Use of cost-effective digital technologies for empowering Pakistani women of disadvantaged communities – A Reflective Narrative

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Abstract: The paper reflects on my experiences of introducing innovative and financially sustainable digital technologies for improving teaching and learning. I piloted three cost-effective technologies (i) blogs (ii) podcast and digital voice recorder and (iii) Google site, with (i) future teachers (ii) visually impaired teachers, and (iii) Pakistani young women. The sample for future teachers includes all prospective female teachers, enrolled for a teaching course during January-May 2017 at one of the public sector universities in Pakistan. For the second case, female teachers working with visually impaired students at one of the institutions during the same period were taken into consideration. Whereas, Pakistani young university going women were selected for the third case to use a Google site from September 2018-January 2019. In all cases, selected participants belonged to disadvantaged communities. Face-to-face discussion among male and female is considered as inappropriate in Pakistani culture. Therefore, I familiarized future teacher with the use of blogging for sharing their reflective practices. While podcast and digital voice recorder were introduced to visually impaired teachers for improving their communication skills. Whereas, I designed a website on mental health education to empower Pakistani young women towards mental health. I've used reflective narratives to record my experiences, whereas I have analyzed the impact of each technology on participants through a survey. Overall, these technologies gave ownership of learning and teaching to individuals. Blog has supported future teachers to collaborate, share, and become a reflective practitioner. Whereas podcast and digital voice recorder have helped visually impaired teachers to improve their communication skills, and use these tools in classroom practices. While introducing a website has empowered the intended participants for their well-being. This paper is significant to understand, how the integration of cost-effective technologies can improve teaching and life-long learning practices, accelerate collaboration, and widen educational accessibility within available resources.

Keywords: low-cost technology, cost-effective technology, disadvantaged women, Pakistan

Introduction
There is a paradigm shift in global educational practices. Technology is gradually being used to improve the educational process and address educational needs.

Educational institutions are now becoming digital-centric to foster ownership of learning and shape communities of practices (Conole, Ingraham and Cook, 2003; Etienne and Wenger-Trayner, 2015). However, the use of technology to cater the educational needs of disadvantaged communities has remained shallow due to the considerable cost associated with its adoption and implementation. Further, the immersion of educational technology in some developing countries has been slow due to socio-cultural barriers (Rogers, 2000).

Cost-effective digital strategies have opened up new possibilities to bridge teaching and learning gaps. Various low-cost technology-enabled platforms and gadgets have been integrated into some educational settings to reduce financial burden (Biriyai and Emmah, 2014; Dias and Victor, 2017; Dommett, 2019; Ferreira et al., 2015; Kuo et al. 2017; Ngesi et al., 2018; Sampson et al., 2018; Sung et al., 2016; Trucano, 2019). But there are some institutional, social, and cultural obstacles to the use of these resources. Like, in some conservative societies, the use of social networking platforms are considered as a threat to cultural and moral values. Zaheer expressed, "Advent of new media is thought to have endangered social norms and also morality of youth" (2018, p.110). However, it is uncertain to blame social media for moral decadence in our society.

Cost-effective technologies are not yet exploited to satisfy the educational needs of disadvantaged communities in countries like Pakistan due to socio-cultural barriers, lack of digital literacy and weak policy interventions.

Toyama (2011) stated, "Technology doesn't cure all educational ills and technology alone is insufficient as a solution". In my viewpoint, ownership of technology-enhanced teaching and learning, digital literacy and innovative use of low-cost technology can mitigate existing educational challenges. It is also important to understand that technology is situated in a socio-cultural context. Therefore, individuals' and institutions' must study the context to adopt appropriate technology.

Context
The Islamic Republic of Pakistan is located in South East Asia. During the last two decades, there has been a tremendous growth of digital technologies across Pakistan. Technology is intertwined with the everyday life of young people. They own personal digital devices like mobile phones and personal computers. Personal assistive devices are also being used by persons with disabilities.

The use of technology is rapidly growing across higher education. However, Pakistan is still categorized as technologically marginalized and innovation deficient country due to lack of research culture and weak policy (Rahman, 2016). Within higher education institutions, the use of open educational resources, e-books, webinars and MOOCs is sparse. Although online platform like a learning management system is used for educational purposes, these platforms are not utilized effectively.

Pakistan follows a patriarchal culture, where female pursuing a career in teaching or completing higher education in Pakistan face many challenges. Shaukat and Pell (2015) highlighted personal and social problems faced by women in higher education. Data was collected through a survey from four districts of Punjab, Pakistan. Findings indicated that there are strong cultural resistances faced by women to acquire education in a modern institution or pursue an education in "technological discipline that promises prestige and economic and societal advancement". Similarly, Irum et al. (2015) studied problems faced by women in higher education institutions of Sindh. Data was gathered through a survey from three public sector universities of Sindh. Findings revealed that they face discrimination and harassment. They also lack freedom of expression and feel unsafe on campus. Findings of both studies cannot be generalized due to methodological limitations. But it has surfaced the prevalence of discriminatory attitudes towards women. With regard to the use of technology, female learners at my workplace use social media, but its use for academic purpose is limited due to lack of digital literacy.

With regard to disabled females, they face a high magnitude of social problems. They are less privileged to acquire quality higher education. Although the government of Pakistan has reserved 2% admission quota for students with disabilities, institutions lack the inclusive infrastructure to meet their needs. One of the research reports underlines,

"Students with disabilities have often had to adapt to the teaching environment in universities with little or no assistance, a circumstance that puts them at an academic disadvantage" (The Economist, 2014, p.37). There are few well-equipped educational institutions in Karachi, Pakistan like Aziz Jahan Begum Trust for the Blind and Ida Rieu School for Blind and Deaf to meet educational needs of blind children, but most of the inclusive institutions are located in poor localities and have limited educational resources. With regard to the use of technology, visually impaired teachers at the selected institution use assistive devices for personal use, but lack skills to apply it for academic purposes.

Mental health issues are escalating among Pakistani young women of disadvantaged communities due to socio-cultural barriers (Mansoor, 2018; Yusufzai, 2018). Hussain highlighted, "Depression and anxiety have been shown to be significantly associated with unemployment and economic depression, cultural disintegration, erosion of ethnic identity, breakdown of social support structures and excessively high-performance demands" (2017). In addition, domestic violence, forced marriage, verbal abuse and oppressive family environment have affected their well-being. Culture of sharing as shame has refrained females to express their feelings with others. Although online resources on mental health awareness are available, most of these are not culturally suitable.

For all these cases, I chose low-cost technologies to empower females. I was introduced to these cost-effective methods during the first three modules of my Masters in Online and Distance Education program (2017-2019) at the Open University, UK under the Commonwealth Scholarship.

My research study addresses the following research question:

1. How the integration of cost-effective digital technologies has empowered Pakistani women of disadvantaged communities?

Research Design

I have used reflective narrative method to highlight, how the use of three cost-effective technologies (i) blogs (ii) podcast and digital voice recorder and (iii) Google site have facilitated teaching and learning of i) future teachers (ii) visually impaired teachers, and (iii) Pakistani young women, in a socio-culturally restrictive environment. I have chosen interpretive qualitative enquiry to unfold my personal experiences of using low-cost technologies to empower others (Clandinin, 2006; Mitchell and Egudo, 2003). The sample for future teachers includes all prospective female teachers, enrolled for a teaching course 'Reflective Practice' during January-May 2017 at one of the public sector universities in Karachi, Pakistan. For the second case, female teachers working with visually impaired students at one of the institutions located in the poor locality of Karachi, Pakistan during the same period were taken into consideration. Whereas, Pakistani young university going women were selected for the third case from one of the public sector universities in Karachi, Pakistan during September 2018-January 2019.

There are few methodological limitations like the reflective narrative is based on knowledge claims. It requires sufficient justification to validate findings. Polkinghorne (2007) suggested, "The researcher can defend the appropriateness of the meaning attributed to the words and phrases of the text by providing the context in which they were made" (p.478). He further suggested readers to read the arguments and validate it by making own judgement about the worthiness of research claim. I first assessed the needs of females belonging to disadvantaged communities at three sites through a socio-cultural lens. I then explored ways to introduce sustainable strategies. Finally, I implemented low-cost technologies and maintained a reflective journal to record my mirrored narratives. Participants' feedback was received through the survey.

Discussion

a) Blog
Blog is an autonomous platform to generate ideas and share evidence-based reflective practices across online learning communities. Learners blog to express their viewpoints, share creative thoughts and increase their readership (Considine, Horton and Moorman, 2009), but its pedagogical success is based on several factors, including self-motivation, preferences and learning approaches (Azizinezhad and Hashemi, 2011; Chawinga, 2017; Garcia et al., 2019; Yunus, Tuan and Salehi, 2013). If learners use a blog as an academic activity without clear intentions, it may result in minimal communication or inadequate reflections (Kerawalla et al. 2008).

Hall (2018) conducted a longitudinal formative experiment on the use of blogging to support in-service teachers' professional development. He examined blog engagement of twenty-six female teachers' enrolled in a literacy master's program at a university in the southeastern United States. He found that they blogged for sharing and discussing teaching problems. They were engaged in critical reflections. The whole process involved them into communities of practices. Findings are pertinent to my research context, as it highlights the potentials use of blogging for reflections.

I taught 'Reflective Practices' course to the female student teachers during January-May 2017 at one of the public sector universities, located in Karachi, Pakistan. There were eight participants enrolled in the course. The module demands participants to engage in microteaching and reflective sessions. They were also required to write a reflective diary, and receive consistent feedback from internal and external peers during classroom discussions. During the first two weeks, I observed that they were not actively engaged in reflective interactions with external peers due to socio-cultural barriers. In Pakistan, face-to-face discussion among male and female is considered as inappropriate. Malik and Gabol (2017) highlighted, "Systemic moral policing and gender segregation seem to have become a norm at university campuses, manifesting a kind of intolerance that is deeply uncharacteristic of a progressive academic culture". I witnessed that it was obstructing their critical thinking skills. As the participants were engaged in a reflective course, blogging was a pertinent alternate activity to accelerate virtual interactivity, and cultivate critical reflective skills.

Introducing blogging as an academic activity does not always guarantee maximum participation and intellectual discourses among learners. Thus, I first asked student teachers to share their perceptions and experiences about blogging. I learnt that none of them had any previous exposure to blogging. Initially, they were hesitant to use the blog due to privacy and security issues. They also had an assumption that blogging would expose their weakness to global learning communities. I conducted a 2 hours session to inform them about the use of blogging for teaching and learning and familiarized them with educational blogging platforms. I also guided them about privacy settings.

I then invited student teachers to design a blog as a reflective journal. As a practice, I asked them to browse educational blogs, and share some interesting web links on their learning blog. I further suggested them to share their blog links with fellows. This activity gradually developed a sense of ownership among them. They started writing teaching reflections, and also gave critical feedback to one another.

At the end of the module, participants expressed that blogging helped them to share their ideas, participate in critical discussions, and take ownership of learning. It shifted their reflective practices from dependencies to independencies. Most of the participants conveyed that blogging developed the trait of self-consciousness among them. Initially, they shared resources with others without filtration, but they gradually learnt filtering content before posting it on their blog. This activity has also encouraged them to continue blogging beyond the course requirement. Being a practitioner, I realized that if learners' blog to resonate their own learning needs, it can engage them in authentic learning practices.

In summary, taking learners into confidence, and informing them about the academic use of blogging motivated them to make the right choice of learning.

b) Podcast and Digital Audio Recorder

Assistive technologies are powerful tools to improve academic participation of persons with disabilities. These have been used by visually impaired students and teachers in various academic settings (Ahmed and Chao, 2018; Bhardwaj, 2018; Silman et al., 2017). However, not all academic institutions in developing countries have access to assistive devices. According to Rohwerder (2018), "Lack of access to assistive devices is due to high costs, limited availability, lack of awareness, lack of suitably trained personnel, lack of governance, and inadequate financing of assistive technologies" (p.5). In Pakistan, the use of assistive technology for teaching and learning of visually impaired people is sparse due to financial constraints. In my viewpoint, the appropriate use of cost-effective technologies can bridge disparities and improve teachers-learners participation.

I have chosen visually impaired female teachers, teaching at one of the educational institutions for visually impaired children located in one of the backward areas of Karachi, Pakistan. Braille slate, stylus and typewriter were used as teaching and learning tools.

During January to May 2017, there were around 12 teachers serving that institution. All of them completed their teaching degree through a distance learning institution. They belonged to a backward area and had no opportunity to attend any professional development course. They all owned a mobile device with assistive apps but never used it for teaching and learning purposes. I asked them about the skills they wish to enhance. All of them expressed that they feel hesitant while speaking, and want to improve their communication skills.

I designed a two days training program on communication skills. I chose audio podcasts as a teaching tool because it is a low-cost technology, which can be used innovatively to improve communication skills. Previous studies have highlighted its use for improving students' soft skills (Bustari et al., 2017; Lawlor and Donnelly, 2010; Ramli, 2017; Yoestara and Putri, 2019). Whereas, mobile voice recorder app was used to practice and reflect on speaking skills.

I collected audio podcasts using various online platforms. Few videos, pertinent to improving communication were also converted to mp3. These podcasts were then uploaded on www.soundcloud.com. Participants were encouraged to listen to these through a web link (via screen reader) on their personal mobile. For training sessions, I used offline podcasts through a blue tooth speaker and USB. For each podcast, participants were engaged in critical discussions. At the end of each session, they were asked to record audio news clipping in their voice on their mobile phones. Finally, they listened to it individually and collectively to identify areas of improvement.

At the end of the training, most of them expressed that the use of podcasts and audio recorder engaged them into reflective practices. Activities stimulated learning, engaged them in classroom discussions, and enabled them to access new information and tips on communication skills. Recording activity helped to improve their speaking skills, and also emerged ideas to use it innovatively (recording audio poems and stories) as a teaching tool. Few participants proposed to use the same tools for microteaching, and for developing audio lesson plans.

c. Google site
In Pakistan, mental health issues are rising among women due to the prevalence of patriarchal culture and societal attitudes and norms. Bibi highlights, "Women are bound to live their lives under socially-sanctioned strict norms while facing discriminatory behaviour from family members" (2018). Depression is perceived as a symbol of mental illness in Pakistani society. It keeps women away from seeking social help at the time of distress.

Female university students at my workplace expressed that they desire to learn about mental health, but there is no culturally suitable platform available towards mental health awareness without any physical interaction. I designed a Google site and piloted it from September 2018-January 2019 with seven female learners, enrolled in 'Research Method' course. I also kept my website resources on Google drive and OERCommons as alternate platforms.

The website includes various sections like awareness, empowerment, inspirational stories and chatrooms. These sections emerged during discussions with participants. I also added links to free courses on depression. The website largely includes culturally appropriate open educational content like podcasts, videos, free courses and blogs. I collected all the resources, whereas it was filtered by volunteer Pakistani female educators.

During the survey, participants expressed that the website empowered them towards mental health. They found all content as culturally appropriate. Chatroom was the most liked section, where participants received free anonymous social counselling from experts. I also included a few collaborative activities on the website, where few individuals contributed their write-ups and drawings. It echoed participants' engagement in communities of practices. They suggested to officially launch my pilot website for global learners of either gender with more resources.

Conclusion

I introduced low-cost technology in each case as a culturally responsive solution to support female of disadvantaged communities in Pakistan. Integration of cost-effective digital technologies has empowered Pakistani women of disadvantaged communities. Blog has supported future teachers to become a reflective practitioner. Whereas podcast and digital voice recorder have helped visually impaired teachers to improve their communication skills. While introducing a website has empowered the intended participants towards mental health. Although findings cannot be generalized, it provides useful insights for optimal resource utilization.

This paper is significant to understand, how the integration of cost-effective technologies can improve teaching and life-long learning practices, accelerate collaboration, and widen educational accessibility within available resources. Using innovative, affordable and accessible technology can bridge the knowledge gap, improve skills, and can promote gender equity in education, but it is pertinent to have digital literacy, study the socio-cultural context, and choose culturally appropriate tools and platform for reaping sustainable practices. Findings are important for policymakers and higher education institutions to introduce culturally situated low-cost technologies for female empowerment, and to disseminate digital literacy among them.

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