

Online Learning in Developing Countries

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### Overview

The 21<sup>st</sup> century is marked by the use of the Internet, which has connected the world globally; people are more connected now than ever before. The Internet has given rise to those seeking to further their education in developing nations. The quest for knowledge and degrees from institutions of higher education has begun to take precedence, as innovation is the driver of our global economy (World Bank, 2000). Most developing nations have begun to make shifts toward a knowledge-based economy (Arnove, Torres, & Franz, 2013). Education is a key principal in the attainment of social and economic progress (Nwomonoh, 1998; World Bank, 1995; Osadan & Burrage, 2014). No longer restricted by borders or boundaries e-learning has created an opportunity to access education. This new prospect creates hope for the disenfranchised with the potential to improve economic and social status. Online learning reduces barriers for students who would typically face circumstances of cost, geography, and scheduling. E-learning has created a paradigm shift that allows anyone with sufficient resources the ability to enroll in courses regardless of who he or she is and where they are located.

The marketplace requires a workforce that has technical expertise. Today's economy is shifting toward a knowledge-based society and globalization (Arnove, Torres, & Franz, 2013). Knowledge-based society is a society that holds education at its core where innovation and entrepreneurship are driven by the people to make societal advances in a changing economic and political world (OAS, 2016). Defining globalization "the intensification of worldwide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa" (Held 1991, p.9; Torres & Schugurensky, 2002, p. 430). Education has long been tied to the economy and viewed as a way to advance a country. Many developing nations face the problem of not having a highly qualified workforce to sustain

and grow their economies. E-learning provides prospects for self-paced learning and supports a diverse learning environment, which is inclusive of woman and country inhabitants.

E-learning came into existence in the mid-1990's as the World Wide Web became a means for the development of asynchronous discussion groups. Garrison defines e-learning as “electronically mediated asynchronous and synchronous communication for the purpose of constructing and confirming knowledge” (2011, p. 2). Asynchronous e-Learning allows the user to take a self-paced approach to learning where learning is on-demand. Synchronous e-Learning is done in a real-time live format. Institutions will often use combinations of both asynchronous and synchronous e-learning formats. Using this combination accounts for the opportunity for collaboration, self-paced, and instructor-led virtual learning amongst learners in a blended learning format. E-learning roots is a blend of the Internet and related technologies in communication. Further definitions explain that e-learning is the use of a digital device ranging from tablets, smartphones, desktops or laptops for the purpose of supporting learning (Clark & Mayer, 2016). Additionally, e-learning is supported through the use of Information Communication Technologies (ICTs) to augment student and teacher learning experience (Sife, Lwoga, & Sanga, 2007).

#### Historical Perspective on Barriers to Learning

Developing countries face many challenges as nations attempt to eliminate poverty, increase literacy rates, provide education for all, and improve gender equality. Education is a major catalyst for improving the aforementioned.

The United Nations (UN) in 1948 created the Universal Declaration of Human Rights that outlined the fundamental rights of all human beings. Article 26 of the Declaration of Human Rights affirmed, "everyone has the right to education. Education shall be free, at

least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made available and higher education shall be equally accessible to all on the basis of merit” (United Nations, 1948, p. 7).

Literacy remains a struggling issue for developing countries. One of the ambitious goals that came out of Dakar Framework for Action, Education for All: Meeting our Collective Commitments by 2015 was to cut the illiteracy rate in half from 18% in 2000; by 2015 the illiteracy rate had only been reduced to 14% which equates to approximately 781 million illiterate adults (UNESCO, 2015). Literacy is important because educational opportunities depend on literacy; literacy is part of human development, an impetus for ending poverty and achieving gender equality. People that are equipped with a basic education are more likely to pursue continuing and higher learning opportunities. Literate parents reduce the perpetuation of illiteracy by ensuring that their children attend school.

The attainment of education for school-aged children is an inalienable right that will help to improve children’s future outcomes. Providing education for all school-aged children and compulsory lower secondary education is common practice in Latin America and the Caribbean, Western Europe, North America, East Asia, and the Pacific. This is in contrast to sub-Saharan Africa, Arab States, South and West Asia where compulsory lower secondary education is less likely (UNESCO Institute for Statistics, 2006). UNESCO has surmised that skills learned at the secondary level help students to create more career options, become conscious citizens, and make better decisions when it comes to health (UNESCO Institute for Statistics, 2006). As a result, more countries are making the change to ensure that children are educated at the primary and lower secondary level for free (Benavot, Resnik, & Corrales, 2006). Abolishing the

associated school fees for lower secondary schools has created more opportunities for lower-income families to send their children to school. 1999 to 2012 there was a major improvement in primary adjusted net enrollment by 20 percentage points in 17 countries. Although improvement was made in 2012, nearly 58 million children were out of school noting that progress stalled since 2007 (UNESCO, 2015). Throughout the world, there are many instances of teacher shortages as a result of a governmental push to educate children of all ages. Whereas one problem has been solved another arises. In some cases, primary teachers have moved up, but voids remain at both the elementary and secondary levels. E-learning is being used to provide support to teachers.

The notion of gender equality and parity is one that continues to plague girls in developing countries even today. Review of the latest *EFA Global Monitoring Report 2015* reveals the following: only 69% of countries with available data achieved gender parity in 2015. Results at the secondary level indicate that less than half achieved gender parity in 2015. A longitudinal look from 1999 to 2012 shows that there is a success in severe gender disparity countries that have fewer than 90 girls enrolled for every 100 boys saw a reduction from 33 to 16 (UNESCO, 2015). Equality between the sexes is an obstacle that impacts social change. The underlining significance of gender bias in education is affecting many nations ability to advance their countries economically and socially. Gender equality and parity is more than the number of girls versus boys in a school setting. It is about the quality, access, and societal norms that must be addressed to tackle this issue. There are many challenges that girls face: Early marriages, adolescent pregnancy, unbiased school and classroom settings. Additionally, the spread of HIV/AIDS continues to effect developing nations. Of the sexes, women make up the majority of the world's economically disadvantaged. This makes them susceptible to HIV/AIDS and other

related infections as a result of inaccessibility to economic resources, opportunities, and life skills-based education (UNICEF, 2003). There are additional perils that marginalized women face such as inadequate health care, improper nutrition, and restricted political access. The outcome remains a revolving door with women not being able to exercise their basic human rights. Humanity and countries make advances as woman are included (Osadan & Burrage, 2014).

### Barriers to E-learning at the Tertiary Level

The previous section framed an understanding of the importance of education in a historical perspective by highlighting significant challenges that developing nations face at the fundamental level as they make efforts to advance their societies. This point of view is necessary to build an understanding of how e-learning can be used as a tool in developing nations to support educational efforts. Furthermore, it is important to identify prevailing challenges as implementation of e-learning is being exchanged from the developed to developing world. This section will review the literature on barriers to e-learning at the tertiary level.

Distance learning is a concept that has been around since the early 19<sup>th</sup> century. The early technology incorporated the use of the television and radio for learning. The Internet has transformed the educational sector creating greater access for many. There are impediments to E-learning that policy makers, post-secondary institutions, and users should consider before participating in this learning platform. According to Anderson & Gronlund, essential challenges exist in developing nations such as device usage and access, electricity, and perceived abilities (Dhanarajan, 2001; Heeks, 2002; Rajesh, 2003); and a non-traditional type of student who is more familiar with a teacher directed versus a student-directed approach found in e-learning (Eastmond, 2000; Evans, 2005; Sehrt, 2003; 2009). In *A Conceptual Framework for E-Learning*

*in Developing Countries: A Critical Review of Research Challenges* researchers deduced that there are four core groups of challenges as it relates to eLearning: individual challenges (both students and teachers); technological challenges; course challenges (non-traditional support and pedagogy); and contextual challenges (institutional management and societal values) (Andersson & Gronlund, 2009).

Each of the four challenges described above is further broken down into subcategories. Individual problems are reflective of the student and teacher. Both face similar challenges such as motivation, technological confidence, and time. Non-motivated students have a higher attrition rate than their counterparts. Conflicting priorities address a number of time students spend engaging in course work. Familial obligations and work are major factors of conflicting priorities. Next challenge is limited resources to finance student education. Student educational experience and background sheds light and impacts student academic confidence (Andersson & Gronlund, 2009). Many students may be lacking computer skills, which are a necessary prerequisite for eLearning. Lastly, gender and student age influences advancement in course work. Home environments that eliminate roadblocks to learning, respect, support, encourage and motivate students have shown to increase student success. Teacher disposition, energy, motivation, and technological skills influence students and make a difference. While limited feedback does not advance student learning and increases student dropout and failure rates.

Technological Challenges ask the question what technologies will be used to access the content? This could include Learning Management Systems (LMS), devices, and language availability. Once the before mentioned is addressed the next concern is how the Internet will be accessed. Many students do not have access to the Internet at home; therefore, rely on telecenters and Internet cafes to gain access. This leads to network reliability and concerns about consistent

connection. The cost of accessing the Internet on a regular basis is a significant distress to students provided that e-learning requires an Internet connection. The next factor is the user friendliness of software and interface design. Finally, localization through embedding culture, aesthetics, and religious values benefits students.

The literature review revealed that there are challenges associated with the course. Trepidations of various aspects of the course are raised surrounding content relevance, the method of instructional delivery, related activities, and the degree of support (Andersson & Gronlund, 2009). Clearer distinctions must be made between traditional courses and e-learning courses. Pedagogy is a recurring theme as it relates to courses mainly shifting from a direct instruction format to student-centered delivery of instruction. The prevalence of course offerings that are current and in line with the future job market are a necessity. Researchers have concluded that Teaching and Learning Activities (TLAs) cannot negate human interaction. Programs where students feel isolated and or alone tend to have lower grades or withdrawal from the course. Instead, recommendations have been made to include frequent assessments, follow-ups, teacher interventions, self-study, and group work. Flexibility looks at the pace in which a course is completed taking into account the learner completing assessments when they choose. Support is needed for both the student and teacher. Students who receive contact from the institution be it IT support, teacher or tutor have fewer incidences of failure. Additionally, teachers who receive support from the institution in the form of professional development, IT support, and institutional leadership have increased commitment and motivation to the course and program.

Contextual challenges, “this factor is addressed in terms of the need for a knowledge repository built on research and evaluations and some discuss the importance of sharing

experiences among e-learning institutions and to establish e-learning units (Andersson & Gronlund, 2009, p. 6). Further, financial support is needed to support advancements in technology and human resources. Instituting required professional development for teachers and staff would support e-learning. Societal and cultural factors play a role in e-learning. Many cultures regard teachers as the authority and expert. Learners will have to change their mindset as they work in an asynchronous learning environment. This is the complete opposite of the norm in developing nations. Politics and policy will promote or hinder the growth of e-learning. Finally, regulations will guarantee the protection of the student, teacher, and institution.

**Table 1: Framework on Challenges for E-learning**

<p style="text-align: center;"><b>Individual Challenges</b></p> <p><b>Student</b></p> <ul style="list-style-type: none"> <li>• Motivation</li> <li>• Conflicting priorities</li> <li>• Economy</li> <li>• Academic confidence</li> <li>• Technological confidence</li> <li>• Social support (support from home and employers)</li> <li>• Gender</li> <li>• Age</li> </ul> <p><b>Teacher</b></p> <ul style="list-style-type: none"> <li>• Technological confidence</li> <li>• Motivation and commitment</li> <li>• Qualification and competence</li> <li>• Time</li> </ul>	<p style="text-align: center;"><b>Course Challenges</b></p> <p><b>Course design</b></p> <ul style="list-style-type: none"> <li>• Curriculum</li> <li>• Pedagogical model</li> <li>• Subject content</li> <li>• Teaching and Learning Activities</li> <li>• Localization</li> <li>• Flexibility</li> </ul> <p><b>Support provided</b></p> <ul style="list-style-type: none"> <li>• Support for students from faculty</li> <li>Support for faculty</li> </ul>
<p style="text-align: center;"><b>Contextual Challenges</b></p> <p><b>Organizational</b></p> <ul style="list-style-type: none"> <li>• Knowledge management</li> <li>• Economy and funding</li> <li>• Training of teachers and staff</li> </ul> <p><b>Societal/Cultural</b></p> <ul style="list-style-type: none"> <li>• Role of teacher and student</li> <li>• Attitudes on e-learning and IT</li> <li>• Rules and regulations</li> </ul>	<p style="text-align: center;"><b>Technological Challenges</b></p> <ul style="list-style-type: none"> <li>• Access</li> <li>• Cost</li> <li>• Software and interface design</li> <li>• Localization</li> </ul>

Source: (Andersson & Gronlund, 2009)

### Secondary Initiative-Mobile Learning Potential Realized

The first half of the literature review put into perspective the relative state of learning in the developed world, followed by a review of commonly researched challenges in eLearning. This half of the literature review sets out to highlight initiatives and nations that are using Information and Communication Technology (ICT) as a way to leverage learning for all people that have been deemed marginalized.

There are approximately 7 billion people on the planet and 5.9 billion mobile phone subscriptions. The developing world accounts for 70% of mobile subscriptions. Mobile networks cover 90% of the world's population accounting for 80% living in rural areas. The UNESCO paper found that global projects from around the world incorporating mobile devices were found to enhance educational experiences, create individualized opportunities, created meaning and was economical (UNESCO, 2012).

These numbers give credence to the potential of mobile technology in education. The UNESCO paper found five common themes globally: mobile learning carries a stigma that can and should be overcome; existing educational policies are not reflective of mobile phone usage; the disenfranchised are addressed and supported; policy development to ensure digital equity; and the creation of non-traditional partnerships (2012).

### Overcoming the Stigma

Nations around the world are seeking non-traditional approaches to learning. South Korea's national focus is to use digital textbooks rather than paper (Lin, T.B, Chen, & Chai, 2015). Tablets and mobile devices will be used to view personalized content. In Chile, the government helps prepare secondary students to take the National University admission test through the use of a portal that students can access using their mobile device (UNESCO, 2012).

These initiatives have caught the attention of companies such as Pearson to create educational content that is accessible via mobile device. Mobile devices in Latin America are being used to support collaboration amongst students who work together while using one device. In places like Africa, the push is to move away from 1:1 devices as they do not support collaborative learning and are more expensive. Safety remains a contentious issue in the age of cyberbullying, sexting, and other inappropriate behaviors. Educators from North America are beginning to realize the potential of mobile devices in the classroom. As a result, policymakers are making changes to educate children on how to use the technology appropriately while building student accountability.

#### Educational Policies

Reformers encounter outdated policy created during a time when the potential for mobile devices was unrealized; this continues to impede the educational arena. The effects of this are felt mostly at the secondary and post-secondary levels of education as a result of protecting younger students. Around the world, policies address safety concerns. Educators adhere to these regulations for fear of legal liability if they are found in violation of a statute. The policy gives way to the limitation of mobile devices and the difficulty in regulating them. The opportunity for situated learning; however, is lost. With the development of augmented reality and virtual reality, students risk not being able to participate in the associated activities. Projects such as Mobile Learning Network (MoLeNET) in the UK saw reduced student dropout rates and improved retention. Other countries have developed similar projects based on MoLeNET. Policies have to address the issue of how to use mobile devices as tools for learning.

#### Help for the Marginalized

Mobile learning potential is reaching those that have been previously excluded. In Niger, Project ABC has been used to support literacy initiatives with adults. Interactive mathematics games to help Project M4Girls in South Africa were designed particularly for mobile phones. Open universities are universities that exclusively offer distance learning and most follow or use the United Kingdom's Open University model (Potashnik & Capper, 1998). Countries like Philippines, Chile, and the UK through open universities are supporting e-learning via the use of mobile phones. People in regions in Asia such as Bangladesh, Mongolia, and India have benefited from using mobile phones to learn English. According to UNESCO, "Researchers have found that when curricular materials are available on mobile devices, students from lower socio-economic backgrounds are more likely to take advantage of them (UNESCO, 2012). Developing countries have ultimately bypassed the necessity to use a computer and have opted for mobile phone. The Colombian government will distribute 250,000 mobile devices with educational software to reduce illiteracy in that country. In Argentina, at the government level, developing nations are using mobile devices particularly in education to improve the quality of supervision, communication, and related services offered to schools.

#### Access & Equity

While there are success stories of mobile learning barriers still exist. Start-up cost and maintenance of mobile phones is still expensive in most parts of the world. Many developed countries do not have 3G or 4G cellular networks. The more advanced larger screen smartphones belong to the wealthy. The application development for smartphones is more expensive and requires technical expertise for development. There may also be disparaging effects as one student may come to school with the latest and greatest phone while his classmates may have a subpar device.

### Partnerships for now and the future

The UNESCO paper highlighted many large scaled projects, which are non-existent at this time. Partnerships, leadership, and cooperation amongst all stakeholders are required to fulfill projects intended goals. The approach and idea of a partnership have changed to one that is broader in scope including stakeholders from every facet of a particular project. This method is necessary to the sustainability of a project. As mentioned, unsuccessful projects fit into several categories: failure to launch, inability to move beyond the pilot, governmental restrictions, and sustainable funding (UNESCO, 2012).

### Open Universities Creating a Pipeline for the Disenfranchised

As mentioned in the previous section, post-secondary education continues to benefit from Information Communication Technologies (ICT) and e-learning platforms. Open universities create a pipeline for those wanting to further their education in a non-traditional format while creating greater access. This section will review places where e-learning has taken off.

It is noted that India is home to the largest Open Universities. The United Kingdom's Open University is considered a mega-university enrolling over 250,000 students from around the world. Created in the early 70's Spain's National University of Distance Education (UNED) is also considered a mega-university and one of the largest in Europe (Depover & Orivel, 2013).

The remainder of the literature review will focus on India and China. Each country respectively, despite their large populations and the world's second largest economy are both considered developing nations as a result of life expectancy, GDP, and infant mortality rates. India and China have both made it national priorities for global and technological engagement. Both nations face similarities in their efforts to meet the demands of expanding economies.

Although both countries share similarities, they differ regarding the types of markets they represent. India is classified, as a mixed market while China is a socialist market leveraging closer to a capitalist economy. Both countries economic growth is on par with their educational movement in higher education. In China, the Ministry of Education had this to say about his plan by 2020: develop human capital, bring education up to speed in the 21<sup>st</sup> century, support advances in the learning society (Ministry of Education, 2010).

In 1985, India through legislation established the Open University, Indira Gandhi National Open University (IGNOU). The IGNOU is made up of 225 programs and roughly 3 million enrolled students. IGNOU plays a dual role in being an institution and a governing body for other institutions and programs. The Chinese government created the Open University of China (OUC) was developed from its predecessor Central Radio and Television University (CRTVU) in 2012. OUC sets to establish its self as a premiere institution with a focus on Chinese characteristics (Jung, Wong, & Belawati, 2013). OUC functions on both the compulsory level and tertiary level to address the needs of all citizens.

As shown in Table I, Course Challenges and its following categories play a significant role in the success of students. IGNOU and OUC address many of the subcategories found under the heading Course. Their approach to course development is; however, different. IGNOU uses a seven-stage course design process: course formulation, course designing, print material development, audio production, preview, development, & field-testing. OUC approach is different in that courses are created based on demand and job skills, experts in and out of education are used, incorporates The Course Construction Work Procedures (CRTVU, 2008) and The Curriculum Workflow (CRTVU, 2007) (Gaba & Li, 2015). In both countries, varying levels of supports are in place for students regarding academic and non-academic need. IGNOU and

OUC both have begun to incorporate asynchronous and synchronous communication into their programs recognizing the need to prepare its citizens for the 21<sup>st</sup> century (Carter, 2009). There are still challenges that OU's dropout's being a major factor; policy development of open and distance education; Acts, Statues, and laws require restructuring; cost can be reduced if the government and National Open Universities collaborate on policy, research, and content development (Gaba & Li, 2015).

### Conclusion

This literature review provides background and insight into societal needs, globalization, and technology that is being used to advance education in developing nations. Challenges that impact the development of e-learning or distance education were highlighted to demonstrate possible policy considerations. A global scan of initiatives and nations that are using Information and Communication Technology (ICT) as a way to leverage learning for all people that have been deemed marginalized was identified. Although there are a few cases of success the research sheds light that there are many challenges perceived and unperceived that developing nations face as they make changes in how they approach teaching and learning.

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