

# The Effectiveness and Acceptance of Collaborative E-learning in the Context of Bangladesh

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**Abstract**—Bangladesh being a developing country is at the primary stage of adopting e-learning technology. Still, in the passage of time, the utilization of web-based technology as the objective of educational systems has become a common phenomenon in Bangladesh. The paper illuminates the effectiveness and contradictory acceptance towards collaborative online learning during the COVID-19 situation in the context of Bangladeshi students. Students of 5 separate sections of a private university in Bangladesh have taken part in this research and their performance has been observed thoroughly. However, the overall performance of the students during online classes was commendable yet their acceptance of the online platform as the medium of education was not as adequate as expected. Lack of proper training of using web-based educational tools, interruption of internet services, etc. could be the constraints behind such contradiction.

**Keywords**—COVID-19, online classes, developing country, availability of resources, acceptance by the students

## I. INTRODUCTION

In this era of technological growth online learning has become a popular approach to learning in developed countries around the world. The switching from orthodox learning media such as face-to-face classes, books to computer and internet-oriented medium [1] such as portrayed animation, graphics, educational videos, tutorials, hypertext including illustrations, simulations, photos, etc. can be marked as the explanation behind the popularity of online learning. As a part of the technological revolution, online learning has been considered as a serviceable way of learning globally but educational institutions in Bangladesh [2] still have some issues to cope up with such technologies. Many educational institutions have developed their online academic portals in order to communicate with both the teachers and students in a better way. However, considering the threat of COVID-19, colleges and universities in Bangladesh initially took the decision to suspend all the classes of educational institutions [3] on March 17, 2020. Sooner, the education ministry and University Grants Commission(UGC) declared [4] to all the public and private universities of Bangladesh to continue teaching and learning via virtual media so that their faculty, students, and staff could remain safe from the public health emergency. The purpose of this paper is to enlighten the fact that Bangladeshi university students have contradictory acceptance towards online learning yet they are bound to pursue their studies virtually to earn their degrees during this pandemic. In order to build this proposition, a survey-based study has taken place upon some university students of Bangladesh. The interruption of internet-facilitated environments, not allocating required physical facilities, lack

of proper training for adopting online lectures can be affiliated as the major constraints behind this contradictory acceptance of online learning in Bangladesh.

The rest of the paper is organized as follows: Section II presents some literature review regarding this field, Section III discusses the detailed applied method, Section IV illustrates our findings from this study, and finally, Section V draws the conclusion of the study.

## II. RELATED WORK

Over the earlier decades of human civilization, learning systems have evolved in numerous manners. In Bangladesh, the scenario is not an exception either. The expansion of information and communication technology (ICT) has incredible reverberation on the learning systems of university students around the world including Bangladesh. E-learning, sharing information through resourceful media, online portal, e-communication are some of the convenient approaches the internet has given the students over the last era.

Meanwhile, some researchers [5] surveyed 2,007 undergraduate students of a public, metropolitechnic university of the US to perceive the prevailing attributes of both online and face-to-face learning procedures. In the United States, [5] over 30% of college students take at least one online course so it is vital to review those classes accordingly for the benefit of the students. They analyzed both the best online and face-to-face classes as well as the worst online and face-to-face classes correspondingly. It revealed whether the course takes place online or face-to-face, persuasive communication, and effective instructors are significant to students for proper learning. However, other factors such as the instructor's approach and anticipated passion towards teaching were more vital in face-to-face classes although the instructor's involvement and as per course assignments were vital in online classes. Yet another researcher [6] enlightened that students who take online classes are more likely to withdraw the courses, and earn low grades in comparison with the regular students. The reason behind this is the less interactive relationship between the instructor and students during the online classes. By doing qualitative and quantitative research on that topic they claimed that an empathic relationship between the instructors and students can significantly uphold the success rate of online classes.

Another couple of researchers [7] have done pre- and post-experience surveys which were based on the views of the students towards having half-semester online courses. 77% of the students responded positively regarding half-semester online classes since it gave them some benefits than regular

classes such as schedule preference, work time management, etc.

In this study of ours, Google Classroom has been used to maintain connection with the students on the online platform. Google Classroom is a popular educational tool that allows teachers and students to use it free of cost. The significance of this platform has been studied by some researchers [8] of Barrett Hodgson University. It basically enlightened the teachers' perspective regarding this tool since it is considered as an effective tool to enhance and personalize students' engagement towards studies. But this study showed that considering the lacking of a user-friendly interface of this tool, it might not have vital influences on regular teaching processes. However, a couple of researchers in Asia [9] have briefed the acceptance of Google Classroom from the perception of the students' during higher studies. Certainly, most of the students are considering this tool as a convenient way of studying. Some researchers in Canada collaborating with the UK researchers [10] have experimented with the problem based learning procedure by means of online learning. The initial result of the prototype significantly enlightened that problem-based learning along with collaborative learning procedures effectively helps the students towards professional development; yet having some technical barriers to overcome. Another approach of improving online learning environments [11] which is based on adaptive algorithms has been experimented by using a skill-based task selection process. They classified the problems as assignments according to the students' conditions. It assisted the students effectively and they are ready to implement it practically onwards.

Furthermore, a group of Indonesian researchers [12] has focused on the importance of the Learning Management System(LMS)- Google Classroom based Flipped Problem based Learning Model (FPBLM) while the learning process of high school mathematics. This flipped classroom activity consisted of two parts, one is classroom learning another one is learning outside classroom methodology. Nonetheless, the flipped problem-based learning model brought greater results than the traditional learning system.

However, a couple of Bangladeshi researchers [13] have surveyed regarding the effectiveness of smartphones as an educational tool. The study distinctly shows that mobile phones have the potentiality of being a convenient device for educational purposes in Bangladesh for undergraduate students in the near future.

During the pandemic of COVID-19, private universities of Bangladesh have transitioned their education on virtual platforms. This transition happened abruptly and the readiness of the students to adapt to online platforms as a significant media of their education has been questioned. Researchers here, [14] have surveyed Bangladeshi students and the result upon the feedback showed that the majority of the students are worried about their degrees yet they are unable to cope with the situation. The students claimed that the lack of provided resources can be considered as the hindrance to this circumstance.

Hence, online learning has the prospects to reinforce [15] both critical thinking and comprehensive learning since it gives the opportunity to record lecture videos graphically which gives the students to think between the notion. It also helps to maintain a harmonious discussion session without

time constraints, thus it continues the comprehensive learning process. Online platforms can be beneficial for collaborative learning as well. In our previous study [16] we introduced a method of collaborative learning of programming languages and it helped the students to build rapport among them to assist each other in need. Due to the collaborative environment of studying students performed well in the examinations as well. Therefore, online learning materials should be designed accordingly to promote collaborative learning.

### III. METHODOLOGY

The instructors started the semester following the collaborative group learning method, which they found effective to teach programming in their previous study [16]. Unfortunately, due to the COVID-19 pandemic situation, they had to move to the online platform in the middle of the semester and continue the classes. Even though the paper focuses on the outcome of the online teaching mode, few details of the students and the collaborative group learning technique has been briefly presented here as well.

#### A. Participants

We reached out to approximately 150 students and a total of 55 students from 5 different sections have willingly volunteered and actively taken part in this mentioned study. All of them are from the Computer Science Department. Among them, 18% of total participants were females whereas the rest 72% were male students. Throughout the study, their names and credentials have not been recorded in order to maintain the anonymity of the research.

#### B. Collaborative Group Learning

From the earlier period of the semester, the instructors introduced the students to a new topic in each theory class and gave them hands-on knowledge in the lab class. They provided both slides and handouts to the students for better understanding. Following the previous study, the instructors skipped the monthly quizzes and designed the first group competition in the first month of the semester. All the students collaborated with each other and weak students got help from their fellow teammates while solving those programming problems. In the middle of the semester, the instructors took their individual midterm exam and the second collaborative group competition and by then their performance got boosted compared to the previous competition.



Fig. 1. Environment of the group competition



Fig. 2. Students are working as a team.

To continue the initial planning, the instructors wanted to move to the pair programming method but due to the pandemic situation, they could not do that and had to move to the online teaching arrangement instead.

### C. Online Teaching Mode

Since all the faculties of the university have already used google classroom for sharing files, the instructors didn't think shifting to online mode would be a big issue. They used google meet for conducting class and google classroom for sharing files and collecting assignments. Every class started on the allocated time and students attended the class using laptops or mobiles. The instructors presented the slides through google meet and interacted with students whenever it was needed.

The lab classes were no exception, yet this time the instructors shared his/her screen with a view to giving the students a better portrait of how to solve a programming problem practically. They explained all the steps of the solution properly and encouraged the students to solve some other problems. Whenever a student faced difficulties to solve a particular problem, the instructors advised the student to share his/her screen and notify him/her how to fix that. It was beneficial since some students might not ask for help because of their shy nature. He/she could also learn how to overcome those difficulties from his/her fellow friends' discussion. Thus, the procedure was aimed to create rapport between the instructors and students. Moreover, if any student did not have access to a computer during the pandemic, he/she could still participate in the lab activity by solving the problem in a paper and presenting that via a mobile camera.

The instructors didn't take any online quiz or competition or any sort of exam by considering the mental condition of the students during the situation (most of the cities have been under lockdown coverage because of the COVID-19 outbreak). They only gave the students an assignment as the final exam covering the whole syllabus. The instructors engaged themselves in counseling the students to monitor their mental health as well. They also celebrated the Bengali new year with the students this year via zoom. Everyone dressed up in traditional dresses and enjoyed some traditional songs together. The instructors were delighted with the responses of the students and expected a great outcome from them. The findings of this study were discussed in the next section of this paper.

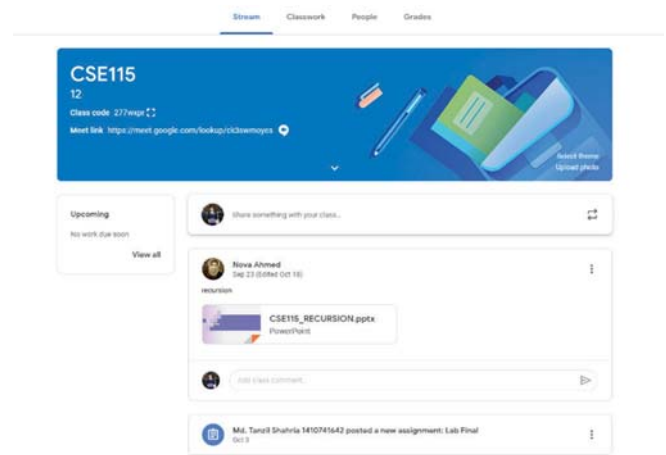


Fig. 3. Example of google classroom environment.



Fig. 4. Celebrating the Bengali New Year.

### D. Ethics and Incentive

From the beginning, the participants were aware of the study and their consent had been taken to participate in our study. The Institutional Review Board (IRB) of the university did not arise any concern as we followed the guidelines properly. Participation was voluntary and anyone could leave if one was not comfortable with the study. There was no recording of any personal information to maintain the anonymity of the study. We have taken the verbal consent of students for the photos as well. At the end of the study, all the participants were thanked without any monetary incentive.

## IV. FINDINGS AND DISCUSSION

In order to demonstrate the findings properly, we categorized the findings into two different categories, descriptive findings, and qualitative findings..

### A. Descriptive Findings

The descriptive findings were again divided into two subcategories. First of all, the overall performance of the students throughout the semester and comparison of the final result with the previous semester has been presented. And finally, a brief discussion regarding the feedback from the students about the whole situation.

#### 1) Overall Performance

. As around 60% - 70% of the semester was completed before the COVID-19 pandemic, there were not any significant effects on the overall performance of the students. This semester, only 6% students got below 60 where 35% got between 60-70, 12% got between 70-80, 28% got 80-90, and 19% got above 90. The overall performance slightly fluctuated from the previous semester but it could not be said



that it was for the pandemic as the instructors followed totally different teaching methods.

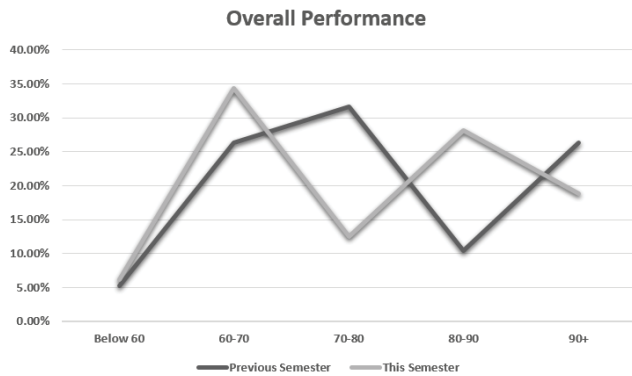


Fig. 5. Overall performance of the students.

## 2) Feedback From The Students

While grading the students, the instructors performed a survey as well among the students to get feedback from them. All the students submitted the response anonymously so that the survey remains fair and impartial. Students from 5 different computer science sections participated in the survey and the instructors got some significant outcomes within it.

The first few questions were about the online classes, how the classes were, which features did they like most, etc. Most of the students (41.8%) said the availability of resources like class recording was most helpful for them whereas others claimed features like screen sharing helped them a lot during the online class. Few of them also said that it was easy for them to submit assignments using the online platform.

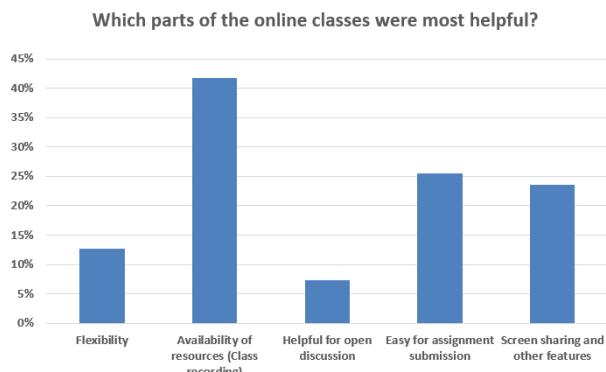


Fig. 6. Feedback on online classes.

Then there were some questions about the overall situation and the instructors got some shocking information from the students. Even though around 80% of the students were present in the online classes, 63.6% of the total students did not think it was appropriate to move to the online platform during the pandemic situation. The students also pointed out some crucial points in the feedback. Few of them are:

- a) In a developing country like Bangladesh, everyone does not have a constant internet connection.
- b) Those who left the city during the lockdown, they don't even get a constant electricity supply.
- c) Since this is new for the students so they can not properly concentrate on the class. Some of the students are also facing technical difficulties to attend the classes.

d) In this crucial time, everyone's life is at risk. Authority should understand students' feelings and their mental situation. Many of them are not mentally stable now.

e) Many of the students, their parents, and other relatives tested COVID-19 positive. They are not in a position to attend online classes.

f) Some students have already lost their parents / their relatives because of COVID-19. No one should force them to continue the classes.

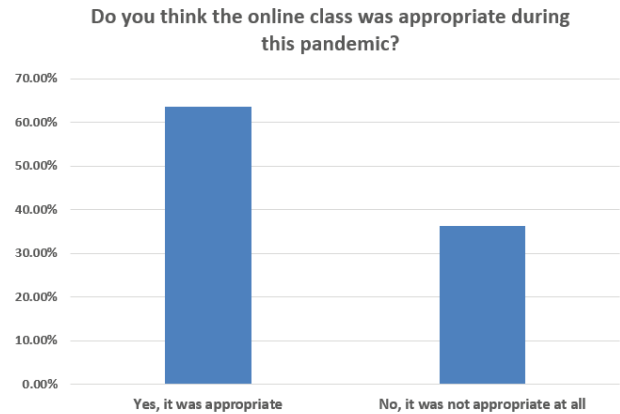


Fig. 7. Students opinion about the online class.

The instructors got some positive feedback as well. Around 36.4% of the students said it was appropriate as they had nothing important to do at home and sooner or later, they had to complete the semester. Some students also suggested that our authorities should introduce the online platform earlier to the students as it is very popular in other developed and developing countries. That might help students to prepare themselves for situations like this.

## B. Qualitative Findings

Although by getting decent attendance and good performance the instructors were happy with the semester but students faced a lot of troubles throughout the semester. Because of the pandemic, the government announced a general holiday for more than 3 months and most of the students went back to their hometown. Most of the villages in Bangladesh do not have a constant electricity supply. Only 58.6% of rural areas now have electricity connections and yet they face around 4 hours of blackout daily [17] [18]. Moreover, most of the students do not have Wi-Fi in their hometown. So, they have to rely on mobile data which is also difficult for them to manage during the lockdown hours. Although most of the places in Bangladesh have cellular network coverage, students are not comfortable with online classes via mobile as they have no prior experience with it. This kind of scenario puts the students in a very difficult position to concentrate on their studies. One comment came out as follows:

*"I am staying in a remote village in Kishoreganj, where electricity and internet speed are scarcely found by me. Again, I am not capable of understanding the lectures for the interruption in the middle of classes due to the discontinuation of electricity. From home, internet connection is a rare term. I can't prepare myself for the semester final of MAT116. Which will cause lower cgpa and will affect my future results as well."*

Again, due to COVID-19, everyone is at risk, many of the students and their families are already affected and some of them have lost their dear ones. In this situation, the educational situations should not force the students for online classes or online assignments. Even though many students are responding positively, some of them are taking risks in their lives to attend the class properly.

Moreover, most of the students did not think of this kind of scenario in their life. During the pandemic period, many of them got scared and mentally broken down seeing the outbreak around them. They are not mentally stable to concentrate on classes and assignments. Our educational institutions should focus on that and help them to recover their mental health rather than causing extra pressure by giving deadlines for the final assignment.

Finally, following the developed countries to move to the online platform to finish the semester was not a good idea at all. People in developing countries like Bangladesh do not have enough resources to respond to this situation like the developed countries. However, those who have the resources, they do not have enough knowledge to utilize the online features especially first-year and second-year students, as they were never instructed to do so. Our educational institutions should add some online sessions to the regular academic calendar to make students ready for this kind of situation.

## V. CONCLUSION

The mentioned study vividly represents the current divergent acceptance of online learning by Bangladeshi university students. Students are participating in the classes virtually yet they are not comfortable enough to continue such procedure. After wrapping up this study, we will share our findings in a proper way with appropriate authority so that they can take necessary steps and be prepared for any emergency like this. Also, we will continue our research on a larger scale to get a decent scenario from other sectors of educational institutions and prepare a journal by analyzing all the data. We encourage other researchers in this field to explore the current conditions of developing countries like Bangladesh and specify how they react during pandemic like the COVID-19.

In order to fulfill the vision of being a digitalized country, Bangladesh has to overcome these limitations towards e-learning technology. To conquer this, the higher education institutions (HEIs) of Bangladesh have to come forward to generalize the norm of using web-based educational tools both by the teachers and the students. Considering the lagged behind situation of Bangladesh in online education, an open-minded aspect of culture and technological growth can ensure a faster growth towards the development of e-learning. However, some effective steps have already been taken such as using national research networks and social media to circulate the video tutorials of the education materials like other developing countries of the world e.g. India, Nepal, Pakistan, etc. Nonetheless, the virtual classroom environment is currently in a theoretical mode in Bangladesh yet it needs to be practically emphasized merging with regular classes. It would help the students to be prepared for dealing with situations like COVID-19 has brought. Moreover, the government of Bangladesh should confirm uninterrupted internet and electricity service so that students can get the proper online learning environment. Although as a developing

country it is not possible to get changed overnight, it will be a gradual process of changing towards betterment. Collaborative learning both in online and traditional educational platforms would considerably play a vital role in the fulfillment of the vision of being a digitalized country.

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