). Retrieved from
<https://www.aacu.org/peerreview/2009/fall/chickering-braskamp>
- Cinque, M. (2013). The “reflective student”: The use of mobile devices through seamless educational spaces and authentic learning scenarios. In Z. L. Berge & L. Y. Muilenburg (Eds.), *The handbook of mobile learning* (pp. 209–223). New York: Routledge.
- Cochrane, T., & Narayan, V. (2017). Design considerations for mobile learning. In C. M. Reigeluth, B. J. Beatty, & R. D. Myers (Eds.), *Instructional-design theories and models: The learner-centered paradigm of education* (pp. 385–413). New York, NY: Routledge.
- Crompton, H. (2013). A historical overview of m-learning: Toward learner-centered education. In Z. L. Berge & L. Y. Muilenburg (Eds.), *The handbook of mobile learning* (pp. 3–14). New York: Routledge.
- Dange, J. K. (2018). Mobile-assisted-learning approach in enhancing the student teacher's vocabulary and usage of mobile phone. In J. Keengwe (Ed.), *Handbook of research on mobile technology, constructivism, and meaningful learning* (pp. 316–330). Hershey: IGI Global.
- De Waard, I. (2013). Analyzing the impact of mobile access on learner interactions in a MOOC (Unpublished master's thesis). Athabasca University, Alberta, Canada.
- Fisher, M., & Baird, D. (2006). Making mLearning work: Utilizing mobile technology for active exploration, collaboration, assessment, and reflection in higher education. *Journal of Educational Technology Systems*, 35(1), 3–30. <http://doi.org/10.2190/4T10-RX04-113N-8858>
- García Botero, G., & Questier, F. (2016). What students think and what they actually do in a mobile assisted language learning context: new insights for self-directed language learning in higher education. In S. Papadima-Sophocleous, L. Bradley, & S. Thouësny (Eds.), *CALL communities and culture – short papers from EUROCALL 2016* (pp. 150–154).
<https://doi.org/10.14705/rpnet.2016.eurocall2016.553>
- Gikas, J., & Grant, M. M. (2013). Mobile computing devices in higher education: Student perspectives on learning with cellphones, smartphones & social media. *Internet and Higher Education*, 19, 18–26. <http://doi.org/10.1016/j.iheduc.2013.06.002>
- Hanvey, R. G. (1982). An attainable global perspective. *Theory into Practice*, 21(3), 162–167.
<http://doi.org/10.2753/JEI0021-3624440403>
- Harley, J. M., Poitras, E. G., Jarrell, A., Duffy, M. C., & Lajoie, S. P. (2016). Comparing virtual and location-based augmented reality mobile learning: emotions and learning outcomes. *Educational Technology Research and Development*, 64(3), 359–388. <http://doi.org/10.1007/s11423-015-9420-7>
- Hatton, N., & Smith, D. (1994). Reflection in teacher education: Towards definition and implementation.

- Teaching and Teacher Education*, 11(1), 33–49. [https://doi.org/10.1016/0742-051X\(94\)00012-U](https://doi.org/10.1016/0742-051X(94)00012-U)
- Hicks, D. (2003). Thirty years of global education: A reminder of key principles and precedents. *Educational Review*, 55(3), 265–275. <http://doi.org/10.1080/0013191032000118929>
- Hwang, G. J., & Tsai, C. C. (2011). Research trends in mobile and ubiquitous learning: A review of publications in selected journals from 2001 to 2010. *British Journal of Educational Technology*, 42(4), 65–70. <http://doi.org/10.1111/j.1467-8535.2011.01183.x>
- International Telecommunication Union. (2016). ICT facts and figures. Retrieved from <http://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx>
- International Telecommunication Union. (2017). ICT facts and figures. Retrieved from <http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2017.pdf>
- ITU Key Indicators. (2017). Retrieved from https://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2017/ITU_Key_2005-2017_ICT_data.xls
- Isaacs, S. (2012). Mobile learning for teachers in Africa and the Middle East - Exploring the potential of mobile technologies to support teachers and improve practice. *UNESCO Working Paper Series on Mobile Learning*. Retrieved from <http://unesdoc.unesco.org/images/0021/002163/216358E.pdf>
- James, P. T. J. (2011). Mobile-learning: Thai HE student perceptions and potential technological impacts. *International Education Studies*, 4(2), 182–194. <http://dx.doi.org/10.5539/ies.v4n2p182>
- Jarvis, C., Tate, N., Dickie, J., & Brown, G. (2016). Mobile learning in a human geography field course. *Journal of Geography*, 115(2), 61–71. <http://doi.org/10.1080/00221341.2015.1026373>
- Khaddage, F., & Knezek, G. (2011) Device independent mobile applications for teaching and learning: Challenges and barriers, and limitations. In S. Barton, J. Hedberg, & K. Suzuki (Eds.), *Proceedings of Global Learn Asia Pacific 2011—Global Conference on Learning and Technology* (pp. 1-7). Melbourne, Australia: Association for the Advancement of Computing in Education (AACE). Retrieved from <https://www.learntechlib.org/primary/p/37143/>
- Krull, G., & Duart, J. M. (2017). Research trends in mobile learning in higher education: A systematic review of articles (2011 – 2015). *International Review of Research in Open and Distributed Learning*, 18(7). <http://dx.doi.org/10.19173/irrodl.v18i7.2893>
- Land, S. M., & Zimmerman, H. T. (2015). Socio-technical dimensions of an outdoor mobile learning environment: a three-phase design-based research investigation. *Educational Technology Research and Development*, 63(2), 229–255. <http://doi.org/10.1007/s11423-015-9369-6>
- Lee, M. J. W., & Chan, A. (2007). Pervasive, lifestyle-integrated mobile learning for distance learners: An analysis and unexpected results from a podcasting study. *Open Learning*, 22(3), 201–218.

<http://doi.org/10.1080/02680510701619810>

Leelamma, S., & Indira, U. D. (2017). My pocket technology: Introducing a mobile assisted inquiry learning environment (MAILE) to promote inquiries among secondary students. *Journal of Education and Learning*, 6(3), 107. <http://doi.org/10.5539/jel.v6n3p107>

Li, Y. (2013). Cultivating student global competence: A pilot experimental study. *Decision Sciences Journal of Innovative Education*, 11(1). <http://doi.org/10.1111/j.1540-4609.2012.00371.x>

Liaw, S. S., & Huang, H. M. (2015). How factors of personal attitudes and learning environments affect gender difference toward mobile distance learning acceptance. *International Review of Research in Open and Distance Learning*, 16(4), 104–132. <http://doi.org/10.19173/irrod.v16i4.2355>

Martin, F., & Ertzberger, J. (2016). Effects of reflection type in the here and now mobile learning environment. *British Journal of Educational Technology*, 47(5), 932–944.
<http://doi.org/10.1111/bjet.12327>

Mitchell, A., Gottfried, J., Barthel, M., & Shearer, E. (2016, July 7). The modern news consumer. *The Pew Research Center*. Retrieved from http://assets.pewresearch.org/wp-content/uploads/sites/13/2016/07/07104931/PJ_2016.07.07_Modern-News-Consumer_FINAL.pdf

Nie, M., Bird, T., & Edirisingha, P. (2013). E-book readers and PDAs for work-based learners. In Z. L. Berge & L. Y. Muilenburg (Eds.), *The handbook of mobile learning* (pp. 209–223). New York: Routledge.

Ntuli, E., & Nyarambi, A. (2018). Instructional technology and meaningful learning: A synthesis for teacher educators for the 21st century. In J. Keengwe (Eds.), *The handbook of research on mobile technology, constructivism, and meaningful learning* (pp. 44–67). Hershey: IGI Global.

Organization for Economic Cooperation and Development. (2018). Preparing our youth for an inclusive and sustainable world: The OECD PISA global competence framework. Retrieved from <https://www.oecd.org/education/Global-competency-for-an-inclusive-world.pdf>

Ozan, O., & Kesim, M. (2013). Rethinking scaffolding in mobile connectivisit learning environments. In Z. L. Berge & L. Y. Muilenburn (Eds.), *The handbook of mobile learning* (pp. 166–175). New York: Routledge.

Pew Research Center. (2018). Mobile fact sheet (Blog post). Retrieved from <http://www.pewinternet.org/fact-sheet/mobile/>

Poushter, J. (2016, February 22). Smartphone ownership and internet usage continues to climb in emerging economies. *The Pew Research Center*. Retrieved from <https://www.pewresearch.org/wp->

content/uploads/sites/2/2016/02/pew_research_center_global_technology_report_final_february_22_2016.pdf

Razavi, T. (2017, December 7). PISA 2018 to assess global competence (Blog post). *The International Educator*. Retrieved from <https://www.tieonline.com/article/2246/pisa-2018-to-assess-global-competence>

Reimers, F. (2009). "Global competency" is imperative for global success. *Chronicle of Higher Education*, 55(21), A29. Retrieved from <https://www.tieonline.com/article/2246/pisa-2018-to-assess-global-competence>

Roberts, J. A., Yaya, L. H. P., & Manolis, C. (2014). The invisible addiction: Cell-phone activities and addiction among male and female college students. *Journal of Behavioral Addictions*, 3(4), 254–65. <http://doi.org/10.1556/JBA.3.2014.015>

Rye, S. A., & Stokken, A. M. (2012). The implications of the local context in global online education. *International Review of Research in Open and Distance Learning*, 13(1), 191–206. Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/1010/2084>

Shi, Z., Luo, G., & He, L. (2017). Mobile-assisted language learning using WeChat instant messaging. *International Journal of Emerging Technologies in Learning*, 12(2), 16–26. <http://doi.org/10.3991/ijet.v12i02.6681>

Suárez-Orozco, M. M., & Sattin, C. (2007). Learning in the global era. In M. M. Suárez-Orozco (Ed.), *Learning in the global era: International perspectives on globalization and education*. Los Angeles: University of California Press.

Sussmuth, R. (2007). On the need for teaching intercultural skills: Challenges for education in a globalizing world. In M. M. Suárez-Orozco (Ed.), *Learning in the global era: International perspectives on globalization and education* (pp. 195–211). Los Angeles: University of California Press.

Taradi, S. K., & Taradi, M. (2016). Making physiology learning memorable: A mobile phone-assisted case-based instructional strategy. *Advances Physiology Education*, 40(3), 383–387. <https://doi.org/10.1152/advan.00187.2015>

Tesolin, A., & Tsinakos, A. (2018). Opening real doors: Strategies for using mobile augmented reality to create inclusive distance education for learners with different-abilities. In S. Yu, M. Ally, & A. Tsinakos (Eds.), *Mobile and ubiquitous learning: An international handbook* (pp. 59–80). Singapore: Springer.

Traxler, J. (2007). Defining, discussing, and evaluating mobile learning: The moving finger writes and having writ. *International Review of Research in Open and Distance Learning*, 8(2). <http://doi.org/10.19173/irrodl.v8i2.346>

- Traxler, J. (2012). Ethics and ICTD research. In A. Chib & R. Harris (Eds.), *Linking research to practice in Asia: ICT for development research, management and perspectives* (pp. 68–81). Ottawa: International Development Research Centre.
- Valk, J.-H., Rashid, A. T., & Elder, L. (2010). Using mobile phones to improve educational outcomes: An analysis of evidence from Asia. *International Review of Research in Open and Distance Learning*, 11(1), 117–140. Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/794/1487>
- Vázquez-Cano, E. (2014). Mobile distance learning with smartphones and apps in higher education. *Educational Sciences: Theory & Practice*, 14(4), 1505–1520. <http://doi.org/10.12738/estp.2014.4.2012>
- Vulić, T., & Mitrović, M. (2015). Smart phone apps as a source of information for students. *eLearning and Software for Education*, 1, 320–326. <http://doi.org/10.12753/2066-026X-15-047>
- Walklet, E., Davis, S., Farrelly, D., & Muse, K. (2016). The impact of student response systems on the learning experience of undergraduate psychology students. *Psychology Teaching Review*, 22(1), 35–48. Retrieved from <http://eprints.worc.ac.uk/4523/>
- Warren, S. J., & Wakefield, J. S. (2013). Learning and teaching as communicative actions. In Z. L. Berge & L. Y. Muilenburg (Eds.), *The handbook of mobile learning* (pp. 70–81). New York: Routledge.
- Wei, F., Chen, G., & Wang, C. (2007). Ubiquitous discussion forum: Introducing mobile phones and voice discussion into a web discussion forum. *Journal of Educational Multimedia and Hypermedia*, 16(2), 125–140. Retrieved from http://www.editlib.org/index.cfm?fuseaction=Reader.ViewAbstract&paper_id=21751
- West, C. (2012). *Toward globally competent pedagogy*. Washington, DC: NAFSA, Association of International Educators. Retrieved from http://www.nafsa.org/uploadedFiles/Chez_NAFSA/Find_Resources/Publications/Periodicals/E_publications epub_toward_globally.pdf
- West, M. (2012). Turning on mobile learning: Global themes. *UNESCO Working Paper Series on Mobile Learning*. Retrieved from <http://unesdoc.unesco.org/images/0021/002164/216451E.pdf>
- West, M., & Chew, H. E. (2014). Reading in the mobile era: A study of mobile reading in developing countries. *UNESCO Working Paper Series on Mobile Learning*. Retrieved from <http://unesdoc.unesco.org/images/0022/002274/227436e.pdf>
- Wu, W. H., Jim Wu, Y. C., Chen, C. Y., Kao, H. Y., Lin, C. H., & Huang, S. H. (2012). Review of trends from mobile learning studies: A meta-analysis. *Computers and Education*, 59(2), 817–827. <http://doi.org/10.1016/j.compedu.2012.03.016>
- Yarmey, K. (2011). Student information literacy in the mobile environment. *Educause Quarterly*

Magazine, 34(1). Retrieved from <https://er.educause.edu/articles/2011/3/student-information-literacy-in-the-mobile-environment>

Yeh, E., & Swinehart, N. (2018). A model for mobile social media integration in constructivist ESL classrooms. In J. Keengwe (Ed.), *The handbook of research on mobile technology, constructivism, and meaningful learning* (pp. 68–88). Hershey: IGI Global.

Yu, S., Ally, M., & Tsinakos, A. (Eds.). (2018). *Mobile and ubiquitous learning: An international handbook*. Singapore: Springer.

