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Abstract- Education is the backbone of a nation. So every nation emphasizes it with their highest value as development is mostly dependent on education. In the modern era, online classroom conditions naturalized through specialized video conferencing applications. There may be students and instructors to take the class as a traditional classroom. There is at least one current tutor present, and the lesson is completed in real-time at a fixed time, with the students being present. Here, students and teachers can genuinely engage in class. However, a class does not always need a live teacher to inspect students; they can also proceed to their desired place. Sometimes there may be no teacher at all. This type of online classroom is an unsupervised online classroom. It is distinguished by ready-made lessons that the students can receive without the help of an instructor. Examinations can also be automated in this system. So, in any situation and place, an online class can be taken. At the time of COVID-19, all over the world, people are in crisis and are locked down in their houses. The traditional educational system is facing more trouble to continue its activities. In the traditional system, some teachers used to teach various subjects in front of their students in an educational institution.

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Online Classroom Platforms: A Comprehensive Study in the Perspective of Bangladesh

A.H.M Saiful Islam^α, Md Sanju Islam^σ, Shaheena Sultana^ρ & Maria Islam^ω

Abstract- Education is the backbone of a nation. So every nation emphasizes it with their highest value as development is mostly dependent on education. In the modern era, online classroom conditions naturalized through specialized video conferencing applications. There may be students and instructors to take the class as a traditional classroom. There is at least one current tutor present, and the lesson is completed in real-time at a fixed time, with the students being present. Here, students and teachers can genuinely engage in class. However, a class does not always need a live teacher to inspect students; they can also proceed to their desired place. Sometimes there may be no teacher at all. This type of online classroom is an unsupervised online classroom. It is distinguished by ready-made lessons that the students can receive without the help of an instructor. Examinations can also be automated in this system. So, in any situation and place, an online class can be taken. At the time of COVID-19, all over the world, people are in crisis and are locked down in their houses. The traditional educational system is facing more trouble to continue its activities. In the traditional system, some teachers used to teach various subjects in front of their students in an educational institution. But there are still a lot of opportunities present to shift the class on the internet platform and continue to proceed. Here we have studied various kinds of online classroom platforms and tools so that both teachers and students can select their platforms as per their requirements in Bangladesh as well as all over the world. For the online platforms, the continuous study is going in a full swing here in Bangladesh from the primary sector to the university sector.

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I. INTRODUCTION

Education has changed a lot in the last couple of decades. Technology has completely changed our learning experience and has made it more fruitful. Education must originate with these new learning styles. For instance, a popular way of Accommodating these new learning styles is through virtual classrooms or online classrooms. An online classroom is an educational ambience where users can interlude, convey aspects, and concern with educational resources at the time of performing in a virtual place. The medium is mostly through a video-conferencing application. It allows many participants through the internet to be connected at the same time from

anywhere in the world. An online classroom is also called a virtual learning environment (VLE). With the online environment, concepts and collaborators are never far away. Mobile accessibility also grants participants greater flexibility. Students are working with each other more than ever because of virtual classrooms. One of the identifying features of separating online learning conditions from typical classrooms is the flexibility of the way lessons are offered. In traditional learning, students sit in a classroom, listening to a teacher, and taking notes. On the contrary, virtual classrooms give learners greater liberty to engage with the components creatively and react based on their inputs. Traditional learning tends to be synchronous, where virtual learning seems to be asynchronous. Online classrooms deliver new modes for tutors to give radiating, amusing, and efficient learning resources. So, innovation is the hallmark of online learning-for, both learners and lecturers. Some interactive online classrooms are Gamified lessons, flipped classrooms, and scenario learning. And there are also a lot of virtual classroom options available with both free and cost[3]. Today all over the world people are facing much trouble for the pandemic COVID-19. People are locked down in their homes. And the virus is spreading at high speed. As per the last update of the World Health Organization on 20 April 2020 (06:00 GMT+6), there are 2314621 confirmed cases, 157847 confirmed deaths and 213 countries, areas, or territories are with COVID-19. Every institutional function, excluding emergency services and limited hour bank services, has been closed for an uncertain time. There is no perfect assumption when to get on the daily activities[1]

We have started with the Introduction part in Section I. In the next sections, we have discussed the online classroom and its benefits, limitations, and future. Section III represents the insights of mobile and internet in Bangladesh. Section VI introduces our online educational activities in Bangladesh. In Section VIII, we have made a comparison of various online classroom platforms in detail. Section IX concludes the paper.

II. THE ONLINE CLASSROOM

An online classroom is an internet-based, flexible, afford- able, and non-restricting learning environment that sanctions teachers and students to cohere, interlude, assist and illustrate conjectures. It has tumbled most of the usual obstructions to synchronous

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learning: cost, distance, and timing. An online classroom should have some features[35][3]. Such as:

- Video conferencing capability, so lecturers and learners can see each other.
- Audio conferencing ability to hear each other.
- Real-time text chats, for messaging each other.
- Interactive online whiteboard to interact much more collaboratively and not just rely on video or audio.
- Library of learning materials so that teachers can provide more relevant, rich, and structured lessons to the students.
- Teacher tools and controls just like in a physical classroom to monitor the class and are much more feasible online.

III. BENEFITS OF ONLINE CLASSROOM

There is much coherence between a traditional education system and an online classroom. Learning through an online classroom gives many advantages that the campus-based system doesn't provide. A few have made a list of top benefits [3] [33] [34] [32]. For instance:

- Access to Class from Anywhere: In any situation, classes can be taken online at any place. All one needs is a laptop or other digital device.
- Effective Time Management: Classes can be taken at any time based on any situation. No need to travel and not worry about wasting extra time.
- Sharpened Digital Skills: There are both opportunities for whetting digital skills and gaining more knowledge in the field of online classroom activities. By studying in an online world, one will be not only doubtless but also bold to use interactive online tools like virtual examinations, drop boxes for home-task, assistance gadgets, e-mail communications to teachers, and others.
- Immediate Feedback on Tests: After any test, no need to wait for a long time. It can be obtained within a short time.
- Knowledge Retention: Online education modules are referred to as micro-learning, which helps learners to discover what they require faster, manageable, and notable. It may appear, there are more benefits for propensity and participation in traditional classrooms, but this is not necessarily right. In online classrooms, anyone can inform his teacher through messaging, or one can use the interactive comment and share elements for engaging and connecting. Features, for example, comment, and rating allows tutors to fix the quality of their content and to synthesize accordingly to the efficient learning realization.

IV. LIMITATIONS OF ONLINE CLASSROOM

Online education has many profits to deliver, still unluckily; there are some losses also. Demerits are

not much as the merits without doubt, but there are indeed some views of the online classroom that some sharers might take as inadvertence. Few main limitations have made a list[4]. Such as,

- Higher Internet Cost: Strong internet availability is the foremost thing to be in the online classroom. But it is a matter of sorrow that it is not possible to provide a reliable connection all the time and everywhere. But it cost much to get this kind of connection.
- Additional Digital Training: Additional digital training is another limitation of the online classroom. Perceiving online learning completely is essential for the online classroom. Some of the tutors and students do not maintain proper lessons of using the given e-Learning gadgets. So, they face difficulties to interact and attain these gadgets.
- Infrastructure Challenges: There is a requirement of using advanced technology and proper network infrastructure for establishing an online classroom. We have many affordable and feasible resolutions for the ascending necessity and adaptability of online classes. But some of the organizations might not propose to offer it for its high-cost installation.

V. FUTURE OF ONLINE CLASSROOM

In the upcoming time, we hope for the online classroom to spread more AI and VR. As the virtual classroom is enduring to spread, we expect to have more innovation in emerging technologies. At the forefront are Artificial Intelligence and Virtual Reality. While these are still searching their footing, they are on their way and will have numerous applications across learning platforms in the coming years. There has been much enhancement in the improvement of electronic media from the beginning of the last century. We have surpassed the obstacles of costly and speedy internet. So, many neoteric organizations have manifested to fully incorporate e-Learning through an online classroom. So that they can simplify learning and development for both employees and learners. Now we can have field visits just by sitting in a classroom. Nevertheless, tech organizations such as Google have now made it true with their virtual reality system. Technological advancements are now switching educational stages. It is also making them free from time and physical location. Today, online classrooms have already stepped into the learning world. A lot of innovations are on their way of coming to the education sector with these. There will be a classroom scenario treating an e-Learning framework with absolute exactness. It will anticipate the learners to forget about their actual presence and the long distance between them and the instructor in the future.

VI. INTERNET AND MOBILE INSIGHT OF BANGLADESH

Bangladesh is a south-east Asian country with a small area. But it has a large population where its literacy rate is rising day by day. And it is a land of opportunities where digitalization is making its way into the deep. Traditional and online activities are both active in the field of education here. Anyone with a desktop or laptop or mobile can be connected to the virtual world with an internet connection. In Table??, we can see the internet and mobile connection statistics of Bangladesh concerning its population. A good number of people are present to use the internet in Bangladesh. Though most of them use mobile internet broadband connection is also impending. So it is not impossible to implement online class activities in Bangladesh regularly. And we can get the information from Table 2 about it.

Table 1: Bangladesh Key Digital Statistical Indicators [31]

Total Population	167.2 million
Internet Users	91.2 million
Active Social Media Users	34 million
Mobile Connections	157.2 million
Active Mobile Social Users	32.2 million

Without having a strong internet connection it is not possible to get into Online Classroom. Though it is costly to get a better one here a good one can be got within a reasonable rate here. From the perspective of Bangladesh, we can see the internet speeds in Table 3.

Table 2: Internet Users in Bangladesh [31]

Description	Number
Total number of active internet users	91.82million
Internet Users as a percent of total population	55percent
Total number of active mobile internet users	86.42million
Mobile Internet Users as a percent of total population	52 percent

Most of the people in our country use mobile phones heavily in their daily activities. As technological kinds of stuff cost more in this country, people are satisfied with their computer alike mobile phones. And it is possible to get a smartphone at a reasonable price as we have many mobile manufacturers here. Here in Table 4. we see the mobile connection types in our country.

Table 3: Internet Speeds in Bangladesh [31]

Description	Number
Average Speed of Broadband Internet Connection	9.06 MBPS
Internet Users as a percent of total population	18.70 MBPS

As a developing country, its literacy rate and per capita income are rising and it is going at a high speed. And one of the best reasons behind its development is

Education. Bangladesh is emphasizing Education highly. We also see in Table 5. the demographic and economic indicators of Bangladesh. There are two types of internet users in Bangladesh and we have seen it from Table 2. But we see a huge difference between mobile and broadband internet users there. Most of the people are suitable with mobile phones. We can analyze it through Table 1.

Table 4: Mobile Connection Types in Bangladesh [31]

Description	Number
Total Number of Mobile Connection	157.2 million
Mobile Connection as a percentage of Mobile Connection	94 percent
Percentage of Prepaid Mobile Connection	97 percent
Percentage of Postpaid Mobile Connection	3 percent
Percentage of Broadband Mobile Connection	43 percent

Previously we have described mobile manufacturers in Bangladesh. Mobile is like a small computer with a lot of advantages. So, with the statistics, we can say that it is feasible to maintain online classroom activities in a developing country named Bangladesh. And it will be able to contribute to building a Digital Bangladesh.

Table 5: Essential Demographics and Key Economic Indicators [31]

Total Population	167.2million
Female Population percentage on whole	49.6 percent
Male Population percentage on whole	50.4 percent
Annual Change in Population Size	+1 percent
Median Age	27.5 years
Urban Population	37 percent
GDP per Capita	3869 dollar
Total Literacy Age(15+)	73 percent
Female Literacy Age(15+)	70 percent
Male Literacy Age(15+)	76 percent

VII. ONLINE CLASSROOM ACTIVITIES IN BANGLADESH

Bangladesh is a developing country. It is emerging day by day with its resources. Though traditional systems are more happening here now a day's new technological system is also preferable with the traditional one. So, online classroom activities have also been started with a limited portion in Bangladesh. TABLE 6: Educational Statistics of Bangladesh in 2018[2]

Bangladesh has a huge education society containing many institutions and its teachers and students. We can observe the quantity from Table 1. Like other people in the world, the people of Bangladesh are also facing a crisis at the time of COVID-19. It is so dangerous that life has been stuck in homes for days long as per the Government's Rule and Safety. All the institutions excluding emergency services and banking are closed in most of the countries. So, all educational institutions are also closed. But they are facing many problems to continue one of the noblest things in the world, and that is Educating. So they are shifting their classes to an online setting. Going through Fig. 8, we can see there are a huge number of students studying at different educational institutions in Bangladesh. They can surely be benefited from the online classroom platforms.

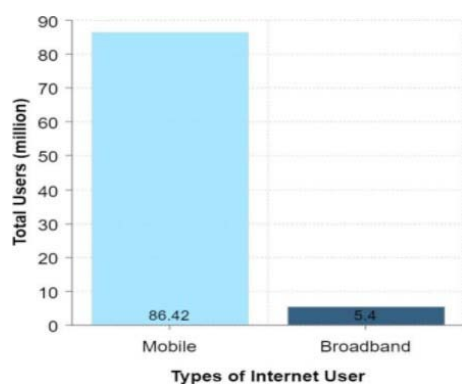


Fig. 1: Comparison of different types of internet user in Bangladesh [31]

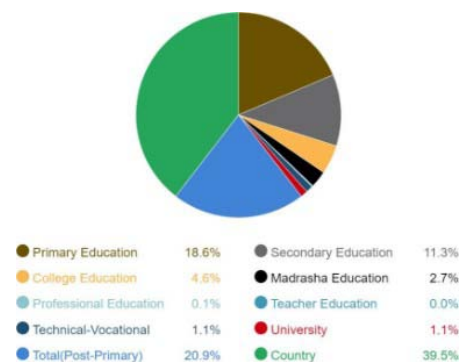


Fig. 2: Different types of education and no. of students in Bangladesh (notitle, n.d.)

Table 7: Educational Statistics of Bangladesh in 2018 (notitle, n.d.)

Name	Features	Pricing	Source
GoToMeeting	Screen sharing, mobile conferencing, meeting recording and transcription, video and voice conferencing	Professional-pack Costs USD12 per month for 150 participants, Business-pack costs USD16 per month for 250 participants.	[6]
Easymeeting	Free meeting room in the cloud, access to Easy meeting directory, available on Android and iOS.	Single license for USD19 a month, Team license for USD239 a month (includes 10 virtual meeting rooms).	[5]

At this crisis moment like COVID-19, teachers of different educational institutions are instructed to take their classes online. Like other private universities in Bangladesh, Notre Dame University Bangladesh is also taking its classes in online classrooms. Faculties and students are also taking their classes regularly at their routine time. So that they can get enough time to do their other work. And mainly to be at home, which is the main thing to be safe in the COVID-19 situation. All the people are playing their roles in tackling this tough situation.

Quality teaching and ethical formation have been conferring and rendering to youngsters by the Holy Cross Congregation in Bangladesh. Most of them have attained competency in various occupations. They have also stood out as committed citizens to serve Bangladesh with inscription. 'Notre Dame' is a brand that symbolizes excellence in the education sector of Bangladesh. At the crisis moment like COVID-19, they are continuing their educational activities on online platforms. So that the students don't face any kind of study-related problem in their career.

VIII. AN OVERVIEW OF ONLINE CLASSROOM PLATFORMS

Online classroom and learning activities are being incorporated by numerous organizations. They are now working with the advancement of online classroom software and tools. But it is difficult to ensure learner's inclination with both innovating educational stages and advancement in technology. Here we have discussed various online classroom platforms with their features, prices and sources in Table 7 to 10:

ProfiConf	Cutting-edge security to keep data safe, web-based solution without the need to download anything, share screens, ability to record the conference.	Free plan for meetings with up to 2 participants, Pro plan is priced at USD12 per month, and the Premium plan costs USD25 per month.	[7]
ezTalks	HD Video-Audio calling, file screen sharing, instant messaging, interactive whiteboard.	The Standard, Pro and Business plans (for 100, 200 and 300 attendees) cost USD13, USD39, and USD65	[11]
Web Room	Document and File sharing, screen-application sharing, interactive whiteboard.	per month Free	[28]
BlueJeans	Real-time Intelligence, unparalleled interoperability, seamless integration.	Standard license for USD12.49 per month, limited to 50 participants per meeting. Pro license for USD17.49 per month, limited to 75 participants per meeting.	[9]
UberConference	Share screen, voice intelligence, HD video meetings.	Up to 10 participants Uber Conference is free, but requires a PIN for each user. For 11-100 attendees, a subscription costs USD15 per month.	[24]
Mikogo	Screen sharing feature, multi-user whiteboard and annotation tool.	USD14 per month, to be used only for 1:1 meetings. For meetings with up to 25 people, payment is USD16 monthly.	[19]
Vast Conference	Conference Calling, worldwide Coverage, exceptional audio quality.	The Essentials, Standard, and Professional plans (for 10, 100, and 250 attendees) cost USD11.99, USD15.99, and USD31.99 per month.	[26]
join.me	Claim your own personalized URL, customize meeting back- ground, better audio, screen Sharing	join.me's LITE, PRO, and BUSINESS plans are priced at USD10, USD20, and USD30 per month respectively.	[17]

Table 8: Educational Statistics of Bangladesh in 2018 (notitle, n.d.)

Name	Features	Pricing	Source
ReadyTalk	Host audio and video meetings with up to 125 attendees through desktops or mobile devices, customize participant profiles and assign roles for efficient meeting management.	Standard and Premium Subscription cost USD12 and USD24 per month.	[20]
Spread	Share screen, remote control desktop, interactive whiteboard, recording and archiving.	Prices USD199 per year for 20 persons and USD499 per year for 100 persons.	[23]
Vedamo	Online whiteboard, video conference, screen sharing, recording.	Unlimited video sessions for 25 participants are priced at USD25 per month	[27]
GOMEETNOW	Share-view desktop, collaborate in real time, record and playback, generate attendance reports	Basic costs Free for 2-100 participants and the time is only for 40 minutes. But the Pro version costs USD12.95 per month for 2-100 participants with unlimited sessions	[13]

Ring Central Office	Chat, HD video calling, screen sharing	It comprises four packages like Essential, Standard, Premium, Ultimate that cost USD19.99, USD24.99, USD34.99, USD49.99 for 20, 100, 200, 200 participants respectively	[21]
Brain Cert	Scalable, secure, whiteboard editor support, real-time collaboration	It prices three packages like Basic, Pro, Business cost USD39, USD99, USD259 per months for unlimited students and 5, 25, 50 teacher accounts	[10]
Unlimited Conferencing	Unlimited minute, custom greeting, free recording	The Basic, Plus, Pro and Premium plans (for 5, 10, 25 and 100 attendees) cost USD7.95, USD11.95, USD 23.95 and USD39.95 per month	[25]
Adobe Connect	Adding QA-polls games, editing and recording features, inbuilt storage space, VOIP integration	Adobe Connect Meeting costs USD50 per month for hosting meetings with up to 25 participants, Adobe Connect Webinar is priced at USD130 a month	[8]

Table 9: Educational Statistics of Bangladesh in 2018 (notitle, n.d.)

Name	Features	Pricing	Source
Fuze	Ability to save and share meeting files, up to 1GB of cloud storage for all its plans	It offers three plans: Free, Pro and Enterprise. The free allows a maximum of 25 participants while the Pro costs between USD8- USD14 and hosts a maximum of 125 participants. The Enterprise comes with a monthly rate of over USD20 and the maximum number of people can be discussed with the company	[12]
Zoom	Supports HD audio and video calls, content sharing with up to 1000 meeting participants, synced end to end with your calendar via Outlook, iCal, and Gmail	Basic plan is free for holding meetings with up to 100 people but it is limited to 40 minutes. Its pro plan costs USD14.99 per host and has to be paid monthly	[30]
MegaMeeting	Video Audio Conferencing Services, webinar hosting and web conferencing, screen and file sharing, recording	Starter edition costs USD19 per month if pay annually, and USD29 if pay monthly. Pro edition costs USD29 per month if pay annually, and USD39 if pay monthly. Enterprise edition costs USD79 per month if pay annually, and USD99 if pay monthly	[18]
Google Meet	Schedule meetings on the fly, lightweight app version runs smoothly on iOS and Android devices, integrated with Google Calendar and Google Doc, access all of Google's apps from one window	G Suite pricing starts as low as USD6 per user per month for Basic, USD12 per user per month for Business, and USD25 per user per month for Enterprise	[14]
Skype	Audio and HD video calling, smart messaging, screen sharing, live subtitles, call recording, private conversations	Skype for Business is a free tool that can facilitate meetings with up to 250 participants. It is integrated with MS Office apps and accessible via iPhone, Android, and PC/Mac devices	[22]

Table 10: Educational Statistics of Bangladesh in 2018 (notitle, n.d.)

Name	Features	Pricing	Source
Zoho Meeting	No download, screen sharing, audio-video, recording, secure session	Costing for meeting and webinar differs. For meeting is prices USD10 per month for monthly and USD8 per month for yearly payment both for 100 participants. But in webinar it depends on persons. For in- stance it costs USD 19. USD 29, USD 39, USD 79 per month on monthly payment and USD15, USD23, USD31, USD63 per month on annual payment on the basis of participants number 25, 50, 100, 150	[29]
ELECTA LIVE	Rich markup and annotation tools, screen sharing and remote control, power points files and images, text-chat, session notes	It has three packages named Easy, Pro, Professional that cost USD29.90, USD39.90, USD69.90 per month with 1, 1, 3 teacher rooms	[15]
Intermedia Unite	Audio and video conferencing, file and screen sharing, and document management	Contact with the sales team	[16]

Being in a developing country so we have to think about the lowest cost with most facilities. Though it entirely depends on one’s own choice but based on the Tables, we can say that Skype, Google Meet, UberConference, WebRoom, GoToMeeting, BrainCert are much suitable in the perspective of Bangladesh as well as all over the world.

IX. CONCLUSION

In the activities of the online classroom, we can be benefited in many ways. It has broadened many fields of technology in online classrooms. It will save both our time and money. And the remaining can be invested in other mediums. It can also prepare us for the upcoming era of digitalization. It can help us to be familiar with technologies. Online classroom trends are forming like never before. These advanced classrooms are going to stay for a long time. It may happen that the traditional classrooms will be replaced by online ones. Technology is giving us so many things that cannot be counted. For instance, we are getting a new interactive education world for it as it is passing the physical and traditional boundaries. We should never stop learning. There is no limit to that also. Also, it is opening the new education door to the working people who work in the daytime. They can learn new things and enrich their knowledge through online classes. So we should be more familiar in Bangladesh to continue our education regularly whatever crisis like COVID-19 we face at any time. Through this paper, anyone can select their online learning platform as per their requirement. We have tried our best to put all the main features and costing details in a short format.

REFERENCES RÉFÉRENCES REFERENCIAS

1. Coronavirus disease (covid-19) – world health organization. WHO. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>.
2. Data.banbeis.gov.bd. banbeis. <https://data.banbeis.gov.bd>.
3. What is a virtual classroom? Techopedia. <https://www.techopedia.com/definition/13914/virtual-classroom>.
4. What is a virtual classroom?- online learning solutions by raccoon gang. Raccoon. <https://raccoongang.com/blog/what-virtual-classroom/>.
5. Easymeeting.net, Accessed 14 April 2020. Available: <https://www.easymeeting.net>.
6. Gotomeeting, Accessed 14 April 2020. Available: <https://www.gotomeeting.com/en-in>.
7. Proficonf, Accessed 14 April 2020. Available: <https://www.proficonf.com>.
8. Adobe connect, Accessed 15 April 2020. Available: <https://buyconnect.adobe.com>.
9. Bluejeans, Accessed 15 April 2020. Available: <https://www.bluejeans.com>.
10. Braincert., Accessed 15 April 2020. Available: <https://www.braincert.com/elearning-platfor>.
11. Eztalks, Accessed 15 April 2020. Available: <https://www.eztalks.com>.
12. Fuze., Accessed 15 April 2020. Available: <https://www.fuze.com>.
13. Gomeetnow., Accessed 15 April 2020. Available: <http://www.gomeetnow.com/web-conferencing/index.html>.
14. Google cloud, Accessed 15 April 2020. Available: <https://gsuite.google.com/products/meet>.

15. <https://www.zoho.com.>, Accessed 15 April 2020. Available: <https://www.e-lecta.com>.
16. Intermedia, Accessed 15 April 2020. Available: <https://www.intermedia.net>.
17. Join me, Accessed 15 April 2020. Available: <https://www.join.me>.
18. Megameeting, Accessed 15 April 2020. Available: <https://www.megameeting.com>.
19. Mikogo., Accessed 15 April 2020. Available: <https://www.mikogo.com>.
20. Pgi, Accessed 15 April 2020. Available: <https://www.pgi.com>.
21. Ringcentral., Accessed 15 April 2020. Available: <https://www.ringcentral.com>.
22. Skype, Accessed 15 April 2020. Available: <https://www.skype.com/en>.
23. Speed, Accessed 15 April 2020. Available: <https://www.spread.com/ja>.
24. Uberconference, Accessed 15 April 2020. Available: <https://www.uberconference.com>.
25. Unlimited conferencing., Accessed 15 April 2020. Available: <https://www.unlimitedconferencing.com>.
26. Vast conference, Accessed 15 April 2020. Available: <https://www.conferencecalling.com>.
27. Vedamo, Accessed 15 April 2020. Available: <https://www.vedamo.com>.
28. Webroom, Accessed 15 April 2020. Available: <https://webroom.net>.
29. Zoho., Accessed 15 April 2020. Available: <https://www.zoho.com>.
30. Zoom, Accessed 15 April 2020. Available: <https://zoom.us>.
31. Digital in bangladesh 2019 report. Hype, August 2019. <https://hypedhaka.com/digital-data-bangladesh-2019/>.
32. 5 reasons why a virtual classroom better than a real one. dexway, February 28, 2019. <https://www.dexway.com/5-reasons-why-a-virtual-classroom-better-than-a-real-one>.
33. Characteristics of a virtual classroom. LearnDash, January 2020. <https://www.learndash.com/characteristics-of-a-virtual-classroom>.
34. seven-benefits-of-a-virtual-classroom. Waldenu.edu, January 21, 2020. <https://www.waldenu.edu/programs/resource/seven-benefits-of-a-virtual-classroom>.
35. Alex Asher. Definition - what is a virtual classroom? Learn Cube. <https://www.learncube.com/what-is-a-virtual-classroom.html>.