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Online classes for higher education in Bangladesh during the COVID-19 pandemic: a perception-based study

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Abstract

Purpose – The main purpose of this paper is to find out the perception of different respondents' groups related to the factors that influence the online learning for higher education in Bangladesh during the COVID-19 pandemic.

Design/methodology/approach – A survey through a structured questionnaire was conducted to gather qualitative information from the 250 respondents (university students, faculty members and administrative officers) in Bangladesh. A questionnaire has been used for collecting primary data, which have been selected using the justification method under the non-probability sampling technique.

Findings – The findings of this study indicated that majority of the respondents told that online classes could be more challenging than the traditional classroom because of the technological constraints, digital divide, insufficient data pack to access the material to attend the class, poor connectivity, lack of device, poor learning environment, technophobia, delayed response and incapability of the teacher to handle efficiently the material and communication machineries.

Research limitations/implications – Due to time restriction and the COVID-19 pandemic, the study was constrained only to Dhaka region in Bangladesh.

Practical implications – The outcomes of the work can be supportive to the governing bodies and proprietors of the higher schooling organizations who are forecasting to adopt online education as a consistent movement in the future.

Originality/value – At last, based on outcomes, investigators have presented some recommendations that can be taken into consideration at policy level. The study would help universities to comply with the pressing need to impart experiential learning through online education during the COVID-19 pandemic.

Keywords Online classes, Perception, Higher education, COVID-19, Bangladesh

Paper type Research paper

1. Introduction

At the end of December 2019, the novel coronavirus disease 2019 (COVID-19) was identified in the capital of the Chinese province Hebei, Wuhan city (Sahu, 2020; Sohrabi *et al.*, 2020).

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It spread everywhere in the world afterward. On 11 March 2020, the COVID-19 was declared a pandemic by the World Health Organization (WHO) (Chahrour *et al.*, 2020; Sahu, 2020). Economies of different countries are seriously affected because of COVID-19. Apart from the economy, the outbreak of COVID-19 has created the adverse effect on education sectors in history in which almost 1.6 billion learners in more than 190 countries have been shut out of face-to-face learning and changed on -default to the online mode of education (Shahzad *et al.*, 2020; Azzi-Huck and Shmis, 2020; Zia, 2020; Sangeeta, 2020). Both faculty members and learners are presented to new platforms, for example, Microsoft teams, Google hangouts, Skype, Zoom, WhatsApp and others (Sangeeta, 2020; Saxena, 2020).

On March 16, 2020, the Government of Bangladesh decided to close the educational institutions, including primary to tertiary levels until March 31, 2020, in order to avoid the spread of the infection (Sakib, 2020; Uddin, 2020), and the closure was extended again and again, most recently until January 16, 2021, to control the second wave of coronavirus outbreak (The Daily Star, December 26, 2020). At this moment, it seems, any prediction is tough to tell as to when closures will end entirely (König *et al.*, 2020).The pandemic has affected 36 million learners (Uddin, 2020) and a million teachers in Bangladesh from primary to tertiary level and restricted their homes following WHO-suggested social distancing rules to tackle the virus (Ahmed, 2020). As the result of COVID-19 crisis, online education has evolved a pedagogical switch from offline mode to online mode of teaching learning, from real classroom to Google classroom, from personal to virtual and from conferences to webinars (Mishra *et al.*, 2020).

It is true higher education institutions (HEIs) had to shift face-to-face learning to online, but a small number of HEIs provided online delivery before COVID-19, and many were not ready for the transition (Crawford *et al.*, 2020). Therefore, due to the sudden move from offline to online, faculty members who are not techno-savvy have been facing the difficulties of lack of online education knowledge, primary preparation or support from information technology (IT) teams (Bao, 2020). At the same time, learners have been facing challenges of poor Internet connection, affordability of Internet connection and technological devices and lack of preparedness. A survey carried out, by Islam *et al.* (2020), using 2,038 samples from private and public universities of Bangladesh, revealed that 55% of the students were unable to join online classes because of poor Internet connections, and 44.7% of the students could not attend online classes because of unavailability of devices. In addition, 87% of students believe that online assessment is not useful as compared to classroom assessment, and 82% think that online classroom is not as fruitful as a face-to-face classroom. However, several factors are required to run smoothly an effective and efficient online class, which is most relevant remains unknown (König *et al.*, 2020).

The research is an effort to investigate the perception of different respondents' groups related to the factors that influence online learning in higher education during the COVID-19 pandemic. This paper covers four major sections. Section 2 briefly describes the gathering review of prior literature that emphasized different factors, which provides the basic framework to comprehend the student's perception regarding online education. In Section 3, the research method and hypotheses are developed and the analysis and interpretation of the result is also presented. Finally, Section 4 draws conclusions and offers some suggestions for future research.

2. Literature review

Online learning is a method of education, which is delivered and administered using the Internet. Online learning can be distributed into numerous groups contingent on the quantity of online education, which is combined into the subject, reaching from old style face-to-face education to combined knowledge to exclusive online developments. Ascertain the difference between synchronous and asynchronous online education and how each influences the coach

and learners. Most of the previous studies, such as like Zia (2020), Demuyakor (2020), Bao (2020), Hossain *et al.* (2020), Khoshaim *et al.* (2020), Mosunmola *et al.* (2018), Sun and Chen (2016), Kauffman (2015), Hung *et al.* (2010), Nguyen (2015), Akareem and Hossain (2012), Chizmar and Walbert (1999), Tastle and Wierman (2007), Roper (2007), Smith (2005), Vonderwell (2003), Petrides (2002) and Swan *et al.* (2000), indicated some factors affecting the online classes for higher education.

Online courses must involve contributors doing regular, significant happenings that benefit to keep them focused. The significance of the regularity of communication in making online classes was also explained by Hung *et al.* (2010). It was also found that lack of immediacy in getting answers to their queries was also found to be a challenge in online education (Muthuprasad *et al.*, 2021). It was also reported by Hartley and Bendixen (2001), Petrides (2002), Vonderwell (2003). Hence, care should be taken by the instructor to answer the queries of the learners' immediately. Researchers have also employed self-efficacy instruments in various academic and technology-related courses and observed that it has a positive influence on students' achievement and persistence in specific tasks (Mishra, 2009). Findings reveal that the lockdown, social distancing and self-isolation requirements are stressful and detrimental for many individuals (Nurunnabi *et al.*, 2020). Tendency is a serious concern among university students that can affect educational achievement both positively and negatively (Hossain *et al.*, 2019a).

Kearsley *et al.* (1995) discoursed the effectiveness and impact of online education in graduate learning in the early times of the Internet. In the first time of the 20th century, online teaching was inadequate to few societies of the learning community. It was just like a new measurement to the learning arrangement. Gustafson and Gibbs (2000) discussed the role of implementer in online learning. Deliberations and exchanges between different participants play a significant character in adaptation of new knowledge. Harasim (2000) attentive on this changing of old style to online style of learning. Gender has an important part in embracing online learning with the observations that female students were additionally adoptable with online learning in terms of projects, learning arrangements and relaxation. The current study also emphases on the challenges of online learning, like connectivity of Internet, class connections, etc. Wallace (2003) provided a review of research on relations amongst teachers and learners about online higher education. Students still choose classroom classes over online classes because of many challenges they face when taking online classes, such as lack of motivation, understanding of the material and decline in communication levels between the learners and their teachers and their feeling of isolation caused by online classes. Demir (2018) discussed the benefits and challenges of Facebook as an online assessment tool. An effective online learning depends on too many factors, like presentation skill, content delivery, use of technology, etc. Hossain *et al.* (2019b) suggest that students and academicians are aware of not only the frequent trajectory movements, such as in the classroom, laboratory and library. Sundarasen *et al.* (2020) found that age, gender, academic specialization and living conditions were significantly associated with anxiety levels.

The literature has emphasized different factors which provide the basic framework to comprehend the perception regarding online education. Papers have also emphasized potential blockages for success of online education, though not many papers have endeavored to appreciate the perception of different respondents' groups (university students, faculty members and administrative officers) in the Bangladeshi context. It is comprehensible that only a partial number of remoteness learning platforms were using online methods of education before the COVID-19 situation. We try to fill this gap with our study, drawing insights from the literature in hypothesizing the problem, exclusively concentrating our attention perception of different respondents' groups on the online classes for higher education in Bangladesh during the COVID-19 pandemic. Finally, in our study, we have used the following factors that are affecting the online classes based on the perception

for higher education in Bangladesh during the COVID-19 pandemic (Muthuprasad *et al.*, 2021) shown in the Table 1.

3. Research methodology

The study has been conducted based on primary data. Primary data have been collected using a questionnaire survey. A close-ended structured questionnaire was used. A survey through a structured questionnaire was conducted to gather qualitative information from the 250 respondents in Bangladesh. A questionnaire has been used for collecting primary data, which have been selected using the justification method under the non-probability sampling technique (Rouf *et al.*, 2015). We interviewed university students, officers and faculty members. Five-point Likert type scale is used to measure the perception of respondents in a group. The responses ranged from 1) Highly disagree 2) Disagree 3) Neutral, 4) Agree to 5) Highly agree measuring seven dimensions, which are digital divide, data limit, poor connectivity, issue with the device, poor learning environment, technophobia and virtual presence only. The total reliability obtained on the standardized items using the Cronbach's alpha was 0.93, which means that consistency was achieved in all the items used in the study (Rouf *et al.*, 2018).

After collection of primary data, hypotheses were formulated, and χ^2 test is used to test the hypotheses with 1% level of statistical significance. For analysis of data, SPSS software has been used. This operation was performed by the χ^2 (chi-square) test and an Ho (null hypothesis) was proposed based on the without significant difference between the perception of the respondents (Rouf *et al.*, 2015).

4. Hypothesis test and results

4.1 Perception of the respondents regarding the digital divide for the online classes

Table 2 shows that 44.4.2% respondents' perception of digital divide is affected for the online classes. In total, 35.2% respondents' perceptions are highly agreed; 11.6% respondents' perceptions are neutral; 7.6% respondents' perceptions are disagreed and only 1.2% respondents' perceptions are highly disagreed.

The significance of the differences was examined by undertaking a Pearson chi-square test (χ^2) in order to find any relationship between respondents' perception and the digital

Table 1.
Factors affecting the online classes

Themes	Criteria	Example
Digital divide	Gap between the learners who have ready access to Internet and computers and those who do not	"Not all rural students have the privilege of Internet and laptop"
Data limit	Insufficient data pack to access the material/to attend the class	"Online classes consume large amount of data which is difficult to afford"
Poor connectivity	Interrupted Internet supply that makes the learners difficult to learn	"Dragging of classes due to network problem"
Issues with the device	Lack of device or device incompatibility to the applications used for online classes	"Unavailability of gadgets with some of the students"
Poor learning environment	Lack of congenial learning environment	"Home environment is not suitable for learning as it leads to lot of disturbances from children and relatives"
Technophobia	Instructors' fear of handling information and communication technologies (ICTs)	"Lack of technical expertise of the teacher"
Virtual presence only	No face-to-face interaction between the learners and teachers	Only one-way communication and no scope for interaction

Particulars			Respondents: Students	Faculty	Admin	Total	χ^2
Digital divide	Highly disagree	*N*	3	0	0	3	5.092
		%	1.2	0.0	0.0	1.2	
	Disagree	*N*	13	2	4	19	
		%	5.2	0.8	1.6	7	
	Neutral	*N*	20	5	4	29	
		%	8.0	2.0	1.6	11.6	
	Agree	*N*	69	24	18	111	
		%	27.6	9.6	7.2	44.4	
	Highly agree	*N*	60	19	9	88	
		%	24.0	7.6	3.6	35.2	
Total		*N*	165	50	35	250	
		%	66.0	20.0	14.0	100.0	

Note(s): df = 8, Mood = 4 and $p = 0.748$

Table 2.
The digital divide for the online classes

divide of online classes. The following null hypothesis was tested to determine whether there is a difference among the respondent groups in this regard.

H0. There is no significant difference among respondent groups regarding their perception on the digital divide of online classes.

The results of the Pearson χ^2 test exhibited that the digital divide of online classes is not statistically significant among the respondent groups at the level of 1, 5 and 10% (Chi-square = 5.092, df = 8, $p = 0.748$ and mode = 4), which show that there are similarities among the perceptions of respondent groups about how their digital divide is affected for the online classes. So, the null hypothesis is accepted.

4.2 Perception of the respondents regarding the data limit for the online classes

Table 3 reveals the respondents' perception on data limit is affected for online classes of higher education in Bangladesh during the COVID-19 pandemic. The table shows that 45.2% respondents highly agree; 34.0% respondents agree; 7.6% respondents are neutral; 11.6% respondents disagree and only 1.6% disagree on the data limit. The following null hypothesis was drawn to determine whether there is any difference among respondent groups in this respect.

H1. There are no significant differences in perceptions of the respondent groups on the data limit of online classes.

The significance of the differences was examined by undertaking a Pearson chi-square test (χ^2) in order to find any relationship between respondents' perception and data limit of online classes.

The results of the Pearson χ^2 test exhibited that data limit of online classes is not statistically significant among the respondent groups at the level of 1, 5 and 10% (Chi-square = 10.447, df = 8, $p = 0.235$ and mode = 5), which show that there are similarities among the perceptions of respondents groups on data limit is affected for the online classes. So, the null hypothesis is accepted.

4.3 Perception of the respondents regarding the poor connectivity for the online classes

Table 4 reveals the respondents' perception that poor connectivity affected the online classes of higher education in Bangladesh during COVID-19 pandemic. The table shows that 52.4%

Particulars			Respondents: Students	Faculty	Admin	Total	χ^2
Data limit	Highly disagree	*n*	4	0	0	4	10.447
		%	1.6	0.0	0.0	1.6	
	Disagree	*n*	20	5	4	29	
		%	8.0	2.0	1.6	11.6	
	Neutral	*n*	13	5	1	19	
		%	5.2	2.0	0.4	7.6	
	Agree	*n*	57	11	17	85	
		%	22.8	4.4	6.8	34.0	
	Highly agree	*n*	71	29	13	113	
		%	28.4	11.6	5.2	45.2	
Total		*n*	165	50	35	250	
		%	66.0	20.0	14.0	100.0	

Note(s): df = 8, Mood = 5 and $p = 0.235$

Table 3.
The data limit for the online classes

respondents highly agree; 36.0% respondents agree; 8.4% respondents are neutral; 2.8% respondents disagree and only 0.4% respondents highly disagree on the poor connectivity. The following null hypothesis was drawn to determine whether there is any difference among respondent groups in this regard.

H2. There are no significant differences in perceptions of the respondent groups on the poor connectivity of online classes.

The significance of the differences was examined by undertaking a Pearson chi-square test (χ^2) in order to find any relationship between respondents' perception and poor connectivity of online classes.

The results of the Pearson χ^2 test exhibited that data limit of online classes is not statistically significant among the respondent groups at the level of 1, 5 and 10% (Chi-square = 7.059, df = 8, $p = 0.530$ and mode = 5), which show that there are similarities among the perceptions of respondent groups on the poor connectivity. So, the null hypothesis is accepted.

Particulars			Respondents: Students	Faculty	Admin	Total	χ^2
Poor connectivity	Highly disagree	*n*	1	0	0	1	7.059
		%	0.4	0.0	0.0	0.4	
	Disagree	*n*	6	1	0	7	
		%	2.4	0.4	0.0	2.8	
	Neutral	*n*	15	5	1	21	
		%	6.0	2.0	0.4	8.4	
	Agree	*n*	57	15	18	90	
		%	22.8	6.0	7.2	36.0	
	Highly agree	*n*	86	29	16	131	
		%	34.4	11.6	6.4	52.4	
Total		*n*	165	50	35	250	
		%	66.0	20.0	14.0	100.0	

Note(s): df = 8, Mood = 5 and $p = 0.530$

Table 4.
The poor connectivity for the online classes

4.4 Perception of the respondents regarding the issues with the device for the online classes

Table 5 reveals the respondents' perception on the issue with devices being affected for online classes of higher education in Bangladesh during the COVID-19 pandemic. The table shows that 27.6% respondents highly agree; 45.2% respondents agree; 17.6% respondents are neutral; 8.0% respondents disagree and only 1.6% respondents highly disagree on the issue with devices. The significance of the differences was examined by undertaking a Pearson chi-square test (χ^2) to find any relationship between respondents' perception and poor connectivity of online classes. The following null hypothesis was drawn to determine whether there is any difference among respondent groups in this respect.

H3. There are no significant differences in perceptions of the respondent groups on the issue with devices of online classes.

The results of the Pearson χ^2 test exhibited that data limit of online classes is not statistically significant among the respondent groups at the level of 1, 5 and 10% (Chi square = 9.359, df = 8, p = 0.313 and mode = 4), which show that there are similarities among the perceptions of respondent groups on the issue with device. So, the null hypothesis is accepted.

4.5 Perception of the respondents regarding the poor learning environment for the online classes

Table 6 reveals the respondents' perception that the poor learning environment affected the online classes of higher education in Bangladesh during the COVID-19 pandemic. The table shows that 26.4% respondents highly agree; 42.8% respondents agree; 17.6% respondents are neutral; 11.6% respondents disagree and only 1.6% respondents highly disagree on the poor learning environment. The following null hypothesis was drawn to ascertain whether there is any difference among respondent groups in this regard.

H4. There are no significant differences in perceptions of the respondent groups on the poor learning environment of online classes.

The significance of the differences was examined by undertaking a Pearson chi-square test (χ^2) to find any relationship between respondents' perception and poor learning environment of online classes.

The results of the Pearson χ^2 test exhibited that poor learning environment of online classes is not statistically significant among the respondent groups at the level of 1, 5 and 10% (Chi square = 3.930, df = 8, p = 0.863 and mode = 4), which show that there are

Particulars			Respondents: Students	Faculty	Admin	Total	χ^2
Issues with the device	Highly disagree	*n*	2	2	0	4	9.359
		%	0.8	0.8	0.0	1.6	
	Disagree	*n*	12	2	6	20	
		%	4.8	0. %	2.4	8.0	
	Neutral	*n*	31	10	3	44	
		%	12.4	4.0	1.2	17.6	
	Agree	*n*	74	22	17	113	
		%	29.6	8	6.8	45.2	
	Highly agree	*n*	46	14	9	69	
		%	18.4	5.6	3.6	27.6	
Total		*n*	165	50	35	250	
		%	66.0	20.0	14.0	100.0	

Note(s): df = 8, Mood = 4 and p = 0.313

Table 5. The issues with device for the online classes

Particulars			Respondents: Students	Faculty	Admin	Total	χ^2
Poor learning environment	Highly disagree	*n*	4	0	0	4	3.930
		%	1	0.0	0.0	1.6	
	Disagree	*n*	21	4	4	29	
		%	8.4	1.6	1.6	11.6	
	Neutral	*n*	29	10	5	44	
		%	11.6	4.0	2.0	17.6	
	Agree	*n*	67	24	16	107	
		%	26.8	9.6	6.4	42.8	
	Highly agree	*n*	44	12	10	66	
		%	17.6	4.8	4.0	26.4	
Total		*n*	165	50	35	250	
		%	66.0	20.0	14.0	100.0	

Note(s): df = 8, Mood = 4 and $p = 0.863$

Table 6. The poor learning environment for the online classes

similarities among the perceptions of respondents groups on poor learning environment. So, the null hypothesis is accepted.

4.6 Perception of the respondents regarding the technophobia for the online classes

Table 7 reveals the respondents' perception on how technophobia is affected for online classes of higher education in Bangladesh during the COVID-19 pandemic. The table shows that 14.0% respondents highly agree; 29.2% respondents agree; 30.4% respondents are neutral; 22.0% respondents disagree and only 4.4% respondents highly disagreed on technophobia. The significance of the differences was examined by undertaking a Pearson chi-square test (χ^2) in order to find any relationship between respondents' perception and technophobia of online classes. The following null hypothesis was drawn to determine whether there is any difference among respondent groups in this regard.

H5. There are no significant differences in perceptions of the respondent groups on the technophobia of online classes.

The results of the Pearson χ^2 test exhibited that the data limit of online classes is not statistically significant among the respondent groups at the level of 1, 5 and 10% (Chi-square = 14.845,

Particulars			Respondents: Students	Faculty	Admin	Total	χ^2
Technophobia	Highly disagree	*n*	6	2	3	11	14.845
		%	2.4	0.8	1.2	4.4	
	Disagree	*n*	31	12	12	55	
		%	12.4	4.8	4.8	22.0	
	Neutral	*n*	46	17	13	76	
		%	18.4	6.8	5.2	30.4	
	Agree	*n*	58	12	3	73	
		%	23.2	4.8	1.2	29.2	
	Highly agree	*n*	24	7	4	35	
		%	9.6	2.8	1.6	14.0	
Total		*n*	165	50	35	250	
		%	66.0	20.0	14.0	100.0	

Note(s): df = 8, Mood = 3 and $p = 0.138$

Table 7. The technophobia for the online classes

df = 8, p = 0.138 and mode = 3), which show that there are similarities among the perceptions of respondents groups on the technophobia. So the null hypothesis is accepted.

4.7 Perception of the respondents regarding the virtual presence for the online classes

Table 8 reveals the respondents' perception on how the virtual presence is affected in online classes of higher education in Bangladesh during the COVID-19 pandemic. The table shows that 18.4% respondents highly agree; 24.0% respondents agreed; 22.0% respondents are neutral; 25.2% respondents disagree and 10.4% respondents highly disagreed on the virtual presence. The following null hypothesis was drawn to determine whether there is any difference among respondent groups in this regard.

H6. There are no significant differences in perceptions of the respondent groups on the virtual presence of online classes.

The significance of the differences was examined by undertaking a Pearson chi-square test (χ^2) in order to find any relationship between respondents' perception and virtual presence of online classes.

The results of the Pearson χ^2 test exhibited that the data limit of online classes is not statistically significant among the respondent groups at the level of 1, 5 and 10% (Chi-square = 10.887, df = 8, p = 0.208 and mode = 2), which show that there are similarities among the perceptions of respondent groups on how the virtual presence is affected in the online classes. So, the null hypothesis is accepted.

5. Conclusions and recommendations

The primary objective of the study was to examine the perception of different respondents' groups related to the factors that influence the online learning for higher education in Bangladesh during the COVID-19 pandemic. It is observed that the majority of the students believe a positive approach towards online classes during the COVID-19 pandemic. Online learning was established to be beneficial as it provided flexibility and suitability for the learners. Students chose well-structured content with recorded videos uploaded in university websites. They also indicated the need for interactive sessions with quizzes and assignments at the end of each class to improve the education knowledge. However, the study revealed that most of the students reported online classes have been more challenging than the traditional classroom because of the technological constraints, digital divide, insufficient data pack to access the material to attend the class, poor connectivity, lack of device, poor learning environment,

Particulars			Respondents Students	Faculty	Admin	Total	χ^2
Virtual presence	Highly disagree	n	15	6	5	26	10.887
		%	6.0	2.4	2.0	10.4	
	Disagree	n	39	10	14	63	
		%	15.6	4.0	5.6	25.2	
	Neutral	n	36	13	6	55	
		%	14.4	5.2	2.4	22.0	
	Agree	n	47	9	4	60	
		%	18.8	3.6	1.6	24.0	
	Highly agree	n	28	12	6	46	
		%	11.2	4.8	2.4	18.4	
Total		n	165	50	35	250	
		%	66.0	20.0	14.0	100.0	

Note(s): df = 8, Mood = 2 and p = 0.208

Table 8.
The virtual presence for the online classes

technophobia, delayed response and incapability of the teacher to handle efficiently the material and communication technologies. Therefore, all these issues should be measured while emerging an online path to make it more productive and effective for the learners. It is likely that after the COVID-19 pandemic calms down, we may see a continued rise in learning schemes using online platforms for study aids, as well as students accepting online education for their higher education. According to the findings and data analysis, researchers have tried to offer some suggestions in the light of the problems they have got during their study:

(1) The online lessons will succeed only if all the learners have entered the Internet. Slightest technical supplies such as connectivity of the Internet, software and device requirements should be satisfied for optimal learning knowledge.

(2) Faculty members should inspire their students to engage and study more by offering rewards that can be fulfilled by giving extra marks through short quizzes.

(3) UGC should play a vital role ensuring they follow specific guidelines needed for appropriate content, connectivity, recorded videos along with proper follow-up makes online classes on par with the traditional classroom situation.

References

Ahmed, M. (2020), "How education can continue in this time of crisis", *The Daily Star*, available at: https://www.thedailystar.net/opinion/education/news/howeducation- can-continue-time-crisis-1887079.

Akareem, H.S. and Hossain, S.S. (2012), "Perception of education quality in private universities of Bangladesh: a study from students' perspective", *Journal of Marketing for Higher Education*, Vol. 22 No. 1, pp. 11-33.

Azzi-Huck, K. and Shmis, T. (2020), *Managing the Impact of COVID-19 on Education Systems Around the World: How Countries Are Preparing, Coping, and Planning for Recovery*, World Bank Blog, available at: https://blogs.worldbank.org/education/managing-impact-covid-19-educationsystems-around-world-how-countries-are-preparing (accessed 18 March 2020).

Bao, W. (2020), "COVID-19 and online teaching in higher education: a case study of Peking University", *Human Behavior and Emerging Technologies*, Vol. 2 No. 2, pp. 113-115.

Chahrour, M., Assi, S., Bejjani, M., Nasrallah, A.A., Salhab, H., Fares, M. and Khachfe, H.H. (2020), "A bibliometric analysis of Covid-19 research activity: a call for increased output", *Cureus*, Vol. 12 No. 3, e7357.

Chizmar, J.F. and Walbert, M.S. (1999), "Web-based learning environments guided by principles of good teaching practice", *The Journal of Economic Education*, Vol. 30 No. 3, pp. 248-259.

Crawford, J., Butler-Henderson, K., Rudolph, J., Malkawi, B., Glowatz, M., Burton, R. and Lam, S. (2020), "COVID-19: 20 countries' higher education intra-period digital pedagogy responses", *Journal of Applied Learning and Teaching*, Vol. 3 No. 1, pp. 1-20.

Demir, M. (2018), "Using online peer assessment in an Instructional Technology and Material Design course through social media", *Higher Education*, Vol. 75 No. 3, pp. 399-414.

Demuyakor, J. (2020), "Coronavirus (COVID-19) and online learning in higher institutions of education: a survey of the perceptions of Ghanaian international students in China", *Online Journal of Communication and Media Technologies*, Vol. 10 No. 3, e202018.

Gustafson, P. and Gibbs, D. (2000), "Guiding or hiding? The role of the facilitator in online teaching and learning", *Teaching Education*, Vol. 11 No. 2, pp. 195-210.

Harasim, L. (2000), "Shift happens: online education as a new paradigm in learning", *The Internet and Higher Education*, Vol. 3 Nos 1-2, pp. 41-61.

Hartley, K. and Bendixen, L.D. (2001), "Educational research in the Internet age: examining the role of individual characteristics", *Educational Researcher*, Vol. 30 No. 9, pp. 22-26.

Hossain, S.F.A., Mohammad Nurunnabi, M., Hussain, K. and Saha, S.K. (2019a), "Effects of variety-seeking intention by mobile phone usage on university students' academic performance", *Cogent Education*, Vol. 6 No. 1, pp. 1-18.

Hossain, S.F.A., Xi, Z., Nurunnabi, M. and Anwar, B. (2019b), "Sustainable academic performance in higher education: a mixed method approach", *Interactive Learning Environments*. doi: 10.1080/10494820.2019.1680392.

Hossain, S.F.A., Nurunnabi, M., Sundarasen, S., Chinna, K., KamaludinBaloch, K.G.K., Khoshaim, H.B. and Sukayt, A. (2020), "Socio-psychological impact on Bangladeshi students during COVID-19", *Journal of Public Health Research*, Vol. 9 No. 1, available at: https://www.jphres.org/index.php/jphres/article/view/jphr.2021.1911/746.

Hung, M.L., Chou, C., Chen, C.H. and Own, Z.Y. (2010), "Learner readiness for online learning: scale development and student perceptions", *Computers and Education*, Vol. 55 No. 3, pp. 1080-1090.

Islam, M.S., Tanvir, K.M., Amin, M.A. and Salman, M. (2020), "Online classes for university students in Bangladesh during the Covid-19 pandemic- is it feasible?", *The Business Standard*, available at: https://tbsnews.net/thoughts/online-classesuniversity- students-bangladesh-during-covid-19-pandemic-it-feasible-87454.

Kauffman, H. (2015), "A review of predictive factors of student success in and satisfaction with online learning", *Research in Learning Technology*, Vol. 23, doi: 10.3402/rlt.v23.26507.

Kearsley, G., Lynch, W. and Wizer, D. (1995), "The effectiveness and impact of online learning in graduate education", *Educational Technology*, Vol. 35 No. 6, pp. 37-42.

Khoshaim, H.B., Al-Sukayt, A., Chinna, K., Nurunnabi, M., Sundarasen, S., Kamaludin, K., Baloch, G.M. and Hossain, S.F.A. (2020), "Anxiety level of university students during COVID- 19 in Saudi Arabia", *Frontiers in Psychiatry*, Vol. 11, p. 579750, doi: 10.3389/fpsyt.2020.579750.

König, J., Jäger-Biela, D.J. and Glutsch, N. (2020), "Adapting to online teaching during COVID-19 school closure: teacher education and teacher competence effects among early career teachers in Germany", *European Journal of Teacher Education*, Vol. 43 No. 4, pp. 608-622.

Mishra, L., Gupta, T. and Shree, A. (2020), "Online teaching-learning in higher education during lockdown period of COVID-19 pandemic", *International Journal of Educational Research Open*, Vol. 1, p. 100012, doi: 10.1016/j.ijedro.2020.100012.

Mishra, S. (2009), "E-learning in India", *International Journal on E-Learning*, Vol. 8 No. 4, pp. 549-560.

Mosunmola, A., Mayowa, A., Okuboyejo, S. and Adeniji, C. (2018), "Adoption and use of mobile learning in higher education: the UTAUT model", *Proceedings of the 9th International Conference on E-Education*, E-Business, E-Management and ELearning, pp. 20-25.

Muthuprasad, T., Aiswarya, S., Aditya, K.S. and Jha, G.K. (2021), "Students' perception and preference for online education in India during COVID -19 pandemic", *Social Sciences and Humanities Open*, Vol. 3 No. 1, p. 100101.

Nguyen, T. (2015), "The effectiveness of online learning: beyond no significant difference and future horizons", *MERLOT Journal of Online Learning and Teaching*, Vol. 11 No. 2, pp. 309-319.

Nurunnabi, M., Almusharraf, N. and Aldeghaither, D.(2020) Mental health and well-being during the COVID-19 pandemic in higher education: evidence from G20 countries , *Journal of Public Health Research* Vol. 9 No. 1, doi: 10.4081/jphr.2020.2010.

Petrides, L.A. (2002), "Web-based technologies for distributed (or distance) learning: creating learning-centered educational experiences in the higher education classroom", *International Journal of Instructional Media*, Vol. 29 No. 1, p. 69.

Roper, A.R. (2007), "How students develop online learning skills", *Educause Quarterly*, Vol. 30 No. 1, p. 62.

Rouf, M.A., Habibullah, M. and Islam, M.A. (2015), "Opinion on the higher education of private universities in Bangladesh", *International Journal of Education and Information Technology*, Vol. 1 No. 3, pp. 81-87.

Rouf, M.A., Kamal, M. and Iqbal, M.M. (2018), "Customers' perception of service quality of banking sectors in Bangladesh", *International Journal of Law and Management*, Vol. 60 No. 4, pp. 922-933.

Sahu, P. (2020), "Closure of universities due to Coronavirus Disease 2019 (COVID-19): impact on education and mental health of students and academic staff", *Cureus*, Vol. 12 No. 4, doi: 10.7759/cureus.7541.

Sakib, S.N. (2020), *COVID-19: Bangladesh Shuts All Educational Institutions*, Anadolu Agency, available at: https://www.aa.com.tr/en/asia-pacific/covid-19- bangladesh-shuts-all-educational-institutions/1767425.

Sangeeta, U.T. (2020), "Factors influencing adoption of online teaching by school teachers: a study during COVID-19 pandemic", *Journal of Public Affairs*. doi: 10.1002/pa.2503.

Saxena, K. (2020), "Coronavirus accelerates pace of digital education in India", Ed Tech Review, available at: https://edtechreview.in/e-learning/3984-corona-virusaccelerates- pace-of-digital-education-in-india http://library.ediindia.ac.in:8181/xmlui//handle/123456789/10145.

Shahzad, A., Hassan, R., Aremu, A.Y., Hussain, A. and Lodhi, R.N. (2020), "Effects of COVID-19 in E-learning on higher education institution students: the group comparison between male and female", *Quality and Quantity*, pp. 1-22.

Smith, P.J. (2005), "Learning preferences and readiness for online learning", *Educational Psychology*, Vol. 25 No. 1, pp. 3-12.

Sohrabi, C., Alsafi, Z., O'Neill, N., Khan, M., Kerwan, A., Al-Jabir, A. and Agha, R. (2020), "World Health Organization declares global emergency: a review of the 2019 novel coronavirus (COVID-19)", *International Journal of Surgery*. doi: 10.1016/j.ijsu.2020.02.034.

Sun, A. and Chen, X. (2016), "Online education and its effective practice: a research review", *Journal of Information Technology Education*, Vol. 15, pp. 157-190.

Sundarasen, S., Chinna, K., Kamaludin, K., Nurunnabi, M., Baloch, G.M., Khoshaim, H.B., Hossain, S.f.A. and Sukayt, A. (2020), "Psychological impact of COVID-19 and lockdown among university students in Malaysia: implications and policy recommendations", *International Journal of Environmental Research and Public Health*, Vol. 17, p. 6206, doi: 10.3390/ijerph17176206.

Swan, K., Shea, P., Fredericksen, E., Pickett, A., Pelz, W. and Maher, G. (2000), "Building knowledge building communities: consistency, contact and communication in the virtual classroom", *Journal of Educational Computing Research*, Vol. 23 No. 4, pp. 359-383.

Tastle, W.J. and Wierman, M.J. (2007), "Consensus and dissention: a measure of ordinal dispersion", *International Journal of Approximate Reasoning*, Vol. 45 No. 3, pp. 531-545.

Uddin, M. (2020), "Effects of the pandemic on the education sector in Bangladesh", *The Financial Express*, available at: https://www.thefinancialexpress.com.bd/views/effects-of-the-pandemic-on-theeducation-sector-in-bangladesh-1592061447.

Vonderwell, S. (2003), "An examination of asynchronous communication experiences and perspectives of students in an online course: a case study", *The Internet and Higher Education*, Vol. 6 No. 1, pp. 77-90.

Wallace, R.M. (2003), "Online learning in higher education: a review of research on interactions among teachers and students", *Education, Communication and Information*, Vol. 3 No. 2, pp. 241-280.

Zia, A. (2020), "Exploring factors influencing online classes due to social distancing in COVID-19 pandemic: a business student's perspective", *The International Journal of Information and Learning Technology*, Vol. 37 No. 4, pp. 197-211.

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