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## ONLINE EDUCATION AND LEARNING LOSS DURING THE COVID-19 PANDEMIC

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### Abstract

In an effort to curb COVID-19 pandemic spread, governments around the world had to be moved from face-to-face to online education. Significant issues related with the technological infrastructures, course designing and curriculum to deliver the standard of online education are a critical issue that needs essential focus. An online survey was conducted from 1<sup>st</sup> June to 10<sup>th</sup> June 2021 on 200 undergraduate rural students to assess the learning loss for online education during the COVID-19 pandemic. The purposive sampling technique and snowball sampling technique under non-probability sampling was used to collect the information. Structured close ended questionnaire had been sent to the respondents using the link, Google form through WhatsApp and e-mail. The present study revealed that 84% of students belong to farmer's families. It has been demonstrated that 34% students had own computer and 56.8% had own smartphone. The students have complained that the learning loss takes place in online education due to inadequate internet connectivity (87.6%), intermittent power supply (79.3%), dissatisfaction on online assessments (88.8%), absence of active observation of the teacher on them (76%), the workload to be completed from the home (84.7%), the absence of friends force them to study in an environment (39.8%), engagement at day to day domestic work (69.2%), employment in paid work (43.7%), and engagement at farming activity (74.6%). The study participants were agreed about the challenges faced and learning loss for online education during the pandemic. To promote quality education on online mode strong strategies are urgently needed.

**Keywords:** COVID-19 Pandemic, Online Education, Undergraduate Rural Students, Technological Infrastructure, Course Designing, Learning Loss.

### Introduction

The world is facing a crisis as the biggest public health risk today due to the Coronavirus Covid-19. Since the outbreak in late December 2019, COVID-19 has wreaked havoc across the world and like any critical sector, education has been hit hard. It has been affected by several challenges ranging from changes in the education curriculum to closing down the physical classroom-based education system due to widespread COVID-19 pandemic. UNESCO estimates that over 160 countries have implemented nationwide educational institution closures, impacting over 87% of world's student population (UNESCO, 2020a). With an increasing number of states, provinces and even whole countries' closing institutions of education, over 91% of the world's student's population are not attending schools/colleges (UNESCO, 2020b). UNESCO has reported that around 320 million learners are affected in India, of which about 34 million belonged to the tertiary level of education (UNESCO, 2020c).

The online education is covered under a larger term of technology-based learning through websites, learning portals, video conferencing, YouTube, mobile apps, and thousand types of available websites for blended learning tools. It is a methodology that involves employing network technologies to create, foster, deliver, and facilitate learning anytime and everywhere. E-learning is very different from the traditional classroom style teacher-student learning environment, where the teacher can't motivate the student to learn using the available material. It is the self-learning style. Here the term, learning loss involves to any specific or general loss of learning and knowledge or to reversals in academic progress, mainly due to closure of educational institutions as alerts sounded on the increasing spread of the COVID-19 infection.

Transitioning from traditional face-to-face learning to online learning is an entirely different experience for the learners and the educators, where they must adapt to with little or no other alternatives available. This pandemic results in the digital revolution in the higher education system through online lectures, teleconferencing, digital open books, online examination, and interaction at virtual environments. There are the possible difficulties in delivering educational content by the teacher, especially for science subjects; possible difficulties in receiving and understanding the educational content for the students; possible difficulties in conducting examinations via online route in an honest and fair way. Laboratory tests, practical tests, and performance tests are impossible to conduct online. In the education system, the educators and teachers have adopted "Education in Emergency" through various online platforms and were compelled to adopt a system that they were not prepared for.

Students from privileged backgrounds, supported by their parents financially, eager and able to learn, find their way to alternative learning opportunities. Those from disadvantaged backgrounds remained shutting out their education in regular way when



their college shut down. This crisis has exposed the many inadequacies and inequities in the education systems – from access to the broadband and computers needed for online education, and the supportive environments needed to focus on learning, up to the misalignment between resources and needs. Due to lack of internet connectivity, information technology, educational materials, and digital technology skill, online education is difficult for teachers, students, and families in rural India. The online education is often discriminatory to poor and marginalized students. Students in rural areas and from disadvantaged families lack required resources to make online education fruitful. Rural India is still grappling with the challenges to make education completely online.

In this backdrop, to weigh the costs of all educational institutions' closures against public health benefits, it is crucial to know the intensity of learning loss among students in lockdown and whether disadvantaged students do so disproportionately on the sudden shift of education to the online mode of teaching and learning. The present study covers the learning status, mode of learning, challenges faced in continuing education and problems related to the delivery of online education especially for rural and disadvantaged students during this extended lockdown amidst the COVID-19 pandemic.

### COVID-19 Pandemic

Initially, in the month of December 2019, a human respiratory disease appeared in Wuhan Hubei Province, People's Republic of China, caused by a novel member of the coronaviruses. On 31st December 2019, China informed the World Health Organization (WHO) about the number of patients with symptoms of respiratory illness of unknown cause (WHO, 2020a). On 30<sup>th</sup> January 2020, the WHO declared the outbreak of this new coronavirus disease, COVID-19, to be a Public Health Emergency of International Concern (WHO, 2020b). On 11th February, 2020, WHO announced a name for the new coronavirus disease: COVID-19 (WHO, 2020c). On the 11th of March, 2020, WHO declared COVID-19 as a global health threat, a pandemic as by then it covers 114 countries in 3 months and infects more than 118,000 people in the world (WHO, 2020d).

In India, the first confirmed positive case was reported on 30th January in a student from Thrissur district of Kerala who had returned home for a vacation from Wuhan University in China (Rawat, 2020).

### Online Education: Technological Infrastructure in India

The biggest challenge for online education is the requirement of efficient technological infrastructure and digital skill set for both students and teachers. Access to smartphone, computer and access to the internet are basic to successful online education. According to the 2017-18 National Sample Survey report on education, only 24% of Indian households have an internet facility. While 66% of India's population live in villages; only a little, over 15% of rural households have access to internet services (NSO, 2018). According to the report by Quacquarelli Symonds, the survey with over 7600 respondents found that in order to use the internet at home, 72.60% of the respondents use mobile hotspot, 15% use home broadband, 9.68% use WiFi dongle and 1.85% have poor internet connectivity. The data revealed that amongst the respondents, who used home broadband, over 3% faced cable cuts, 53% faced poor connectivity, 11.47% faced power issues and 32% faced signal issues. When it came to the mobile hotspot, 40.18% faced poor connectivity, 3.19% faced power issues and 56.63% faced signal issues (PTI, 2020). While 24% Indians own a smartphone, only 11% of households possess any type of computer, which could include desktop computers, laptops, notebooks, palmtops or tablets (Kundu, 2020). In 2019-20 the Ministry of Human Resource Development budget for Digital e-learning was reduced to Rs. 469 crores from Rs. 604 crore (Press Information Bureau, 2020). While the government's Saubhagya scheme to provide electricity to households shows that almost 99.9 percent of homes in India have a power connection, the picture is less luminous regarding the quality of electricity and the number of hours for which it is available every day. Mission Antyodaya, a nationwide survey of villages conducted by the Ministry of Rural Development in 2017-18, showed that 16% of India's households received 1 to 8 hours of electricity daily, 33% received 9 to 12 hours, and only 47% received more than 12 hours a day (Kundu, 2020).

### Objectives

This research paper was focused on the following objectives: 1) to study the perceptions of students on the sudden shift of education to the online mode of teaching and learning during COVID-19 pandemic, 2) to examine the challenges faced by the students in adapting the online education process during COVID-19 pandemic, 3) to anticipate the various potential loss in online education system because of COVID -19 pandemic in India, 4) to enlist effective suggestions for continuing online education during the pandemic situation.

### Research Methodology

#### Place of study

This study was limited to college students of Ramnagar block II, Purba Medinipur, West Bengal, India. The samples also were associated with the students of Ramnagar College and also with the students returned in their native village from urban area.



## Study design

One time observational and experimental study on undergraduate students of 1<sup>st</sup> to 6<sup>th</sup> semester was conducted to evaluate the learning loss through online learning mode. The data collected were statistically analyzed in the findings.

## Sample size

A total of 200 respondents were covered for the survey. Of sample students, most of them were aged below 22 years with a median age of 21 years. The number of male and female was equal in the sample students. The majority of them were affiliated to the Hindu religion (83%), resided in mostly remote rural areas (70.7%), and had a family income of less than INR 10,000 per month (65.1%). Majority students were from the Arts academic background (63.3%).

## Method of Data collection

This study is based on primary and secondary sources of Information. A survey method was employed in order to collect data from undergraduate students belonging to the rural location. Considering the sample needed as per the objective of the survey, the students were selected by using purposive sampling technique and snowball sampling technique under non-probability sampling method. Due to the pandemic, the respondents were being contacted through phone calls and data were collected through providing questionnaire using the link 'Google form' after telephonic consultation with them. A structured close-ended questionnaire was designed as a tool to collect data. Data were collected around 10 days from 1<sup>st</sup> June to 10<sup>th</sup> June, 2021.

Secondary sources of data used are (a) national and international reports, (b) govt. reports, (c) search engines (Google search), (d) academic journals, (e) survey reports, and (f) newspapers.

## Data Analysis

Descriptive statistics were carried out to interpret the responses of study participants. Simple percentage distribution was estimated to assess the learning loss due to online education.

## Findings

Several questions related to modes of learning, barriers faced in continuing learning, time spending for study, separate reading room at home and study environments etc., were asked to trace out the learning loss among college students in rural scenario during lockdown. A majority of the students (85.9%) felt that learning takes place better in physical classrooms than online classes and only a minority of the students (14.1%) felt that online education is better than attending physically. Specifically, from science stream, all are agreed about the learning loss in online education due to absence of practical classes. Nevertheless, 78% students felt that since the beginning of the pandemic online education is a viable alternative in the current circumstance. Remaining felt that online and offline classes can simultaneously be continued. In keeping the time for own education, 65.8% students put their opinion on less time spending in comparison to the prior in the functioning of online education.

The students dissatisfied about the online educational resources and tools being used by the professors to disseminate information. The students (88%) felt that adequate study material is not available online. The students (89%) felt that online tools for problem solving, programming, and designing cannot enrich courses. The students (84.4%) also felt that only slideshows are not so effective in disseminating information.

The students expressed how they thought class lectures can be made more interactive. The students (86.4%) felt that they can interact better with professors in a physical classroom. The students (84.2%) felt that professors can make lectures more interactive using devices like chalk board device and note taking in the classroom setting. Also, side by side the students (56.3%) opined that communication between professors and students through chatbox during online lectures have made them interactive.

Most of the students felt that internal assessments taken in different phases throughout the course semester are effective in improving their result. In pandemic situation, these assessments were being held in home environment. It is being found that 88.8% students felt that online assessments cannot properly evaluate their knowledge and affect the learning process. 73% students complained in getting average marks in these online assessments. They felt that their intelligence and obtained marks was not properly evaluated, and they were treated like average general students.

It is the evidence showing that students in lockdown period tend to spend less time in attending classes compared to when colleges are open. 66.6% students commented that they were less motivated in learning at online mode of education. In attending the online classes on regular basis, 33% students did not attend the classes even after having their own android phones. It is the evidence



that 59.8% students confined at home due to COVID-19 had felt stressed and anxious as infected any time, mainly during the second wave of the infection spread.

It is evident that only 34% had own computer. Most of the students were getting classes through smartphone. Simultaneously, 56.8% had own smartphone, remaining students had to use other family members' phone. 68% students complained about continuous watching in small screen as stressful for eye. A large majority of the students (86.6%) felt that online education is leading to overuse of digital technologies and 84.6% students felt that excessive screen time is causing annoyance, headache and affecting their normal life style. Therefore, they were losing interest in online classes.

It is being found that 87.6% students felt that online education is causing phobia of losing internet connectivity among them. Several times they had faced the internet network disconnection into ongoing class. Also, students felt that online education is affecting their learning activity in sharing a limited space (66.7%) and a limited number of internet connectivity digital devices (73.2%) with other family members. 63.6% students felt that online education is exposing the digital divide among them, because their peers from low income cannot afford the high-cost internet data package.

A student generally feels comfortable in a classroom as getting the company of his friends and peers. In case of online education delivery, this is not possible as 67% told that the video camera cannot provide clear view of their peers which can be seen by them. In addition, 79.7% students complained into shut down the device camera to stop the frequent network disconnection, so that proper audio can work. Regarding home environment, it is evident that only 36.3 % students had own separate room in attending classes. Further, it has been observed that students have complained that the online education system has created a stressful environment for them in their homes as the absence of active observation of the teacher on them (76%), the workload to be completed from the home (84.7%), the absence of friends force them to study in an environment (39.8%), engagement at day-to-day domestic work (69.2%), employment in paid work (43.7%) and engagement at farming activity (74.6%). 74.7% students felt their home environment as improper for online class learning. In this pandemic era, most members are living in the home closing of all outdoor activities. In addition, this crisis time force the students to engage in economic activities to increase family earnings. In the present study, almost 84% of students belong to farmer's families. So, instead of attending online classes, they need to work in fields.

Students have now taken online classes, spending most of the time on virtual platforms. 88% students had expressed that they also use internet data for watching movies, chatting with friends through Facebook, WhatsApp etc. and also for other entertainments connected to the outside world.

Abnormality of electricity supply in this rural scenario hampers students' learning. 79.3% students were anxious of electricity supply during online classes. Intermittent electricity supply is the regular scenario in the study area. In addition, the natural disasters like heavy rainfall, thunderbolt and storm are also the reason of discontinued power supply.

## Discussion

In the present analysis, the picture of a remote rural area was presented. This paper intended to study the perception of students on the online education during the COVID-19 lockdown period. Online education can be better personalized through smaller class size and homogeneous background of the students.

Long-standing lockdown, insufficient family income, inadequate access to digital resources, frequent interruption of electricity supply and poor internet connectivity have disrupted the academic life of the students in rural scenario. Attending online classes requires an efficient android phone, computer or laptop, long hours of internet, and peaceful space for each student. It was observed that the same was not affordable for everyone in the study area. Economic inefficiency was found to be a major cause to keep away many students from online education during the entire period of lockdown. It was also observed that many times students have all the required facilities to attend online classes, but they do not attend the classes attentively. In offline classes when students were seen to engage with their mobile phones, teachers restrict them. The college students spend a lot of time with social media that led them away from the study.

Although the adoption of digital learning is the key to ensure the continuity of education following the physical closure of colleges, students were, on average, likely to experience a learning loss during the lockdown. There is evidence showing that students in online education tend to spend less time in learning compared to when physical classrooms are open. Many students confined at home due to COVID-19 felt stressed and anxious as infected any time, and this behaviour negatively affects their ability to concentrate on study. Changes in daily routine including lack of outdoor activity, disturbed routine lifestyles, social distancing, engagement in domestic work and employment in paid work had affected the mental well-being of the students. During the lockdown, students from less



advantaged backgrounds were more likely to be exposed to a stressful home environment. Because, they were more likely to share the same room space and digital devices with other family members as work from home is declared as compulsory for employed person and also increasing importance of online business. It is evident that there were many homes where there are a limited number of digital devices and more people need to use them simultaneously. There is the evidence for rural population's earnings less due to closure of offline business and workers who over the years had been migrated to urban centres for jobs, returned home as unpaid. Parents in these households, who were under pressure because of financial and job security issues due to the COVID-19 crisis, were not in the best position to support their children online learning circumstances. Reduction in family income, limited access to digital resources, and the high cost of internet connectivity had disrupted the academic life of the students belonging to disadvantaged class.

Physical college closure and the lack of in-person contact make students less externally motivated to engage in learning activities. A classroom environment is important in learning activity of any student. In case of delivering lectures at online education, most of the time classes had to be continued without video camera, due to poor internet network. The peer-to-peer impact in the college environment motivates students to attend the classes more attentively, which is not being possible in an online setting. This creates a sense of psychological isolation within the student. It is well known that being in a classroom and hence having the opportunity to interact with classmates produce important positive externalities. In peer effects students teach each other and get improvement together. Classmates' high achievements performances motivate the student (through competition or social influence) to work harder. The closure of college and the move to a remote learning environment are the causes in students' interest less in learning. Further, it has been observed that many students had complained that the online education system has hampered their learning motive and attitude. While a computer must be preferable for online classes, a smartphone can also serve the purpose. However, the smartphone can be convenient for apps, but not for completing lengthy assignments. It is difficult to continue the classes in this small screen. One of the major causes of less interest of students in learning was the struggle with focusing on the screen for longer periods of time.

The shift from physical class to online class has serious consequences on assessments and evaluation. Depending on the course nature and the assessment type, application of online assessments and evaluation is a challenging task. Teachers had been enforced to change their assessment types and students were bound to accept this change to fit the online mode. Student assessments and evaluations were carried out online, with a lot of trial and error, uncertainty and confusion among the teachers and students. The approach adopted to conduct online examination varies as per the convenience and expertise among the educators in the college and the compatibility of the learners. Additionally, performance tests for laboratory-based subjects, as well as practical tests were impossible to conduct online.

Students have now engaged at online classes, spending most of the time on virtual platforms, which have left them vulnerable to online exploitation. Increased and unstructured time spent in online education has exposed children to potentially harmful and violent content as well as greater risk of cyberbullying. Longer time closures of college and strict containment measures mean more families have been relying on technology and digital solutions to keep the students engaged in learning, entertained and connected to the outside world, but all of them did not have the required knowledge, skills and resources to keep themselves safe online.

The data package (costs) is comparatively high against average income earned, and continuous access to internet is costly for the farming community and other vulnerable classes residing in the study area. Online face-to-face classes (video) are encouraged by most; however, students from economically disadvantaged had expressed that the face-to-face online class consumes more data packages. There is also a new form of digital divide among the students, where few are able to use the device with internet data pack and few are not able. Students reported that the teachers are in dilemma as to whom to listen and which tools to adopt for the students of varied socio-economic background. Students thought the pre-recorded videos can help; but this restricts the teacher-student interactions. It is difficult to design a proper system to fit the learning needs and convenience of all students from reach, poor, rural and urban.

Many students studying in urban institutions and staying in hostels had returned to their native villages since the onset of the lingering lockdown. In villages, they faced challenges to access the online courses conducted by their institutions mainly due to poor internet data connectivity and intermittent power supply.

## Conclusion

Online education has become an essential alternative under the circumstances of the present pandemic where smartphones, computers, internet and technology services need to be considered as a necessity, not a luxury. In the present analysis, the picture of a remote rural area was presented, where undergraduate students are more inclined for physical classrooms over virtual classrooms. The COVID-19 pandemic outbreak has made learning loss in academic activities. The online classes cannot be accessed on class routine basis by each student due to the unavailability of smartphones, laptops, mobiles network and regular supply of electricity to especially



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poor families and remotest areas. The students from under privileged suffer due to the present choice of digital platforms. Some tools like social presence during the online classes, exchanging student’s personal information with each other and also with the teacher, supporting proper video communications may help to increase their interest and approach in online education.

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