EDUCATION DURING A PANDEMIC

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

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Abstract

The universities of Bangladesh used to suffer greatly from the so-called 'session jams' but most public and private universities overcome those difficulties and have mostly eliminated the session jams. Due to the COVID-19 outbreak and resulting lockdown, students are at risk of losing months or in certain cases missing sessions in the next step in their education. The situation is so dire that UNESCO has called it a worldwide unprecedented education emergency.

Universities in Bangladesh and the university students in Bangladesh are also facing the same emergency. 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.

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.

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This study is one of the first in Bangladesh that attempts to gauge the need and readiness of various stakeholders to implement successful fully online education. This paper suggests a process for measuring the readiness. The results can give the policymakers ideas on areas of improvement and may assist universities to launch fully online classes that will be accessible and affordable by students during and beyond the COVID-19 lockdown phase.

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

Introduction

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

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 and faculty members to conduct online classes. It is hoped that this paper will provide policymakers such as the University Grants Commission a perspective from the students' and professors' points of view.

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 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” was 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 are no mention of 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.

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 on-line course with one hour of face-to-face discussions. Their conclusion was 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).

Online education is still not prevalent in Bangladesh and no significant data was found. However, there is a long-standing tradition of distant 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 medium of instruction utilized by Bangladesh Open University. Approximately 50% tutors favored text material and delivery over TV, and 82.5% students had a favorable opinion about education delivered through TV programs.

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 education online. Broadband internet access being necessary for streaming video or other data-heavy applications but 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 the their student's ownership of Smartphone, 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

1. Are students worried about the gap in study and willing to participate in online classes?
2. Do students have the technological resources including access to affordable data needed for online classes
3. Do universities provide faculty members sufficient technical resources and assistance to conduct successful online classes?
4. Are faculty members willing to teach online classes?

Methodology

Online surveys are quick, inexpensive and yields an acceptable response rate. (Saleh and Bista, 2017). 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.

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.

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.

Results and Interpretation

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 are shown in Fig-1 below. It was found that the distribution of the respondents were 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.

Do you want to take online courses so study is not delayed?

695 responses

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 exceeds the number of respondents..

Computing device	Number of students
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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% has 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 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 network connectivity status of the students.

What kind of Internet connectivity do you have?
695 responses

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)

Do you think mobile companies, the government and other ISPs should make data cheaper for students?
695 responses

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)

Are you willing to teach an online course in the future?

83 responses

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.

Would you consider using free video conferencing/video call solutions to run online classes?

83 responses

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

Despite not having sufficient university-provided resources for the online classes, an overwhelming majority (78.3%) indicated that they were not interested in using 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 and Implication

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 survey and data analysis.

Research questions	Conclusion
Are students worried about the gap in 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 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 with 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. Assessment would be the most challenging task. Introducing portfolio might be a possible isolation. Finally, 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 poor family background. During the Corona pandemic some are even struggling to have food for survival. How can I think to force them buying internet data pack 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 students are still deprived from it. So, naturally their access to online and distant learning through 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, 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.”

Dr. Rasheda Akhter of Jahangirnagar University stated, “Students don’t have enough resources to have internet access as most public university students can’t afford to buy needed equipment or afford internet services” 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.”

The recurring concern about students having adequate computing resources and network connectivity was 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.

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 that

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 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 a SMS-based survey to understand students' access to computing resources and data services.

Similarly, the participation of the faculty members were 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 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.

Search strategy and selection criteria

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 was 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.

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