



COVID-19 Pandemic-induced Teaching-Learning Experiences: Some Realities from Assam (India)

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In the Indian state of Assam, when there was an emergency transition to online education from the conventional means owing to COVID19 and lockdown, it became necessary to comprehend what cumulative experiences might have emerged from the sudden shift in the teaching-learning process. Despite an increase of 13% in mobile internet usage in Assam, the digital divide persists which makes it crucial to understand the difficulties, strategies, and choices in education and adaptability of the participants with the remote teaching-learning mode (Mankotia, 2020; Hassan, 2020). It also became important to find out whether the participants are better adapted to the transition to online education and if the probability of sustained remote teaching-learning in the post-pandemic scenario is higher. Considering the likelihood of sustained online education in the post-pandemic scenario, this cross-sectional inquiry was conducted among the primary, secondary, and tertiary level students, teachers, and parents across the state during June 13-28, 2020. The respondents were selected utilizing the snowball sampling method who voluntarily answered the online survey developed through Google forms, the link to which was sent to the respondents through social media and descriptive analysis was employed to interpret all responses. Even though poor internet connectivity, overburdening, and stressful experiences have exacerbated the education process during the lockdown, most of the participants advocated for the adoption of a blended mode of learning in a post-COVID19 world. The switchover though encouraged further use of ICT in education; a question of accessibility emerges, as the study is limited to participants with internet access thereby exposing the digital divide in education.

Key words: *Accessibility, Blended learning, COVID-19, Education, Online.*



Introduction

First reported in the city of Wuhan in the Hubei province of Central China in December 2019, the coronavirus disease 2019 (COVID-19) (Holshue et al., 2020) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (Ghinai et al., 2020; Sharma & Singh, 2020) became a health nightmare for the world when infections and deaths began to be reported from almost every part of the globe. When the global number of infected cases increased to 118319 and death toll to 4292, the World Health Organization declared COVID-19 as a Pandemic on 11th March 2020 (WHO, 2020). The rapid growth and global spread of COVID-19 through human to human transmission (Kar, 2020), made the nations adopt all the plausible measures to contain its spread, including the execution of absolute lockdown in the entire country or parts. Though lockdown played an effective preventive role against the coronavirus pandemic by limiting the movement of the population, the implementation of it also led to the temporary closure of the educational institutions thereby forcing education to go online.

The increased adoption of ICT in the education sector was already underway with the global edtech investments in education technology reaching US\$18.66 billion in 2019 (Li & Lalani, 2020), the world becoming crippled with COVID-19 further accelerated the pace. The digitization of education though being on a roll for quite some time, the sudden shift away from classroom to online teaching and learning have also put many educators, learners as-well-as families of the learners in a predicament. The reasons being many, including little to no technical knowledge, lack of resources to avail online education, lack of interest, improper study environment, health effects, anxiety, and depression triggers, etc., online education may not be seen as the replacement to the conventional classroom teaching-learning process. Despite these, the extended closure of the educational institutions being still active in many parts of the globe, online teaching-learning sustained education while securing the safety of lives during the pandemic.

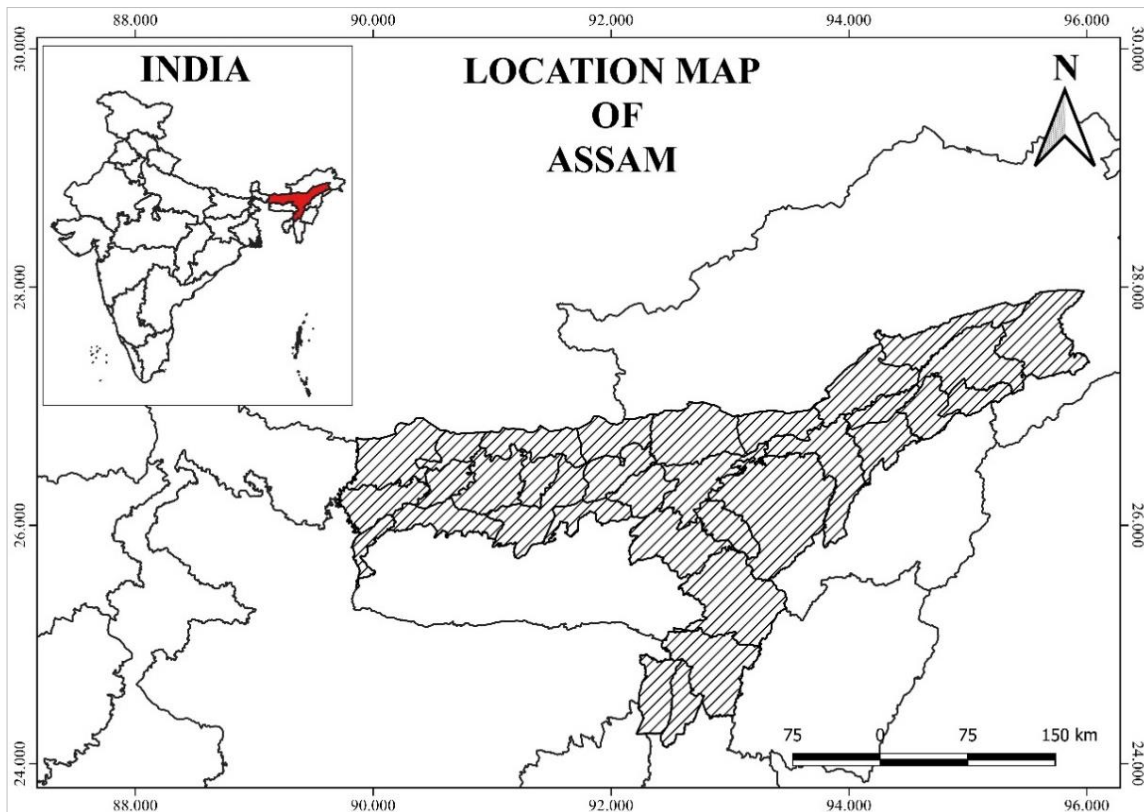
India enforced the world's largest and most rigid nation-wide lockdown from the midnight of 24th March 2020, and with it started the temporary closure of educational institutes (Ansari, 2020). The institutions following the guidelines of the Ministry of Human Resource Development (MHRD) and University Grants Commission (UGC) adopted online teaching-learning measures to not disrupt the learning scenario of the students (Careers360, 2020), but e-learning is still a far-fetched reality for many within the same borders. The UNESCO estimates that a total of 320.71 million learners have been affected in entire India during the lockdown (UNESCO, 2020). In the present pandemic scenario where the lower socio-economic stratum (SES) has emerged to be the most vulnerable to the socio-economic impacts of COVID-19 (Gopalan & Misra, 2020; Baloran, 2020), digital divide deepened further thereby affecting their access to education. In addition, according to a report by Quacquarelli Symonds (QS), the internet infrastructure in India is not ready to adapt to online learning mandated by the situation arising due to COVID-19 ("COVID-19: Indian Internet infrastructure," 2020), and



of equal importance is also the educational infrastructure. The educational institutions which already embraced digitization of education prior to COVID-19 were better prepared for the switch over and could easily adopt the available tech-solutions or develop their own (Srivastava, 2020). Moreover, the pandemic also affected the psychological and emotional state of the population which resulted in increased anxiety levels among the people (Roy et al., 2020; Baloran, 2020). This emergency shift has the students, teachers, and parents dealing with anxiety arising out of the current situation and also with mental and physical health conditions emerging out of increased screen time (Shih & Killeen, 2020; Verma, 2020). Not that the shift to virtual education has only negative impact but also accelerated the incorporation of technologies and innovations in education (Allen, 2020) such as flipped classrooms (Williams, 2020), national and institutional online learning platforms, contents and repositories, platforms and software for assessment, training, video conferencing, etc. (World Bank, 2020).

In a pre-COVID Assam, the education system was characterized by improved school enrolment ratio- the Gross Enrolment Ratio for primary level (I-V) being 113.4% for 2013-14 and 102.6% for 2017-18, and for upper primary (VI-VIII), 93.1% for the year 2013-14 and 98.9% for 2017-18 respectively. Also, a comparatively higher enrolment level than the national for the graduate level courses was recorded for 2013-14 with 79.44% enrolment, but on the flip side, education was plagued by alarming drop-out rate at the school level and also by the incapability of the state institutions to accommodate all the students in higher education (Goswami, 2020; OKDISCD & IHD, 2014). Moreover, reasons as lack of quality education, poor infrastructure, obsolete curriculum, etc. added to the flaws (Eduprogress, 2019). The picture of employment in the state during pre-COVID period was no good too with an unemployment rate of 7.9% in 2017-18. As per PLFS (2017-18), the worker population ratio in Assam is 43.7% of which 56.5% are “self-employed”, 25.1% are regular salary/wage earners and 18.5% are casual workers (Baruah et al., 2020). The domain of health has always been central to human development in the state and education strongly impacted the levels of morbidity. According to the findings of HDR Survey 2013, illiterates (54/'000) or those with less than primary-level education (45/'000) faced twofold the level of morbidity as compared to those with post-secondary (24/'000) or college education (21/'000) (OKDISCD & IHD, 2014). With COVID-19 in the frame, the loss of livelihood and vulnerability to it increasing has intensified the economic, digital and education divide along with increasing the burden of diseases on all. Thus, the northeastern state of Assam due to these pre-existing conditions, has experienced the same with respect to the emergency switch to online education with the rest of India and considering the relevance of all the above aspects of online teaching-learning in the current education scenario of the state, this study is primarily focused in assessing the challenges faced by the students, teachers, and parents of the state of Assam during the transition to online education; the coping strategies adopted to meet the challenges, the adaptations to the technologies in education, the attitudes developed and to picture the preference of the mode of education in the post-COVID world. This study is also aimed to address the health issues that have emerged as a result of COVID-19 and online education.

Figure 1. Location map of the study area



Methods

The researchers led this study during the increasing pace of COVID-19 cases in Assam and a full lockdown was imposed within the state. The cross-sectional study consisted of five questionnaires, intended for teachers, parents, and students in the primary, secondary and tertiary levels of the education system in Assam, India (InSCED, 2014). The respondents were chosen utilizing the snowball sampling method who deliberately responded to the online survey developed through Google forms, the link to which was sent to the respondents through social media. The inquiries were explicitly designed to seek socio-demographic information as well as comprehend the challenges, issues, coping strategies, adaptability, and changes imposed upon them due to the Covid-19 lockdown concerning education accessibility. The online survey was circulated from June 13 to June 28, 2020.

Table 1: Questions designed and Questionnaires retrieved for each category of respondents

SL No.	Respondent Category	Number of Questions designed	Number of Questionnaires retrieved
1	Primary Level Students	29	100
2	Secondary Level Students	34	150
3	Tertiary Level Students	36	573
4	Teacher	28	216
5	Parents	25	100

After 15 days, the respondents in the student category were selected regardless of their residence within Assam and institutional affiliations whether public or private. Similarly, respondents in the teacher category were chosen irrespective of their teaching experience and institution level. The parent respondents were chosen regardless of their children's educational level. However, the socio-demographic questions in each questionnaire recorded the above-mentioned specifics for each category to obtain a better picture of the challenges confronted and perceived attitudes for online teaching and learning. The data obtained were interpreted using descriptive statistical measures such as frequency and mean percentage and also correlation analysis was applied in certain cases. The study included only those respondents who had access to the internet.

Results and Discussion

The rapid dispersal of Covid-19 made the entire populace of Assam vulnerable, particularly the professions that require teamwork. Therefore, classroom teaching and learning being one such activity immediately came to a halt. The sudden closure of educational institutions, however, did not stop the teacher from teaching and the students from learning as most of the institutions almost immediately resorted to emergency online teaching. It should also be noted that keeping aside the persisting digital divide and inequity in access to education owing to the disparity in facilities such as electricity, internet connection, and availability of devices, the country had already been lacking the infrastructure and resources to switch to effective online learning and many of them were even not familiar with the idea of online learning (Kundu, 2020). The sample from this study reported that 66 % of students at the secondary level, 65.27% of students at the tertiary level of education, and 57.87% of the teachers were unacquainted with online teaching and learning till this emergency situation appeared.

A. Students experiences with online learning

To better understand the experiences of students, they were classified into three categories based on their education level and type of education. Separate questionnaires were prepared

for the three categories where the primary category included students from class I to V, the secondary category had students from class VI to XII and the tertiary category with students in the undergrad, technical, vocational courses and above. The students in primary and secondary categories were provided with the option of the parents to fill the questionnaires on behalf of the students in consultation with them. 46% of students in the primary category, 64% of students in the secondary category, and 79.76% of students in the tertiary category concurred that the episode of the COVID-19 pandemic has influenced their access to education. Aside from the above mentioned, 88% of students in the primary sector, 81.33% in the secondary sector, and 76.43% of students in the tertiary sector have consented to be facilitated with some sort of means to digital learning. Interestingly, the majority of the respondents resided in urban areas except for the students in the tertiary level of education where the majority of the student respondents resided in rural areas. The disparity in access to education is also relevant from the sample as 62% of students in the primary category and 94% of students in the secondary category received education from private institutions, while, in the case of the tertiary sector, 86.56% of the students studied in government institutions and just 7.85% were students of private institutions. Smartphones were additionally answered to be the most utilized device by the students to avail online learning where 85.69% of students in the tertiary sector mentioned the utilization of smartphones as a prime device to attend online classes and submit assignments.

1. Challenges in adapting to online learning

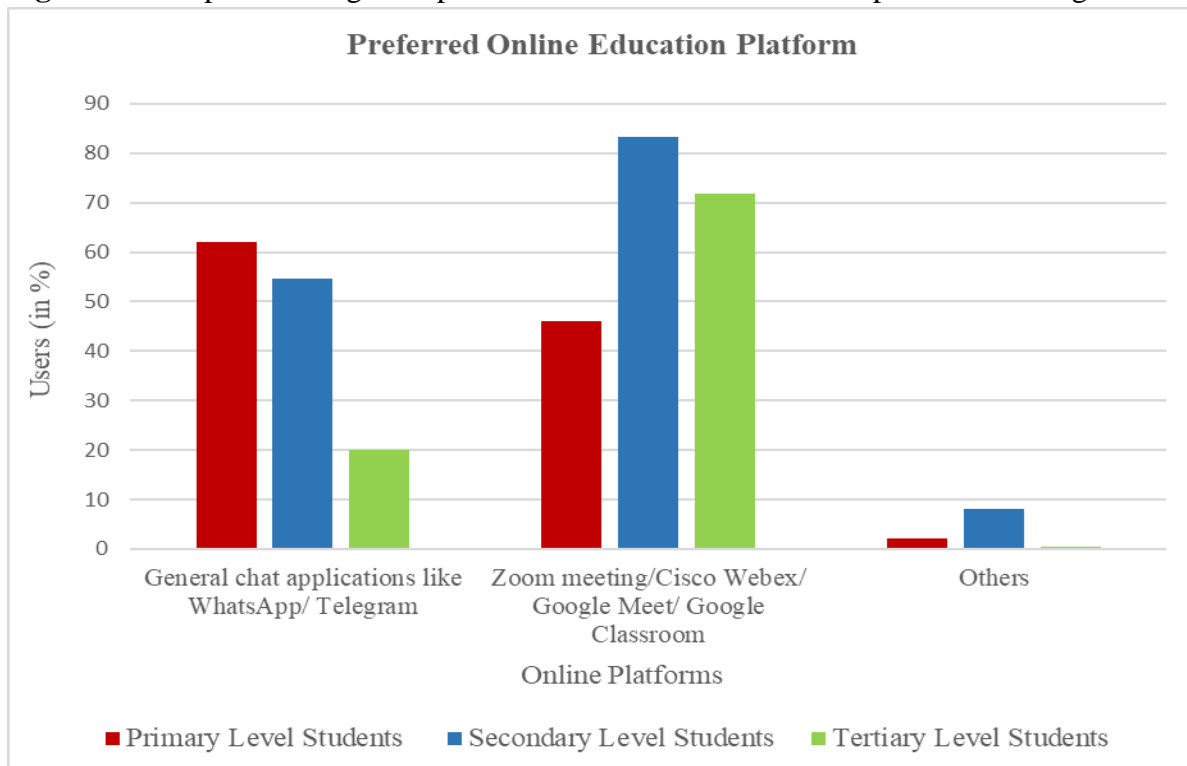
Among students receiving primary education (n=100), 60% stated that they missed the personal interaction with the teachers and classmates and 47% mentioned that they experienced poor network connectivity at home. The students receiving education in the secondary category (n=150), likewise reported that 64.67% missed the personal interaction with the teachers and classmates and 54% experienced poor network connectivity at home, followed by 29.33% found the online classes exhausting and 26.67% didn't find the online resources interesting. On account of the students in the tertiary sector (n=573), 33.50% of them experienced poor network connectivity at home, 28.97% missed the personal interaction with teachers and students, 21.81% mentioned that they had to spend more money on internet subscription due to increasing daily data consumption. Hence, despite possessing gadgets, absence of coordinated cooperation with teachers and fellow peers and the absence of immediate feedback mechanisms along with poor network connectivity restricts students to avail complete opportunities of online learning resources. One student availing education in the tertiary level opined, *"I have to bear the loss, as connectivity issues hamper communication with voice breaks and screen freezes with loss in connectivity during online classes."* Another student added, *"I can barely attend the classes and miss many classes due to poor network."*

2. Adaptation to online learning

With the continuing difficulties in availing online education, 52% of the students in the primary education level utilized general chat applications like WhatsApp and Telegram. A parent of a student expressed that, “*The teachers shared notes and recorded video lectures through WhatsApp, and even led assessments by means of WhatsApp, where the students used to write answers to questions provided by the teacher on sheets of paper under the strict supervision of a parent or guardian. The images of the answer sheet bearing student name and roll number are then shared with the teacher by the guardian and the assessment marks are later provided through the same chat application*”. Only 46% of the respondents in the primary category utilized video conferencing applications like Google Meet, Cisco Webex, and Zoom, and 62% of the respondents utilized general chat applications like WhatsApp, Telegram, etc. to access educational resources. Another 2% made use of applications like CampusCare, and so forth. In the case of students in the secondary level of education, 83.33% utilized video conferencing applications for online learning, 54.67% used chat applications, 7.33% made use of other online platforms such as CampusCare, ALLEN BPMS, and furthermore institutional applications or portals.

The students in the tertiary level accessed education mostly through video conferencing applications 71.90% and 20.10% of the students utilized general chat applications while 0.35% made use of the other platforms.

Figure 2. Graph showing the preference of online education platform among students





To cope with the persisting challenges in online learning, the dominant part of the students expressed that they took help from their friends and family and also traveled to regions with good network reception during class timings. Few students additionally attempted to cope with the difficulties of online learning by utilizing asynchronous online learning with the help of websites and applications such as YouTube, BYJUS, and Unacademy. To enhance online learning a student remarked, *“I read my books thoroughly to supplement the online lectures.”* Another student expressed, *“I have resorted to self-learning rather than depending solely on online lectures.”*

3. Attitude towards online learning

A positive reaction was recorded from the students in the primary level of education where 93% of them had a comfortable study environment at home, 61% favoured home learning post-COVID-19 and 87% of the student's parents supported online learning. Conversely, only 25% responded positively to having a sense of safety within their institutional environment and 44% did not know whether they would feel secure within their institution post lockdown. Subsequently, 77% of the students reported that their educational institution has adopted online learning measures and 64% of them did not encounter any trouble in online learning. Correspondingly, 77% of them didn't feel overburdened with home assignments and activities and 85% of them were motivated and interested to attend online classes. 63% of students likewise reported that online learning not a stressful experience for them and 42% of them could connect well with their teachers and friends.

The students in the secondary education gave a blended response where 57.33% consented to have assimilated the intended knowledge and skills through online learning and 60.67% reported of being overburdened with home assignments and activities. Only 46% felt interested and motivated to attend online classes. Online learning was a stressful experience for 50.67% of the students and only 34.67% responded to have been able to engage well with the teachers and peers. Around 38.67% of the students evaluated the whole online learning experience as average and only 7.33% appraised the online learning experience as very good. The parents and guardians of 80% of the students supported online learning and 82.67% had a comfortable home study environment although only 38% preferred home learning post-pandemic. Subsequently, 32% of the students agreed to feel safe within their institutional environment and 48% of students were not sure of their safety within their institutes post-COVID-19.

In view of the students in the tertiary sector, 86.56% of them reported that their institute has adopted online learning measures and 53.92% concurred that the online learning resources provided by their institution have met their requirements. Subsequently, 27.39% of the students have accessed the ICT initiatives adopted by the MHRD, and 21.81% of students have enrolled for Massive Open Online Courses (MOOCs) during the lockdown time frame. On the contrary, 67.71% of the students have reported having experienced difficulty in online learning, 53.57%



of students agreed to have achieved the intended knowledge and skills through online learning, and 53.05% reported to be able to engage well with the teachers and peers. 52.87% of the students also responded to be overburdened with home assignments and activities and 54.62% felt motivated to attend online classes. Online learning was a stressful experience for 47.81% of the students and 49.56% of the students rated the whole online learning experience as average. Only 29.84% of students consented to have a sense of safety in their institutional condition post-covid-19 pandemic and 49.38% didn't know whether they will have a sense of safety in their institutional condition.

B. Teachers

Among the 216 teachers who responded to the questionnaire, 70.83% resided in urban areas, 15.74% in semi-urban and 13.43% in rural areas. From the total sample, 35.65% were college teachers followed by 33.80% of school teachers, 27.78% taught in universities and the rest taught in coaching and vocational training institutes. The greater part of the respondents 55.09% educated in government institutions, 11.57% in semi-government institutions, and 33.33% in private institutions. The maximum responses (41.20%) were from the age group of below 35 years, followed by 28.43% from the age group of 45 years and above and 20.37% responses were recorded from the age group 35 to 45 years. With the start of pandemic induced lockdown, the maximum number of teachers (96.76%) consented to have shifted their mode of imparting education to digital.

1. Attitude against online education

The findings of this study highlight that the majority of the teachers (58.80%) reported online education to have decreased the interaction between the teachers and the students as many did not find virtual communication to be as effective and comfortable as face to face and this greatly affected the education process as communication leads to the educator to understand the learner's state and the learner, the concept. The teachers also felt that online education failed in developing the communication skills of the students by decreasing the social and cultural interactions among them. According to 58.33% of the respondents, online education is not feasible for all. The teachers perceived e-learning to be limited to certain disciplines and that the subjects involving practical or laboratory work faced a setback. Many teachers also found the online mode of education ineffective in assessing and evaluating the students.

Table 2: Teachers' negative attitude to online education

SL No.	Attitude against Online Education	n (No. of responses)	n% (n/N*100%, N=216)
1	E-learning is focused more on developing theoretical knowledge rather than practical skills	87	40.28
2	E-learning is limited to certain disciplines	81	37.5
3	E-learning does not guarantee the effectiveness of assessments	90	41.67
4	E-learning fails to develop the communication skills of the learners	90	41.67
5	E-learning reduces social and cultural interaction among the learners	98	45.37
6	E-learning lacks face-to-face communication between the learner and the educator	127	58.80
7	E-learning provides a limited feedback mechanism	70	32.41
8	E-learning is not feasible for all	126	58.33

2. Attitude in favour of online education

Several teachers participating in this study favoured online education as it made accessibility to education and of resources quite easy and also removed location, time, and cost constraints. The majority (46.30%) of the teachers stated that the shift to online education improved their time management skills and increased their self-motivation by making them follow an institutional teaching framework in their home environments. Many also found online education to be flexible, efficient, inclusive of learners, and exposed to immense resources.

Table 3: Teachers' positive attitude to online education

Sl. No.	Attitude in favour of Online Education	n (No. of responses)	n% (n/N*100%, N=216)
1	E-learning is cost-effective as it reduces commuting and other costs involved	79	36.57
2	E-learning reduces geographic location constraint in selecting the learning option(s)	81	37.5
3	E-learning allows flexibility	85	39.35
4	E-learning gives access to greater resources	63	29.17
5	E-learning assures equal participation of learners	22	10.19
6	E-learning provides efficient performance monitoring	14	6.48
7	E-learning requires strong self-motivation and time management skill	100	46.30

3. Challenges in adapting to online teaching

In view of the challenges incurred in this emergency shift to online teaching, the major challenge that surfaced for the teachers was the failure of making online classes student inclusive. 81.94% of teachers reported that they were unable to reach out to all the students in the class. 69.91% of the teachers regarded poor network connectivity as another important challenge in imparting online education. On the other hand, 27.78% of the teachers blamed the lack of technical resources and 20.37% faced issues with time management. Of the 76.39% teachers who affirmed that their educational institution has undertaken e-learning measures, only 24.07% claimed to have undergone any formal training while 55.09% claimed to have self-learned the utilization of online learning platforms. Teachers also cited the lack of inadequate teaching resources on their end as another reason for the failure to attract the interest and the engagement of the students. Many also faced increased pressure to cover the syllabus on time and to make the students understand the content. Increased expenditure for getting equipped with digital resources and also being put under additional pressure by the institutions to attend and conduct webinars and online workshops were few other problems faced by the teachers.

Table 4: Challenges faced by teachers in online teaching during the Covid-19 pandemic

Sl. No.	Challenges in adaptation to Online Education	n (No. of responses)	n% (n/N*100%, N=216)
1	Poor network connectivity	151	69.91
2	Inadequate content/ materials to teach	40	18.52
3	Lack of technical resources	60	27.78
4	Time management	44	20.37
5	Security risks	34	15.74
6	Not able to reach out to all the students	177	81.94
7	Increased pressure on content delivery	43	19.91
8	All of the above	1	0.46
	(Others)		
9	a) Too much pressure by the institutions on teachers. For example, how webinars and faculty development program is the new normal b) Personal investment for establishing a digital classroom at home. c) Students not interested to avail online mode of teaching	5	2.31
10	None of the above	1	0.46

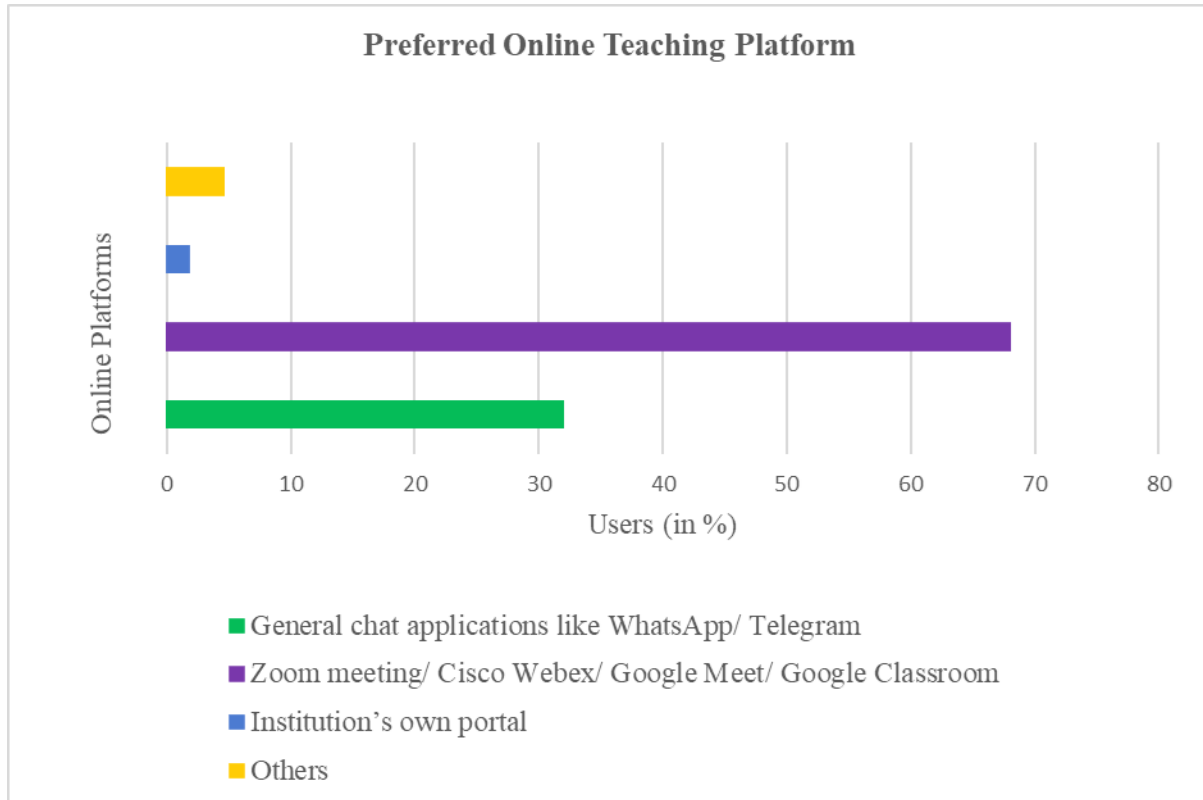
4. Adaptation to online teaching

The transition to online education is facilitated by the use of online tools and resources. This study also assessed the online platforms being preferred by the teachers to deliver education and also the strategies adopted for the evaluation and assessment of the students.

The response on the use of online learning software and applications due to the emergency shift to online teaching indicated that education was mainly imparted through video conferencing applications such as Zoom Meeting, Cisco Webex, Google Meet, etc. (68.05%), followed by general chat and messaging applications (31.94%) which are not specifically built for online teaching. Only 1.85% of the teachers used institutionally designed portals while some teachers also made use of YouTube to upload and share contents. Few also used emails. In those cases where the students did not have a smartphone or devices to access online education or missed

out on classes due to network issues or other reasons, a few teachers shared lessons with students through telephonic communication.

Figure 3. Graph showing the preference of online education platform among teachers



As regards assessment and evaluation of the students, 56.02% of the respondents used digital platforms. Some teachers provided the questions to the students through chat applications and the responses were submitted in the form of pictures taken of the answers written down by the students under the strict monitoring of the parents within a limited time frame, while some other teachers opted for an online open-book examination method with an extended time frame through google forms. 27.78% of the teachers assessed and evaluated the students' progress by communicating over the phone with the parents and 16.20% of the teachers did not adopt any assessment or evaluation strategy.

5. Perception and preference for online teaching and learning

As per the teacher respondents, only 31.49% of them perceived that all their students could afford the basic devices required for online learning whereas, 68.52% had a negative response to it. Consequently, 66.67% agreed on getting enough time to design lesson plans and audio, video content while 58.33% complained of time constraints. 51.39% responded positively to online teaching being a stressful experience for them. There was almost a balanced response, where 50.46% of teachers had the impression that the learners achieved the intended

knowledge and skills that were the focus of the lecture or course delivered. On being enquired about returning to the physical institutional environment, 44.5% were uncertain and 17.59% were negative about it. Almost half of the sample (50.46%) stated their experience with online education as average but the majority did look forward to the adoption of a blended mode of teaching with equal emphasis on online and conventional methods and flipped classrooms.

C. Parents

The emergency adoption of online learning was a new experience to many parents, the experiences being double-edged. Of the 100 participants who responded to the questionnaire, 74% resided in urban areas, 13% in semi-urban, and another 13% in rural areas. The majority of the urban respondents replied in affirmative of their children availing online education while a few rural and semi-urban respondents replied in negative. This existence of a weak positive relationship between location and availing of online education by the children was further indicated by a low r value of $+0.321$. From the sample, 73% of parent respondents were employed, 14% were self-employed, 10% were homemakers, and 3% were unemployed. Regarding pay every month, 39% of the parent respondents earned in excess of 75000 rupees, followed by 20% earning 15000 to 30000 rupees, 14% earned 30000 to 45000 rupees, 10% earned 45000 to 60000 rupees, 9% earned less than 15000 rupees and 8% earned between 60000 to 75000. The existence of an extremely poor positive relationship between the average monthly salary of the respondents and the availing of online education by their children was substantiated by an r value of $+0.1224$. The majority of the respondents were female (56%) and 75% of the respondents fell in the age group 35-50 years, followed by 25% above 50 years and 8% below 35 years of age. 46% of the sample had their children enrolled in the secondary level of education, 21% in primary, and 14% in tertiary. Another significant characteristic that emerged from the sample is that 77% had their children admitted into private institutions while only 14% into government intuitions. The level of engagement of the parents with their child's education also varied greatly within the sample with 53% being very much engaged, 33% being least engaged and 14% being not engaged at all. For facilitating the accessibility to online education, 23% of the respondents bought a new device for their children. The children either used their own personal device for online learning (39%) or their parents' device (44%) or shared a device with their siblings (17%). 79% of the sample affirmed to not have attended any parents' orientation program for familiarization with the online resources and tools.

1. Attitude against online education

As apparent from the study, the majority of the parents were worried that online education was reducing the interactions of their children with the teachers and classmates, which according to them if continued for long might make their children socially introverted. 27% of the parents reported their children's health being affected while accessing online education. 35% of the parents were not satisfied with the course content being provided and the method of coverage

of the syllabus by the educators through the online mode. They believed the quality of education was compromised. A few of the respondents also stated that their children were put under increased pressure through assignments and workloads. The parents also found themselves under pressure to meet the educational needs of their children on one hand and the expenses rising on the other. 22% of those parents who were previously more engaged with the learning process of their children complained that online education was making it not feasible for them to engage more actively in the process.

Table 5: Parents' negative attitude to online education

Sl. No.	Attitude against Online Education	n% (n/N*100%, N=100)
1	E-learning has increased my expenses. (or expenses on internet and buying device/s)	24
2	E-learning has put my child under pressure through increased assignments and workload	31
3	E-learning has made my child less interactive with teachers and fellow students	56
4	E-learning has affected my child's health	27
5	The course content and method of coverage of the syllabus through online learning is not satisfiable	35
6	E-learning has increased the pressure on me to meet my child's needs to access education	24
7	My child/children feel(s) discriminated against his/her peers due to failure in accessing online learning	8
8	The inability of my child to attain online classes has affected his education and mental health	9
9	E-learning has not made it possible for me to actively engage in my child's education	22

2. Attitude in favour of online education

This study also highlights that the majority of the parents favoured online learning as it secured the safety of their children without hindering their education. 27% of the respondents asserted that online education made them engage more actively in their children's learning process than before. A few parents also found online learning to be beneficial as the contents of learning were available and accessible at any time of the day and according to 10 % of the respondents, online education is more efficient than traditional classroom learning.

Table 6: Parents' positive attitude to online education

Sl. No.	Attitude in favour of Online Education	n% (n/N*100%, N=100)
1	E-learning has helped my child to continue learning during the lockdown	77
2	E-learning secures the safety of my child, as staying at home during this pandemic is safer than going to school	82
3	E-learning has made learning more accessible with video and audio content of all topics being available 24x7	26
4	E-learning has helped me in engaging more actively in my child's education	27
5	E-learning is more efficient than traditional classroom learning	10

3. Perception and preference

While 51% of the sample were happy with the shift to online mode mainly because of it being a tool for education continuity during the lockdown, 74% reported the quality of education to have been hindered by this switchover. With the world still in the grasp of COVID-19, 55% of the sample claimed that they would feel insecure to send their children to educational institutes once the lockdown is lifted despite the preference for classroom learning among many for the sake of quality education. Only 6% of the sample favoured complete transition to online while the majority (56%) of the respondents sought a blended approach of education delivery and attainment in the post-COVID-19 period wherein the concept of flipped teaching and learning is fused with online and classroom education.

D. Online education and health

The results of the study highlight concerns among parents, students, and teachers as the emergency shift to online education and adaptation to it along with the fear of COVID-19 has affected the physical and mental health.

The students in the primary level of education as a result of spending increased hours online and increased pressure, were exposed to health conditions like irritation of the eyes, tiredness, depression, etc. 68% of the students reported to have spent less than 2 hours online every day but 30% spent 2-4 hours. Also, 69% of the students, who agreed to have performed physical



activity during the lockdown, also faced health issues due to increased exposure to digital media.

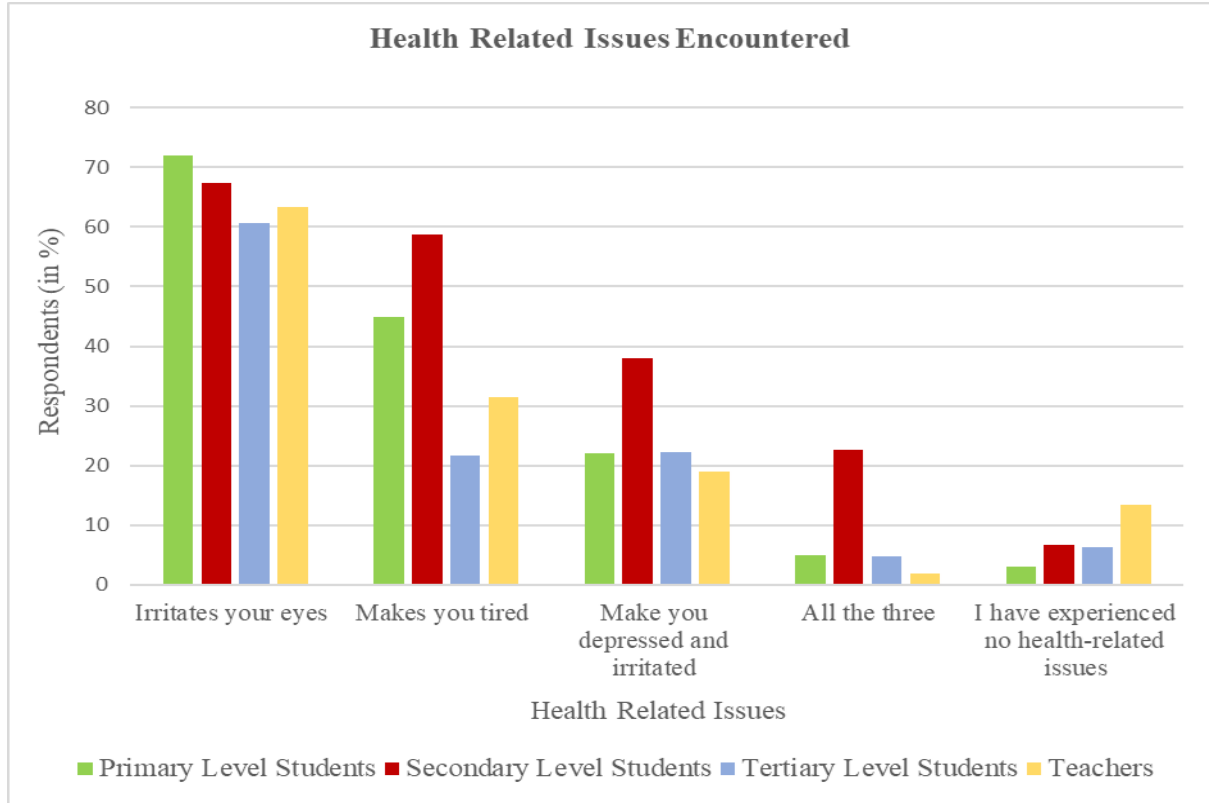
6.67% of the students at the secondary level of education spent more than 6 hours online on a daily basis, 29.33% spent 4-6 hours and the same is the percentage of respondents who spent 2-4 hours online every day. The surge in screen time affected the health of the students and put them under stress despite 55.33% of them remaining physically active.

The tertiary level students also complained of ailments and stress. 5.41% of the students spent more than 6 hours online every day while 10.12% spent 4-6 hours. This affected their health in many ways.

The teacher respondents claimed to have faced health issues such as irritation of the eyes, tiredness, depression, and irritation, etc. These health conditions emerged from spending more hours online than usual and of the anxiety created by COVID-19 and lockdown. 9.72% of the teachers spent more than 6 hours online on daily basis, 20.83% spent 4-6 hours online and 38.89% spent 2-4 hours online each day. The teachers too complained of stress.

27% of the parents participating in this study reported that spending more time with the device(s) affected the health of their children and 9% claimed that due to the inability of their children to attend online classes, insecurities developed which affected the psychological and emotional state.

Figure 4. Health Issues among students and teachers



Conclusion and Implications

The study explains how the shift to the online mode of education during the pandemic turned a boon as well as a bane for students, teachers, and parents. With experiences of both the kinds while adopting and adapting to online teaching, positive and negative attitudes developed among the teachers towards online education. The teachers turned into facilitators of learning with the switch to the online mode. Their role increased from presenting ideas and concepts to students and making them understand those to also include guiding and assisting the students to explore and understand the concepts on their own (Facilitator of Learning: Definition & Concept, 2015; Lai, 1993). The flexibility, efficiency, and the lack of geographic and other constraints balanced the numerous challenges and the negative attitudes to online education. The students too felt to be put through tests with the emergency shift where one student expressed, *“In Assam, poor internet connectivity persists and a large number of students don't own even a simple phone. It seems, nowadays the Government and education institutions are indirectly presenting that Education is not meant for poor people. If you don't have money, you are not eligible to receive an education”*. But, with the adoption of the strategies of adaptation, the students though not all, found themselves to be insync with the process of transition. Parents’ experiences and concerns about online learning added another perspective to the implementation of the online tools of education.



Another aspect of the paper is the health issues arising out of the pandemic and the digital shift. COVID-19 first appeared in China and turned into a pandemic. It being a new disease, its emergence and spread created confusion, anxiety, and panic among the world population (Roy et al., 2020). In such anxiety and panic gripped society when the normal classes got postponed and education went online, the fear and confusion arising out of COVID-19 and the uncertainties of education, impacted the emotional and psychological state of the students, teachers, and parents who had to fight the disease as-well-as the changes and challenges of the transition (Duraku& Hoxha, 2020; Baloran, 2020). With a disturbed sleep cycle, more screen time, headaches, eye irritation and other health woes, many complained of psychological and physical stress (Medhi, 2020). This study thus brings to focus how the switch to online education while securing lives from COVID-19, too put the health of the students and teacher population at risk.

The authors conclude that the pandemic hit transition to online education revolutionized the education infrastructure (Dutta, 2020) of the state of Assam on one hand, and laid bare the cons of the structure in facilitating the transition on the other. From the findings that stemmed from this study, it is evident that teacher education and training should not be limited to traditional pedagogy but should incorporate the emerging online pedagogy (Mbodila&Muhandji, n.d.) to facilitate effective teaching and learning process through digital tools and resources (Villanueva &Udaundo, 2019). The teaching-learning experience in the virtual mode of education gets affected by the design, structure, quality, and amount of course content and therefore, the courses should be designed, structured, and delivered in a way to be able to seize the attention and interest of the students. The process of online education also gets affected by the interaction between the teachers and students, by the ease of adaptation and also by technical, financial, and temporal limitations. All these determine the success or failure of the transition to and adoption of online education (Nambiar, 2020). In the present context, steps should be undertaken to enhance the experiences of accessing education through virtual mode and this involves the innovation and promotion of structured user-friendly online educational environments and tools. The recent developments in artificial intelligence for teaching and learning, virtual and augmented reality and simulations and serious games which have emphasized the importance of technology-enabled learning should be further encouraged. Blended learning should be the new norm and there should be increased choices and options of resources and means at the disposal of the students. “Anywhere, Anytime and Any Size Learning” should be endorsed (“A New Pedagogy is Emerging,” 2020; Nambiar, 2020) and ways of ameliorating good health, physical, emotional, and psychological, should be fostered (Richards, 2020).

The study, irrespective of it being limited, draws the ground realities of the emergency shift in the education mode in the state of Assam and the various facets of it. The unexpected intermittence to conventional methods for accomplishing education should be considered as an opportunity to inculcate new tools and techniques and make the education system more



efficient as a whole and also device mechanisms to make education inclusive for all students regardless of their financial, geographic and time constraints.

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REFERENCES

- A New Pedagogy is Emerging... and Online Learning is a Key Contributing Factor. (2020, August 4). Retrieved August 4, 2020, from <https://teachonline.ca/tools-trends/how-teach-online-student-success/new-pedagogy-emerging-and-online-learning-key-contributing-factor>
- Allen, J. (2020, March 13). How Technological Innovation In Education Is Taking On COVID-19. *Forbes*. Retrieved from <https://www.forbes.com/sites/jeanneallen/2020/03/13/how-technological-innovation-in-education-is-taking-on-covid-19/#35ad267b7bc7>
- Ansari, A. (2020, June 1). COVID-19 effect: Schools shut, colleges conducting online classes; get latest updates here. Retrieved July 28, 2020, from <https://www.shiksha.com/boards/articles/covid-19-effect-schools-shut-colleges-conducting-online-classes-get-latest-updates-here-blogId-32375>
- Baloran, E. T. (2020). Knowledge, Attitudes, Anxiety, and Coping Strategies of Students during COVID-19 Pandemic. *Journal of Loss and Trauma*, 1-8. doi:10.1080/15325024.2020.1769300
- Baruah, J., Das, K., & Choudhury, S. (2020). *Report on ECONOMY OF ASSAM in the Backdrop of COVID-19 Pandemic*. State Innovation and Transformation Aayog (SITA), Government of Assam, & OKD Institute of Social Change and Development, Guwahati.
- Careers360, T. (2020, March 26). COVID19 Lockdown: UGC promotes online courses for students, teachers. Retrieved August 1, 2020, from <https://news.careers360.com/covid19-lockdown-ugc-promotes-online-courses-for-students-teachers>
- Duraku, Z. H., & Hoxha, L. (2020, April). The impact of COVID-19 on education and on the well-being of teachers, parents, and students: Challenges related to remote (online) learning and opportunities for advancing the quality of education. Retrieved from https://www.researchgate.net/publication/341297812_The_impact_of_COVID-19_on_education_and_on_the_well-being_of_teachers_parents_and_students_Challenges_related_to_remote_online_learning_and_opportunities_for_advancing_the_quality_of_education
- Dutta, A. (2020). Impact of Digital Social Media on Indian Higher Education: Alternative Approaches of Online Learning during COVID-19 Pandemic Crisis. *International Journal of Scientific and Research Publications (IJSRP)*, 10(05), 604-611.
- Ghinai, I., Mcpherson, T. D., Hunter, J. C., Kirking, H. L., Christiansen, D., Joshi, K., . . . Uyeki, T. M. (2020). First known person-to-person transmission of severe acute



- respiratory syndrome coronavirus 2 (SARS-CoV-2) in the USA. *The Lancet*, 395(10230), 1137-1144. doi:10.1016/s0140-6736(20)30607-3
- Government of India. Ministry of Human Resource Development . (2014). Indian Standard Classification on Education. Retrieved from <https://www.mhrd.gov.in/indian-standard-classification-education-2014>
- Gopalan, H. S., & Misra, A. (2020). COVID-19 pandemic and challenges for socio-economic issues, healthcare and National Health Programs in India. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, 14(5), 757-759. doi:10.1016/j.dsx.2020.05.041
- Goswami, D. (2020). Achievement and Challenges of School Education in Assam: A Critical Study. *International Journal of Psychosocial Rehabilitation*, 24(06), 4695-4705.
- Hassan, M. (2020, June 12). Digital Divide: Students in Assam's Hojai Struggle With E-Classes. Retrieved from <https://www.thequint.com/my-report/assam-hojai-online-classes-a-struggle-for-economically-weak>
- Holshue, M. L., DeBolt, C., Lindquist, S., Lofy, K. H., Wiesman, J., Bruce, H., . . . Pillai, S. K. (2020). First Case of 2019 Novel Coronavirus in the United States. *New England Journal of Medicine*, 382(10), 929-936. doi:10.1056/nejmoa2001191
- Kar, B. K. (2020, July 18). COVID-19 Crisis in India and Mixed Realities. *Northeast Now*. Retrieved from <https://nenow.in/opinion/covid-19-crisis-in-india-and-mixed-realities.html>
- Kundu, P (2020, May 5). Indian education can't go online – only 8% of homes with young members have computer with net link. Scroll. Retrieved from <https://scroll.in/article/960939/indian-education-cant-go-online-only-8-of-homes-with-school-children-have-computer-with-net-link>
- Lai, K. (1993). Teachers as Facilitators in a Computer-supported Learning Environment. *Journal of Information Technology for Teacher Education*, 2(2), 127–137. doi:10.1080/0962029930020202
- Li, C., & Lalani, F. (2020, April 28). The COVID-19 pandemic has changed education forever. This is how. Retrieved August 2, 2020, from <https://www.google.com/search?q=world+economic+forum>
- Mankotia, A. S. (2020, April 1). Mobile internet usage increases just 10% since lockdown Read more at: <https://economictimes.indiatimes.com/tech/internet/mobile-internet-usage-increases-just-10-since-lockdown>. *The Economic Times*. Retrieved from <https://economictimes.indiatimes.com/tech/internet/mobile-internet-usage-increases-just-10-since-lockdown/articleshow/74920799.cms?from=mdr>



- Mbodila, M., & Muhandji, K. (n.d.). The use of ICT in Education: A comparison of traditional pedagogy and emerging pedagogy enabled by ICT's. In *WorldComp Proceedings*. Retrieved from <http://worldcomp-proceedings.com/proc/p2012/FEC2651.pdf>
- Medhi, T. S. (2020, June 24). Online classes may affect physical health: Experts. *The New Indian Express*. Retrieved from <https://www.newindianexpress.com/cities/hyderabad/2020/jun/24/online-classes-may-affect-physical-health-experts-2160494.html>
- Nambiar, D. (2020). The impact of online learning during COVID-19: Students' and teachers' perspective. *The International Journal of Indian Psychology*, 8(2), 783-793.
- OKD Institute of Social Change and Development, Guwahati, & Institute for Human Development, New Delhi. (2014). *Assam Human Development Report 2014: Managing Diversities, Achieving Human Development*. Government of Assam, Transformation and Development, State Innovation & Transformation Aayog. Retrieved from <https://sita.assam.gov.in/portlets/assam-human-development-report-0>
- Richards, E. (2020, July 31). Kids' mental health can struggle during online school. Here's how teachers are planning ahead. *USA Today*. Retrieved from <https://www.usatoday.com/story/news/education/2020/07/31/covid-online-school-kids-mental-health-teachers/5529846002/>
- Roy, D., Tripathy, S., Kar, S. K., Sharma, N., Verma, S. K., & Kaushal, V. (2020). Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. *Asian Journal of Psychiatry*, 51, 102083. doi:10.1016/j.ajp.2020.102083
- Shih, S. F., & Killeen, O. (2020, May 21). Increasing screen time during the coronavirus pandemic could be harmful to kids' eyesight. *The Conversation*. Retrieved from <https://theconversation.com/increasing-screen-time-during-the-coronavirus-pandemic-could-be-harmful-to-kids-eyesight-138193>
- Srivastava, M. (2020, June 30). COVID-19 To Fuel Next Wave Of Innovation For Education Sector. Retrieved August 3, 2020, from <http://bweduction.businessworld.in/article/COVID-19-To-Fuel-Next-Wave-Of-Innovation-For-Education-Sector-/30-06-2020-292546/>
- Verma, P. (2020, June 15). COVID-19 Impact: Screen time up by 100% for children. *The Economic Times*. Retrieved from <https://economictimes.indiatimes.com/industry/services/education/covid-19-impact-screen-time-up-by-100-for-children/articleshow/76383951.cms?from=mdr>



- Villanueva, C. C., & Udaundo, N. (2019, November 27). Digital and Traditional Pedagogy in Education. *Daily Sun*. Retrieved from <https://www.daily-sun.com/post/442042/Digital-and-Traditional-Pedagogy-in-Education>
- Williams, S. (2020, June 15). The benefits of a flipped classroom for distance learning [Web log post]. Retrieved from <https://blog.pearsoninternationalschools.com/the-benefits-of-a-flipped-classroom-for-distance-learning/>