

# Flipped Classroom: Students and Teachers Perceptions on the Impact and Challenges of Implementation at Tertiary Level in Bangladesh

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## Abstract

This study aimed to enhance the capacity of teachers at Jashore University of Science and Technology (JUST) to manage blended classes effectively by introducing them to the Flipped Classroom (FC) model. Through a series of workshops and training sessions, teachers and students explored FC concepts, methodologies, and best practices. Teachers who participated in the initial workshop began implementing FC in their classrooms, and after three months, they reconvened to discuss their experiences, challenges, and the overall impact of FC on their teaching. In addition, students from various university departments received training on FC usage. Afterward, both teachers and students completed separate questionnaires, sharing their perspectives on the FC approach. The analysis revealed mixed reactions from teachers, while students generally responded positively to FC. Teachers expressed hesitation to adopt FC, citing increased workload, limited technical knowledge, and inadequate technological support. Additionally, many teachers lacked formal pedagogical training, which compounded the challenges of transitioning to this model. Conversely, students displayed strong interest in flipped learning, with many expressing a desire for FC-based methods across all courses. In light of these findings, the study recommended providing teachers with pedagogical and technology-focused training and hiring additional staff to help reduce the current teaching workload. Overall, this study offers valuable insights for teachers, students, and educational authorities in Bangladesh, highlighting the readiness and potential benefits of FC for elevating tertiary education standards.

**Keywords:** blended learning, flipped learning, technology in teaching

## 1. Introduction

Traditional lecture-based classrooms have lost their effectiveness (Datig et al., 2013), leading educators to explore alternative teaching methods. Among these, the flipped classroom has gained attention as an effective model (Newman et al., 2016) that can replace traditional approaches. The flipped classroom is a form of blended learning in which students are introduced to new content at home and then apply their knowledge through problem-solving activities during class.

In a flipped classroom, the traditional sequence of classroom activities is reversed (EDUCAUSE Learning Initiative, 2012). Instead of presenting new material in class, teachers provide students with videos or other resources to review before class. Students engage with this material independently at home. During class, students participate in discussions, group activities, Q&A sessions, and problem-solving exercises. Teachers use class time to address any misunderstandings, monitor student progress, and provide feedback.

As technology reshapes all aspects of life, education must also adapt. Blended learning, while practiced globally for decades, has been less common in Bangladesh. Before the COVID-19 pandemic, education in Bangladesh was almost entirely face-to-face. However, the pandemic necessitated a sudden shift to online learning, raising questions about its effectiveness. Initially, students and teachers struggled with the unfamiliar online format; traditional classroom strategies did not translate well, and active student participation declined. Challenges included teachers' lack of preparation, unfamiliarity with online pedagogy and assessment, and issues of access and equity (Khan et al., 2021a; Khan et al., 2021b). Many students felt isolated and unmotivated to study independently without real-time feedback.

Both blended and online learning require students to take more responsibility for their education. They must

prepare in advance to make the most of class time. Pedagogical strategies now need to address students' evolving needs by integrating active methods like flipped classrooms and gamification, which foster curiosity, creativity, and motivation (Colomo-Magaña et al., 2020, p. 1). As a result, educators worldwide are implementing the flipped classroom model across various subjects (Bergmann & Sams, 2012, p. 19), which has proven to be more effective than traditional face-to-face and electronic learning models (Mortaza Mardaha et al., 2023).

Bangladesh's education system was deeply impacted by COVID-19. For the first few months, educational institutions remained closed, and online learning became the only option. This transition presented challenges, including students' reluctance to study independently, teachers' limited technology skills for designing interactive lessons, and students' passive participation (Khan et al., 2021a). Students often joined online classes without preparation and turned off their cameras, making it difficult for teachers to assess their engagement and learning progress. Teaching became a monotonous task for many instructors.

Further complicating the landscape, the University Grants Commission of Bangladesh and the Bangladesh Accreditation Council introduced an Outcome-Based Education (OBE) curriculum aligned with the Bangladesh National Qualifications Framework. Under this system, higher-level students are required to study at least two hours per week for each credit, in addition to scheduled class time. This requirement underscores the need for students to take greater ownership of their learning. Promoting learner autonomy, where students actively direct their own learning, is essential (Holec, 2001, p. 48). However, fostering self-reliance can be challenging. The flipped classroom offers a promising approach, as it encourages students to study at home using teacher-provided resources, whether in an online or face-to-face setting. To implement this approach effectively, it's crucial to understand both teachers' and students' readiness and the potential obstacles involved. This study aimed to explore these factors.

### *1.1 Research Objectives*

Numerous studies have been conducted throughout the world to investigate the effectiveness of Flipped Classroom, but only a few studies have been done in Bangladeshi context. It is still unknown whether teachers and students in Bangladesh are ready for Flipped Learning and what challenges exist in this context. To address this gap, this study aimed:

- 1) To reveal the perceptions of teachers and students regarding the impact of Flipped Classroom on teaching and learning.
- 2) To identify the challenges of implementing Flipped Classroom at the tertiary level in Bangladesh.

### *1.2 Literature Review*

Flipped Classroom has gained substantial attention from practitioners and researchers as a promising approach to enhance student engagement, teaching-learning outcomes, and critical thinking skills (Bishop & Verleger, 2013). Ajmal and Hafeez (2021) conducted a review of 32 studies on the use of Flipped Classroom in various departments including English, Mathematics, Genetics, Statistics, Medicine, Pharmacy, and Business. They found that Flipped Classroom had a positive impact on learning, interaction, effectiveness of teaching, and learner involvement in almost all cases. Some other studies (Amresh, Carberry, & Femiani, 2013; Chen et al., 2018; Newman et al., 2016; Love et al., 2014; Mortaza Mardaha et al., 2023) have also shown that FC improves student performance, engagement in learning activities, attitude, understanding of content, and overall outcomes.

Flipped Classroom is supported by several strong theoretical bases. The first is learner autonomy theory, which refers to the fact that the learners take charge of their own learning. By gaining basic knowledge of the content before the class, learners can make themselves more actively engaged in the classroom learning activities. Flipped Classroom creates opportunities for the teachers to provide feedback to students, which enhances their mindset and self-efficacy (Mercer & Dornyei, 2020). Vygotsky's (1978) theory of Zone of Proximal Development (ZPD) is optimized through Flipped Classroom, as it reduces the distance between independent problem-solving at home and collaborative problem-solving in the classroom. This process allows students to learn through discovery and independently acquire information and increases "learner-centered activities such as problem-based learning" (Mason, 2013).

Bergmann and Sams (2012) argue that Flipped Classroom promotes active and self-directed learning, requiring learners to engage with content outside of class. Their empirical testing of Flipped Classroom revealed numerous benefits, including personalized learning, increased student-student and student-instructor interaction, improved classroom management, and quality content learning.

Anjomshoaa et al. (2022) reviewed 14 articles and analyzed 699 articles from 2010-2022, and found that Flipped Classroom had a positive impact on various teaching-learning variables in different contexts. Bond (2019, as

cited in Anjomshoaa et al., 2022) highlighted the similarities between Flipped Classroom and other pedagogical approaches, such as mastery learning, brain-based learning, problem-based learning, and multiple intelligences.

Noroozi (n.d.) conducted a study on students' perceptions of incorporating Flipped Learning into L2 Grammar Lessons. The participants found flipped learning instruction to be satisfactory, engaging, and effective. Self-learning enabled language learners to engage in peer-assisted learning, student-teacher interaction, and reduce dependency on the teacher.

Attaran and Zainuddin (2016) conducted a case study on Malaysian students' perceptions of Flipped Classroom and found that most students had positive perceptions and would recommend flipped learning for other courses and students. Students provided feedback suggesting that flipped videos should be more engaging and shorter, and situated within an authentic context.

Colomo-Magaña et al. (2020) conducted an extensive study on university students' perception of the usefulness of the flipped classroom methodology. They concluded that the flipped classroom was positively evaluated as a learning methodology, highlighting its instrumental dimension as an alternative method to promote learning.

Basal (2015) in his study on the implementation of a flipped classroom in foreign language teaching found that flipped classroom benefited students in terms of learning at their own pace, advanced student preparation, overcoming time limitations in class, and increasing participation. The study also provided recommendations for integrating learning management systems into English language teaching departments and implementing flipped classrooms in language teaching.

Karmaker (2020) conducted a study on flipped classroom in Bangladesh at Jagannath University. The study revealed that blended learning was perceived as highly positive in terms of student satisfaction, helpfulness, in-class activities, and better utilization of class time. However, there were some shortcomings revealed in the study that required reconsideration.

Betihavas et al. (2016) in their systematic review of 21 titles and abstracts found "neutral or positive academic outcomes and mixed results for satisfaction. Engagement of students in the flipped classroom model was achieved when academics informed and rationalized the purpose of the flipped classroom model to students."

The above discussion demonstrates the substantial potential of flipped classroom to improve teaching and learning in normal situation and especially when in-class instructions are not possible. As there is a scarcity of research on flipped classroom in Bangladesh, this study aimed to make a notable contribution by revealing the readiness level of the teachers and the students for this pedagogical model.

## **2. Method**

This exploratory study aimed to understand the perceptions of teachers and students at Jashore University of Science and Technology. The study included training sessions on basic methodologies for flipping lessons. Although primarily qualitative, quantitative data were also gathered to support the qualitative insights.

### *2.1 Participants*

The study participants included teachers and students from Jashore University of Science and Technology. Two workshops were held for teachers, with thirty-nine teachers attending the first workshop and fifty-nine attending the second. Additionally, ten teachers participated in individual interviews, and fifty-eight teachers completed a questionnaire on their views and challenges regarding the flipped classroom model. For the student participants, a training session was conducted with one hundred students from various departments. Following this session, ninety-nine students completed a questionnaire.

### *2.2 Instruments*

For the workshops and training sessions, modules were developed using relevant literature and experimental studies (Abuhmaid, 2020; Aljaraideh, 2019; Basal, 2015). Once participants had a foundational understanding of the flipped classroom model, separate survey questionnaires were created for teachers and students to collect their feedback. An interview checklist was also prepared to explore the challenges teachers faced when implementing the flipped classroom. These questionnaires, grounded in previous research and literature, addressed various aspects of the flipped classroom model. Both teachers and students responded to each statement on a three-point Likert scale (Agree, Maybe, Disagree).

### *2.3 Procedure*

The workshops aimed to give teachers and students a foundational understanding of the flipped classroom model. In the first workshop, teachers were introduced to various methodologies and classroom activities for

conducting flipped lessons. Afterward, they were encouraged to implement flipped lessons in some of their course sessions. During the second workshop, teachers shared their insights and discussed the challenges they encountered while applying these lessons. Students received information about the flipped classroom model, including how it functions and the role they play in this approach. Both teachers and students completed survey questionnaires only after fully understanding the model and, in some cases, experiencing it in their classrooms. They were informed about the purpose of data collection and asked to provide consent for participation. Only those who consented were allowed to complete the survey, and their responses were kept confidential. To ensure clarity, the questionnaire was available in both English and Bangla.

#### *2.4 Data Analysis*

To achieve the study's objectives, both qualitative and quantitative methods were used. Descriptive statistics, including standard deviation and correlation, were applied to analyze respondents' opinions. The data was processed using SPSS, version 25.

### **3. Results and Discussion**

#### *3.1 Satisfaction with the Present Mode of Teaching*

Before the Covid-19 pandemic, all undergraduate students attended in-person classes. However, once the pandemic began, most universities transitioned to online classes through platforms like Zoom, Google Meet, and Microsoft Teams. After training on the flipped classroom model and experiencing flipped lessons, 68% of students at JUST reported satisfaction with the current teaching approach, while the rest expressed dissatisfaction with traditional teaching methods. In contrast, only 42% of teachers were satisfied with the current teaching format, citing concerns related to student attitudes, academic performance, and the skills students were gaining.

#### *3.2 Opinion Regarding Using FC Model in the Classroom*

Despite differing opinions, the majority of students (93%) expressed a strong preference for incorporating flipped lessons in their classrooms. Similarly, nearly all teachers (99%) wanted to implement the flipped classroom model to enhance the effectiveness of their teaching. Most teachers also believed that students would benefit from and enjoy this approach. The flipped classroom model shifts the teacher's role from a traditional lecturer to a learning facilitator, a change that nearly all teachers viewed positively.

#### *3.3 Students' Role and Readiness*

The flipped classroom model required students to change their role from passive learners to self-responsible learners. At home, prior to classroom session on a lesson, they had to acquire knowledge of the basic aspects of the content. It was found that nearly all of them expressed their readiness to adopt flipped methodologies.

#### *3.4 Students' Perceptions about the Flipped Classroom Model*

The students provided their opinions about the usefulness of the flipped classroom model and its impact on different aspects of learning. Most items received highly positive responses from the students, except for items 10 and 15, which addressed the challenges they might face. The students felt that the flipped classroom model would require them to do more work outside the classroom and give them less class time to practice course concepts. However, all other 18 items received high mean values, indicating the students' positive attitude towards the flipped classroom model. The standard deviation for all items showed that the students had a similar opinion.

Table 1. Students' perceptions of the effectiveness of flipped classroom

Sl.	Items	Mean	SD
1	I feel that watching videos and taking notes contribute efficiently to my learning.	2.95	0.22
2	With flipped classroom model, I feel more prepared for my examination	2.90	0.30
3	I like watching the lessons on video.	2.95	0.22
4	I try to learn as much as possible while watching the videos.	2.93	0.26
5	I wish more instructors use the flipped or inverted classroom model.	2.85	0.36
6	Flipped classroom encourages me to practice critical and creative thinking.	2.84	0.37
7	Learning basic content prior to class greatly enhances my understanding of material.	2.92	0.28
8	Flipped classroom gives me the opportunity to ask more questions inside the classroom.	2.93	0.26
9	Flipped classroom attracts my attention to learning and teaching process.	2.92	0.28
10	With flipped classroom, we have to do more work out of the classroom.	2.89	0.32
11	Flipped classroom can be a suitable teaching strategy.	2.90	0.30
12	Flipped classroom can improve interest in exploring topics.	2.89	0.32
13	I felt prepared to complete course tasks in class after listening to the video content.	2.80	0.41
14	Flipped classroom can be more engaging than the traditional classroom.	2.87	0.34
15	Flipped classroom gives me less class time to practice the concepts of course.	2.76	0.43
16	Flipped classroom reduces the effort to understand the basic knowledge of the subject matter.	2.86	0.35
17	Flipped classroom gives me greater opportunities to communicate with other students.	2.86	0.35
18	I believe that I am able to learn material with flipped classroom instruction better than with traditional lecture-based instruction.	2.88	0.33
19	I would recommend flipped classroom to a friend.	2.88	0.33
20	Flipped courses did not limit my interaction with instructors.	2.79	0.41

Students' perspectives on the effectiveness of flipped classroom practices can be grouped into three key areas: content-related aspects (usefulness of materials reviewed in advance), classroom learning, and aspects related to instruction and engagement. Watching videos, for instance, was seen as a valuable experience that enhances both the depth and quality of content learning. Being exposed to the material twice helps students felt better prepared for exams, boosting their confidence with course tasks and activities.

Students also appreciated that the flipped model fosters self-regulation and encourages learner independence. In the pre-class phase, they actively engaged with new content, which promoted higher-order learning skills like critical thinking. Additionally, students reported that this model allows them to ask more questions during class, leading to more engaging, activity-oriented interactions and strengthening their understanding of the teaching-learning process. Notably, these views showed no significant difference based on gender (Pearson correlation 0.06).

### 3.5 Teachers' Perceptions about the Role of Flipping in Students' Learning

The teacher questionnaire consisted of three sections. In the first section, teachers shared their opinions on the role of flipped classrooms in student learning. Table 2 shows the mean and standard deviation for all ten items related to teachers' perceptions. Overall, teachers agreed that flipped classrooms have a fairly significant impact on various aspects of learning, with an overall mean score of 2.50 on a 3-point scale.

Table 2. Role of flipped classroom in students' learning

Statements	Mean	SD
Flipped learning improves student's attention during class time	2.53	0.74
Flipped learning improves student's self-confidence coming to class with basic understanding	2.58	0.76
Flipped learning makes learning more enjoyable	2.47	0.76
Flipped learning can improve students' achievement	2.53	0.74
Flipped learning makes learning more flexible	2.37	0.89
Flipped learning can improve students' interaction in classes	2.63	0.76
Flipped learning improves students' motivation to learn	2.42	0.53
Flipped learning makes learning more students-centric	2.47	0.89
Flipped learning improves students' creativity	2.55	0.89
Flipped learning improves students' higher order thinking skills	2.47	0.83

Both students and teachers agreed that the flipped classroom model enhances cognitive skills such as attention, self-confidence, and motivation. As a result, teaching becomes more learner-centered, and the learning experience becomes more engaging. Teachers also felt that this model promotes creativity and fosters higher-order thinking skills. Interaction, a key component of effective learning, is positively impacted by the flipped classroom, leading to better quality and quantity of student-teacher interactions.

### 3.6 Flipped Classroom and Teachers' Role

Like any teaching model, the flipped classroom requires teachers to adopt a role that differs significantly from the traditional lecture-based approach. The second section of the teacher questionnaire (Table 3) included seven items about teachers' roles both inside and outside the classroom. The majority of teachers believed that flipped learning allowed them to make more efficient use of class time (mean 2.47). They also felt it helped them track student progress beyond the classroom (mean 2.71) and improved communication between students and teachers due to increased interaction (mean 2.68). Many teachers noted that it enabled them to better manage the classroom, transforming monotonous lectures into dynamic, interactive activities. With more time to monitor students, teachers were able to assist those who are struggling and help them overcome learning challenges (mean 2.42).

Despite these benefits, the flipped model also introduces additional responsibilities and tasks, which many teachers found made their jobs more challenging compared to traditional classrooms (mean 1.97).

Table 3. Flipped Classroom and teacher's role

Items	Mean	SD
Flipped learning helps teachers make better use of class time	2.47	0.71
Flipped learning enables teachers to follow students' learning beyond classrooms	2.71	0.52
Flipped learning enables better class management	2.32	0.64
Flipped learning liberates teachers from dull routines	2.39	0.83
Flipped learning improves teacher-student communication	2.68	0.74
Flipped learning enables me to help struggling students	2.42	0.52
Flipped learning makes my job easier	1.97	0.83

### 3.7 Challenges of Implementing the Flipped Classroom

After attending the first workshop, the teachers were asked to incorporate the flipped model into their courses. While many of them did so, they only partially implemented it. In the second workshop, they were then asked to provide feedback on the challenges they faced when trying to implement flipped learning. This feedback section, consisting of seven items (Table 4), focused on the teachers' preparation for implementing the learning activities. The average score for this section was 2.36, indicating that the teachers encountered significant challenges when implementing flipped learning. The implemented model greatly increased the workload for the teachers.

Table 4. Challenges of the implementation of flipped classroom

Items	Mean	SD
Flipped learning requires teacher preparation programs to prepare teachers	2.66	0.52
University authority has important role in the implementation of flipped learning	2.66	0.76
The internet facilities available do not support the implementation of flipped learning	2.08	0.83
Existing infrastructure impact the implementation of flipped learning	2.42	0.52
Flipped learning needs changes in current regulations and legislations	2.47	0.76
The current curricula do not allow for the implementation of flipped learning	1.87	0.76
Flipped learning needs more time to prepare learning activities	2.39	0.89

Figure 1 shows that the teachers are not prepared for this kind of change, as most of them had never heard of the flipped model before. The teachers believe that not only themselves but also the authorities, are not ready to bring about the necessary changes and provide the required facilities. Implementing a new pedagogy model requires all stakeholders to adapt to the changes. However, academic ordinances and regulations are not aligned with the implementation of this model, which presents a huge challenge. The existing infrastructure, including internet access, also hinders the implementation of this model. The current curricula pose the least challenge, as

they have recently been modified according to the directions of the University Grants Commission of Bangladesh. The main challenge seems to lie with the teachers. In addition to managing a heavy workload, they need technological knowledge and time to prepare appropriate teaching and learning activities and materials for the flipped classroom.

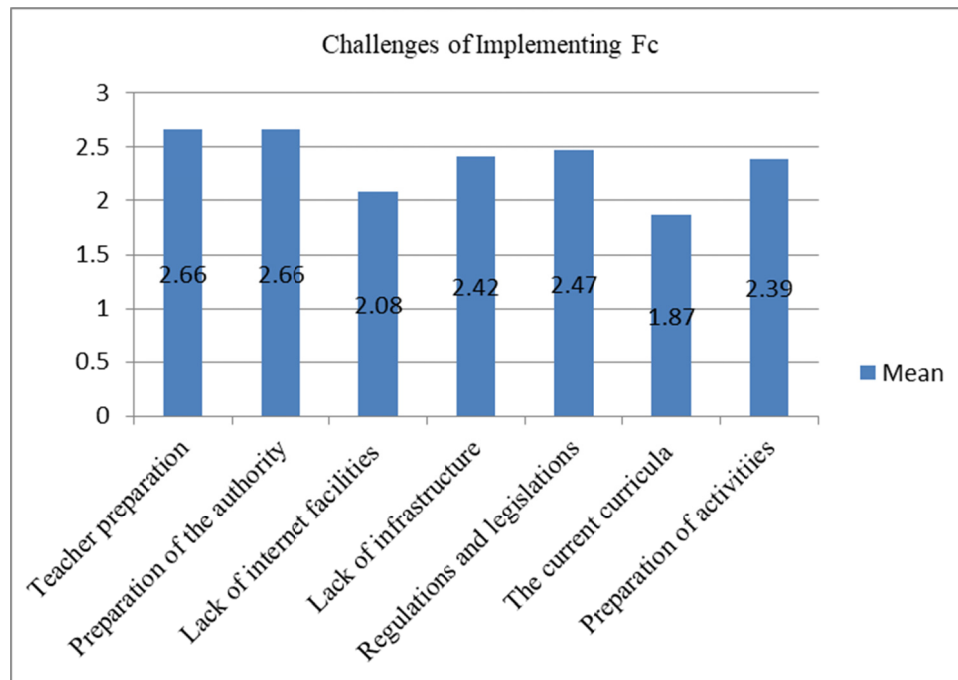


Figure 1. Challenges of implementing flipped classroom

An interview with teachers following the second workshop provides information that supports the findings mentioned above. The participating teachers expressed that the flipped model shows promise, but infrastructure development is necessary before implementation. To implement the flipped classroom, teachers need to change their traditional role as lecturers and become facilitators of learning. They believe that they play a crucial role in bringing about the necessary changes in various aspects of new pedagogy models like the flipped classroom. One of the most daunting challenges they face is preparing learning materials and activities. They believe that high-speed internet, technological facilities, financial benefits, and training should be provided by the authorities. Another major challenge they reported is the assessment system. The existing assessment system is mostly summative, which hinders the implementation of flipped learning. The flipped model requires formative assessment to track ongoing learning progress and take appropriate measures to address any deficiencies, thereby motivating students for further improvement. However, most teachers believe that these challenges can be overcome, although they are concerned about their workload and the additional activities involved in designing and providing materials and feedback sessions. They suggest that decreasing the teacher-student ratio and providing training and other facilities would help alleviate these concerns. However, despite the challenges, most students expressed a strong desire to have the flipped classroom implemented at any cost.

#### 4. Conclusion

The study aimed to investigate the perceptions and challenges associated with implementing the Flipped Classroom (FC) model at the tertiary level in Bangladesh. Through workshops, training sessions, and surveys involving both teachers and students at Jashore University of Science and Technology (JUST), the study shed light on the readiness and obstacles related to FC implementation.

The study revealed that while teachers exhibited mixed reactions towards FC implementation, students showed a largely positive response. Teachers expressed hesitation due to workload, lack of technical knowledge, technological support, and pedagogical training. Conversely, students demonstrated a high level of interest in FC, expressing a desire for its incorporation into all their courses. The findings emphasized the necessity of providing pedagogical and technological training for teachers to facilitate FC implementation. Additionally,

reducing teachers' workload through the hiring of more educators was suggested to alleviate concerns and enhance their ability to adopt FC successfully.

Despite challenges, FC was perceived as a promising pedagogical approach to enhance student engagement, critical thinking, and learning outcomes. Teachers acknowledged the potential benefits of FC in improving student attention, confidence, motivation, and interaction in class. However, the transition to FC necessitated a shift in teachers' roles and preparation for adapting to new methodologies. Infrastructure development, including reliable internet access and technological facilities, emerged as crucial prerequisites for FC implementation. Moreover, institutional support, including alignment of academic regulations and curricula with FC requirements, was deemed essential to facilitate its adoption effectively.

The study highlights FC as a potential catalyst for improving the quality of tertiary education in Bangladesh. By addressing challenges through targeted interventions such as teacher training, workload reduction, and institutional support, FC can offer a transformative learning environment conducive to enhanced student engagement, learning outcomes, and overall educational quality. Considering the positive perceptions and eagerness of students to utilize flipped classroom methodologies to become autonomous learners, and to make the transition from rigid teacher-centered physical classroom to flexible, effective, active and student-centered teaching strategies meaningful (Nouri et al., 2016), it would be a timely decision to implement the flipped classroom.

The flipped classroom, with its sophisticated and well-researched methodologies, classroom activities, empirical evidence, and the option to reuse and modify readily available materials in the digital world, can greatly enhance the quality of teaching and learning at the tertiary level. Since most universities in Bangladesh have already implemented some form of blended learning system in the post-COVID-19 pandemic period and provided teachers and students with technological facilities such as learning management systems and institutional emails, implementing flipped classroom methodologies can be easier and more effective than before. The findings of this study have been substantiated by the study conducted by Chowdhury (2020) where she emphasized that integration of blended learning at HEIs in Bangladesh is vital, as it incorporates both physical and online learning components to provide better quality education for all. This research provides valuable insights for educational practitioners and policymakers in Bangladesh to consider in their efforts to embrace innovative pedagogical approaches and enhance the standard of tertiary education.

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**Authors contributions**

Dr. Md. Abdullah Al Mamun contributed to concept development, study design, and manuscript revision. Abdul Wahid Dippro was responsible for data collection and drafting the manuscript. Both authors were actively involved in all phases of the study, including reviewing, editing, and finalizing the manuscript.

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