Challenges of Technology Integration in Teacher Education Programmes in Bangladeshi Tertiary Institutions

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Abstract

Technology integration has considerably affected teaching and learning cultures and resulted in revolutionary changes to worldwide pedagogical practices. For numerous reasons, including a lack of experience, policy, planning, infrastructure, and the environment, many educational institutions have not been able to gain the greatest benefits from technology. This study, seen through the lens of Activity Theory, reports the challenges of technology integration in the teacher education programs of tertiary institutions of Bangladesh. It has employed an interpretative qualitative research design for data elicitation and data analysis. Seven written reflection papers on the barriers of technology integration from both male and female teacher educators working in various private public universities were collected. The findings reveal that a variety of issues such as lack of tech-tools, devices, training and related expertise, administrative support, electricity, technology-equipped classrooms, attitudes of teachers and students, gap between theory and practice hinder teacher educators' effective integration of technology in pedagogical practice of teacher education programs in Bangladesh. The findings can have implications for policy makers, curriculum designers, and other stakeholders with similar or different educational contexts.

*Keywords***:** *activity theory, Chittagong, English language teacher education, public and private universities, technology integration*

Introduction

Technology integration has significantly altered education in general and English Language Teaching (ELT) in particular. These changes have an impact on teaching strategies, classroom interaction, student engagement, the creation of materials, syllabus design, and curriculum development. Language teachers all over the world have adopted it for facilitating teaching and learning, engaging students

in effective communication, and fostering learner autonomy after realizing its enormous benefits and attraction to learners of all levels. Laudari and Maher (2019) observe "Information communication technologies (ICT) is argued to enhance access, equity, and quality in learning and teaching" (p. 77). Hall (2009) outlines the benefits of ICT integration in language teaching for children stating that it can help young learners to talk, write and read with a goal or a purpose, present and organize information in a variety of ways, point out key features a text, and develop the comprehensibility of language. So, there has been a general consensus among educationists, and policy makers to use ICT because it can enrich, complement and transform education for sustainable development and it is used to "facilitate universal access to education, bridge learning divides, support the development of teachers, enhance the quality and relevance of learning, strengthen inclusion, and improve educational administration and governance" (UNESCO, 2022, p.1). In conformity with the global emphasis of role of technology in education, the government of Bangladesh has taken many pragmatic steps to include technology in the teaching and learning practices of Bangladeshi schools, colleges and universities.

The Ministry of Education with the support of UNESCO and other donor agencies have already launched a Master Plan for ICT (2012-21) with a view to reducing digital divide and leveraging ICT as a cost-effective and enabling tool to increase the quality of education in the country. Besides, as a part of actualizing the objectives of the Master Plan of ICT, Ministry of Education has implemented the Access to Information (A2I) program for capacity building of teachers by supplying supplementary digital materials tailored for various sectors of education. The development of an informed, equitable, and just society and a digital Bangladesh through the use of ICT would have an impact on the effectiveness of education, transparency, accountability, and dynamism and further ensure that common people across the country can access education services (Master Plan for ICI in Education in Bangladesh, 2019). The report also emphasized the urgent needs for training and building of capacity of teachers, education administrators, curriculum developers, and trainers on ICT skills to facilitate technology integration in teaching and learning of educational institutions.

Similarly, to align with the goals of Ministry of Education, Bangladesh National Qualifications Framework (2021), an international instrument of benchmark drawn by University Grants Commission (UGC), Bangladesh, has listed digital literacy as a key competency in graduate, postgraduate and doctoral level of students in different universities of Bangladesh. Categorizing various skills (fundamental, social, thinking and personal) all undergraduate, graduate and doctoral students are expected to have, BNQF has outlined the ICT skills such as the ability to use a variety of technology applications to enhance research and study, collect information to facilitate work and study. Therefore, such expected outcomes from students in the higher education institutions have implications for teachers, teacher educators and administrators working in Bangladeshi private and public universities.

Almost all educational settings now incorporate technology, though at varied rates and with varying degrees of success. To make teaching and learning successful, interactive, relevant, and exciting, it is crucial for all educators, including teachers and trainers, to develop their digital literacy. The University Grants Commissions of Bangladesh have made great efforts to train university faculty in the use of technology as a result of the urgent demand for technology integration. However, when it comes to the use of digital tools and their integration into teaching and learning, Bangladesh's various

institutions face many difficulties, including a lack of infrastructure and logistical support, a shortage of experts and trainers, attitudinal issues, a lack of awareness of the value of ICT and its potential, and insufficient support and encouragement from policymakers. Therefore, these obstacles are restricting ICT integration and application in Bangladeshi higher education institutions.

In this study, the researcher investigated the use of technology by teacher educators in teaching and learning practices of Bangladesh. If TEs develop expertise in technology use and can use in everyday classrooms, it will surely impact the future teachers to be aware of the necessity of ICT skills and to encourage them to incorporate it their own classrooms. However, when we looked at practical field realities or the actual situation prevailing in the seats of higher education in Bangladesh, we observed that TEs did not use technology effectively, confidently and frequently while conducting classes. The absence of technology integration in many institutions and the inefficient and improper use of IT in some universities pointed to the gap between theory and practice in the context of Bangladesh. While technology integration brings forth huge benefits as supported by theoretical paradigms and a lot of research findings, a relevant question is why Bangladeshi institutions lag behind ensuring fruitful and skillful use of technology to facilitate teaching and learning. There must be some issues that hinder the universities to effectively use technology in the classrooms. Through this study, the researcher wanted to delve into those issues. In addition, being informed of in-depth knowledge of the barriers of technology use TEs encountered in their teaching and learning practices will inform the trainers, policy makers, designers of syllabus and curriculum about the effectiveness of current ICT policies and thereby, help them in their future course of action. So, this research seeks to answer the question, what factors constrain technology integration in the teacher education programs of tertiary educational institutions of Bangladesh?

Review of Literature

Not unlike many other areas such business, economics, politics, technology has significantly impacted academic disciplines, more precisely, English language teaching and second language teacher education. Global education systems have recognized the powerful force of technology and accommodated it with the aim of reaping the best harvest from technology for promoting and facilitating learning and learner-centered pedagogy. However, while incorporating technology in various teaching and learning contexts across the globe, the challenges are diverse and complex. Discussing the ordeals of technology integrations, Marcinkiewicz (1993) argues that If there isn't an understanding between instructors and computers, full computer integration into the educational system will remain a distant dream. We must research instructors' computer usage patterns in order to comprehend how to achieve integration.

This assertion anticipates teachers' computer literacy and good command of handling technology is a prerequisite for effective use of ICT in the classroom. In the similar vein, Wong (2013) when talking about technology as an innovation in bringing about teacher change in the context of Hong Kong, postulates that teachers' belief about language learning and teaching should be matched with their views of the capabilities of technology for bringing success in the classroom. In this detailed case study on a training program on technology for English language teachers, he concludes that the alignment between technology and teachers' pedagogy can yield more productive results in classroom teaching and learning.

A study in the context of teacher education in Brazil, has reported a number of problems for in-service teachers who were doing an e-course for improving new skills so that they can function effectively in online teaching and learning (Lima, 2015). When investigating the reasons for sharp decline in the number of participants, the major issues identified were limited access to technology, low internet speed, and some of the problems were linked with cultural and individual issues such as emotional barriers, mismatch between the method and learning objectives, organizational limitations, no financial incentives for taking part in the course, the busy schedule of teachers, the non-compulsory nature of the course, and lack of familiarity with the online platform. Therefore, it is imperative for the policy makers or course designers to ponder over the mentioned challenges and troubleshoot them ahead while introducing a course for novice teachers. Donaghue (2015) has shared her experience of introducing iPads in UAE (United Arab Emirates) with a view to transforming post-graduate results and student learning experience of higher education. The experience of being exposed and introduced to iPads resulted in their being deskilled and unsettled due to their lack IT related knowledge and skills. Exposure to new technology required the teachers to unlearn the old tacit knowledge and long-established routines which led to "feelings of disorientation, loss of control and decreased motivation" (Donaghue, 2015, p.145).

Lightfoot (2019) in her article on the role of ICT in English language teacher education asserts that technology benefits teachers' professional development regardless of contexts. She observes although teachers from high-resourced contexts receive the greatest opportunities by maximizing its potentiality, "there has been considerable focus on the advantages of using technology to provide access to high quality resources, content, and development opportunities for teachers in otherwise low-resource contexts" (Lightfoot, 2019, p. 53). However, she also highlights the factors that influence the use of technology in teacher education program and the main factors are access, skills and motivation. To detail on the issue of access, the writer states that access to technology is hindered by lack of hardware or maintenance problem, obsolete operating system and poor network or bandwidth in low-resource contexts. A related challenge she has pointed out is teachers' lack of skills and motivation. Citing example from South Asia, she reiterates that "English language teachers lack the confidence and/or literacy skills to fully exploit the opportunities for professional development that technology affords or use it effectively with their students (Lightfoot, 2019, p.56.). Further, Kiddle and Prince (2019) scans the challenges and opportunities of online and digital technology from a different point of view and states that there is a big difference between a teacher training program conducted online and offline and in the physical modality, an observer is likely to give more effective feedback to trainee teachers.

Integration of technology in language teaching and teacher education provides teacher educators or language teachers with the opportunity of conducting classes online and being physically present. Leveraging on the advantage of online classes, many teacher training programs are conducted online, as already pointed out. Despite many advantages of such courses, Stannard and Salli (2019) contend that in online courses students cannot feel the presence of teachers and often feel alienated. And such situation is aggravated by the use of third-party teaching materials such as material from YouTube, blog posts and Vimeo, which turn the status of teachers almost invisible and anonymous. Next, the use of ePortfolios as a means of digital support for collaborative learning and documentation

and assessment has gained considerable popularity among ELT professionals for triggering changes or innovations in teacher education. ELT educators frequently use this form of technology for a variety of purposes such as planning goals, continuous professional growth, representation and self-development, display of transferable skills. But some crucial factors impacting the successful implementation of ePortfolio entails readiness of teachers, educators, stakeholders and having clear vision and expertise (Gulzar & Barrett, 2019, p.496).

Through their mixed-method research design, Abbasi et al. (2021) have identified the barriers that hinder the professional development of Pakistani teacher educators and some of them are insufficient training, technological knowledge, and scarcity of resources. Laudari and Prior (2020) opine that evaluating the effectiveness of technology integration in the context of Nepal is an under-researched area and their quantitative study, both researchers' findings show that Nepali teacher educators have greater confidence in content knowledge (CK), pedagogical knowledge (PK) than their technological, pedagogical, and content knowledge (TPACK) and technological knowledge (TK). Similar to this, another research on ICT in Nepal has concluded that teacher and policy-related obstacles were the significant challenges than institution/school-related ones in implementing ICTs (Paudel, 2022). Such findings accord with the findings found out in other South Asian countries like Pakistan and Bangladesh.

In the global context of the pandemic, technology integration and online teaching faced a lot of challenges such as "creating content for online spaces, learning new delivery tools, understanding online pedagogy, engaging parents, addressing student mental health issues, and attempting various pedagogical strategies to address both synchronous and asynchronous teaching and learning" (Hartshorne et al. 2020, p. 138). Li et al. (2019) discuss six factors crucial for primary school teachers for their professional development and the integration of ICT in primary schools in Mongolia, which are competence in ICT, collaboration for integration of technology, autonomy to bring innovation in education, professional recognition, practices and skills in handling education use of technology and incentives on the use of technology.

Another study conducted in the same context (Nepal), the researchers focus on the barriers to ICT use in various courses on teacher education and conclude that crucial factors such as ICT policies, training for teacher educators, and resources related to the use of technology restricted the integration of technology in teacher education in Nepal ((Laudari &Maher, 2019). Seen through the lens of Activity Theory, the study reveals that these issues create tensions and become manifested in different levels of teacher education. Shrestha et al. (2022) find that poor network, lack of technological support from administration or institutions and digital skills, efficacy and confidence of teachers, poor ICT infrastructure were the major hurdles of technology use for both teachers and students while making transition from traditional mode of teaching and learning to online teaching and learning during the Covid-19 pandemic in Bangladesh. The study also disclose that such challenges influenced the morale of both teachers and students.

Kabir and Hasnat (2021) reporting on the reflection by six secondary level school teachers in the context of Bangladesh during the pandemic, have pointed out some issues that surfaced out of those reflections. Both the researchers state that teachers found that minimizing the pedagogical gap between traditional teaching and online teaching was really challenging for them. The study also

reveals that teachers faced problems while doing assessment and providing feedback to students. Some other barriers the study identify in terms of technology are teachers' technophobia, their lack of self-efficacy and familiarity with the required pedagogical and technical knowledge necessary to conduct online classes. The researchers suggest that technical, pedagogical, and content knowledge (TPACK) framework can help teachers deal with the situation.

In their study, Rana and Rana (2020) report some of the challenges of ICT integration in teacher education, which are lack of clarity in ICT education policy and strategic documents by the Ministry of Education, Nepal, regarding technology integration, insufficient funding for teacher training to make them skilled in using technology in classrooms and infrastructural facilities. Besides, the negative perceptions of majority of teachers belonging to the old generation and their inability in handing technology are also big challenges. Although some of the institutions manage funding from alternative sources, such temporary solutions are not considered viable. It is interesting to observe the common barriers paralyze the innovations in teacher education in many South Asian countries such as Nepal, Bangladesh, Sri Lanka, etc. The findings in this study only consolidate the earlier study by Laudari and Maher (2019).

Studies using various research designs in a variety of contexts indicate almost similar factors such as problems related to classroom management, finding out acceptable and reliable activities to match students' learning styles, teachers' ICT self-efficacy and emphasis on teaching ICT skills, training on the use of ICT for teachers and learners, infrastructure for ICT integration, attitude and perception of teachers and school management to embrace innovation, school support, technological access, beliefs, utilization of available ICT resources, online security and misuse of information, integration of digital technology in curriculum, responsible and safe use of ICT for learning, gender equality, national framework for technology integration, technological competence and it's impact on personal-professional use and pedagogical competence in both language teaching and English language teacher education programs impacting the use of technology in educational institutions (Samuel & Zaitun,2007 ; Lee & Sparks, 2014 ; Mukuna, 2014; Dhakal & Pant, 2016; Dilek, 2016; Drossel & Eickelmann, 2017;Hsu, 2017; Suárez-Rodríguez et al., 2018;Castaño-Muñoz et al., 2018; Vrasidas & Glass, 2005).   All these accounts imply that integrating technology in teaching learning is challenging.

Theoretical Framework

For theoretical framework in the current research, the researcher was guided by Activity Theory. He analyzed the data on challenges of technology integration in teacher education programs of Bangladeshi tertiary institutions through the lens of Activity Theory. This framework considers development and learning as social phenomena and recognizes all activities as collective, social and object-oriented. One crucial tenet of this theory is that it views contradictions as the driving force for making changes and contradictions are inevitable and occur between different components of activity system, which function though the contradictions. The various components of activity system are subject (for example, individuals or groups), object (subject's motive for action), and "the tools that mediate subject's actions within his/her community with stratified roles/duties for the activity regulated by overt or covert norms and standards, which are known as rules" (Laudari & Maher, 2019, p.80). Pointing out four types of contradictions, Engesťom (1987) states that primary contradictions happen

within the different components of activity system while secondary contradictions occur between them and quaternary contradictions take place between secondary and primary activity system. And tertiary contradictions surface when various components of the system need to use an advanced system for achieving objectives. Detection and recognition of contradictions can help us to identify the causes of problems, which can trigger changes.

Application of the activity theory and its constructs helped the researcher to identify how and why technology was utilized, what factors influenced the use of technology in English language classrooms, what were the discrepancies between the policy documents and the actual implementation of policy with regard to technology use, how the discrepancies gave rise to additional tensions (contradictions) between different individuals or groups or stake-holders and also how emerging tensions initiated changes in English language classroom in particular and in society in general. Therefore, activity theory and its associated components guided this research in a structured and professional manner.

Context and Research Design

The context of the study was the Department of English Language and Literature at a private university in Chittagong, Bangladesh. During the time of the research, the department was renowned for its adherence to quality education and also it was one of the largest departments in terms of number of students. The department was offering MA in ELT program with a view to creating quality English language teachers catering for the challenges of 21th century language education. The duration of the program was two semesters (one year).

The study used interpretative qualitative research design for data elicitation and data analysis to "understand other cultures, from the inside" with the aim of unpacking "inter-subjective knowledge construction" (Taylor & Medina, 2011, p.5). Besides, the phronetic iterative approach used in qualitative helped the researcher to delve into "contextual knowledge that is interactively constructed" (Tracy, 2020, p.6). The design allowed the researcher to interact, build up rapport with the research participants, engage in meaningful communication with them such as sharing with them the purpose and importance of the study and receive the data in the form of a reflection write-up focusing the research question. Following Brawn and Clarke (2013), the researcher collected data generated by participants as it allowed the participants to "record (primarily by writing or typing, but potentially also by audio or video recording) their experiences or views in relation to a series of questions or prompts" (Brawn & Clarke, 2013, p. 134). So, the research paper was based on the review of some government policy documents and reflection papers on the challenges of technology integration in technology, collected from seven teacher educators (TE1-TE7) working in different public and private universities located in urban and rural areas of Chittagong and observation of facilities related to technology in the respective departments and universities. As research on the challenges of technology integration in higher educational institutions in Bangladesh is few and in teacher education is fewer, and not many universities were offering teacher education programs in ELT, the researcher used purposive sampling based on the interest, professional experience in teacher education programs and their availability and more importantly, their experience of using technology in the ELT program. After completing data collection, he analyzed the reflection papers for generating themes following Braun and Clarke (2006) and for coding the data, the researcher used priori themes from literature reviewed and themes

emerging out of the data.

As already pointed out that all the seven TEs were experienced and their experienced ranged from 10 to 15 years and 2 of them were working as the head of the department and they had active role in shaping ICT policy and using technology in the department. Four of the TES were male while two of the were female. In the reflection paper, they were asked to record their experience with technology, the policies they conformed, the ICT facilities they had and more importantly, the challenges they encountered while using technology in the ELT classes. The findings of the reflection papers were analyzed against the ICT policy of the government using Activity Theory framework.

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Results

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The findings of the study have been organized into six themes and taken together, they spotlight the major barriers of technology integration in the teacher education programs, specifically, in MA in ELT program of Bangladesh tertiary institutions.

Policy and Planning

This study has revealed that there was lack of clarity regarding the use of technology in the both public and private universities of Bangladesh. Although there was a lot of emphasis from the top management and higher education governing authority, there was no transparent and definite guidelines to ensure ICT integration in teacher education programs. This found manifestation in the words of TE1 working at a public university, "in my institute, there is no strict policy for technology integration". And this was also supported by TE7, who had a long experience of working both as teacher educator and a policy maker. He lamented the lack of systematic way or strategy to incorporate technology in MA in ELT program. Echoing the same tune, TE5 indicated that any teacher training offered by policy makers was project-based and time-bound, and with the end of project, training ended and when the tenure of project manager or director ended, the successors did not continue the training. She also complained of dishonest practices in many teachers training projects. She said, "Corruption, self-interest, lack of professionalism, dishonesty are the challenges at the policy levels."

Therefore, in absence of relevant ICT policy and planning from the authority, it was left to the discretion of teachers to the extent of technology use for pedagogical purposes. For instance, TE1 reported that some of his colleagues used technology sporadically for delivering their lectures and the devices they used were projectors, laptops, and sound systems and they used PowerPoint slides and YouTube videos in their MA in ELT classrooms. Similarly, TE3 and TE4 who were working at two different private universities shared their experiences of using ICT in their classrooms. TE 3 observed that the classes in his department was tech-equipped and he used technology to teach pronunciation, grammar and writing to the undergraduate students. He stated "In Phonetics and Spoken English, I would play a video to show my students how 1) language bias works, 2) power determines the structure of language and 3) they need to find comfort in their own tenor of voice and manner of articulation." And TE4 also found technology very useful as it helped her engage her students in the activities and she enjoyed the freedom because before coming to the classes, she was ready for classes developing primary and secondary materials from the Internet. She holds ". ICT integration helps me develop and build student-student and student-teacher relationship." TE5, who was also female teacher educator maintained that she used technology voluntarily to initiate innovations in the classrooms, and her students had a preference for classes in which technology was the medium of instruction.

Resources

This qualitative study finds that resource-related issues appeared as significant barriers to the integration of technology in teacher education programs. Although teachers were aware of the importance of using technology for classroom learning, they could not do so due to the lack of mediating digital artifacts such as multimedia projectors, computers, uninterrupted supply of internet, relevant apps such as WhatsApp, Google classroom, Google Meet etc. and frequent power failure. While talking about the dearth of resources and technicians in his department, TE1 maintained "the primary challenge in technology integration is the shortage of required number of devices. The classrooms in my university are not technologically equipped. We only have two projectors and one laptop in the institute." Though working at a different private university, TE2 expressed similar opinions stating that his classes were not equipped technologically and although some classes had multimedia projector, many lacked this facility restricting the use of technology for teaching and learning. Finally, TE6, who works at public university and TE7, who works at private university, shared that lack of modern facilities like computers and projectors posed a severe hurdle to conduct technology-driven classrooms. And such sorry picture of classrooms is worsened by the frequent power cut pervading in many public universities in Bangladesh. TE6 asserted "In reality, classrooms in our department do not have any modern equipment, such as overhead multimedia projector, sound system, smart board etc. Hence, our classrooms are not perfectly ready for technology integration." Describing his experience at public university, TE3 says "Teaching "Composition" at "X" University is the worst ever experience I have ever had. The classroom was newly furnished. It did not have fans, lights, or air conditioning."

Training

Another crucial factor delimiting teacher educators' consistent and competent use of ICT was their incompetency to handle digital tools and to identify proper tools for appropriate pedagogical purposes. Many TEs in the study identified that teacher themselves were not digitally literate about how and when to use technology in teaching and learning because of the fact that they were not trained properly. TE6 opined that to get desired benefits of pedagogical technology, teachers needed to be trained properly and   sufficient training could make teachers informed of a variety of teaching strategies available to them for making teaching collaborative, student-centered and effective and also training in ICT could boosts teachers' confidence and harness their skills in the skillful use of technology. He pointed out:

> For example, there is a number learning management systems (LMS), such as Google Classroom, Canvas, Blackboard, Mindflash, and Litmos which have different and unique features for managing teaching-learning correspondences. If teachers do not know their use, the purpose of using technology will not be served and the goals will not be achieved.
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> His observations were also confirmed by TE2, TE5 and TE6. For example, TE7 contended:
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> There are some teachers who do not have sufficient training to integrate technology in their teaching. They do not know how to use different tech-tools; they do not know how to use different features of tech-tools. Some of the teachers even, I have noticed, they are taking, they are giving classes using mobile phones only, not using even laptop".
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> This accords with the views of TE1 when he stated that long-term training for teachers is

badly needed to build up their capacity to incorporate technology in their pedagogy. Reiterating the necessity of digital skill for teachers, he asserted that universities should initiate learning management system (LMS) for students and teachers and they should acquire the basic digital skills and know how to develop materials, deliver lectures and administer tests and design assessment items using digital tools. And TE2 and TE7 indicated that students also required ICT training to make the use of technology useful and successful.

Techno-Culture and Mindset

It is suggested that cultivating a rich culture of technology integration in teaching and learning practices of tertiary institutions aiming at learning objective in mind is a very important issue to cater for the demands of andragogy or the adult learning. Unfortunately, this culture is desperately missing in many universities in Bangladesh as identified by TE1. He states that the negative mindset of teachers regarding technology is also responsible for their lack of teachers' skills in ICT. According to him, some teachers are not tech-savy at all and some of them are scared of using technology in the classrooms. He expresses that teachers' perception regarding technology is one of the major challenges. Besides, he demands a concerted efforts on the parts of all stakeholders to inculcate the culture of ICT in educational institutions. He maintains "in my opinion, technology integration cannot be successful with individual efforts only. We need to develop an institutional culture of technology integration".

Similarly, TE6 also thinks that university teachers should change their perception about technology. There are many teachers who are unwilling to embrace innovation in teaching and learning. He observes "… there are a few teachers who, due to their outdated mindsets, show complete reluctance towards technology. This reduces the spirit of the young teachers and slows down the entire process." And TE7 also states that there are some students who are not interested in technology and find it difficult to concentrate and understand a technology integrated class, maybe, due to their unfamiliarity with the digital culture.

Funding

As digital devices are expensive to purchase, many public and private universities find it very difficult to ensure technological tools required for the integration of technology in classes. Many teacher educators working in the context of South Asia recognize this fund deficit as a significant barrier to technology integration. TE1, who functions as the head of the institute states that no special budget he receives from the authority to buy digital devices. In his own words, "institute receives a poor yearly allocation for teaching aids which is not enough to cover the maintenance cost, let alone buying any new items." A relevant observation from TE3 is although all public universities get grants from UGC for their smooth running of both academic and administrative activities, malpractice and dishonesty creep in and "the grants which were supposed to be used for modernizing language learning tools for English language teaching have not been used effectively." He also has the experience of working for a long time at a private university and regarding the picture of many private universities, he says that they are not willing to invest money in a sector which will not bring immediate financial return for them.

Administrative and Environmental Support

Some of the TEs participating in this study share that in spite of their willingness to use technology, they do not have required support from the administration. TE7 tells that there is no

motivation and monitoring from the administration or UGC, although the authority always ask teachers to use technology while conducting classes. He complains that there is none to monitor:

> What type of devices they are using, whether they are using them properly, whether they are using different features of zoom, different features of Google meet, whether they are starting class in time or finishing class in time, whether they are using breakout room, whether they are sharing their screen.

TE5's view also supports such view and she observes that teachers need incentive from the administration and this is absolutely missing. TE2 adds that even overall teaching and learning culture in the universities do not provide congenial atmosphere for technology integration. He observes "most of the lesson plans are traditional which require memorizing, writing and reading only." In the same vein, TE3 indicates that there should be a kind harmony between teachers, students and the use of technology in classrooms. He says, "If the bond between humans and artificial intelligence tilts in the balance, English Language Teaching in Bangladesh universities will not cut corners." Drawing attention to the bureaucratic tangle existing in the assessment practices in public universities, TE6 observes the tenets of technology do not dovetail properly as most of the works related to assessment and evaluation are done manually. He puts forward "in public universities, processing assessment reports and preparing results have to be compatible with the university's stated rules and guidelines. Furthermore, keeping assessment records in hand- written broad tabulation sheets is preferred to having computer generated result cards." He concludes that due to the socio-economic status of public university students, who are mostly from lower or lower-middle class family, technology integration in education can be very challenging. If students cannot afford to buy the digital devices, they cannot get the best out of technology.

Discussion

This research study explores the factors that restrict the use of technology in teacher education programs and in doing so, the activity theory (Engestr̆om, 1999) has been used as a guide. The subjects in the activity system are the teacher educators and novice teachers who are enrolled in the ELT programs. They perform object-oriented activity with the help of digital artifacts such as laptops, cell phones, computer and tools such as Google classroom, zoom, WhatsApp, black board and canvass etc. The object of students' activity system is to be involved online learning facilitated or mediated by digital artifacts and the object of teachers' activity system is to involve student teachers in technology-integrated teaching and learning. (Shrestha et al.2022). As observed in data, all TEs recognized the importance of integrating and using technology in the teacher education programs for facilitating teaching and learning. They also lamented the lack of clear policy and planning from UGC and university authority. They also indicated that they were not provided with the required infrastructural facilities such as the Internet, labs, computers, multimedia projectors, adequate power supply. Although Ministry of Education, UGC, BNQF (2021) emphasized a lot for technology integration with a view to empowering both teachers and students with digital literary and skills, they failed to ensure ICT facilities in the institutions. Such gap between theory and practice gives rise to contradictions or tensions in the activity system and in this study, the tensions or challenges identified are lack of expertise and training, absence of digital culture and devices and tools, negative perception of stakeholders regarding technology integration, and lack of congenial atmosphere to

support technology use.

To detail the gap between theory and practice more elaborately, this study identified the part of policy making and implementation as a different activity system, which is the supporting activity to the primary activity and the primary activity is the integration of technology in the tertiary institutions. The task of designing policy and implementation is done by agencies such as Ministry of Education, UGC, BNQF and their recruited experts and TES are advised and expected to use technology in their teaching and learning practices as is evidenced by the documents of Mater Plan of Ministry of Education. (2019). While there is a strong emphasis by the authority to integration technology on one hand, the lack of policy or clarity in the policy on the other hand causes quaternary contradictions between technology integration and policy (Laudari & Maher, 2019, Paudel, 2022). This gap between theory and practice confirms the findings of Rana and Rana (2020).

The study also reveals that one of the factors that constraints TEs' ICT use in Bangladeshi universities, which is the lack of resources. Applying the tenets of the activity theory, this can be termed as a secondary contradiction in the context of activity system of TEs' technology practice. As already pointed out in the data, many TEs complained that they did not have sufficient ICT facility for using technology. Most departments have very limited number of computers, projectors, labs and other required digital devices and they have suffered from poor internet speed and network. Frequent power failure is also an annoying issue affecting the use of technology in the classroom teaching and learning. These challenges result in contradictions in the activity system as TEs realize the importance of using technology for making classes more effective, but they are unable to do so due to the lack of resources. The contradictions emerge between the objects and the mediating artifacts. Barriers such as these and their ramifications corroborate the findings of Lima (2015), Lightfoot (2019) and Laudari and Maher (2019). A related challenge identified in the study is the shortage of funding. One of TEs complained that he did not receive any separate funding for buying ICT resources and other TEs shared about the corruption in financial issues and profitmaking tendencies of university. In other words, the financial limitation is found to be critical issue restraining the use of technology for pedagogical practice in the teacher education programs of universities. Therefore, lack of resources like digital devices and tools and infrastructural facilities such as poor speed of the internet, power cut and funding crisis have limited TEs' access to technology and these tensions as the manifestations of secondary contradictions have adversely impacted their technology integration in the teacher education programs.

Some other barriers this research study unpacks are related to training, administrative support, environment, assessment, perception of teachers and students, motivation and monitoring and they give rise to secondary contradiction in the activity system as there are contradictions between the existing circumstances and technology integration. Most of the TEs observe that teachers are not properly trained to use various features of ICT and they are not aware of LML and its usage while some of them hold that the traditional culture of teaching and teachers' outdated mentality responsible for their failure to incorporate technology in pedagogy. In addition, existing assessment practice is found to be a deterrent factor as teachers have no idea to assess students' performance using technology. Taken together, these revelations affirm the findings of other studies (Wong, 2013; Lima, 2015; Donaghue, 2015 ; Rana, 2018, Gulzar & Barrett, 2019 ; Li, 2019 ; Abbasi et al. 2021) conducted in different times in different contexts.

According to Engestr̆om (2001) contradictions between two systems result in quaternary contradiction as mentioned earlier also and " contradictions generate disturbances and conflicts, but also innovative attempts to change the activity" (p.137). In absence of any clear policy and planning by the higher authority, TEs in this study share that they enjoyed the use of technology in their classroom for multifarious benefits it brings. For example, TE4 observe that ICT allowed her showing images or videos downloading them from the Internet and helped her to increase the impact factor of subject matter. She claims that switching from the white board to digital screen is one the best things she does in her ELT classrooms resulting in the increase in students' attention and engagement.

Conclusion and Implications

This study has identified some of crucial factors hindering the effective technology integration in the context of teacher education in Bangladesh. It is found that lack of resources and infrastructural facilities such as technological devices, tools, speed of the Internet, network and insufficient training facilities for teacher educators and students, absence of techno-culture, gap between policy and practice, negative perception of teachers and students, lack of administrative support greatly has restricted the integration of technology in the teacher education programs of tertiary institutions in Bangladesh.

We should bear in mind that technology by itself cannot change the pedagogical picture of institutions. To harness the huge potentiality of technology with a view to bringing innovations in teaching and learning culture of Bangladesh and making teacher educators skilled and effective users of technology to facilitate teaching and learning, it is important to remove the identified barriers to technology integration. In this regard, this study carries important implications for policy makers, curriculum designers and other teacher trainers as it has culled some primary data from teacher educators who have direct experience of teaching novice teachers and are well aware of the challenges of technology practice in classrooms. In addition, this study is fraught with meanings as both male and female teacher educators working at both private and public university shared their experience of using ICT in a variety of contexts and their experiences can be interpreted from multiple perspectives. Also, this research study tends to contribute to the understanding of the picture of technology integration for the teacher educators working elsewhere or in other parts of the world and can figure out the similarities and dissimilarities of challenges teacher educators encounter. Finally, this research captures the experience of ICT use by only some teacher educators and is in no way representative of total scenario of Bangladesh. So, on this account, the study lacks generalizability and further research by other researcher is likely to enhance our understanding of the issue.

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