# Chapter 45
# Teachers' Professional Development in Bangladesh: Issues and Way Forward


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**Abstract** Developed countries across the world have policies promoting quality teacher education through successful evolution of the use of emerging technologies. In Bangladesh, currently there is no systematic process for recruiting and training of pre-service teachers. Lately, piloting in-service teachers' professional development and networking have been initiated in Bangladesh through virtual learning environment (VLE), web 2.0, e-learning, and mobile learning in addition to traditional modes. Although they have been found to be contributing significantly in improving the quality of teachers, lack of guidance on curricular development, lack of teacher collaboration, and peer support are identified as a hindrance in teachers' professional development. In addition, though Bangladesh is striving to achieve inclusive education by undergoing various initiatives, inadequate experiential learning facilities are identified as the primary hindrance to such reforms. In view of the above, here we propose a holistic teacher education framework taking andragogy with its emphasis on learner's needs, prior experience, readiness, orientation, and motivation into consideration to develop digital learning strategies for teacher education. The feasibility and effectiveness of technological infrastructure are also addressed. It is hoped that our proposed strategy and the clarification of issues it addresses can act as a positive catalyst to mature the progress of teacher education in Bangladesh.

**Keywords** Professional development · Virtual learning environment · Andragogy · Inclusive education · Experiential learning

## Introduction

> Knowledge is power. Information is liberating. Education is the premise of progress, in every society, in every family—Kofi Annan.

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There is a positive correlation between a nation's development and investment in education, particularly, investment in the upgradation of the quality of education in primary level as well as in general education sectors (Psacharopoulos, 1988). It is no surprise that the SDG Goal 4 aims to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" (UNESCO, 2016).

Public education is the main form of education in the primary and secondary levels in many countries (World Bank, 2021) including Bangladesh. Primary, secondary, and higher education are the three major segments of the education system in Bangladesh. Primary education is 5-year long, spanning from grade 1 to 5. The secondary education is 7-year long and subdivided into three levels—a 3-year-long junior secondary level (from grade 6 to 8), a 2-year-long secondary level (grade 9 and10), and a 2-year-long higher secondary level (grade 10 and 11) (Rahman et al., 2010). Teaching as a sector of employment is also one of the largest in Bangladesh with over 1.1 million teachers from pre-primary to tertiary education (BANBEIS, 2017). The most common school-level teaching style in Bangladesh is lecture methods without using any teaching aid, and emphasis is primarily given to rote learning (World Bank, 2000).

An awareness of the importance of pedagogical approaches that support human flourishing, citizenship, and the development of the complex skill set required for advanced economies is evident within national policy (Ahsan & Mullick, 2013); however, there is little evidence that these intentions flow into changed practice. This chapter reviews the current teacher education in Bangladesh, as an important site of culture change that would lead to the successful adoption of more appropriate pedagogies. We provide a historical context that explains the gaps and areas for improvement and propose a framework for an effective teacher education system that incorporates digital resources that can overcome the inequalities of educational outcomes.

## *Importance of Teacher Education*

Teachers' roles and responsibilities in the effective education system have long been recognized globally. There is compelling evidence to believe that well-prepared teachers are more confident and successful in their profession than others (Darling-Hammond, 2000). Indeed, "teacher quality" was found to be the single most crucial school-level factor influencing student's attainment in a study carried out in 25 countries by Organization for Economic Cooperation and Development (OECD, 2005). Therefore, teachers are extremely important, and an inseparable component of any education system and their competencies in providing quality education are of utmost importance (Jimerson & Haddock, 2015; Selvi, 2010). This is especially true for countries like Bangladesh where pre-service training/certificate is not mandatory to be recruited as a teacher. Besides classroom teaching, teachers play a significant role

in the overall development of an educational program including curriculum development, student mentoring, and many other responsibilities that create an appropriate learning environment (Harden & Crosby, 2000).

Education is seen from a much broader perspective in the Sustainable Development Goals (SDGs). SDG target 4C is categorically focused on boosting the quality of teachers. It states, by 2030 countries will "sustainably increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small developing states".

## *Andragogical Model*

In looking at the learning strategy for teacher education, it is notable to consider the needs of adult learners. Unlike pre-adult learners, adult learners are enthusiastic, pragmatic, self-guided, and task oriented (Beder & Darkenwald, 1982) and may have pre-developed notions about education through life experiences. The latter, however, could imply barriers to adult education (Pew, 2007). Therefore, it is essential for the educators to comprehend the disparities and diversity in learning styles of adult learners (Clerk, 2010), and they should be taught andragogically (Caruth, 2014). Learning becomes more significant when both the educator and the learners share their responsibility by designing learning goals and objectives mutually, maintaining interpersonal communication, fostering reflection on experiences, and upholding self-guided learning (Zhang, 2009). Hence, adult learners should be provided opportunities involving decision-making in terms of developing courses as well as improving learning methods (Hughes & Berry, 2011).

The core principles of adult learning presented in the original andragogical model of Knowles (1968) are based on some important assumptions about adult learners. Knowles et al. (1998) pointed out that adults need to realize the importance of learning something before accepting it. This is because adults' self-identity comes through life experiences leading them to prioritize their learning objectives and needs. Things that are related to real-life settings are likely to be accepted more enthusiastically by adults than anything else (Knowles et al., 1998). Besides, several factors including external motivators like social status, ranking, wages, rewards, and internal motivators such as job satisfaction, identity, self-esteem, belonging, quality of life can lead towards individual growth of the adult learner (Knowles, et al., 1998).

The Knowles model is a transactional model (Brookfield, 1986) as it is transformable from community education to human resource development. The second portion of the andragogical model (Knowles, 1995) consists of the following eight steps of andragogical process design:

- Learner preparation
- Climate for learning
- Program planning

- Diagnosis of learning needs
- Formulation of learning objectives
- Outline of the learning plans
- Carry out learning plans
- Evaluation of the learning outcomes.

Furthermore, teaching philosophies and values of the learners are influenced by the andragogical process (Cretchley & Castle, 2001). In a study of developed countries' higher education perspective, it was found that andragogy focuses on learner-centred approaches while pedagogy concentrates on teacher-focused strategy (Yoshimoto et al., 2007).

For the current Bangladesh context, it is also important to bear in mind that Knowles' (1968) assumptions of andragogy are harmonious with the principles of blended learning (Korr et al., 2012). This is because blended courses are distinguished as a combination of traditional classroom setting and online activities that allow collaborative learning (Caruth & Caruth, 2013) either synchronously or asynchronously (Fig. 45.1). Moreover, blended learning and andragogy are compatible with each other as both enable learners to establish new information by comparing information acquired from past experiences. Learners are also stimulated by relevant problem-solving activities as well as individualized continuous feedback. This is important because blended and distance learning are important tools if educators in rural areas where education improvement is needed most are to be able to participate

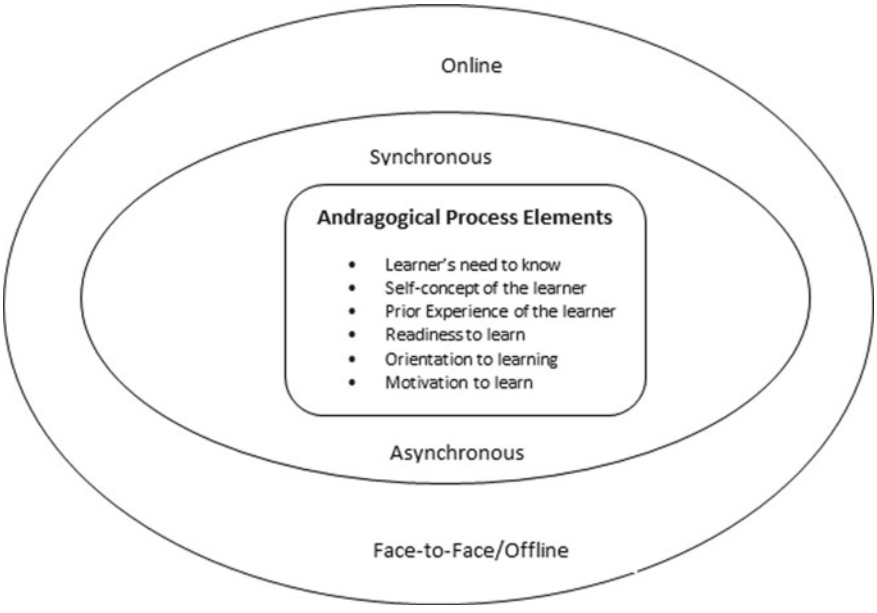


**Fig. 45.1** Relationship between blended mode and andragogy ( Modified from Knowles et al., 1998)

in quality education that in turn enables them to become educators that enhance the quality of their students' learning.

## Overview of Teacher Education in Bangladesh

### *Policies and Initiatives Related to Teacher Education*

In order to appreciate the particular challenges Bangladesh teacher education currently faces, it is vital to be aware of the policy context and the historical developments that have given rise to it. The first education policy in Bangladesh was formulated in 1974 upon the suggestion of the Qudrat-e-Khuda Education Commission (1974). In the 1974 education policy, emphasis was given to in-service teachers training. However, that policy has never been implemented. The second education policy was proposed in 1988 by the National Education Commission (1988), where pre-service training for secondary school teachers was suggested. Since 1988, at least five more education policies have been proposed, but none of them brought any significant change and improvement in the education sector. The latest education policy in Bangladesh was formulated in 2010 (NEP, 2010), which is seen as the polished version of all of the previous policies (Chowdhury & Kabir, 2014). A number of strategies have been proposed for improving teacher education in NEP (2010). These include.

1. Mandatory foundation training as well as C-in-Ed and B.Ed courses for primary and secondary teachers, respectively, within 3 years of joining their posts with college teachers being required to undergo a refresher's course every three years.
2. Modernization of syllabus and curriculum of teacher training as well as increase in the duration of C-in-Ed courses from one year to one and half years including 9 months of practical classes.
3. Formation of training facilities for the trainers both at locally and globally to raise the benchmark of training.
4. Inclusion of extensive co-curricula materials in the training and proper evaluation of trainees' tasks.
5. Introduction of financial incentives for the trainees on the basis of their skill evaluated through continuous assessment.
6. Development of high standards of training facilities will be ensured.
7. A commitment to ensure Internet connectivity for all educational and training institutions so that academic staff/personnel can engage in effective digital education practices.

The National Education Policy 2010 and ICT Policy 2015 particularly emphasized the use of ICTs to progress the quality of education in Bangladesh (BTRC, 2021; NEP, 2010). ICT laboratories and multimedia classrooms are being provided

in the educational institutions (a2i, 2014; Government of Bangladesh, 2019). Thousands of teachers in primary and secondary school levels have received 15-days-long basic training on creation and use of multimedia content as teaching–learning tools, and more than 20,000 teachers have shared their digital content through the online teacher's portal (Government of Bangladesh, 2018). However, the National Information and Communications Technology Policy (NIP) in Bangladesh has been criticized to be ambiguous and techno centric as well as for not being able to address issues associated with digital inclusion (Aziz, 2020). Besides, teachers' belief and attitude have been found to be a major impediment in the success of ICT in education in Bangladesh (Khan et al., 2012). Moreover, the success of improved teaching–learning using multimedia content has found to be largely dependent on two variables—(1) how the technology is designed and implemented and (2) how the teachers are trained to use it (Parvin & Salam, 2015). Therefore, educating teachers in ICT is crucial in the successful implementation of the above initiatives (Government of Bangladesh, 2019).

## *History of Teacher Education in Bangladesh*

Despite Bangladesh education policy being fairly recent, educational practice has a much longer history dating back to the colonial period. Teachers training in the subcontinent started in the early 1900s in Guru training schools, which subsequently transformed into primary training institutes (PTI) by the middle of twentieth century. In 1951, there were 59 government and three private PTIs. Currently, there are a total of 67 government and one private primary training institutes (PTIs) dedicated for in-service training of primary school teachers. PTIs basically conduct C-in-Ed and DPEd programs. C-in-Ed is intended only for teachers with secondary school certificates, whereas DPEd is for teachers with higher secondary school certificates and above academic qualifications. PTIs also run some short-term training programs like ICT in education as per government decision (NAPE, 2017).

For secondary school teachers, there are 14 government training colleges and a National Academy for Educational Management (NAEM). There is one training institute dedicated for the Madrasa teachers. Besides, there are five higher secondary teacher training institutes (HSTTI) for the subject-based training of higher secondary college teachers. In addition to providing training, all 14 government training colleges offer B.Ed courses, and some of them also offer M.Ed. course. Such courses are also offered in the education and research institutes under the Dhaka, Rajshahi, and Khulna Universities. Bangladesh Open University also offers B.Ed. courses through distance learning. Apart from the above-mentioned public facilities, there are 106 private secondary teachers' training centres (NEP, 2010). Though some facilities are available, their standard in terms of infrastructure, quality of training, contents taught are, to a large extent, of low standard. Moreover, a lack of coordination and institutional linkage among these institutions was found to be an impediment in improving the quality of teacher education in Bangladesh (ADB, 2015).

## *Present Teacher Education*

What is apparent from this overview is that there is not a coherent process of pre-service teacher education in Bangladesh (Al Amin & Greenwood, 2018). In-service teacher development programs in Bangladesh are too focused on teaching a perfect lesson in the classroom without evaluating actual learning by a student (Thornton, 2006). As a result, there exists a significant gap between a teacher's understanding of curriculum and his/her actual teaching practice. Some studies suggest that teaching practice in Bangladesh is largely driven by students achieving good grades in examinations rather than their actual learning (Al Amin & Greenwood, 2018). There is evidence that primary school teachers in Bangladesh would welcome peer support through planning of lessons, preparing content, classroom observations and corrective feedback. However, time constraints as well as the social structure of the schools restrict teachers' uptake of such embedded improvement approaches (Thronton, 2006; Rahman et al., 2018). Furthermore, the challenges of the curriculum in terms of policies and technologies, poor academic background of teachers, perceived low capability of many students, and contextual components influence teachers' enthusiasm to develop professional learning communities (PLCs) (Thornton, 2006). Attributes like attitudes, thoughts, efficacy beliefs, and perceived support are mostly accounted for variances in teachers behaviour (Malak et al., 2018). There is also a concerning lack of resources and support to enable teachers to include learners with disabilities or other support needs (de Monchy, 2014).

In line with National Education Policy 2010, government primary schools have progressed to adopt inclusive education; however, they faced several challenges in implementing inclusive education because of inferior quality in teaching children with special needs. Teacher collaboration and peer support are notably absent in schools in Bangladesh. There is an urgent need for improving the in-service training for school teachers providing them instructional techniques for diverse learners and communication skills with different stakeholders to carry out quality inclusive education (Siddik & Kawai, 2020).

## *Technology Integration in Developing Teacher Education Improvements*

Several pilots have taken place for technology integrated teaching–learning activities in Bangladesh. An online teachers' portal (www.teachers.gov.bd) has already been designed to store and retrieve subject-specific digital content for teacher education classrooms. The portal can be defined as a building block of the professional learning community (PLC) of teachers across the country. As the use of portable devices like mobile phones is increasing in developing countries for teaching and learning purposes (e.g. Shrestha, 2011), Bangladesh is no exception. The historical

background of the utilization of mobile technology in teacher training is moderately short. Teaching Quality Improvement in Secondary Education (TQI-SE) project introduced mobile technology in teachers' training in Bangladesh for the first time in 2006 (Pouezevara & Khan, 2007). Later on, English In Action (EIA), an education development program of collaboration between the UK and Bangladesh governments, introduced audio–video materials and e-resources to utilize the potentiality of mobile learning to ease the professional development (PD) of English language teaching (ELT) community (Shrestha, 2012). EIA started to train teachers by adapting mobile technology in classroom settings which is one of the first instances of adopting an approach consistent with andragogical principles that we can identify (Karim et al., 2017). To ensure the quality teaching–learning practices, Bangladesh Open University (BOU), the only distance learning provider, has also planned to use mobile and Internet technology for the learners (Islam, 2016). These initiatives indicate that wedding appropriate curricular approaches with mobile technology may hold out promise for teacher's professional development in resource-constrained contexts like Bangladesh (Shohel & Banks, 2010). Evidence suggests that adopting the mobile technology in English teacher training program was able to upgrade the teachers' personal and professional skills (Karim et al., 2017). More specifically, it is anticipated that this sort of change may transform teachers' conventional classroom behaviour towards a more student-centred one. However, some disparities are ascertained between the policy of EIA and national curriculum (Karim et al., 2017). It is, therefore, important to evaluate the approach so that teacher development programs and the National Education Policy are mutually supportive.

## Proposed Framework for Teacher Education

Building on the evaluation of how mobile computing devices can support education and training (Ally & Prieto-Blázquez, 2014; Attewell, et al., 2010), we offer in this section a possible framework applicable to the Bangladesh context. Our starting point is premised upon the realization that perceptions, attitudes, and usage patterns of technology integration vary significantly among teachers. Teacher educators need space to assess the tools' potentiality alongside the andragogical advantages it can support. This change may assist pre-service and in-service teachers to shift their stances towards the addition of portable devices within the existing teaching–learning settings.

Bearing in mind that mobile learning is defined as through interactions among learners, devices, and context (Mouza & Barrett-Greenly, 2015), learning design needs to be designed as well as employed taking into consideration the mobile learning environment (Herrington et al., 2009). Features like portability of devices and instant connectivity to data and networks are exclusive to mobile learning environments and can afford significant advantages to mobile learners (Cheon et al., 2012). It is favourable that Bangladesh has witnessed a huge jump in mobile subscription and usage of Internet through mobile devices in the last decade. The number of

mobile subscriber has almost doubled in 8 years between 2013 and 2021, it jumped from about 98 million to little over 173 million during this period (BTRC, 2021). The number of Internet subscribers has also drastically increased over the last 5 years, and it has increased from about 61 Million in 2016 (mobile Internet 58 million and fixed line 3 million) to over 112 Million in 2021 (mobile Internet 103 million and fixed line 9 million) (BTRC, 2021). Moreover, the country has a number of policy initiatives to support e-readiness. The main telecom operators have begun to roll out fourth generation (4G) mobile networks nationwide; the bandwidth of the only submarine cable has also been raised to 200 gb/s. Further research is needed as to the reliability of coverage where teacher education can most benefit from mobile learning, but the prevalence of accessibility of mobile networks is greatly improved to the extent it is viable to serve as a learning platform.

An important aspect that the mobility of learners opens up is new spaces for reshaping formal, informal, and non-formal learning under the lenses of andragogical approach. Moreover, learning content can also be reshaped or customized within a mobile learning platform (Grant, 2019). In addition, access to instructor/tutor is also flexible in mobile learning settings which can take place either synchronously or asynchronously. Furthermore, continuous availability of data services and networks is also crucial to ensure collaboration as well as engagement. Hence, teacher collaboration and peer support can be improved through mobile learning platforms by offering one-to-many and many-to-many communication and reducing the gap between practice and curriculum. All of these possibilities can play a considerable role in transforming learners from unmotivated to motivated. However, the physical cultural and historical contexts influence the learning. As well, the learners' readiness may vary based on his /her perceptions, views, attitudes, and affordability of technology (Grant, 2019). The above-mentioned characteristics are summarized in Fig. 45.2 to address the design

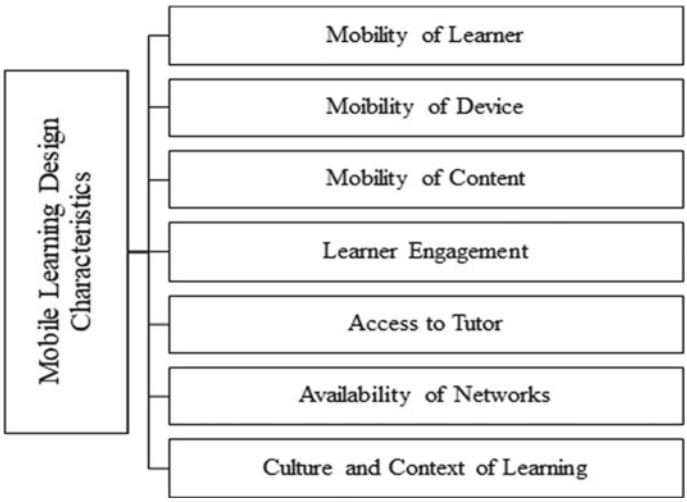


**Fig. 45.2** Design characteristics of mobile learning environments ( Modified from Grant, 2019)

of mobile learning environments.

As mobile learning is considered an emerging field to enhance distance learning, Liu et al. (2008) emphasize the learners' perceptions and design characteristics. Besides, versatility of learners and variation of educational settings need to be considered under the lens of andragogical process design to achieve expected learning outcomes. Hence, information related to learners' need, readiness, and orientation to learn is also imperative in m-learning design. Consequently, requirements as well as constraints analysis should guide the development of mobile learning in the context of Bangladesh. With this in mind, it is important to consider that learners also need support services to foster their confidence and proficiencies to deal with any arising impediments. Liu et al. (2008) suggest several support services like training and community support need to be integrated into the development of mobile learning design. As curriculum development and implementation follow top-down approach in Bangladesh (Rahman et al., 2018), the process lacks flexibility, becomes bureaucratic, and creates difficulty (Fullan, 2007a, 2007b). Though teachers are the practitioners of utilizing the prescribed method in the classroom, they are unfortunately deprived of expressing their views (Ali & Walker, 2014). Learning experience and learning objectives need to be considered to evaluate the significance of mobile learning-integrated andragogical approaches. Figure 45.3 shows how mobile learning activity protocol can be configured.


**Fig. 45.3** Mobile learning activity design protocol ( Modified from Liu et al., 2008)

There are dilemmas such as what tenets or scaffolds should be followed to design mobile learning platforms and what instructional strategies can be embraced to improve teacher education. This sort of technology integration could enable a paradigm shift in teacher education in the context of Bangladesh. The implementation pathway of mobile learning in teacher education must be supported by technology and mobile applications infrastructure (Khaddage & Cosío, 2014). This raises further research challenges such as applying the affordances of innovations in technology to learning content, interaction, and usability principles between technology and andragogy, and optimum ways to text innovations in modes of instructional practices. Cochrane (2010) identified several gaps in successful implementation of mobile learning such as absence of explicit theory for effective design of mobile learning, insufficient cross-sectional or longitudinal studies to assess the impact of mobile learning activities, and poor policy support for learners and teachers to adopt mobile learning. It is important that the development of mobile learning strategy in Bangladesh addresses these gaps.

The four factors, namely technological drive, andragogical adoption, policy confirmation, and evaluation/further research altogether propose a framework to adopt mobile-mediated teacher education in the context of Bangladesh (Fig. 45.4).

Andragogical considerations such as learners need to know, self-concept of the learner, readiness as well as orientation to learn, and motivation of learners needs to be best matched with technological adoption such as hardware and software. Hence, at the heart of teacher education, audio-visual resources (restructuring of content) can be made available on teachers' mobile phones (changing instruction methods) at 24/7 (accessibility) without making any significant investment (Bring Your Own

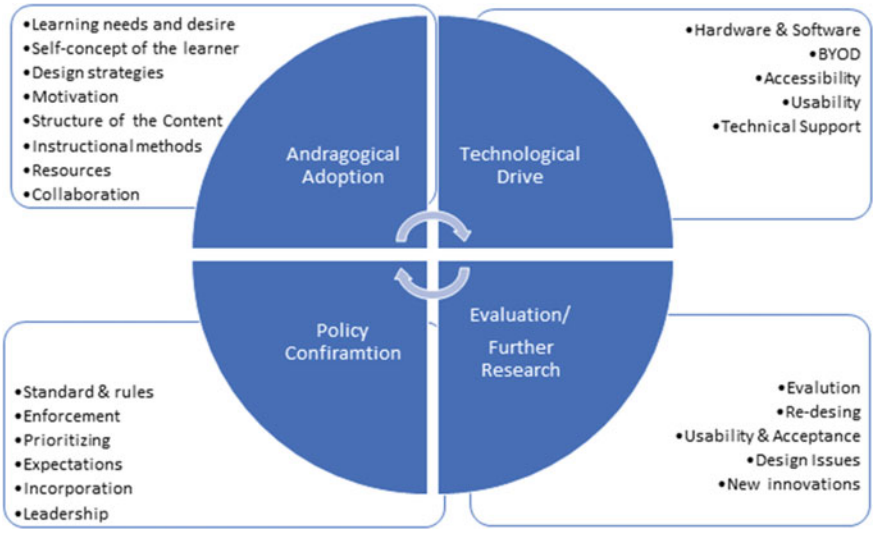


**Fig. 45.4** Framework for M-learning implementation for teacher education ( Modified from Khaddage & Cosío, 2014)

Device). Furthermore, peer teachers can communicate among themselves (collaboration) over mobile phones using communication software (technical support) and launch events or workshops through audio–video conferencing (changing instructional strategies) apps in terms of their demand (learners' need and desire).This sort of synthesis will lead towards collaboration and improve self-concept of the learner as they avail themselves of wider access to web 3.0 technology as well. In addition, this sort of convergence needs to be supported by policy confirmation (curriculum support) and prioritization (expectation and enforcement by Government of Bangladesh). This paradigm shift will be redesigned based on acceptance (readiness and motivation to adopt), design characteristics (contextualization availability of technological resources), usability (teachers' skills to implement) as well as new innovations.

## Discussion

Teacher education is demanded to enrich teachers' skills (Karim et al., 2018) irrespective of the courses. In addition, teacher education acts as a pivotal factor to determine teachers' actions (teaching–learning activity and assessment) in the classroom. The purpose of any teacher education program is to promote positive transformation among the teachers (Hargreaves & Fullan, 1992). Perceiving the potential outcomes of teacher education programs, pre-service as well as in-service teachers needs to be equipped with competences and strategies to facilitate interactive classrooms by adopting audio-visual utilities and employing varied activities for enhanced students engagement (Karim & Mohamed, 2019). Moreover, Sustainable Development Goal (SDG) 2030 commits Bangladesh to increase the supply of competent teachers to a large extent by 2030 through promoting international collaboration for teacher training. Hence, Bangladesh has the opportunity to strengthen its teacher training capacity through innovative strategies instead of relying on traditional approaches. To meet the demand of SDG, Bangladesh needs to invest more on technology enhanced teacher training programs considering andragogical elements to offer quality education for the adult teacher/learners. This sort of paradigm shift must be supported by awareness creation, redesign of content, and modification of instructional practices. To tackle teachers' resistance to participating in this sort of paradigm shift, it is advisable to prioritize work with remote learning contexts that can serve as exemplars for wider uptake across Bangladesh. Professional development materials developed for m-learning platforms need to be incorporated into revised classroom resources produced by the National Curriculum and Textbook Board (NCTB) to take the maximum advantages of audio-visual interactive instructional practices in the classrooms. Finally, just-in-time access to an extensive educational resources through mobile learning settings may bridge the disparity of retrieving and manipulating information by the teachers and move forward to the educational opportunity in every premises of the society.

## References

a2i (2014). *ICT in education: Content development by the teacher for the teacher*. Access to Information (a2i) Programme, Prime Minister's Office, Government of Bangladesh, a2i.gov.bd.

ADB. (2015). Policy reform in Bangladesh's secondary education (1993–2013) tracing causal processes and examining ADB's contribution. Asian Development Bank, Manila.

Ahsan, M. T., & Mullick, J. (2013). The journey towards inclusive education in Bangladesh: Lessons learned. *Prospects, 43*(2), 151–164.

Al Amin, M., & Greenwood, J. (2018). The UN Sustainable Development Goals and Teacher Development for Effective English Teaching in Bangladesh: A Gap That Needs Bridging. *Journal of Teacher Education for Sustainability, 20*(2), 118–138.

Ali, M., & Walker, A. L. (2014). Bogged down ELT in Bangladesh: Problems and policy. *English Today, 30*(2), 33–38. https://doi.org/10.1017/S0266078414000108.

Ally, M., & Prieto-Blázquez, J. (2014). What is the future of mobile learning in education? *International Journal of Educational Technology in Higher Education, 11*(1), 142–151.

Attewell, J., Savill-Smith, C., Douch, R., & Parker, G. (2010). *Modernising education and training: Mobilising technology for learning*: ERIC.

Aziz, A. (2020). Digital inclusion challenges in Bangladesh: The case of the National ICT Policy. *Contemporary South Asia, 28*(3), 304–319. https://doi.org/10.1080/09584935.2020.1793912

Bangladesh Bureau of Educational Information and Statistics (BANBEIS). (2017). Bangladesh Education Statistics. Retrieved from https://lib.banbeis.gov.bd/BANBEIS_PDF/Bangledesh%20Education%20Statistics%202017.pdf

Beder, H. W., & Darkenwald, G. G. (1982). Differences between teaching adults and pre-adults: Some propositions and findings. *Adult Education, 32*(3), 142–155.

Brookfield, S. (1986). *Understanding and facilitating adult learning: A comprehensive analysis of principles and effective practices*. McGraw-Hill Education.

BTRC. (2021). *License ands*, WebPage: http://www.btrc.gov.bd/license-statistics. Last access April 15, 2021.

Caruth, G. D. (2014). Meeting the needs of older students in higher education. *Participatory Educational Research, 1*(2), 21–35.

Caruth, G. D., & Caruth, D. L. (2013). The impact of distance education on higher education: A case study of the United States. *Turkish Online Journal of Distance Education, 14*(4), 121–131.

Cheon, J., Lee, S., Crooks, S. M., & Song, J. (2012). An investigation of mobile learning readiness in higher education based on the theory of planned behavior. *Computers & Education, 59*(3), 1054–1064.

Chowdhury, R., & Kabir, A. H. (2014). Language wars: English education policy and practice in Bangladesh. *Multilingual Education, 4*(1), 21.

Cochrane, T. D. (2010). Exploring mobile learning success factors. *ALT-J, 18*(2), 133–148.

Clerk, K. D. (2010). *Student perception and success: How adult learners at a two-year technical institution perceive instruction and how their perceptions contribute to their overall academic success*: Oakland University.

Cretchley, G., & Castle, J. (2001). OBE, RPL and adult education: Good bedfellows in higher education in South Africa? *International Journal of Lifelong Education, 20*(6), 487–501.

Darling-Hammond, L. (2000). How teacher education matters. *Journal of Teacher Education, 51*(3), 166–173.

De Monchy, M. (2014). *Situation analysis of children with disabilities in Bangladesh, Dhaka*. Unicef. https://www.unicef.org/bangladesh/media/2046/file/SA-disablity%20report.pdf

Fullan, M. (2007b). *The new meaning of educational change*. Routledge.

Fullan, M. (2007a). Change theory as a force for school improvement. In *Intelligent leadership* (pp. 27–39). Springer.

Government of Bangladesh. (2018). *Gender budgeting report 2017–18, Chapter-28*. Information and Communication Technology Division, Ministry of Finance, Government of Bangladesh, Dhaka.

Government of Bangladesh. (2019). *Master plan for ICT in education in Bangladesh (2012-2021): Progress review report 2019*. Ministry of Education, Government of the Peoples' Republic of Bangladesh, Dhaka.
Grant, M. M. (2019). Difficulties in defining mobile learning: Analysis, design characteristics, and implications. *Educational Technology Research and Development, 67*(2), 361–388.
Harden, R. M., & Crosby, A. (2000). AMEE guide no 20: The good teacher is more than a lecturer—The twelve roles of the teacher. *Medical Teacher, 22*(4), 334–347.
Hargreaves, A., & Fullan, M. G. (1992). *Understanding teacher development*. Teachers College Press.
Herrington, A., Herrington, J., & Mantei, J. (2009). Design principles for mobile learning.
Hughes, B. J., & Berry, D. C. (2011). Self-directed learning and the millennial athletic training student. *Athletic Training Education Journal, 6*(1), 46–50.
Islam, M. A. (2016). *Can mobile learning upgrade the educational status of bangladesh: challenges and opportunities?* Webpage:http://oasis.col.org/handle/11599/2679?show=full. Last access April 15, 2021.
Jimerson, S. R., & Haddock, A. D. (2015). Understanding the importance of teachers in facilitating student success: Contemporary science, practice, and policy. *School Psychology Quarterly, 30*(4), 488–493.
Karim, A., Mohamed, A. R., & Rahman, M. M. (2017). EIA—A teacher education project in Bangladesh: An analysis from diversified perspectives. *International Journal of Instruction, 10*(4), 51–66. https://doi.org/10.12973/iji.2017.1044a
Karim, A., Mohamed, A. R., Ismail, S. A. M. M., & Rahman, M. M. (2018). Organized hypocrisy in EFL teacher training programs. *International Journal of Instruction, 11*(2), 437–450. https://doi.org/10.12973/iji.2018.11230a
Karim, A., & Mohamed, A. R. (2019). Examining the impact of an English in action training program on secondary-school English teachers' classroom practice in Bangladesh examining the impact of an English in action training program on. *Qualitative Report, 24*(3), 441–469.
Khaddage, F., & Cosío, J. H. (2014). *Trends and barriers on the fusion of mobile apps in higher education where to next and how*? Paper presented at the Society for Information Technology & Teacher Education International Conference.
Khan, M., Hossain, S., Hasan, M., & Clement, C. K. (2012). Barriers to the introduction of ICT into education in developing countries: The example of Bangladesh. *Online Submission, 5*(2), 61–80.
Knowles, M. S. (1968). Andragogy, not pedagogy. *Adult Leadership, 16*(10), 350–352.
Knowles, M. S. (1995). *Designs for adult learning: Practical resources, exercises, and course outlines from the father of adult learning*. American Society for Training.
Knowles, M. S., Elwood, R., Holton, R., III., & Swanson, A. (1998). *The adult learner: The definitive classic in adult education and human resource development* (5th ed.). Heinemann.
Korr, J., Derwin, E. B., Greene, K., & Sokoloff, W. (2012). Transitioning an adult-serving university to a blended learning model. *The Journal of Continuing Higher Education, 60*(1), 2–11.
Liu, H., Huang, R., Salomaa, J., & Ma, D. (2008). *An activity-oriented design framework for mobile learning experience*. Paper presented at the Fifth IEEE International Conference on Wireless, Mobile, and Ubiquitous Technology in Education (wmute 2008).
Malak, M. S., Sharma, U., & Deppeler, J. M. (2018). Predictors of primary schoolteachers' behavioural intention to teach students demonstrating inappropriate behaviour in regular classrooms. *Cambridge Journal of Education, 48*(4), 495–514.
Mouza, C., & Barrett-Greenly, T. (2015). Bridging the app gap: An examination of a professional development initiative on mobile learning in urban schools. *Computers & Education, 88*, 1–14.
NAPE. (2017). *A study on implementation of 'ICT in education training' in Government Primary Schools*. National Academy for Primary Education (NAPE).
NEP. (2010). *National Education Policy 2010*. Ministry of Education, Government of Bangladesh
OECD. (2005). *Teachers matter: Attracting, developing and retaining effective teachers*. OECD.

Parvin, R. H., & Salam, S. F. (2015). *The Effectiveness of using technology in English language classrooms in Government Primary Schools in Bangladesh* (Vol. 2, No. 1, pp. 47–59). FIRE: Forum for International Research in Education.

Pew, S. (2007). Andragogy and pedagogy as foundational theory for student motivation in higher education. *InSight: A Collection of Faculty Scholarship, 2*, 14–25.

Pouezevara, S.L., & Khan, R. (2007). *Learning communities enabled by mobile technology: A case study of school-based in-service secondary teacher training in rural Bangladesh*. RTI International

Psacharopoulos, G. (1988). (1988) Education and development: A review. *The World Bank Research Observer, 3*(1), 99–116. https://doi.org/10.1093/wbro/3.1.99

Rahman, M., Hamzah, M. I. M., Meerah, T., & Rahman, M. (2010). Historical development of secondary education in Bangladesh: colonial period to 21st century. *International Education Studies, 3*(1), 114–125.

Rahman, M. M., Pandian, A., & Kaur, M. (2018). Factors affecting teachers' implementation of communicative language teaching curriculum in secondary schools in Bangladesh. *Qualitative Report, 5*, 23.

Selvi, K. (2010). Teachers' competencies. *Cultura International Journal of Philosophy of Culture and Axiology, 7*(1), 167–175.

Shohel, M. M. C., & Banks, F. (2010). Teachers' professional development through the English in Action secondary teaching and learning programme in Bangladesh: Experience from the UCEP schools. *Procedia-Social and Behavioral Sciences, 2*(2), 5483–5494.

Shrestha, P. (2011). The potential of mobile technologies for (English) language learning in Nepal. *Journal of NELTA, 16*(1–2), 107–113.

Shrestha, P. (2012). Teacher professional development using mobile technologies in a large-scale project: Lessons learned from Bangladesh. *International Journal of Computer-Assisted Language Learning and Teaching (IJCALLT), 2*(4), 34–49.

Siddik, M. A. B., & Kawai, N. (2020). Government primary school teacher training needs for inclusive education in Bangladesh. *International Journal of Whole Schooling, 16*(2), 35–69.

Thornton, H. (2006) Teachers talking: the role of collaboration in secondary schools in Bangladesh. *Compare: A Journal of Comparative and International Education, 36*(2), 181–196. https://doi.org/10.1080/03057920600741180

UNESCO. (2016). *Unpacking sustainable development goal 4 education 2030 guide*. Retrieved November 13, 2021 from http://unesdoc.unesco.org/images/0024/002463/246300E.pdf

World Bank. (2021). Education statistics (EdStats), WebPage: https://datatopics.worldbank.org/education/. Last access April 15, 2021.

World Bank. (2000). *Bangladesh: Education sector review*. University Press Limited.

Yoshimoto, K., Inenaga, Y., & Yamada, H. (2007). Pedagogy and andragogy in higher education—A comparison between Germany, the UK and Japan. *European Journal of Education, 42*(1), 75–98.

Zhang, J. (2009). *Exploring education major focused adult learners' perspectives and practices of web-based distance education in sixteen universities*. ERIC