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A Study on The Effectiveness of Online Classes In Bangladesh During the Covid-19 Pandemic

Md. Tanjimul Islam[1], Shahid Uddin Fahim[2], Fatema Jahan[3], Humayra Ferdous[4], Md. Ehasanul Haque[5]*

[1]Department of Computer Science & Engineering, American International University-Bangladesh (AIUB), Dhaka, Bangladesh; tanjimul500@gmail.com
[2]Department of Computer Science & Engineering, American International University-Bangladesh (AIUB), Dhaka, Bangladesh; sufahim2020@gmail.com
[3]Department of Aquaculture, Khulna Agricultural University, Sonadanga, Khulna, Bangladesh; bonajahan@gmail.com
[4]Department of Physics, American International University-Bangladesh (AIUB), Dhaka, Bangladesh; hferdous@aiub.edu
[5]Department of Industrial & Production Engineering, American International University-Bangladesh (AIUB), Dhaka, Bangladesh; ehasanul@aiub.edu
*Correspondence: ehasanul@aiub.edu

Abstract

Purpose of the study: This paper aims to investigate the effectiveness of COVID-19 pandemic on online education in Bangladesh through a questionnaire-based survey.

Methodology: A survey was done from 310 students from different private and public universities to find their perspectives about online education in Bangladesh. The Linear Regression method was used for data analysis.

Findings: This survey revealed around 60% people are satisfied on online education system in our country due to getting close interaction and enough effort from the teacher. On the contrary, the remaining students are unhappy by considering their health and mental issues as they are attending long time online classes.

Implications: It is recommended to improve the internet speed, and provide sufficient educational materials, technical training on online education to students in Bangladesh to enhance the effectiveness of online education system during the pandemic period.

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1. INTRODUCTION

The COVID-19 pandemic has made an impact on education at all levels around the world, and Bangladeshis no exception. The epidemic, according to academics and health professionals, will have a long-term impact on education. The COVID-19 epidemic has halted education systems worldwide, affecting about 1.6 billion students in over 200 nations (Khanom et al., 2020). In March 2020, the Bangladesh government ordered the closure of all educational institutions, including all kind of residential halls and dormitories on campus, and students were ordered to return home (Wadud, M. 2020). This pandemic creates a great impact on the student communitiesspecially in Bangladesh and many students may fall off permanently. Unexpected educational institution closures have touched 99 percent of the world's student population, with up to 99 percent of those in low-and lower-middle-income countries affected.

As a result, online learning became a viable alternative to traditional offline or classroom-based learning.Online learning is a type of education in which technology and communication are used to let students learn from far-away places (Adnan & Anwar, 2020). To create a learning environment, online education makes use of internet- based video, audio, and text communication, as well as software. It uses a virtual environment to replace traditional classrooms for online learning, such as chalkboard, whiteboard, and projector-based learning, also known as virtual classes, e-learning, remote learning, and so on (Basilaia & Kvavadze, 2020). Online schooling looks to have both advantages and disadvantages. However, transitioning from a traditional educational atmosphere to a virtual platform is a mammoth task. However, several organizational efforts in a short period of time have shown that change is achievable (Huang et al., 2020). Other countries'online classrooms have put a huge focus on Bangladesh's education system. Virtual teaching-learning, on the other hand, was a novel experience in practically all Bangladeshi educational institutions.

Due to the abrupt cessation of face-to-face classes, both professors and students have had little time to embrace virtual classes and new classroom possibilities. Some researchers have linked semi-online asynchronous assessments to an increase in instructors' views of cheating, while a full online or open-booktest has been associated to a drop in teacher perceptions of cheating. To address the different challenges identified, they advised educational stakeholders (students, faculty, and administration) on solutions to bridge equipment and technology gaps and improve online engineering education (Asgari et al., 2021). Universities can now continue their semesters using online platforms such as Microsoft Teams, Google Meet, and Zoom cloud, according to the University Grants Commission. BDREN is supported by 147 of Bangladesh's 153 governmental and private universities Mahmud et al., 2021).

Online education is possible with the help of BDREN. Within four months, validity was given. Every day,around 3,800 classes are offered online, with over 220,000 students enrolled. An online class would be a good substitute for a face-to-face class (Khanom et al., 2020). A transition from traditional lecture-based classes to more interactive, simulation-based lectures is required to tackle the difficulty of producing a realistic picture inan online class (Khanom et al., 2020).

From the above references, it is obvious that online classes, learning, and teaching are no longer a choice or luxury; they are increasingly a requirement.Students gain much from online classes and online learning, and this is increasing education, with educational institutions concentrating on online programs at the moment. Our study employs a traditionalframework in which the significance of online classes, student-teacher relationships, online class obligations, and other concerns are discussed in a natural manner so that future researchers can better understand the significance of online classrooms. This research will provide light on the significance of online classes in Bangladesh, as well as the importance of online classes from the perspective of students.

The main purpose of the research is to investigate the impact on online education system through a survey from undergraduate students at university level in order to determine the success rate of online classes during pandemic situation.

2. LITERATURE REVIEW

The COVID-19 pandemic has brought about significant changes in education systems around the world. With the closure of schools and universities to reduce the spread of the virus, online learning has become the primary mode of education delivery. Bangladesh is no exception, where schools and universities have been closed since March 2020. This literature review aims to evaluate the effectiveness of online classes in Bangladesh during the COVID-19 pandemic.

A study by Nahar et al. (2020) investigated the likely impact of Covid-19 on private higher educational institutions (PHEIs) in Bangladesh. They found that COVID-19 may create a barrier to the successive growth of tertiary education in terms of dropping enrolment in the coming academic years and also PHEIs may face trouble in the salary payment of their academic and non-academic staff. Even, many staff may lose their jobs. Thus, Covid-19 may psychologically affect the community of PHEIs.

A study by Wang et al. (2021) investigated the effectiveness of online learning during the COVID-19 pandemic in China. The study found that online learning was effective in providing continued education and maintaining academic progress. However, the study identified challenges such as poor internet connectivity and lack of access to technology.

Similarly, a study by Sulaiman et al. (2021) evaluated the effectiveness of online classes during the pandemic in Malaysia. The study found that while online classes were effective in providing continuity of education, they posed challenges such as technical issues, lack of engagement, and limited interaction between students and teachers.

A study by Liyanagunawardena et al. (2020) investigated the effectiveness of online learning during the pandemic in Sri Lanka. The study found that online learning was effective in providing continued education, with students showing high levels of engagement and satisfaction. However, the study identified challenges such as poor internet connectivity and limited access to technology.

In India, a study by Singh et al. (2021) evaluated the effectiveness of online classes during the pandemic. The study found that online learning was effective in providing continuity of education, but there were challenges such as lack of access to technology, poor internet connectivity, and limited interaction between students and teachers.

In Japan, a study by Liang et al. (2021) investigated the effectiveness of online learning during the pandemic. The study found that while online learning was effective in providing continued education, there were challenges such as lack of access to technology and limited interaction between students and teachers.

A study by Kabir et al. (2021) investigated the impact of online classes on the academic performance of undergraduate students in Bangladesh during the COVID-19 pandemic. The study found that while online classes were effective in providing continuity of education, they had a negative impact on students' academic performance, as students struggled to adapt to the online environment.

In contrast, a study by Akhter et al. (2021) found that online classes were effective in maintaining students' academic progress during the pandemic. The study surveyed university students in Bangladesh and found that students perceived online classes to be effective and useful in providing continued education.

Another study by Islam et al. (2020) evaluated the effectiveness of online classes in Bangladeshi schools during the pandemic. The study found that while online classes were effective in providing continued education, they posed challenges for both students and teachers. The study identified issues such as poor internet connectivity, lack of access to technology, and limited teacher training in online teaching.

Similarly, a study by Hossain and Siddique (2021) investigated the challenges faced by university students in Bangladesh during the transition to online learning. The study identified several challenges, including technical issues, poor internet connectivity, and lack of motivation.

A study by Ahmed et al. (2021) evaluated the perceptions of university students in Bangladesh towards online classes during the pandemic. The study found that students had positive perceptions of online classes, with many students preferring online learning over traditional

classroom teaching.
The literature suggests that online classes in Bangladesh during the COVID-19 pandemic have had both positive and negative effects on students' academic performance. While online classes were effective in providing continued education, they posed challenges for both students and teachers, including technical issues, poor internet connectivity, and limited teacher training in online teaching. Future research should focus on addressing these challenges to improve the effectiveness of online classes in Bangladesh.

3. OBJECTIVES

The objectives of this study are listed below:

a. To understand the effectiveness of online classes

b. To evaluate the teacher and student interaction.

c. To identify the health or mental issues

d. To check the availability of educational materials such as Computer, Mobile, Internet.

4. MATERIALS AND METHODS

4.1 Questionnaire

The data about Bangladeshi students' attitudes about online classrooms was collected using an online questionnaire-based survey technique. During the COVID-19 pandemic, we created a google form with ten questions about online classes. The questions were related to the effectiveness, problems, Teacher-student interaction, health and mental impact and possibilities of online classes in Bangladesh during the epidemic. During the COVID-19 outbreak in Bangladesh, the investigation led to the discovery of the suitability of online learning in education.

4.2 Participants

The main goal of this study was to determine how Bangladeshi students felt about mandatory digital and distant learning academic courses in the face of the Coronavirus (COVID-19). There were 310 students in the study's sample. Among the students who participated in the survey were students from public and private universities. The age of the students ranging from 17 to 20 years. All of the students that took part in the survey were enrolled in online classes. After collecting data, regression method was used to find the effectiveness of the online educational system by using SPSS.

4.3 Data Analysis

4.3.1 SPSS:

SPSS is a statistical analysis software package that is frequently used in the field of social science. It's a complete statistical analysis and data management tool with a lot of flexibility. It is one of the most extensively used statistical programs, capable of processing and analyzing even the most complexdata. It is appropriate for both active and inactive users. SPSS offers a lot of features (Nagaiah & Ayyanar, 2016).

4.3.2 Linear Regression:

Linear regression attempts to model the relationship between two variables by fitting a linear equation to observed data (Kumari & Yadav, 2018). One of the variables is considered an

explanatory variable, while the other is considered a dependent variable. To match people's weights to their heights, a modeler can apply a linear regression model. Before attempting to fit a linear model to observed data, a modeler should first determine whether there is a link between the variables of interest. The equation for a linear regression line is Y = a + bX, with X as the explanatory variable and Y as the dependent variable. The intercept (the value of y when x = 0) is a, while the slope of the line is b (Kumari & Yadav, 2018).

4.3.3 ANOVA:

Analysis of variance, or ANOVA, is a statistical approach that divides observed variance data into several components for use in additional tests. A one-way road ANOVA compares two means from two independent (unrelated) groups using the F-distribution. The null hypothesis for the test is that the two means are equal. As a result, a statistically significant result shows that the two means are not equal (Sthle & Wold, 1989).

4.3.4 F-Distribution:

This is an asymmetric distribution, which is widely used in ANOVA. It has a minimum value of zero and no maximum value. The distribution's apex is located near zero, and the lowerthe curve, the higher the f-value beyond that point. A variety of different distribution curves make up the F distribution. The f distribution is linked to chi-square because it is the ratio of two chi-square distributions with degrees of freedom v1 and v2 (note: each chi-square is first divided by its degrees of freedom). The shape of each curve is determined by the degrees of freedom in the numerator (dfn) and denominator (dfd) (dfe). The features of your sample decide this. for example, In a simple one-way ANOVA between groups (Ramirez, 2000).

$$dfn = a - 1$$

$$dfd = N - a$$

Where:

a = the number of groups

N = the total number of subjects in the experiment

4.3.5 Co-efficient:

To determine the strength of a relationship between two sets of data, correlation coefficient formulas are utilized. The formulas yield a value between -1 and 1, where 1 indicates a strong positive relationship, while -1 indicates a strong negative link. A 0 result shows that there is no correlationat all (Ramirez, 2000).

5. RESULTS AND DISCUSSION

The effectiveness of online education during COVID-19 pandemic in Bangladesh has been investigated through a questionnaire-based survey. Around 310 students of age limit 17-20 years from different private and public universities were surveyed to find their perspectives about online education in Bangladesh. Fig. 1. exhibits the Pi-chart showing effectiveness of online classes for the students took part in this survey. Pi-chartshows more than 60% of the students are agreed that online classes are effective for their study.

Figure 1: Pi-chart showing effectiveness of online classes for the students took part in this survey.

Question: Do you think online classes are effective for our country?	
Yes	No
182	128

Figure 2: Pi-chart showing effectiveness of online classes in Bangladesh.

Question: Do you find onlineclasses effective for yourstudy?	
Yes	No
198	112

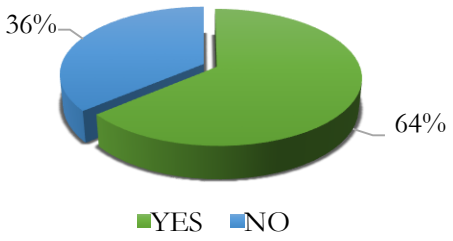

Figure 2 shows the Pi-chart that reveals the effectiveness of online classes in Bangladesh. According to the Pi-chart, around 60% of the respondents believe that online classes are effective for the student at university level in Bangladesh and this data has been collected form different public and private universitystudents of undergraduate level. In addition, 64% of students believe that online classes are beneficial to their education. The results exhibited in Fig. 1 & 2 are quite similar that online classes are effective in bothcases although 40% of the students are not supposed to support the online classes due to having some limitations compared to the face-to-face classes.

This percentage of effectiveness is seen to be raised by making online education materials available such as the internet, mobile or laptop computers, and any online learning platform.

Figure 3: Pi-chart showing the interaction level between teacher and student during online classes.

Question: Could you interact withthe teacher during online classes?	
Agree	Disagree
251	59

Figure 4: Pi-chart showing the perception of students regarding the effort of teachers during online classes.

Question: Do you think teacher'seffort is sufficient during online classes?	
Agree	Disagree
256	57

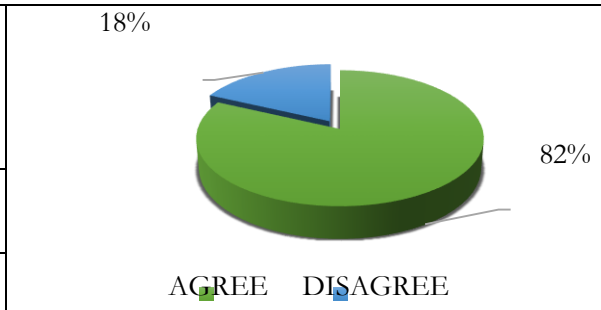

Figure 3 & 4 showed the Pi-chart that explains the interaction level between teacher and student and the perception of students regarding the effort of teachers during online classes respectively. According to thesurvey, 81 percent of respondents believe they can communicate with the teacher during online classes, while the remaining 19 percent disagreed. During online lessons, 82 percent of students agreed that the teacher's efforts are sufficient. The pupils are able to communicate with the teacher since the teacher's efforts are commendable. And if those who disagreed could have a better understanding of the medium ofonline learning, teacher-student interaction would improve.

Linear Regression:

Linear regression method was attempted to establish the relationship between two variables by fitting a linear equation to observed data. One of the variables is an explanatory variable, while the other is a dependent variable.
Table 1 showed the Regression Analysis by using SPSS software for correlating the following two surveyquestions and the R, R-Square, F-distributions and coefficient values were obtained consequently. This survey was conducted on a web-based questionnaire using Google form over 10 days period (April 20-April30). After analyzing data from SPSS, we found R=0.556, R Square=0.309 and Adjusted R-square=0.307.This R-square value indicates that 30.9% of the variance in "online class effectiveness for our country" predicted from the variable "online classes effectiveness for our study".

- Do you think online classes are effective for our country?
- Do you find online classes effective for your study?

Table 1: The Regression Analysis by using SPSS software to find out the R, R-Square, F-distributionsand coefficient values.

Regression

[DataSet1]

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	10. Do you find online classes effective for your study?[b]	.	Enter

a. Dependent Variable: 1. Do you think online classes are effective for our country?

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.556[a]	.309	.307	.411

a. Predictors: (Constant), 10. Do you find online classes effective for your study?

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.219	1	23.219	137.712	.000[b]
	Residual	51.930	308	.169		
	Total	75.148	309			

a. Dependent Variable: 1. Do you think online classes are effective for our country?

b. Predictors: (Constant), 10. Do you find online classes effective for your study?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.223	.039		5.753	.000
	10. Do you find online classes effective for your study?	.570	.049	.556	11.735	.000

a. Dependent Variable: 1. Do you think online classes are effective for our country?

Table 2: showed the Regression Analysis by using SPSS software for correlating the following two survey questions and the R, R-Square, F-distributions and coefficient values were obtained consequently. After analyzing the data from SPSS, we found R=0.343, R Square=0.117 and Adjusted R-square=0.115. This R- square value indicates that 11.7% of the variance in "interact with the teacher during online classes" predictedfrom the variable "teacher's effort during online classes". Majority of the surveyed students think teacher's effort is sufficient during online classes.

- Could you interact with the teacher during online classes?
- Do you think a teacher's effort is sufficient during online classes?

Table 2: The Regression Analysis by using SPSS software to find out the R, R-Square, F-distributions and coefficient values.

Regression

[DataSet2]

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	7. Do you think teacher's effort is sufficient during online classes?[b]	.	Enter

a. Dependent Variable: 6. Could you interact with the teacher during online classes?

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.343[a]	.117	.115	.370

a. Predictors: (Constant), 7. Do you think teacher's effort is sufficient during online classes?

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.608	1	5.608	40.965	.000[b]
	Residual	42.163	308	.137		
	Total	47.771	309			

a. Dependent Variable: 6. Could you interact with the teacher during online classes?

b. Predictors: (Constant), 7. Do you think teacher's effort is sufficient during online classes?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.526	.049		10.740	.000
	7. Do you think teacher's effort is sufficient during online classes?	.347	.054	.343	6.400	.000

a. Dependent Variable: 6. Could you interact with the teacher during online classes?

According to the survey results, the majority of students have high-speed or dependable internet connectivity for online classes. The survey results also exhibited the level of satisfaction by the teacher's effort and interaction between teacher and student during online classes. In virtual communication, 'interaction' must be a necessary component. Because online classes lack the impact of face-to-face classes, they must be more engaging to keep students engaged and produce good results. Since online education is the only option available while the pandemic is raging, there is a need to ensure quality devices and accessories by the organization for strong and reliable internet connection as well as clear sound and visibility during online classes. Students and parents need to be contacted to ensure logistical support by their side.
Students must not only learn how to deal with fast-paced online lessons, but also have a strong computerand technical background in order to benefit from their online lectures. Such students can manage their studies successfully and without difficulty, but when it comes to conducting group assignments without face-to-face interaction with their classmates, they have a lot of issues.

6. LIMITATION

It is the first time in Bangladesh that the online education trend has been implemented on a large scale, but in terms of teaching and learning, as well as assessments, the online trend has run into some unavoidable conditions, which have been discussed in previous literatures. In terms of online education evaluation, the variety and manner in which are distributed in an online environment are limited. Students and teachers have expressed a number of concerns about online classes, which are reflected in the data. For the beginners, who are connecting with an online class for the first time, facing difficulties in adapting to this trend. Transitioning from a traditional classroom to computer-based training in a virtual classroom completely changes the learning and teaching experience for them. Secondly, most students are staying at home during the shutdown in various parts of the country with limited internet facilities.

As a result, students use mobile internet, which disrupts online connectivity owing to poor internet signal. Besides, internet access in our country is still prohibitively expensive. There are some technological obstacles, such as a lack of literacy when it comes to using a computer or a smart phone.

There are some lacking from educators' side as well. Because, within a short period of time teachers were required to learn about multimedia presentation such as power point, video and image editing techniques.

Thirdly, students and teachers must download several apps such as Zoom, Teams, Google meet, and others, which might be problematic owing to a lack of prior expertise and the fact that these apps have a limited time to be connected online.

Fourthly, time management has been critical, as Zoom can link individuals online for 40 minutes at a time, but students take time to reply to the lesson owing to technical interruptions. When students arrive in the midst of the lesson, they have the opportunity to learn a little more. Fifthly, it is challenging for professors to handle comments from each student while still keeping them engaged in the materials. Both facilitators and students may find it difficult to adjust to the online environment. Technical difficulties, complexity, and activity sequencing were determined to be among the key barriers to the integration of multimedia applications in the learning environment in previous research.

7. FUTURE DIRECTION

Governments around the world have implemented strict measures such as national lockdowns and social distancing campaigns to prevent the spread of the deadly COVID-19. Our educational system has been hampered by these constraints. We're already working on a study to look into the effects of the Coronavirus, which has had an impact on Bangladesh's educational system. During

the COVID-19 lockdowns, we also plan to examine the effectiveness of virtual schooling. Following data analysis, online classes have some disadvantages and limitations. As a result, we must concentrate on the restrictions and attemptto address the limitations.

- Inability to Concentrate on Screens.
- Technological Issues.
- Manage Screen Time.
- Lack of social interaction.
- Teacher Training.
- Inappropriate for Hands-on Fields.
- Screen exposure may cause health issues among students.
- Irresponsible attitude-lack of attention.

8. CONCLUSION

We concluded that covid-19 totally change our education system. We discovered that students thought online education was a viable option in the current climate. Despite the numerous obstacles that students and teachers have when teaching and studying online, the good news is that conducting online classes is without a doubt a commendable move done by the current administration to reduce the loss of students' academic activities. Students and teachers should be encouraged to complete this assignment properly and should view it as a challenge to complete in a timely manner. Students must remember that they are the most important stakeholders, and they must be self-motivated to take an active interest in responding to online classes with their best efforts.

- Here both positives and negatives to online education.
- Online class not suitable for everyone.
- In these times of lockdown and restrictions, online classes are extremely beneficial.
- Educational materials availability.
- The teaching and learning activities went well.
- Student face health or mental issue to attend a long-time online class.
- Online classes are not the same as in-person classes.

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Author's Biography:

Tanjimul Islam is currently working as a chief executive officer (CEO) at TNR Software. He earned his Bachelor in CSE degree from the Department of Computer Science, Faculty of Science and Technology, American International University-Bangladesh (AIUB). He is now doing his master's from the Department of Computer Science, Faculty of Science and Technology, American International University-Bangladesh (AIUB).

Shahid Uddin Fahim is currently working as an Associate in Quantanite. He has completed his Bachelor's degree from the Department of Computer Science, Faculty of Science and Technology, American International University-Bangladesh (AIUB).

Fatema Jahan is currently working as a lecturer at the Department of Aquaculture, Khulna Agricultural University, Bangladesh. She has earned bachelor's and master's degree from the Department of Fisheries and Aquaculture, Bangladesh Agricultural University, Bangladesh.

Dr. Humayra Ferdous is currently the Head and an Associate Professor of the Department of Physics at the American International University-Bangladesh (AIUB). She received her B.Sc (Hons) and M S degree in Physics from the University of Dhaka before she joined AIUB as a Lecturer in 2010. In 2011 she was awarded scholarship by the Norwegian State Educational Loan Fund to pursue her PhD in University of Oslo (UiO), Norway. Upon successful completion of her PhD (Dissertation Title: Study of Changes in Lung Transfer Impedance due to Ventilation Using Focused Impedance Measurement (FIM) Technique) she returned to AIUB in 2015. In 2020, she was promoted to as an Associate Professor. Her prime research area is bioimpedance and respiratory system. In addition to teaching, Dr. Ferdous is currently holding the post Publication Secretary of Bangladesh Medical Association (BMPA). She has successfully served as convener of publication committee and member of scientific committee of International Conference on Physics in Medicine 2020 and 2022 (ICPM-2020 and ICPM-2022), held in Dhaka, Bangladesh. Apart from BMPA, she is also a Life Member of Bangladesh Physical Society (BPS). She held the position of Finance Secretary in BAA in 2015-16. She likes to contribute to the field of sustainable technology and Physics education in Bangladesh. She published several papers also in the relevant field.

Md. Ehasanul Haque has completed his B.Sc. and Masters in Materials Science and Engineering from the University of Rajshahi, Bangladesh in 2008 and 2009 respectively. He received "Gold Medal Award" from the University of Rajshahi for securing top position in B.Sc. examination He received his PhD degree with one of the most prestigious MEXT Scholarship in 2018 and received "University President Award" for outstanding research output from Japan Advanced Institute of Science and Technology (JAIST). He joined American International University-Bangladesh (AIUB) in 2018 and currently working as a Senior Assistant Professor and Head at the Department of Industrial and Production Engineering, Faculty of Engineering. His primary research areas are Nonlinear Optics, Electrodeposition, Corrosion Behavior Study, Nanofabrication, Alloy Formation, Study of Optical, Electrical and Mechanical Properties of Materials, Laser Technology, Microstructure Study, Properties of Carbon Nanotubes, Fabrication of Composite Materials, and their properties and so on.