

## EDUCATION DURING A PANDEMIC

*A feasibility study of online classes in Bangladesh to counteract potential study gaps caused by COVID-19 related lockdowns*

**Shafia Shama<sup>1</sup>, Javed Iqbal<sup>2</sup>**

### ABSTRACT

Due to the COVID-19-related lockdowns, university students in Bangladesh are at risk of losing months or entire semesters. Online learning can be a potential solution to this problem. Such online learning requires facilities and infrastructure at the universities, a robust data infrastructure at the national level, and adequate computing devices and sufficient and affordable data services for the students.

This study is one of the first in Bangladesh that attempts to gauge the need and readiness of various stakeholders to implement successful online education. This paper reveals that universities may not be ready for online education and that a digital divide exists that may online education inaccessible to a significant number of students.

**Key Words:** Tertiary Education, Online education, Pandemic, COVID-19, Study gap, University Education, Education Quality, Private Universities, Public Universities, Bangladesh.

### INTRODUCTION

UNESCO recently stated that worldwide 1.59 billion students are facing a study gap due to COVID-19. (Giannini, 2020). In Bangladesh, there are over one million university students (BANBEIS 2018), all of whom are now locked out of their universities.

A successful countrywide online education program requires three elements: sufficient resources for online pedagogy possessed by the universities and faculty, sufficient technological resources possessed by the students, and the availability of adequate infrastructure.

However, very little concrete data exists to understand whether the universities and the students have the technical and financial means to make such online classes effective and successful or the availability of broadband communication all over Bangladesh.

Study gaps or loss of academic years would severely impact the social and economic lives of students and all of Bangladesh. Therefore it is important to understand the problem so proper solutions may be proposed.

This paper examines if students have the technological means (smartphone/computers) and connectivity solutions (mobile data/broadband internet) to perform online classes. It also reports on the readiness of the universities as evaluated by faculty members to hold online classes. It is hoped that this paper will provide university administrations and policymakers such as the University Grants Commission a perspective from the students' and professors' points of view.

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## LITERATURE REVIEW AND RESEARCH QUESTION DEVELOPMENT

Humankind encountered three pandemics in the last century, with the Spanish Flu pandemic occurring over 100 years ago. Even before that, during the great plague in 1665, campuses across England were emptied following ‘social distancing’ orders from the authorities and Isaac Newton returned home from Cambridge University, and during that isolated period, he made fundamental discoveries in Mathematics and Physics that changed science. (McDonald, 2020). However, no records of formal or informal education delivery during the great plague remain, leading to the assumption that university education was halted during that period.

The Spanish Flu contagion of 1918-1919 was the most deadly pandemic in human history. Approximately 40 million individuals died worldwide, including approximately 12-17 million individuals in India, of which Bangladesh was then a part. (Murray, et. al. 2006: 2211-2218). Over half a million died in the United States, but universities like Stanford, University of North Carolina, Princeton, Vassar, and many others did not close but quarantined students and continued to deliver education even though the mandatory masks made understanding the professor difficult. (Carlton, 2020).

Cauchemez et. al, (2009: 473-481) discussed various school closure protocols and their efficacy during the 2008-2009 SARS outbreak. They also examined previous pandemics: the 1918 Spanish Flu in the USA, the 1957 French pandemic, and the 2008 Hong Kong outbreak. The difficulty and importance of “Sustaining teaching and learning over prolonged periods of closure” were identified as one of the causes behind higher economic and social costs associated with school closing.

The 2009 SARS pandemic was the first instance during the Internet era where online delivery of education was possible, but also highlighted the difficulties of maintaining educational continuity during school closure. 47% of caregivers of children responded in a US survey that they will need between some to a lot of help educating their children at home. (Blendon, 2008). France planned to use TV and radio to broadcast lessons, coupled with direct interaction between pupils and teachers by telephone or internet communication. (Cauchemez et. al, 2009) However, there is no mention of the educational continuity of university students when they were forced to leave the campus in any of the surveyed literature. Bangladesh was similarly absent in the context of school closing and education continuity during a pandemic.

Dr. Andrew Fauci, one of the leading pandemic experts in the world, told the US Senate that it was unlikely that effective treatment or vaccines would be available by September for the Fall semester at US campuses. (Reiss, 2020). This comment may be applied to Bangladeshi campuses as well which leads to potential study gaps.

Lack of any literature addressing the study gap for university students during pandemics and Bangladesh’s absence in any literature does not necessarily present an insurmountable obstacle in determining the optimum method for delivering education and mitigating study gaps. Online education is well accepted and some of the top universities in the world currently offer fully online Bachelors’ and Masters’ degrees. Bowen and colleagues (2013) showed that there is virtually no difference in the education outcome when students attended a traditional, on-campus course compared to students taking an online course with one hour of face-to-face discussions. They concluded that “students in the hybrid format are not harmed by this mode of instruction in terms of pass rates, final exam scores, and performance on a standardized assessment of statistical literacy.” This is not surprising considering virtual universities and fully on-line libraries were envisioned even during the early days of the World Wide Web (Barnard, 1997). More recently, Shahidullah and Chowdhury (2020) presented a list of technologies and administrative solutions to deliver online education to address campus closure due to the pandemic.

BdREN, a UGC sponsored high-performance computing and networking organization funded jointly by the government of Bangladesh and the World Bank has made available its corporate license for Zoom, a video conferencing software, to all universities in Bangladesh regardless of membership in BdREN. (BdREN, 2020). The availability of this software can close an important resource gap for many universities that do not have such solutions currently available.

Online education is still not prevalent in Bangladesh and no significant data was found. However, there is a long-standing tradition of distance education through Bangladesh Open University where printed material is provided to students and classes are delivered over radio and TV. Islam and Islam (2008) measured the effectiveness of various mediums of instruction utilized by Bangladesh Open University. Approximately 50% of tutors favored text material and delivery over TV, and 82.5% of students had a favorable opinion about education delivered through TV programs.

As of late April 2020, the regulatory authority for all university education in Bangladesh, the University Grants Commission, has issued sometimes contradictory directives, such as first allowing online classes and then ordering that all online testing and assessments be stopped. “On 4 April the University Grants Commission (UGC) asked all private universities to halt examinations and their evaluation until further notice amid the coronavirus pandemic. The direction came less than two weeks after the commission urged universities on March 23 to continue classes online.” (Priyadarshini, 2020). UGC later reversed its decision and allowed private universities to hold online tests subject to certain conditions. (Alamgir, 2020)

## **PROBLEM STATEMENT**

Therefore online education is a well-established process to maintain educational continuity. But there is a lack of evidence that the universities and the students have the means to deliver and receive an education online. Broadband internet access is necessary for streaming video or other data-heavy applications but the availability of Broadband is limited outside major cities. Mobile internet, therefore, can be a potential solution to this problem. However the expense may be more than what some students can bear, and even mobile internet may not be available where the students reside. Lastly, there is no clear data on the availability of necessary computing devices by the students.

The universities themselves lack this information and so does the regulatory authority for universities in Bangladesh, the University Grants Commission (UGC). The UGC has launched a survey aimed at university faculty to obtain information on the technological resources including access to Wi-Fi and free wired networking. The survey also asks the professors to provide information about their student’s ownership of smartphones, Laptop computers, Desktop computers, and Tablets. (UGC, 2020). It can be concluded that the professors do not possess this information and a survey of the student body will be required to obtain this information. The UGC has not launched a similar survey designed to elicit such data from students.

This paper aims to fill those gaps so that the universities, professors, and the UGC may have another source of information to aid in mitigating the study gap during the pandemic and aid in the establishment of a policy framework to enable online education when the pandemic is over.

## **RESEARCH QUESTIONS**

- Are students worried about the gap in the study and are faculty members willing to teach online classes?
- Do professors, universities and students have sufficient technical resources to teach, deliver and learn via online classes?

## METHODOLOGY

Searches were conducted on Pubmed and Google Scholar from Jan 1, 1950, to April 30, 2020, for papers written in English. The following search criteria were used: “influenza” or “pandemic” and “school closure”. All abstracts were read and papers were selected for review if primary data on economical, logistical, social, or policy aspects of school closure were addressed. Out of the 83 papers found, 23 were considered to contain primary data regarding school closure policy and one contained primary data on educational continuity during school closure due to a pandemic.

Questions were developed to make responses easy and unambiguous with clear Yes/No choices where possible to yield an acceptable response rate. (Saleh and Bista, 2017).

## DATA COLLECTION

An online survey was administered to university-level students via university mailing lists, Facebook groups, and WhatsApp messaging groups and direct emails. The questionnaire was designed to understand the respondents’ attitude towards possible study gaps caused by the pandemic and to gauge interest in online classes. As online classes will require access to computing devices and network connectivity, additional questions solicited that information from the students. Due to the lack of any previous such survey in Bangladesh, the questions were basic by design and did not attempt to explore any causality. 695 responses were collected between April 20, 2020, to May 6, 2020. (Confidence level 95%, CI 3.71 for a population of 1.2 million)

Another online survey was circulated among university professors that attempted to elicit information relevant from an educator’s point of view. This questionnaire inquired about the availability of technical and pedagogical resources required for successful online courses, and like the questionnaire administered to the students did not attempt to establish causality. 83 responses were collected between April 22, 2020, to May 6, 2020. (Confidence level 95%, CI 10.7 for a population of 7,771 university faculty members per BANBEIS, 2018)

It is hoped that the data will give the universities and the UGC a data-backed view about the readiness and any resource-gap of the students to successfully participate in online classes, and also allow the universities to understand where they may have any gaps in their online class delivery. The UGC is currently conducting a detailed survey among university faculty about their own and their university’s readiness to conduct online classes, and it is hoped that the results will also supplement UGC’s results and contribute to UGC’s policymaking.

## SURVEY RESULTS

There are forty-three public and one hundred three private universities in Bangladesh with approximately six hundred seventy-six thousand and three hundred fifty-one thousand students, respectively. (BANBEIS, 2018). The distribution of the respondents is shown in Fig-1 below. It was found that the distribution of the respondents was a majority from private universities.

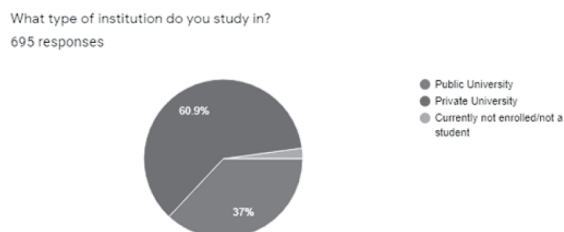


Fig-1: Respondent's university type

Students also overwhelmingly responded that they were not concerned about potential study gaps caused by the pandemic, as illustrated in Fig-2

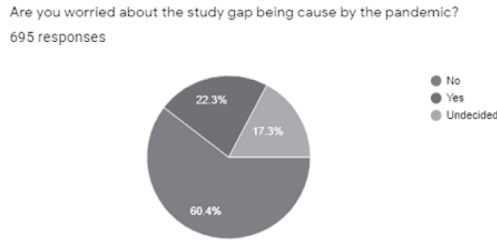


Fig-2: Students' attitude towards study gaps

Curiously, while only 22.3% of the respondents indicated that they were worried about study gaps, 46.9% or more than double that number expressed an interest in online classes as shown in Fig-3.

This leads to the conclusion that regardless of the pandemic-caused study gaps students are interested in online classes and this interest may continue in the post-pandemic period.

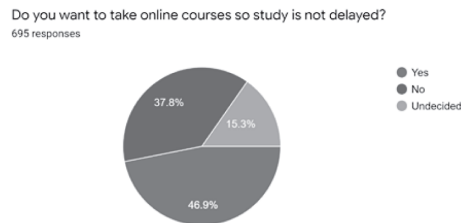


Fig-3: Student attitude towards online classes

When university type is taken into consideration, it is seen that approximately 64% of private university students have expressed the opinion that they are not concerned about study gaps while among public university students approximately 53% of the respondents are not worried about the study gap. Regarding the student attitude towards online classes, it was seen that approximately 45% of private university students are interested in online classes compared to 49% of public university students.

Combining the above datasets, it can be inferred that private university students are less concerned about study gaps and slightly less interested in online classes compared to their peers studying in public universities.

Access to computing devices is varied and may be cause for concern. Table 1 shows the types of computing devices to which the students have access. As this question allowed selection of more than one option the total responses exceed the number of respondents.

Computing device	Number of students
Computer without Webcam	61
Computer with Webcam	188
Smartphone only	198
Tablet/iPad only	5
Computer, smartphone and/or tablet	237
None of the above	8

Table 1. Computing devices

For interactive learning and class, participation webcams may be helpful but not necessary. However, a total of 203 respondents out of 695 or 29% have responded that they do not possess a computer or laptop, which may pose a significant barrier to submitting papers or other online assignments. Even more alarming, 8 students or 1% have responded that they do not possess any computing device at all, which would make attending online lessons nonviable for those students.

Broadband connectivity would be helpful but not necessary for online classes delivered via video conferencing if students use mobile data on their smartphone or other computing devices. If the online classes are limited to asynchronous delivery of content such as PDF files to be downloaded and studied by the students and subsequently assignments are uploaded to be graded by a faculty member, then mobile data may be sufficient.

In the survey, 34% indicated that they have access to mobile data only while 62.9% indicated that they have access to broadband. Twenty-one respondents indicated that they have access to neither broadband nor mobile data. Similar to the access to the computing device, access to network connectivity would be an absolute necessity for online classes to be useful to the students. Fig-4 shows the breakdown of the network connectivity status of the students.

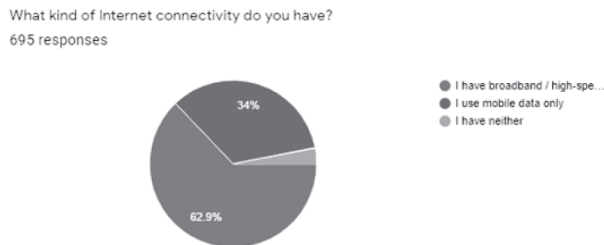


Fig-4: Access to network connectivity

Over 78% of the respondents have indicated that they consider current prices for internet connectivity to be too high for online education, and an overwhelming 92% has indicated that the universities, the government and the ISPs including the mobile companies should work together to reduce the price of data cheaper for students. (Fig-5)

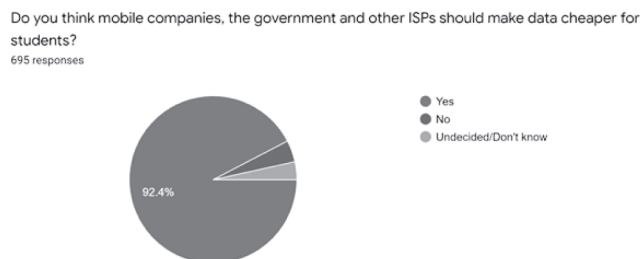


Fig-5: Data prices should be reduced

83 total faculty members responded to the faculty survey. Of the respondents, 80 disclosed their university type, and among those 52 or 65% were faculty members at public universities, and the remaining 35% were faculty members at private universities. Under 29% indicated that they currently teach online classes, and the

remaining approximately 71% indicated that they do not teach online classes. When asked whether they were willing to teach online classes, an overwhelming 80% answered in the affirmative (Fig-6)

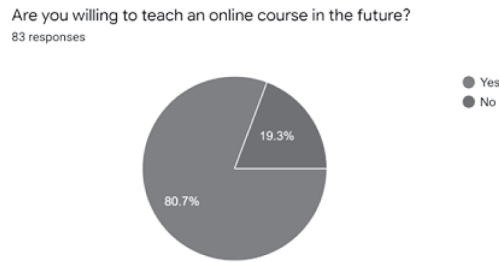


Fig-6: Faculty members willing to teach online classes

However, 60% of the respondents indicated that their university currently does not have sufficient technical resources needed to successfully conduct online classes.

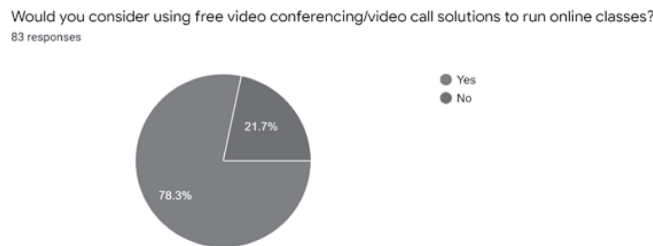


Fig-7: Faculty members willing to use free video solutions

An overwhelming majority (78.3%) indicated that they were willing to use free video conferencing or video call solutions to teach online courses. UGC in its survey also poses a similar question and lists multiple free solutions such as Google Hangout, Facebook Messenger, or WhatsApp.

## ANALYSIS

The need for online classes is pressing as students, faculty, universities and the UGC are all concerned about the study gap and the associated negative economic and social impact that may result.

Table 2 summarizes the conclusions derived from the survey and data analysis.

Research questions	Conclusion
Are students worried about the gap in the study and willing to participate in online classes?	Yes
Do students have the technological resources including access to affordable data needed for online classes	No
Are faculty members willing to teach online classes?	Yes
Do universities provide faculty members with sufficient technical resources and assistance to conduct successful online classes	No

Table 2. Research Questions and Conclusions

Faculty are very much aware of the limitation of technology and the paradigm shift that may be required. Professor Mahbub Ahsan Khan of Dhaka University commented that “switching into a new paradigm (from face to face to online) is a daunting task and demands essential preparation and time. Both teachers and students will require sufficient training to adopt and adapt to the new phenomenon. Teachers should play the role as a facilitator or moderator. Students also need to change their mindset to become co-learners. Moreover, it should be cost-effective, authentic, and pedagogically feasible. The assessment would be the most challenging task. Introducing a portfolio might be possible isolation. Finally, a reasonable teacher-student ratio should be maintained.”

Access to computers and networks by the students is a concern as seen from the demand by a majority for data price reduction. Professor Mirza Hasan of BRAC University commented that “Online course would be necessary but the problem is not all will be able to access it. This accessibility question needs to be addressed before we embark on this mode of teaching.”

The faculty members are mindful of the digital divide and the negative implication. Professor Rejaul Karim Bakshi of Rajshahi University stated, “In a country with digital divide it's just luxury to think of online class. About half of my students are coming from a poor family background. During the Corona pandemic, some are even struggling to have food for survival. How can I think to force them to buy internet data packs for online classes?” Professor Iftikhar A Chowdhury who teaches at a private university raised the same concern and proposed a possible solution facilitated by the government: “The digital divide is still yawning in Bangladesh. While a handful of students from privileged classes have access to PC/laptops and internet connections, the majority of students are still deprived of it. So, naturally, their access to online and distant learning through the internet will be limited. Unless, they have access to facilities such as cyber labs operated across Bangladesh by the ICT Ministry and the A2i project of the government, the full benefit of distant online learning will not reach all university students of the country. But this is very important for education continuity and discipline of the students during this time of indefinite countrywide lockdown due to COVID 19 pandemic.”

Professor Mokhdum Morshed of North South University stated, “Lack of resources is the main obstacle as far as online classes are concerned. Universities need to provide that resource support to both faculty members and students if they want to make it successful.” which matches the survey responses.

Certain courses cannot be taught online. Prof. Qazi Azizul Mowla of Bangladesh University of Engineering and Technology pointed out that engineering courses rely heavily on labs, and that cannot be done online: “Most students have the technological capability to attend online classes but not all, besides, Lab/sessional courses cannot be offered at the moment besides that requires hands-on work”. A similar challenge was highlighted by a professor of a decidedly non-technical discipline. Dr. Mir Mehbub Alam Nahid of Rajshahi University expressed his concern: “In my department (Theatre) it is quite impossible to conduct online classes.”

Among these valid concerns, Dr. Shamim Al Mamun of Jahangirnagar University offers a glimpse of what is possible and what is currently happening: “My students are enjoying my class. My research group students are more active in their online sessions.”

## **LIMITATIONS AND SCOPE FOR FURTHER RESEARCH**

Public and Private universities in Bangladesh do not have equal resources and equal quality students. There is a financial disparity between Public and Private university students as well which is evidenced in the digital divide. (Zhou et. al. 2011). A curious implication of this may result in under-participation of those with limited



or no computing resources or network connectivity resulting in the underrepresentation of the digital have-nots. This may result in an artificial reduction in the magnitude of the digital divide problem.

The research for this paper was conducted without any active and official participation of any universities or the UGC. The underrepresentation problem may be correct by a broader survey conducted by or through official university channels that can ensure a representative sample. As of this writing, BRAC university launched an SMS-based survey to understand students' access to computing resources and data services.

Similarly, the participation of the faculty members was voluntary. It is expected that UGC's survey will result in broader participation and due to the in-depth nature of that survey elicit more information needed for successful online courses.

However, these limitations point to the scope for further research. If the UGC survey results are made public or made available to the author, a subsequent paper can provide a detailed analysis of the faculty and university readiness for online education and assessments. University-sponsored or facilitated student surveys will similarly yield better data. Combining such detailed faculty responses and broad-based student responses will enable all stakeholders to adopt policies and strategies to conduct successful online education not just during the pandemic but beyond.

## **CONCLUSION**

Based on the responses we conclude that both universities and students lack sufficient technological resources for effective online education. The recurring concern about students having adequate computing resources and network connectivity were both seen in the student responses and echoed in the faculty comments. This major concern should be addressed to make the online education viable and mitigate the study gap caused by the pandemic.

However, those concerns should be addressed and the crisis should be turned into an opportunity. As Priyadarshini (2020) states, "We have a choice to make. We can be the slaves of our old habits, ideas, and actions or we can be adventurous, willing to experiment with new methods, implement new ideas, create new teaching and learning environments. Let us not allow the limits of our knowledge to shape our imagination. Let our imagination create new knowledge."

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