

Re-Thinking Out-of-School Learning in Rural Pakistan

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Abstract: Continued innovation in networked digital technologies brings both opportunities and challenges to educators, educational system designers, and policy makers. This situation is exacerbated in developing countries where there is marked disparity of educational opportunities and achievements compared with developed countries. With a global population having one out of five children out-of-school, UNESCO's agenda of quality 'Education for All' demands attention to a deteriorating situation. Advancements in learning technologies continue to be seen as key to solving the disparities with increasing diversity in the design, development and implementation of educational technology initiatives. This paper proposes a framework for underprivileged communities in Pakistan who do not have access to good schools, teachers and libraries. Contextualizing adaptable learning support, scalability of initiatives, and development of sustainable policies, however, is a continuous challenge. In reviewing relevant 'stand out' initiatives during the last two decades and socio-technological impacts on the communities they served, we discuss a range of issues and stakeholder perspectives framed by challenges arising from technological, pedagogical and localized perspectives. Principles are identified that might assist contextualized learning support models for remote and underprivileged communities, and a way forward is proposed in terms of a sustainable, scalable and adaptable teaching and learning model.

Keywords: Mobile technology, ICT, educational technology, developing countries, underprivileged, innovation models

1. Introduction

Rapidly progressing development of Information and Communications Technology (ICT) through mobile devices and wireless technologies has established a solid foundation for alternate trends where teaching and learning is no longer dependent on specific time, place, and even the teachers (Hussain, 2013). Innovation in e-learning is simultaneously supporting learners in remote areas; however, harnessing what can sometimes be perceived as disruptive learning strategies and styles through pedagogical and technological innovation poses a challenge to governments and educational system designers.

One of the most recurring issues faced by policy makers regarding the use of educational technology for underprivileged communities relates to the design, development and implementation of appropriate solutions (Trucano, 2014). Most of these pedagogical and technological innovations, product, services and models are initiated from the developed countries, and decision/policy makers in developing countries with a completely different set of challenges 'import' these technologies to their environments. Adoption of educational technologies without context-aware development results in either a failure, or become too expensive to afford, and subsequently provide evidence that use of Educational Technology in underprivileged context is not an implementable concept (Trucano, 2017). Thus, the purpose of this short paper is to present an initial comparison of educational technology initiatives undertaken at different geographical locations, associated technological and financial capacities, and approaches to solve the problems; however, effectiveness of these initiatives is not discussed. This paper thus represents an initial step within a broader research agenda aimed at specifying a framework for out-of-school learning to serve

underprivileged communities in Pakistan. In pursuing this focus some lessons from the literature and the projects are discussed.

2. Challenges for 21st Century Education

2.1 Global Perspectives

Global educational stakeholders have initiated numerous programs and initiatives to take advantage of contemporary ideas, methods and technologies, with aspirational educational agendas focusing towards 21st century skills to overcome the emerging global challenges. For example, 'Education for All' (EFA) was initiated by UNESCO in 2000 to provide primary education to all children by 2015, and Millennium Development Goals (MGD) were set by UNDP, UNESCO, UNICEF and the World Bank to help reduce uneducated youth (UNESCO, 2007). Despite all these initiatives, one out of five children, adolescents, and youth globally is out-of-school, and the progress in recent years to improve the situation had declined drastically (UIS, 2018).

2.2 Disparity in Educational achievement – Developed versus Developing Countries

The world is shifting from top-down external drivers to a combination of top-down and bottom-up approaches such as Web 2.0, where blogs are replacing website, and Wikipedia is replacing Britannica, creating innovative learning models to tackle the significantly changing factors in the world leading to new dimensions of literacy (Anderson, 2009). In Australia, Gonski (2011) highlighted that students must also develop a capacity for problem-solving and decision making; creative thinking; collaboration, communication, and negotiation; technology and innovation in addition to mastering core skills. Increased focus on inquiry-based learning and design thinking in 21st Century learning skills have resulted in a major shift in the purpose and mechanism of teaching and learning – from content delivery to building student capacity (Alexander, et al, 2013).

Statistics from global monitors show that these 21st Century trends are being adapted effectively by the developed countries, whereas the low and medium income levels developing countries are far behind in this race. For example, in OECD countries, on average, only 6% adults have not gone further than primary education, whereas the average percentage of out-of-school secondary age students in Sub-Saharan Africa is 58% and that in Southern Asia is 48% (UIS, 2018). Multi-Government projects like *Assessment and Teaching of 21st Century Skills* (ATC21S), have been initiated in developed countries with focus on skills like collaborative problem solving, communication and enhancing student learning in key learning areas (Alexander, et al., 2013), whereas 58 million children are out of school globally and around 100 million children do not complete primary education. The world's poorest children are four times more likely not to go to school than the world's richest children, and five times more likely not to complete primary school (UNESCO, 2015).

2.3 Pakistan – Education and Out-of-School Children Status

Education plays an important role in building foundations of any country. In Pakistan, most of the out-of-school children are residing in remote, rural or underprivileged city areas. There are particular challenges in providing quality education in these areas including shortage of good teachers in these areas, the hidden child labor challenge, affordability and cultural barriers to pursue educational goals (Titola-Meskanen, 2014). Socioeconomic status (SES) of the family presents its social and economic position in the society. Education of parents, their income and occupation determine the socioeconomic class (SEC) of any family and considered the decisive factors for attaining the level of respect in the society (Ghazi et al., 2013). The quality and standard of education in rural areas are going down, and thus increasing urban/rural disparities and inequalities in Pakistan, which is creating the learning crisis in low-income rural areas (Agrawal, 2014). The funds granted by the international funding agencies are not being utilized effectively and hence there the education sector in Pakistan is badly affected in last few decades (Khan et al., 2016).

3. Role of ICT in spreading education globally

3.1 ICT initiatives in underprivileged context

The ubiquitous use of mobile technology in developing countries has opened new avenues to innovative educational opportunities, equity, and quality. Where the main reasons behind out-of-school secondary level children are poverty, location and gender (UNESCO, 2011), learning models based on mobile technology can provide access to people living in remote locations without schools, teachers and libraries (Abu-Al-Aish, 2013). M-learning provides the learner the leverage to decide what, when, where, why and how to learn because of its usability, accessibility, and affordability, making it an individualized, personalized and highly interactive learning (Ally, 2009; Cobcroft, 2006).

3.2 Entrepreneurial Initiatives in Educational Technology

A significant increase in availability of mobile devices and wireless technologies is observed in developing countries during the last two decades and its socio-technological impact on the overall education system is revolutionary. From the government ranks to newly established tech startups, emerging pedagogical and technological innovations are evident in every region of the world at the academic research and practical implementation levels (Trucano, 2014). Many segments of the global society have initiated ‘stand out’ innovation – examples include technology innovation leaders MIT Media Lab with *One Laptop per Child* in providing, low cost, solar powered laptop to educate the poorest children of the world, *Kio Kit* in Kenya, comprising a box of 40 tablets to turn any classroom into digital classroom, *mobistation* in Uganda, in the form of a mobile classroom with briefcase having a solar powered multimedia kit, *SMS Education* in Pakistan, *Same Language Subtitling (SLS)* in India focusing on utilizing available technologies to augment learning with the underprivileged communities, and project *Hole in the Wall*, providing elementary education and life skills through peer learning (Dangwal, 2011). ‘Leapfrogging Inequality’ has identified around 3000 global education innovations, the largest of such collection to date, with an aim of facilitating research and fresh innovation (Trucano, 2017). In Table 1, we highlight some ‘stand out’ projects.

Table 1

Comparative Factors of Educational Technology Initiatives for School age children

Project Name	Community in Focus	Desired Learning Outcomes	ICT innovation	Learning Style	Consideration of local Context
One laptop per Child (OLPC) (Initiated by MIT Media Lab in 2005)	Poorest Children of the world	Globally connected learning community	Low-cost, solar charging laptops	Self empowered learning	Very low (Global pedagogy design)
Hole in the Wall (Initiated in India in 1999)	Disadvantaged communities of rural and urban slums	Improving elementary education & life skills	Wall mounted computer	Minimally Invasive Education (MIE)	High (pedagogical design suited to local audience)
SMS Education (Initiated in Pakistan in 201)	Children and their parent from all communities	Personalized learning and progress monitoring	Mobile phone Short Message Service (SMS)	Subject Quizzes and vocabulary building	High (Teaching material can be easily localized)
Same Language Subtitling (SLS) (Initiated in India in 2013)	Weak readers in India	Enhanced reading skills	TV & videos with Same Language Subtitling (SLS)	Karaoke for songs and videos	High (Learning material suited to local taste)

Alternative Learning System (ALS) (Initiated by Philippines government in 2004)	Filipinos who cannot attend regular formal education	Formal and non-formal education access to all	Parallel learning system through Community Learning Centres (CLC)	Community based learning environment	Very High (Volunteer instructional managers are from local community)
Kio Kit (BRCK) (Initiated in Kenya in 2013)	Rural areas school students	Quality education to rural students	A box of 40 simultaneously charging tablets connected through BRCK	Turning any classroom into digital classroom	Medium (Educational content prepared centrally for all users)
Mobistation (Initiated by UNICEF Uganda in 2013)	Schools and Health Centres in Rural Communities	To overcome challenges in providing quality education	Solar powered multimedia kit in a portable suitcase	Learning anywhere through portable kit	Medium (Educational content prepared centrally for all users)
SabaqPk (Initiated in Pakistan in 2012)	School children from all communities	Quality educational content in local language	Topic-wise educational videos in local language	Learning through videos tutorials	High (videos follow local curriculum of each region)
e-Learning Sudan (ELS) (Initiated in 2012)	Children excluded from educational system due to conflict	Alternate learning for education deprived children	Local curriculum-based games for Mathematics	Tablet based Mathematics games	High (games follow local curriculum of each region)
Nefham (Middle East) (MENA Region) (Initiated in 2012)	School children from all communities	Overcome the educational resources gap	Local curriculum based educational videos in local language	Supplementary Learning through videos tutorials	High (videos follow local curriculum of each region)

4. Providing Education to All – a Way Forward

4.1 Challenges in implementing Educational Technology

The only certainty regarding the future of technology is that it will be different from what it is at present. The present-day challenge for stakeholders in education is to face and adequately respond to, not just the integration of technology in education, but the extraordinary pace with which it is changing. Innovative technologies in future will bring along with them novel needs, shifting teachers' roles, new pedagogical design requirement, and different learning perspectives (Makrakis, 2005). Moreover, educational technology is not necessarily a solution in itself – it will only deliver results according to the way it is utilized. It is just a set of tools, like a range of teaching techniques, and can only bring effective results through appropriate pedagogical use by the teachers (Costa, 2016). Arguably, the potential benefit of educational technology is not being realized, and there is a considerable rhetoric-reality gap present, as educational technologies fail to deliver as expected (Coombs, 2015; Saljo, 2009). There is therefore a serious need to analyze the progress of educational technology from different perspectives to avoid the pitfalls in future which are being experienced at present.

4.2 Adopting contextualized approach for remote and underprivileged communities

Achieving optimum contextualized learning for underprivileged communities is a key challenge. But, the problems cannot be solved just with new technology, partly because the 'shelf-life' of some innovations seems short. For example, the *One Laptop per Child* project experienced decline in demand in recent years due to ubiquitous availability of mobile (smart) phones and internet. Therefore, a more viable model would be the one which relies on existing technology and to innovate accordingly within the available resources.

Education is a human endeavor so the learning models encompassing innovative ways for a teacher to facilitate learners may have long term impact with far reaching outcomes. Also, the innovation models developed around contextualized content are expected to live longer than the models designed around the containers that carry them. At the design stage of the educational technology initiative, innovators may also study lifecycles of previous initiatives for the similar target audience to create better context-aware learning models. The learning models with the scalability, adaptability and sustainability as an integral part have more likelihood of crossing beyond the startup phase.

4.3 Sustainable and adaptable approach for out-of-school children in Pakistan

Increasing population of out-of-school children in Pakistan demands a sense of urgency to overcome this problem. ICT penetration, particularly ubiquitous availability of mobile phones in rural and remote areas of the country provides us an opportunity to adapt leapfrogging approach for bringing these children to the educational mainstream. However, developing solutions without first understanding the local socio-technological context may become another short-term patchwork to support the educational system. Therefore, we need to study in-depth the local context and factors leading to increasing number of out-of-school children, and accordingly develop a framework to bring these children back into the mainstream

5. Conclusion

Our exploration of the relevant literature highlights existing impacts of information and communication technologies in the context of the developing world, particularly mobile devices and wireless technologies. Innovations in the design and utilization of educational technology in underprivileged contexts demonstrate some success to date, and our review suggests plenty of potential for future innovation. Emerging teaching and learning opportunities arising from ongoing advances in ICT demand that governments, policy makers and other education industry stakeholders to re-think the pedagogical and contextual aspects of education to optimize the benefits of educational technology, particularly for underprivileged communities. New initiatives in educational technology may become more successful by adopting context-enabled strategies, and by understanding the socio-technological aspects of these initiatives in the localized learning environments. Moreover, as new technologies are rapidly replacing old ones, models centered on technology may soon become obsolete, whereas the ones adopting innovation based on new learning and pedagogical aspects with scalability, adaptability and sustainability incorporated in the design framework may have a longer life. In our further research, we aim to analyze the role of localized contexts, such as, subject fields, infrastructure, curriculum and policy leadership in influencing the ICT based educational solutions.

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