TEACHERS' REFLECTIONS ON ONLINE CLASSES DURING AND AFTER THE COVID-19 CRISIS: AN EMPIRICAL STUDY

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The COVID-19 pandemic has had an overall influence on educational systems in countries throughout the world, and Bangladesh is no exception, in which all of the academic institutions in that country have been closed since March 18, 2020. The pandemic compelled the secondary schools in Bangladesh to shift from face-to-face learning to online modes of education. This abrupt change created huge challenges (e.g., class participation or use of online tools) in relation to teaching students online who were previously taught face to face. The aim of this study was to provide some expert insights into online teaching with the goal of helping secondary school teachers in Bangladesh navigate through their online teaching challenges during this pandemic and in the post-pandemic era. In-depth interviews with six expert secondary school teachers were qualitatively analyzed to gain reflections on the variety of individual teaching paths taken during this educational change and to identify potential relations between teachers' learning paths, motivation, teaching experience, and conceptions of online teaching through educational technology. Online teaching requires certain technological, pedagogical, and content knowledge (TPACK) along with technological literacy. The combination of these three primary forms of knowledge requires context-specific and goal-oriented adaptation. Therefore, it needs to be demonstrated according to the need of the context. The article ends with a reflection on how the TPACK framework can help secondary school teachers deal with online teaching practices in the context of Bangladesh during this COVID-19 pandemic as well as in the post-pandemic era. The findings and discussion in the article about online teaching practices can be helpful for teachers within other similar contexts.

KEY WORDS: online teaching, teachers' perception, COVID-19, pedagogical content knowledge, technological literacy, blended teaching, TPACK

1. INTRODUCTION

The immediate need to shift from face-to-face to online classes due to the recent COVID-19 pandemic all around the world has added a new kind of challenge and workload to teachers' jobs (Kabir, 2020b; Rapanta et al., 2020). As a result, teachers face huge challenges in coping with online teaching and keeping at least a minimum of communication with students and supporting students' learning and development (Kabir, 2020a). This shift has also invited extensive debate on the benefits and pitfalls of online learning and how realistic it is to suddenly shift large amounts of teaching to online formats (Li, 2021; Lau & Dasgupta, 2020). Thus, teachers have been forced to adopt an online mode of teaching. During this crisis, everything is so quick that it is not palpable to embrace a holistic approach to education that is convenient to implement and functional for everyone (Moorhouse, 2020). However, despite the debate and criticism, teachers and researchers agree on the point that online teaching should be conducted to keep the education process ongoing until physical campuses can reopen (Kohnke & Moorhouse, 2020). However, this digital shift has suddenly put many teachers in difficult positions in Bangladeshi since they lack both the necessary pedagogical and technological knowledge to implement teaching online (Farhana et al., 2020).

This article focuses on the pedagogical preparedness of secondary school teachers with little or no experience in online teaching and their reflections on online classes in terms of challenges and adaptation. The pandemic situation has brought forth a series of recommendations for teachers employing online teaching. Many of these recommendations focus on digital tools and Internet materials that teachers can use as they transition from face-to-face to online classes (Kabir, 2020a; Rapanta et al., 2020). In addition, teachers are also offered several strategies (i.e., a full range of digital tools and resources), mostly without pedagogical content knowledge (PCK) and in many cases without technological literacy along with PCK and contextualizing knowledge. These aspects are needed to explain why online classes are different from face-to-face classes and how online classes can be dealt with during the pandemic. Therefore, due to the need for some broader-based pedagogical guidance for secondary school teachers in Bangladesh, this article distills the reflections of

six experienced teachers to interpret their experiences on taking online classes during this pandemic and in normal times in the future.

2. LITERATURE REVIEW

The quick shift from face-to-face educational formats to online modes due to the COVID-19 pandemic has suddenly given many teachers a new sense of the difference between teaching online and in physical classroom settings (Rapanta et al., 2020). Ries and Wagner (2020) reported that if the COVID-19 situation becomes stable, a number of universities in the United States have decided to consider the possibility that in-person classes may not resume until 2021. Kabir (2020b) also postulated that due to the unpredictability of the pandemic people may have to maintain social distancing measures even after the COVID-19 phase, probably until 2022-such as in relation to staying at home; attending public functions, following World Health Organization hygiene guidelines; and school closures (Li, 2021). Therefore, it is likely that the return to the face-to-face classroom education will be delayed and teaching online remotely will continue throughout the upcoming years, at least for the next 1 or 2 years. Similarly, in the wake of an increasing number of coronavirus cases in the country, the government in Bangladesh has decided to cancel one of the public exams for the higher secondary school students and hinted that school closures will continue at least until mid-2021 (The Business Standard, 2020). Thus, both policymakers and secondary school teachers have no option but to continue with online education until a return to normalcy after the pandemic is over.

Online teaching involves using a diverse range of digital tools and platforms, pedagogical approaches, and institutional arrangements and supports, as well as assessing interactions and implementing monitoring-with many potential combinations of these operations and integrations (Helm, 2015; Wang, 2009). The term online teaching is massively used but with a wide range of meanings (Singh & Thurman, 2019). In this article, in relation to Bangladesh, we refer to online teaching as a mode of teaching that is mediated by a variety of means. These modes range from recorded lectures on National TV and YouTube to different online interactive platforms such as Google Class, Zoom, and Facebook Live (Farhana et al., 2020). In Bangladesh, the speed of the Internet also varies widely in urban and rural areas (Farhana et al., 2020; Mamataz, 2017). This difference happens due to the socio-economic disparity between urban and rural areas. Several researchers have pointed out that the urban-rural contextual difference is one of the factors that makes the classroom context different (Hasnat, 2016, 2017). The required technological devices and equipment needed to teach online classes are not cheap and Internet data are expensive in Bangladesh, where only 60% of secondary school teachers have access to the Internet and 92% of them access the Internet through their smartphones (Kabir, 2020a; Ahmed & Kabir, 2018). However, Biswas et al. (2020) contended that 100% Internet connectivity in Bangladesh is not available for both teachers and students. They further stated that most students are very familiar with online learning and have a positive perception of learning and studying via online platforms during this pandemic. Nonetheless, research studies related to understanding teachers' perceptions and adaptabilities regarding their online teaching challenges and the learning outcomes of online teaching are scarce. This article focuses on exploring these issues.

The concept of an online class and conducting an online class is new and challenging in Bangladesh, and in other similar developing countries where the pedagogical and technological capacity is limited (Kabir, 2020a). Moreover, online classes require having digital technology and equipment with good Internet connectivity, which is not cheap and equally available to everyone in Bangladesh (Farhana et al., 2020; Kabir, 2020a; UNICEF, 2020). Therefore, conducting online classes in a developing country such as Bangladesh is not convenient. It is also a new phenomenon for most secondary school teachers in Bangladesh. Many of them are not prepared pedagogically and technologically to conduct online classes (Farhana et al., 2020). However, without preparation and proper pedagogical and digital knowledge, teachers may be in trouble when transitioning to teaching classes online. Moreover, teachers' unprepared online classes may be less interactive and less productive for students. Rapanta et al. (2020) argued that teachers need to be skilled at information and communications technology (ICT) in both multimedia classes and online classes. Therefore, it is important to have reflections of teachers about the preparation challenges for an online class, both from pedagogical and technological points of view. In the context of Bangladeshi, little research has been done thus far to understand the pedagogical aspects of both online and face-to-face classes.

2.1 Purpose of the Study

The current study was undertaken to understand how secondary school teachers—through their reflections about both online and face-to-face teaching—have adapted themselves to teaching online classes, despite a number of pedagogical and technical challenges. Taking into account these contextual considerations, the present study addresses the following reflection questions (RQs):

- RQ 1: How did the secondary school teachers adapt to the changed mode of teaching from face-to-face to online classes?
- RQ 2: In what aspects do the teachers think online teaching is different from face-toface teaching?
- RQ 3: How did the COVID-19 pandemic help teachers improve their overall professional development in teaching and technological skills?

3. METHODOLOGY

Different types of research approaches have prevailed in the realm of research projects that are distinctive from one another in terms of inquiry, philosophy, and theoretical

underpinnings. The approach to this study was qualitative in nature and the exploratory research method was used to interpret the in-depth interview data. Exploratory research is defined as a research method employed to investigate a problem that is not clearly explained (Given, 2008). It is used to gain a better understanding of an existing problem when no single answer provides conclusive results for that problem (Given, 2008). Lichtman (2017) argued that when conducting exploratory research, in-depth interview data can be used as a primary data source, providing researchers with a powerful means of gathering data. The forced adaptation of online teaching during this pandemic is palpably one of those problems to be explored in the context of Bangladesh.

3.1 Participants

In total, the authors interviewed six teachers (T1–T6) via Zoom. The usual duration of each interview was 20–25 minutes. The teachers were selected based on the following three criteria: (a) teaching expertise (based on their vast experience); (b) experience in both face-to-face and online teaching; and (c) willingness to cope with changing situations. All of the teachers were currently secondary school teachers at an urban school. In this study, the authors used pseudonyms for each teacher (i.e., T1–T6). Table 1 gives the details pertaining to the participants.

Teacher	Description of the Participants	Instrument
T1	A secondary school teacher who has been teaching for 15 years	
T2	A secondary school teacher who has been teaching for 15 years	
Т3	A secondary school teacher who has been teaching for 15 years	Semi-
T4	A secondary school teacher who has been teaching for 12 years	Interview
Т5	A secondary school teacher who has been teaching for 12 years	
Т6	A secondary school teacher who has been teaching for 10 years	

TABLE 1: Secondary school teachers

3.2 Data Collection

To collect the qualitative data, one-to-one interviews were conducted via Zoom. Since the interviews were semi-structured, the participants were asked the questions given in Table 2 at the beginning of the interviews.

TABLE 2: Semi-structured questions

Question Number	Semi-Structered Question	
1	How do you perceive between the online and face-to-face classes in connection to the pedagogical and technological challenges?	
2	To what extent have you adapted online teaching into your practice?	
3	How has the COVID-19 pandemic helped you improve overall professional development in teaching and technological skills?	

The lockdown and social distancing situation did not allow us to conduct interviews in person. All of the participants were secondary school teachers. The purposive selection procedure was applied to conduct the interviews. The participants were provided with the information necessary about the study through emails, and their written consent was obtained through emails before data collection. Due to the participants' preferences, the interviews were conducted in Bangla and were recorded using a Zoom recording option. Later on, the recorded interviews were transliterated in Roman Bangla and then translated into English. Regmi et al. (2010) suggested that researchers need to come up with accurate and valid translations to interpret the meanings and discourses of collected data. Denzin and Lincoln (2018) further suggested that the only way to validate the exactness in the translation process is to use different researchers to check recordings and transcripts. Therefore, after the translation of each teacher's interview, the translation was then sent to them to be checked for its exactness. The translations from Bangla to English to further cross-check the exactness of the meaning.

3.3 Data Analysis

Bogner et al. (2009) contended that interviews of experts are considered as crystallization points for pragmatic insider knowledge that can provide useful insights on existing problems and newly emerging topics. The authors went through the translated interviews a number of times to identify and explore coding for emerging themes (Silverman, 2013). The authors then ran the transcribed data in the NVivo 12 data analysis software program as a means of more robustly and rigorously complementing the analysis of themes. NVivo gave us ways of identifying themes in the data and it also helped us double-check the data for deeper analysis. Zamawe (2015) contended that NVivo (and, of course, all computer-assisted qualitative data analysis software) now forms an important part of qualitative data analysis that can be used to boost the accuracy and speed of the analysis process. Subsequently, these themes and codes (emerged both inductively from the raw data and in light of relevant literature on online teaching and pedagogical and technological reflections more broadly, in Bangladesh) were studied closely in order to refine the initial codes in light of what is

currently known about the online teaching understandings of the secondary school teachers in Bangladesh. Then, the interviews were qualitatively analyzed and the emerging categories were used to develop typologies of the teachers' learning paths under changing circumstances.

4. FINDINGS

The findings revealed a considerable range of reflections from the secondary school teachers between the online and face-to-face classes in connection with the pedagogical and technological challenges and the extent to which this was enabled through the guidelines for test developers and their adaptations and actual practices. Each of the three key themes is elaborated in this section.

4.1 The Gap between Online and Face-to-Face Classes

The interviewees reported different opinions about the changed mode of their teaching during this pandemic. First, to start the discussion, our first question to each of the interviewed teachers was the following. In what aspects do the teachers think online teaching is different from face-to-face teaching? This question was intended to help us understand the perceptions of the teachers about the pedagogical gaps between an online and face-to-face class. The authors also intended to see if there was any gap between an online and face-to-face class in relation to the effectiveness of the teaching–learning process and its outcome, and if so what were the challenging issues that hindered the teaching and learning quality. In this process of discussion, two teachers provided their insights:

Whatever I say about online classes, it cannot be the replacement of a face-to-face class. Students seemed serious to me in a face-to-face class rather than in an online class. It is harder to judge the attentiveness of the students in an online class than in a face-to-face class. To get students' feedback is also difficult in online. Even the students are also not serious about online assessment. It also seems to be challenging to assess online. Conducting exams physically is easy to me. (T1)

I think a face-to-face class is always more effective than an online class. Moreover, taking an online exam seems quite difficult as it's hard to connect all the students at the same time to sit for the examination. It is also complex to preserve the grading of regular assessments. So we encourage our students to submit their homework and assignment online so that we can keep them involved with the school. But online assessments cannot be the replacement for face-to-face assessments. (T5)

It is relevant to comment here that although T1 seems not to prefer online classes over faceto-face classes, the use of the word replacement indicates that online classes and assessments may be for the time being or act as a makeshift arrangement during this COVID-19 situation but it can never be an alternative way of teaching and assessing in a physical classroom. In favor of his statement about face-to-face class, T1 avers that he finds students more attentive in a face-to-face interaction than in an online class. T1's use of the words "harder to judge the attentiveness" in an online class signals out the demotivational aspects of the students, which may hinder the quality learning outcomes for the students. Several studies (Kabir, 2015; Schmidt, 2010; Whitt, 2015) also have suggested that attentiveness—one of the psychological characteristics of learning—is an important factor in students' academic success. Cicekci and Sadik (2019) also argued that students who have less attention in listening to their teachers in a class tend to have low academic success. T5's statement is also supportive of T1's reflection. His use of the words "more effective" indicate that he prefers face-to-face interaction for his classroom teaching. Since there is a small body of research in the Bangladeshi context on this debate, a recent study (Farhana et al., 2020) argued that 81% of secondary school teachers of their study prefer to conduct online classes using either smartphones (49%) or computers/laptops (37%). International research (Moorhouse, 2020) also finds that due to the health guarantine and social distancing, online teaching has emerged as a potential means for educational need by facilitating synchronous group interactions and engaging learners by extending learning beyond the traditional mode of a classroom.

Both T1 and T5 raised a similar issue regarding the challenge of assessment in online classes. Their concerns about the difficulty of conducting online examinations indicate that either they are not familiar with this form of assessment or they may not have the pedagogical and technological training necessary to conduct online assessment. T1, using the word "challenging," seems to indicate that he was not comfortable with online assessment. It may be that he is not skilled in doing online assessment or that he prefers face-to-face assessment to online assessment. However, T5 raised the challenge of online assessment differently. He pointed out that keeping a record of the online assessment was more problematic (e.g., to save files and access them later) than taking the assessment. T5's statement also informs that he lacks the technical knowledge of storing students' assessed performance. Moorhouse (2020) posited that there are several online platforms, including Zoom, for assessing and storing students' performance in a formative way, whereas it is counter-argued that "transforming assessment from face-to-face coursed to online format has also proven to be challenging" (Nuland et al., 2020, p. 5).

Instead of an online assessment of students' performance, T5's acceptance of homework and online assignment submission also gives rise to the question of the validity of students' actual performative outcomes from the online classes. However, considering the pandemic context, there is no other better alternative to assess students' performance. Something is at least better than nothing. Even a number of international researchers' findings (Quezada et al., 2020) also support assignment-based performance assessment during this pandemic. A technology-enhanced assignment-based assessment can also be a part of formative feedback and take a more holistic approach to assessment (Spector et al., 2016).

T3 and T4 varied in their opinion on the issues raised by T1 and T5 for the gap between online and face-to-face classes. Both T3 and T4 identified the gap in terms of some specific pedagogical issues of a classroom. Both of them stated:

In a face-to-face class, I can get a panorama of the whole class. But when I record the class on video, it seems that I am speaking to the camera. I don't enjoy the vibe of a physical classroom. I can't see the reactions of the students. It feels that I can use my natural teaching ability more in a physical class than in an online class. (T3)

Whatever I try to deliver a lively lecture to record and upload online for my students, I think I can't do it like the way I do in a face-to-face class. In a recorded lecture, students can get to know the topic explained by me but they have no scope to make questions or interact with me. I also can't know whether they got me or not, especially the weak students. (T4)

The statements by T3 and T4 indicate that their understanding of online classes means the recording of lectures and uploading them online. T3's use of the phrase "speaking to the camera" clearly indicates that he does not enjoy recorded teaching and prefers face-to-face teaching. The comment by T4 also signals that he is not clear about the possibility of an interactive class online. This indicates that he is not trained for online classes, both pedagogically and technologically, because online assessment involves both pedagogical and technological skills. Research in the context of Bangladesh also claims that since the pandemic happened suddenly and unexpectedly, the teachers had no previous training in teaching online classes (Farhana et al., 2020). Therefore, from the perspective of T3 and T4, it is debatable to conclude whether or not online classes could be made successful or interactive.

In this regard, the vignette of T6 completely differs from the rest of the participants. He actually suggests the utility of both face-to-face and online classes and the necessity of online classes by making some distinctive features. He stated:

Actually, you know, I don't want to compare both the mode of teaching. An online class cannot be a replacement for a face-to-face class. It can be an alternative for emergency situations like lockdown or quarantine situations. I can always feel a lively atmosphere in a face-to-face class that is absent in an online class. For example, teaching face-to-face is like visiting a place physically and see the place practically. However, online teaching is like watching that place on TV. You can't feel the sense of bonding with the place to you. Similarly, when I teach online I cannot feel that I am attached to my students. (T6)

The statement by T6 highlights the ongoing argument among the secondary school teachers in Bangladesh about whether an online class is better than a face-to-face class or vice versa. His use of analogy to describe an online class—"online teaching is like watching that place on TV"—projects that he misses the idea of the real-time and interactive reality of a physical classroom. In terms of the connectedness to the students, his notion is also similar to that of T3 and T4 in this regard. Moreover, he also hinted at a pivotal point that a firm bonding between a teacher and the students is less likely to take place in an online class. Different empirical findings (Ganesh et al., 2015; Sparks, 2019) have shown that for effective and lifelong learning, teachers are required to meet regularly with their students to give feedback about their learning and engagement in the classroom, and to brainstorm better ways to reach out to them. In a face-to-face classroom, both students and teachers develop deeper

relationships with one another and interact in a more positive way during a class. This results in better communicative information about projects and assignments to students and creates more collaborative learning environments for students.

4.2 Something Is Better than Nothing

A number of participants reported that the situational context and current reality of the pandemic should be considered. Therefore, considering the utility and necessity for the current time, online classes are at least better than no classes at all as a means of keeping the teaching–learning process rolling at secondary schools. The following participants corroborated:

- Face-to-face class is always better in normal circumstances. However, considering the current context, I want to say that online classes gave me different experiences in this crisis situation. The COVID-19 situation changed my mind. It increased the sharing tendency for teaching materials among the teachers. There is always a positive competition among the teachers to do well in online teaching. (T2)
- At present, the bottom line is that we are able to connect students via online classes. At least, it is better than no class at all in this situation. If there would be no classes, there would be a mental problem with the students. (T3)
- Online class is just like drinking a glass of lemon juice instead of the lemon itself. I think during the pandemic, it is the best option to keep our education in progress. (T4)

The statement by T2 highlights the significance of online classes since the demands of the pandemic and online classes gave him a new pedagogical experience that otherwise would not have been possible if there were no physical closures of institutions as a result of the COVID-19 pandemic. He actually embraced the online classes as a way to gain a new type of experience—i.e., online classes—that helped him grow as a teacher. His words "sharing tendency" also indicate that this crisis helped him share and exchange teaching skills and experiences with his colleagues that improved his self-efficacy and motivational skills in teaching. According to T2, teachers have become more intimate with each other in relation to discussing online teaching issues during this pandemic. As a consequence, his knowledge of online teaching increased, which made him confident in his ability to conduct a successful online class. Several researchers studying the COVID-19 crisis in relation to other contexts are also supportive of T2's notion. König et al. (2020) also contended that to become successful in online teaching during this pandemic, teachers require not only pedagogical knowledge and skills but also confidence. Teachers' motivational aspects and self-efficacy are also important constructs that increase teachers' teaching competence. However, T3 focused on the aspect of students' mental health. He argued that if there would be no online classes, students might suffer from mental problems. Therefore, to keep students healthy mentally, online classes at least allow teachers to remain connected to them and allow students to feel that their education is still on track. T3's concern about mental health during the lockdown situation is also evidenced in other research findings within the Bangladesh context as well as the international context. Khan et al. (2020) contended that educational activity has been hampered due to the lockdown and quarantine, which has caused the prevalence of stress, anxiety, and depression related to COVID-19 among home-bound students in Bangladesh, and online education can be one way of reducing these mental problems experienced by students. In an international context, Liang et al. (2020) also suggested that since quarantine has isolated students from their schools, students have developed depression by staying at home and feeling isolated, which can be solved by keeping them connected through online classes.

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4.3 The COVID-19 Pandemic Helped Teachers Improve Digital Competence in Teaching

Teachers viewed online teaching aspects and experiences in a new light. They stated that the pandemic helped them improve their teaching and professional skills. Most importantly, the COVID-19 situation helped teachers support students through technology-enhanced online teaching. They learned to prepare digital content for teaching. They also developed their knowledge of ICT, which they applied for educational purposes. Several vignettes from the participants are the following:

However, in an online class, I can use teaching aids more. In the future, online teaching can be supplemented with face-to-face teaching if needed after the pandemic. The COVID-19 pandemic has taught me many technical features for online teaching and learning. (T1)

To record a lecture, I rehearse several times in front of the camera. After that, I record the final version. This process has improved my lecture ability than before. I am sure this improvement will help me to conduct a better face-to-face class in the future. (T2)

Online classes helped improve our professional development as a teacher. In my teaching career, I never thought of a class for a long on how to conduct but in this pandemic, I have thought a lot about how to make my online lecture better. So, every day, I improve a lot as a teacher. (T4)

Due to the experience I have gathered from the online classes, I am now confident enough to manage and format technical issues of a computer system in the future. I have also come to know how to prepare a tabulation sheet using the Excel program. (T5)

I would have never learned different aspects of IT to use in my lecture if there would be no online classes during this pandemic. I even might not learn the IT skills to apply in the classroom lecture. (T6)

Interestingly, most of the teachers shed light on a wider digital transformation process in the education system of the school, which also increased their beliefs about their abilities in using technology to succeed in online teaching situations. T1 clearly states that online

teaching helped him improve his technological literacy in relation to educational applications, which is why he suggests integrating online teaching with face-to-face classroom teaching after the pandemic is over. His intention indicates how his professional confidence as a teacher grew. T2 and T4 also affirmed their professional skills of teaching from the online teaching lectures. T2 was even optimistic that the preparation and experience of his online classes could help him with his face-to-face classroom teaching after the COVID-19 pandemic lockdown. T5 and T6 further highlighted the possibilities of learning several ITrelated features of educational need that helped them conduct a techno-driven class. T5's use of the phrases "technical issues of a computer system" and "how to prepare a tabulation sheet" is a clear indication that if there had not been any online classes, he might not have been able to learn these technological aspects, which indeed helped him to become a techno-savvy teacher of the 21st century. There is mounting evidence indicating that without technological knowledge, teachers may face difficulties in teaching since classrooms and teaching-learning processes are likely to be underpinned by technology (Spector et al., 2016; Ahmed & Kabir, 2018). However, T6 indicated there is a lack of IT-driven schools as well as teachers. His words, "I even might not learn the IT skills" signal that the classroom context and the teachers are not supportive of using and learning relevant technology that can be used in teaching and learning processes. His words might also indicate that there is not sufficient training or no training at all to instruct teachers on how to interweave technology in pedagogy and its content. Therefore, the online class gave him the rare opportunity of gaining digital literacy. His tone of the statement in the conditional past also signals that he feels an urge for the opportunity to learn something that can help him incorporate pedagogical and technological knowledge while teaching online.

5. DISCUSSION

This article has discussed and highlighted aspects of the immediate impact of the COVID-19 pandemic on secondary school teachers in Bangladesh. The participants in the study addressed a range of issues regarding online teaching and its adaptation challenges and new learning. The COVID-19 pandemic has created new challenges in teaching and learning for secondary school teachers in Bangladesh. The pandemic has replaced the known traditional classrooms and predictable timetables for teachers with unexpected situations, which has resulted in teachers having to employ online classrooms. Teaching online is one of those challenges. Thus, teachers are among those who are trying to cope with these new challenges. Since the COVID-19 pandemic lockdown has affected almost all aspects of society and everyday life, people have had to learn to organize communications and interactions in new ways. In this study, the secondary school teacher participants reported on how they adapted to online teaching during the COVID-19 school closures.

Our research questions aimed to explore how the teachers adapted to the challenges of online teaching during this unexpected situation, what they reflected on regarding both online and face-to-face teaching, and how they improved themselves professionally in relation to

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both their pedagogical and technological needs. All of the teachers reported that despite the pedagogical and technological challenges, they maintained online teaching in a connective way with their students. The majority of the teachers stated that they had been introduced to new teaching and learning content for online classes. In addition, the teachers also faced challenges in assigning tasks for assessment and providing feedback to their students.

The results obtained in this study indicate that one of the major reasons for the struggle with online classes is that teachers lack digital competence. Some teachers reported that they struggled to adopt online classes or they were technophobic. The online teaching–learning environment is much different from a face-to-face class, which takes some getting used to. A teacher needs to be accustomed to a variety of online digital toolkits beyond physical classroom walls. She/he should have the conceptual ideas of online teaching platforms such as, for example, Google Classroom, Zoom, and Blackboard. In addition, to make an online class effective, a teacher needs to know how to use free teaching materials from online resources and distribute them during online classroom talk and tasks. Several researchers have claimed that an online class can be synchronous or asynchronous but it should be live and interactive at a certain point in time between a teacher and the students (Kohnke & Moorhouse, 2020). A teacher needs to know numerous pragmatic and easy-to-implement concepts in order to use teaching materials that can be put into practice immediately with little or no preparation.

When the authors analyzed the emergent factors of the challenges, a number of participants further reported the challenges of conducting online assessments, providing feedback, and keeping records of the assessments, which thus far have been mastered to a lesser extent. This happened mainly for two reasons: (1) teachers lacked self-efficacy, and (2) teachers were unfamiliar with the required technological and pedagogical knowledge necessary to teach online classes. The existing research also suggests that as relevant facets of teacher competence, teachers' self-efficacy and technological–pedagogical knowledge are significant components in providing feedback to students online (König, Jäger-Biela & Glutsch, 2020). Thus, it is necessary to help teachers develop their technological literacy of different online learning models such that they can overcome the issues of online assessment and feedback to their students.

This study also identified that if teachers had not provided online classes during the closure of schools due to the pandemic, mental health problems could have become a serious concern among secondary school students. Therefore, online classes helped students stay connected with their teachers and maintain some continuity in their studies. Despite the argument of the quality and effectiveness of the online classes by the teachers, the online classes also created an opportunity for the teachers to transform, adapt, and learn new knowledge and skills to improve themselves for the post-pandemic world and their future face-to-face classroom contexts. The online teaching experience in the pandemic has been able to reshape the teachers and their professional knowledge of how to function and respond to any challenging situations. It remains a matter of debate on how long online modes will continue after the COVID-19 pandemic is over. Will online teaching platforms go away or become parallel modes that can be blended with face-to-face teaching in physical classrooms within the context of secondary schools in Bangladesh? Whatever the probability is to envisage, it is plausible that the secondary schools will need a cohort of teachers with the necessary pedagogical and technological skills to incorporate online resources and platforms into face-to-face classes. Therefore, the authors intend to propose a framework based on our findings that is relevant to the current situation and can be contextually customized for teachers to improve both their pedagogical and technological skills. The authors also intend to promote a framework that will provide teachers with a better understanding of the synergy between technology and pedagogy.

5.1 TPACK: A Potential Framework to Deal with the Situation

The technological, pedagogical, and content knowledge (TPACK) framework, as a technology-based educational framework, has been in use for more than a decade (Valtonen et al., 2020). Debatably, it is one of the most well-accepted and widely used frameworks for technology adaptation in connection with pedagogy and relevant content. In this regard, the TPACK framework proposed by Mishra and Koehler (2006) can be adopted to help teachers understand the synchronous teaching-learning process and conduct online classes more effectively. The authors are also well aware of the complex situation presented by the COVID-19 pandemic, and that no single framework can encapsulate a phenomenon completely and no single framework can provide all of the answers. The TPACK framework is no exception. In this present context, the TPACK framework can represent a process of creating a deep and meaningful learning experience through the incorporated development of three interdependent elements: technology, pedagogy, and content knowledge (Fig. 1). This framework can also ensure that teachers have a way to engage students in collaborative learning (Mishra & Koehler, 2006). A careful look at Fig. 1 shows that the three primary forms of teacher education are not entirely separate, but are integrated. The intersections of each knowledge type are critical since they represent deeper levels of understanding.



FIG. 1: The technological, pedagogical, and content knowledge (TPACK) framework [adapted from Mishra and Koehler (2006)]

The concept of the TPACK framework may represent a full understanding of how to teach with technology for secondary school teachers. In this study, it was found that teachers have sufficient knowledge of teaching content but only limited knowledge of online teaching pedagogy and the use of technology. Therefore, if teachers know how to incorporate all three major elements when teaching online—technology, pedagogy, and content—the challenges of online classes related to pedagogy and technology may be reduced. Therefore, the focal point of the TPACK framework is to recommend that teachers understand how to use technology in order to teach concepts in a way that enhances student learning experiences.

5.2 Our Reflections as Practitioners

Being the practitioners, we, the authors, were also involved in online classes during this pandemic caused by COVID-19. Although online teaching was a new phenomenon for us, we initially found it challenging but also an opportunity to learn new skills in pedagogy and technology. We found that many learners in our class willingly participated in discussions in an online class who used to sit quietly in the back in a physical classroom. The probable

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reason for this may be that the learners felt at ease and stress-free when attending classes online since they joined the classes from their home or their comfort zone. This stress-free and ubiquitous situation often made them more active and participatory in classroom discussions. It also seemed to us that those who used to feel shy in a face-to-face class were able to respond spontaneously in an online class. This is because a teacher has a better opportunity to reach out to a student on one-to-one communication on screen. Therefore, when a face-to-face classroom will be functional in a new normal world, online teaching as a form of blended teaching can be useful for learners.

6. CONCLUSIONS

In conclusion, this study did not include statistical or empirical data since it was reported qualitatively from the teachers of one urban school in Bangladesh. It explored how secondary school teachers adapted to the challenge of quickly transitioning face-to-face oncampus teaching to fully online teaching in response to the COVID-19 pandemic. The authors captured the essence of the online teaching challenges, teachers' adaptations, and the contextual needs resulting from the reflections of the participants. The COVID-19 pandemic has emerged as a realistic option for tech-savvy teachers to improve their technological knowledge. The pandemic has given us a remarkable new understanding of the concept of teacher–student engagement and has made us think about how to best use the physical classroom and how to find alternatives when face-to-face teaching is not an option.

There is no rule book for academic teaching and learning during this pandemic situation. However, there is the opportunity to rethink and redesign what it means to teach and learn during and after the pandemic. The concluding and pivotal argument is that there is room for opportunity for online classes to go along with face-to-face classroom teaching in Bangladesh in the years to come. Therefore, the authors hope these explorations may prompt training programs in teacher education that will support teachers in coping with situations due to natural disasters or when something similar to the COVID-19 pandemic occurs, prepare them digitally for the 21st century educational process, and help them make their face-to-face classes more interactive in the post-pandemic era.

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