# Teachers' Perception of Using Technology in a Blended Learning Environment to Facilitate Collaborative Learning in Bangladesh

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**Abstract.** Following the COVID-19 crisis, practically all university instructors decided to incorporate blended learning by adopting interactive technologies to enhance the teaching-learning process. Vygotsky's socio-cultural theory, which shaped collaborative learning, is encouraged since it strengthens the activity that contributes to an individual's growth and enrichment. This study explores how faculty members perceive students collaborating in learning in a blended learning setting using interactive technologies. As a result, a mixed method technique for data collecting was used in this study to investigate how teachers are perceived in a higher education setting. The research was conducted on 100 academics from various public and private universities in Bangladesh. Through a semi-structured interview, data were gathered. Given the different restrictions and limitations, the study's findings demonstrate that the teachers' attitude was both positive and negative. The findings support the idea that technology has increased the number of ways to work together on collaborative tasks offering better assurance and access for sharing and communication. However, the teaching-learning process might be aided by adequate training for students and teachers as well as by the availability of authentic resources.

**Keywords:** Blended Learning · Collaborative Learning · CALL · Technology Supported Learning · Web 2.0

## 1 Introduction

Collaborative learning is shifting from the traditional lecture-based classroom to a more learner-engaged one. It is duly recognized as a technique in the universities of Bangladesh that can help learners to get the necessary outcomes. Bangladeshi University curricula often inspire collective works like group presentations, peer investigation, etc. Following the COVID crisis, practically all university instructors decided to incorporate online learning by adopting interactive technologies to enhance the teaching-learning process. The post-COVID situation does not deny the necessity for technology in the classroom rather, its use in the classroom is more activated. That's where the blended learning environment emerges. The preference for exercising interactive technologies in universities to facilitate collaborative learning is gaining popularity day by day. The increasing

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use of technology in the blended learning environment to facilitate collaborative learning thus creates opportunities as well as problems for the instructors in Bangladesh. As a member of the least developed country, the economy plays a huge role in creating problems when using technology in the classroom. This research attempts to find out the teachers' perceptions regarding the use of technology in Bangladeshi university classrooms to facilitate collaborative learning. It is seen that numerous advantages, such as self-paced and directed learning, instant feedback, repetitive practice, cost-friendly, and easy access, encouraged educators to continue creating more complex tools to aid students in their learning.

### 1.1 Statement of the Problem

Using technology to facilitate the teaching-learning process is nothing new in the language-learning field. Adaptation of technology by Bangladeshi University teachers, especially after the COVID crisis, to provide collaborative tasks to facilitate the teaching-learning experience of the learners has increased radically. Different tools are used to facilitate learners' learning experiences. This study tries to find the effectiveness of tools and a convenient environment for using technology that can be used to enhance learners' experience of completing collaborative tasks.

### 1.2 Significance of the Study

The study findings may help learners, teachers, and administrators to assess tools and identify and minimize the problems faced when using technology to facilitate collaborative learning. It is also apprehended that a strong tech-savvy background can help to mitigate the problems, so adequate training should be provided to teachers and learners.

### 1.3 Research Questions

This study has considered the following four research questions to comprehend the real situation.

1. To what extent does using technology facilitate collaborative learning?
2. What are some popular technical tools that are used to promote collaborative learning in Bangladesh?
3. What challenges do the educators in Bangladesh confront when implementing technology to promote collaborative learning?
4. What measures can be adopted to help mitigate the identified challenges?

## 2 Literature Review

**Blended Learning**
Blended learning is a technology-mediated approach where web-enhanced educational materials and physical interactions are integrated to expand learners' learning advantages in classroom ambiance.

**Collaborative Learning**

Rooted in Lev Vygotsky's socio-cultural theory's zone of proximal development, collaborative learning refers to both peer-to-peer and group-based tasks to foster deeper and critical thinking with minimal traditional instruction.

**Technology and Collaborative Learning**

Learning is far more effective when it can be turned into a social activity rather than an isolated one. It can be integrated into collaborative tasks to bring out the best outcome from the students [1]. Learners' joining effort makes it a social drill where technological devices serve as tools that support learning. The use of technology provides learners with ready access to a vast amount of information as well as the opportunity to control their own learning process [2].

**Computer-Supported Collaborative Learning (CSCL)**

According to Garbin et al. (2014), Computer Supported Collaborative Learning (CSCL) is the most general and anticipated way for people who are regionally distant; can talk and produce materials in the association. Individuals from different countries can join meetings in real-time. Increasing networking can flourish metaphorical human networking [3].

Stahl, Koschmann, and Suthers (2006) give a new dimension by proving that computer-mediated learning and communication are concerned with how we communicate and gather knowledge together while using technology. Participants in CSCL adapt both synchronous and asynchronous means and share and create knowledge [4].

According to Chiu, Wen & Sheng (2009), social media was the most used web 2.0 application as it mostly focuses on learners and helps the learner to learn in a system that can be shared easily. In this case, files, images, or any multimedia files can be shared easily by both the teacher and the student. Thus, this web 2.0 application facilitates collaborative learning as it also ensures learners' active participation [5].

Demirkan, Gros & Goul (2010) points out the positive side of computer-supported collaborative learning as in 2007, the number of people doing online courses increased to 3.5 million. However, the annual projected growth rate at that time was 21.5% [6].

**Factors Influencing Teachers' Technology Integration**

Zhao (2007) administered qualitative research to look into the standpoint and experiences of adopting technology integration training excommunicated with 17 social studies teachers. The findings of that particular study showed that most educators were convinced to obtain help from modern devices and showed an admiring attitude towards technology absorption training. They were supposed to extend their use of technology in the classroom and thus use it with much efficiency [7].

Anderson and Maninger (2007) investigated the matter that what are the main elements which were connected to learners' tech-related capacity, competence, intentions, and beliefs. Statistically, ample changes were found in learners' long-held beliefs, capacity, self-efficacy, and an inner urge to use tech materials for future educational endeavors [8]. Those qualities were correlated, and there had been a significant impact on learners to engross themselves in studies incorporating technology and computer access.

Educators and academicians are found to encounter many odds in their pursuit to blend technology to facilitate collaborative learning. Moreover, struggling with time management and feasibility of using technology, lack of proper administrative support, absence of harmony in educational ambiance, social stratification, etc., are some noteworthy issues to impede the utilization of technology [9].

Earle (2002), in his study, coined up a few obstacles to the integration of technology in education and learning which are some of those restraining forces like want for proper training, resources, support, time, access, etc., forcing teachers to stay out of the track [10].

## 3 Research Methodology

### 3.1 Research Design and Participants

The research was conducted in a mixed method, a combination of both qualitative and quantitative approaches. Data has been collected through a semi-structured questionnaire survey.

The target group for this study was tertiary-level teachers. The total number of participants (male and female) was one hundred faculties from different public and private universities in Bangladesh. The experience of their teaching ranges from 6 months to 15 years.

### 3.2 Data Collection and Analysis Procedures

The study used one semi-structured interview questionnaire to collect data. The questionnaire contained sixteen questions in total. The first part of the questionnaire was designed to find out the participants' personal information like educational background and professional information like the institution he is currently working in, designation, and teaching experience. The second part contained five open-ended and seven close-ended questions to elicit respondents' perceptions of using technology.

The quantitative data have been analyzed statistically, whereas qualitative data have been analyzed using non-statistical methods. The data were recorded, transcribed, and analyzed by identifying common themes and patterns.

The collected data were processed using excel and were represented in graphs, pie charts, and tables.

## 4 Findings and Discussions

The present study is based mainly on the data collected from the teachers of Bangladeshi Universities, both public and private universities, from both urban and rural areas.

### 4.1 Findings

**Findings Under Research Question One**

Figure 1 demonstrates that of the 100 teachers, 65 strongly agree that using technology to give collaborative tasks can facilitate the teaching.learning experience. Twenty.three agree that technology can facilitate collaborative learning, but there should be active teacher participation to maintain student engagement. 8 teachers partly agree as they believe certain tasks can only be feasible if you want to use technology to facilitate collaborative learning. 2 teachers disagree because they believe Bangladeshi context is not yet feasible for using technology to give collaborative tasks to the students.

Figure 2 shows the teachers' frequency of preference in using technology to provide collaborative tasks in a blended learning environment. 67% always use technology to provide collaborative tasks in the classroom (both virtual and physical), 12% usually use

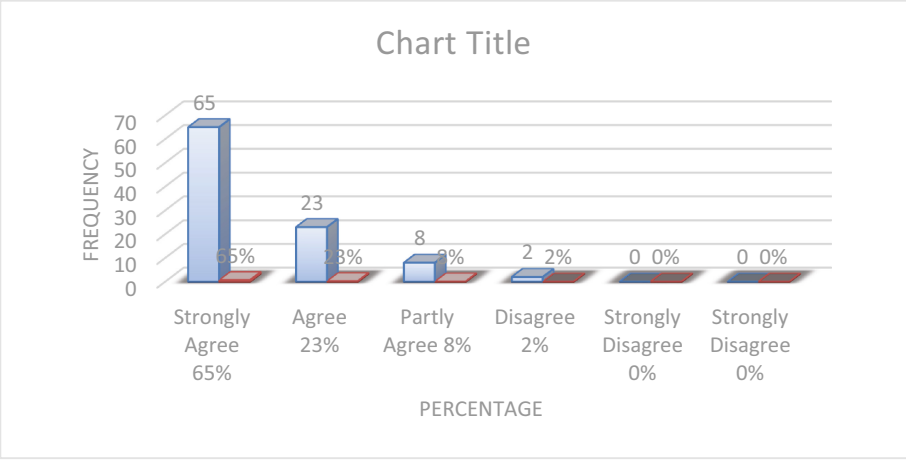


**Fig. 1.** Technology can facilitate collaborative learning.

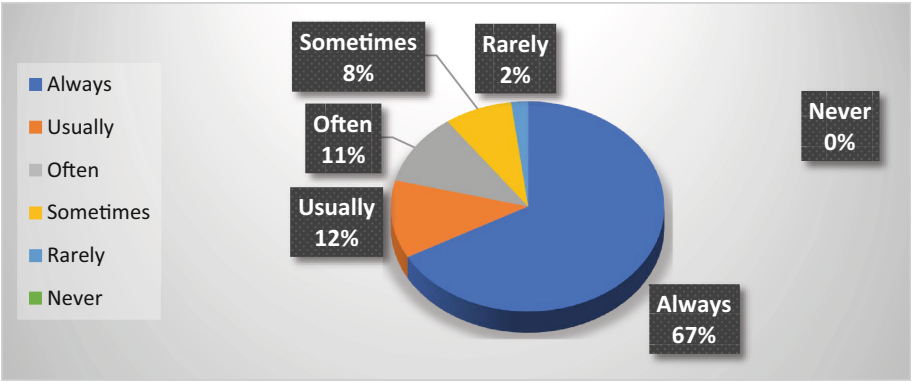


**Fig. 2.** Frequency of using technology to provide collaborative tasks.

technology, 11% often use technology, 8% sometimes use whereas 2% use it if there is no other way, like that happened in Pandemic when the country had to adopt the virtual classrooms to continue the whole teaching-learning process.

**Table 1.** Reasons for using technology to facilitate collaborative learning.

| **Points** | **Positive aspects** |
|---|---|
| Comprehension | Students can easily relate the theory with the concrete image, which makes it more comprehensible. |
| | Learners feel interested in the topic as it vividly presents the contents to the students |
| Acceleration of learning | Easy to use. |
| | It helps students to access the skills and knowledge they need to acquire. |
| | Motivate learners to be innovative and critical to their learning progress. |
| Transcending time and space boundaries | No barriers of time and space. |
| | It can be used at a more convenient time rather than traditionally particular physical class time. |
| | The pandemic situation, natural calamities, or when unrest prevails on campus, using technology can be most effective. |
| Materials and resources management and development | It helps teachers to organize and manage their tasks more efficiently. |
| Students' interest | Lots of information and knowledge are available. |
| | Tutorials are easy to find and understand. |
| | Helps to provide resources & relevant videos. |
| Other skills | Increases confidence level, increases hand-on-learning. |
| | It creates the development of higher-level thinking & oral communication. |
| | Self-management & leadership skills are enhanced. |
| | It helps students with both academic objectives and social skills objectives. |
| | It brings exposure to and an increase in understanding of diverse perspectives. |

(*continued*)

**Table 1.** (*continued*)

| Points | Positive aspects |
|---|---|
| Accessibility | Faster access. |
| Proficiency with Computer technology | Prepares students for the future. |
| | Promotes tech skills. |
| | Students become tech-savvy. |
| Cost-effective | Reduces educational costs. |
| Peer learning | Can be compared to each other easily. |
| | Weak students can get help from the good ones. |
| | Students can share their learning experiences. |
| | Collaboration can open new ideas to solve the problem(s). |
| | They can eliminate the cultural prejudice between the students. |
| | It promotes diversity and improves critical thinking capabilities. |
| | Provides a centralized sharing capability. |
| Student engagement | Provides a more engaging learning environment. |
| | Enhance interaction and engagement. |
| | Creates enthusiasm among the learners. |
| Accommodation of students | Can accommodate a huge number of participants. |
| Outcome of learning | Best outcome-based learning process. |
| Individual accountability | It involves the establishment of group goals as well as individual accountability |
| Teacher student engagement | It enhances teacher-student engagement. |
| Feedback | Getting feedback is easy. |
| | Teachers can provide feedback with minimal time. |

Table 1 exhibits the reasons behind teachers' preference for using technology in the classroom (both physical and virtual) to accelerate collaborative learning.

**Findings Under Research Question Number Two**

Figure 3 exhibits the common and popular tools that the teachers of universities in Bangladesh use to promote collaborative learning. From the checklist, 76% of teachers use technology.based assignments like google docs or blogs to promote collaborative learning. 40% of academics use online quizzes, 16% use the interactive whiteboard to engage students in the tasks, 92% use PowerPoint presentations using google slides,

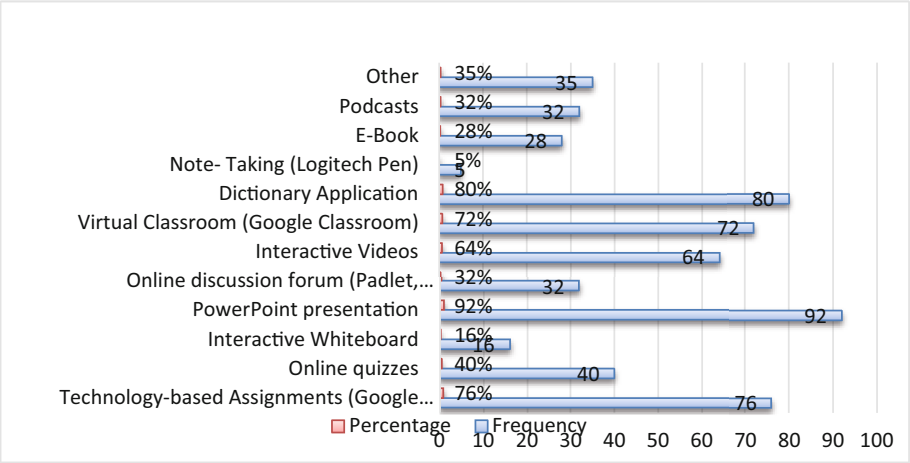


**Fig. 3.** Some popular technical tools to promote collaborative learning in Bangladesh.

Prezi, etc., & 32% use Online discussion forums using Padlet, Socrative, Now Comment, Kialo, Backchannel Chat, Flipgrid, WhatsApp, and Messenger, etc. However, 64% of academics prefer using interactive videos (live stream or downloaded), 72% choose virtual classrooms like zoom or google classroom, 80% use a Dictionary application, 5% use Note.taking tools like Logitech pen, E.books are used 28%, and 32% of them prefer Podcasts to accelerate the engagement of learners in the collaborative teaching.learning process. Apart from these tools, 35% said that they also use Think Binder, Simple Surface, Storybird, Spelling Training site, and Skype to provide and engage students in the collaborative classroom.

**Findings Under Research Question Number Three**

Table 2 manifests the challenges academics face when using technology to assist collaborative learning in the classroom.

Two of the participants haven't faced any problems integrating technology in the classroom. However, it is seen that rural area students face the logistics problem more compared to urban university students.

Interestingly, one participant believes that Bangladesh is still not ready to integrate technologies to teach in the classroom as the students cannot get connected to the materials presented in technology. Students do not want to use technology for learning purposes. They usually use technology for entertainment. The participant believes the excessive use and reliance on technology is a myth in disseminating quality education as in the time of Covid-19, students did not learn much compared to face-to-face classes.

**Findings Under Research Question Number Four**

Table 3 denotes the steps that can be taken by the administrators, teachers, and students to mitigate the problems when faced in cases of integrating the technology to engage in collaborative learning.

**Table 2.** The challenges educators confront in Bangladesh when implementing technology to promote collaborative learning.

| Challenges | Statements |
|---|---|
| Regarding Students | Lack of students' enthusiasm. |
| | Sometimes students don't understand the points and answer wrongly. |
| | Incompetency in using the technologies. |
| | Less acquaintance with the system. |
| | Students believe that group work goes better if the members can meet in person not virtually. |
| | Intergroup dynamics affect learning. |
| | Misusing online teaching-learning platforms. |
| | Students' tendency to adopt shortcut strategies. |
| | Often there is a lack of communication among the heterogeneous group members. |
| | They tend to copy & paste to avoid hard work. |
| | Reduces direct peer interaction. |
| | Students get distracted easily without direct teacher intervention. |
| | Often get distracted by using social media applications. |
| | Students' financial inability to get technological facilities. |
| | Students' inexperience in understanding instructions. |
| | Inexperience in time management. |
| | Group conflict. |
| | Resistance to accepting technology. |
| | They take much time on understanding the blended system. |
| | Less control over students. |
| | Doing something that requires a long time, makes them less interested. |
| | Learner's tendency to remain callous. |
| | Potentially diminishes cognitive development and reduces problem-solving skills. |
| Regarding Logistics | Internet Issues. |
| | Technical problems with the devices. |
| | Electricity shortage. |
| | Lack of devices. |
| | Poor internet speed. |
| | Broken and difficult-to-use machines. |

(*continued*)

**Table 2.** (*continued*)

| Challenges | Statements |
|---|---|
| | Low bandwidth. |
| | Maintaining modern technology is very expensive |
| | Unskilled technicians. |
| | Lack of instruments in the institutions |
| | Poor network infrastructure. |
| | Lack of Professional training. |

**Table 3.** Measures to be adopted to help mitigate the identified challenges.

| Recommendations | |
|---|---|
| To Administrators | Adequate training for teachers and students should be initiated. |
| | The institution must ensure proper logistics facilities for both students and teachers. |
| | Government aid is required to facilitate funding. |
| | There should have an alternative to the electricity problem. |
| | Institutions need to manage “student loans”. |
| | Classroom set-up for technology-based teaching. |
| | Workshops, seminars, training, etc., should be arranged to uplift educational technology regarding this. |
| To Teachers | Creating tasks that effectively motivate the learners. |
| | Raising awareness among learners about its positivity. |
| | They shall provide guidance and materials for the learners’ study. |
| | Classroom management should be improved. |
| | Teachers shall guide and move the students toward the preplanned goals with proper, efficient execution, following appropriate methods and ensuring required teaching competence. |
| | Use culture-specific content. |
| | Set the rules for collaboration and make goals and expectations clear. |
| To Students | Students must use technology frequently for learning purposes. |
| | Students must be active in learning practices. |
| | They should try to install a sense of camaraderie with their peers. |
| | They should remain conversant with the changing needs of the field of education. |

Faculties from different universities mostly focus on logistics support like high-speed internet and backup for the electricity problem. The uninterrupted class can ensure to use of the potential of the students while actively engaging them in the task.

### 4.2 Discussion

The objective of this study was to explore how teachers perceive the use of technology to promote collaborative learning. The data from the interview of the participants reflect that collaborative tasks are very much effective and have become a natural phenomenon in university classrooms. The technology used in providing collaborative tasks in classrooms made it much easier to make them learn together.

Infused technology in collaborative learning can also make it more feasible. From the response of the participants, it has been found that almost 98% acknowledge the effectiveness of collaborative learning. However, two percent disagree because of the challenges learners face because of their low economic status or rural area.

Tools like Google docs, forms, blogs, interactive videos, PowerPoint slides, online discussion forums, and virtual classrooms are gaining popularity as the most useful and available tools to accelerate collaborative learning. The study suggests that teachers prefer collaborative tasks like discussion (e.g. think-pair-share, round-robin, etc.), reciprocal teaching (e.g. fishbowl, jigsaw, test-taking teams, etc.), problem-solving (e.g. send a problem, case studies, etc.), graphic information organizers (e.g. word webs, sequence chains, etc.), writing (e.g. peer editing, dialogue journals, etc.), games (e.g. jeopardy, friendly feud, etc.). Of these collaborative tasks, 88% of the teachers prefer to use discussion-based tasks, 98% prefer problem-solving tasks, and 67% choose writing-based problems when using technology-integrated collaborative tasks.

The study demonstrates the positive and negative aspects of infusing technology into collaborative tasks. Positive aspects include the availability of authentic materials and resources, easy accessibility, diversity in learning, reduction of affective filters, and immediate feedback. Negative aspects like electricity shortage, demotivation of students, and low internet facilities mainly cause challenges for both the teachers and learners when engaged in collaborative tasks.

However, technology helped to transcend the barriers of time and space and thus, creating more opportunities to increase the chance to use more collaborative tasks efficiently and offering assurance of better learning and communication.

## 5 Conclusion and Recommendation

Despite the rigidity of many teachers and the constraints of instructional methods, technology-assisted education is growing in popularity in the Bangladeshi context. The research reflects the current trend of using popular technical tools to make the collaborative teaching-learning procedure effective. Recent advancements in information and communication technology (ICT) have demonstrated the high quality of education, resulting in a substantial gap between conventional methods and new technology-supported teaching and learning [11]. However, proper counseling for students and training for both teachers and students can improve the situation much more, thus creating an efficacious teaching-learning environment.

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