Ilkogretim Online - Elementary Education Online, 2021; Vol 20 (Issue 5): pp. 5367-5374
http://ilkogretim-online.org
doi: 10.17051/ilkonline.2021.05.602

The Waves of COVID 19 Era: A study on how it excavates the Digital Gap in Education System.

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Abstract- In India, the emergence of COVID-19 was confirmed a pandemic in all its states and Territories. In effort to fight COVID-19, a lockdown was enforced on 25 March 2020 that negatively effected the school system. The conventional education system has been adapted to the education technologies (EdTechs) model, where teaching and evaluation are performed online. The goal of this paper is to identify barriers faced by teachers during online teaching and evaluation in different home environment settings in India.Empirical data was obtained from 500 respondents via an online survey. The proposed conceptual structure was empirically investigated by means of the Chi-square Logistic Regression Test. Finding shows that this involved a lack of technological infrastructure, insufficient knowledge of online teaching platforms and security issues. The results of the study may be of interest to the regulatory authorities and employers of higher education institutions that are preparing to implement online teaching as a daily practise in the future. A number of scholars have conducted research to resolve the challenges faced by online teaching and learning students during COVID-19 in India.To the knowledge of the researcher' understanding, this is the first research to discuss the problems facing the education system during online teaching and evaluation in the home setting. The current study fills the void by adding to the literature on online teaching and evaluation of home environment settings during the pandemic situation.

Key Words: Education System, COVID-19, Impact, Govt. of India and Digital Divide.

I. INTRODUCTION

COVID-19, the contagious epidemic, spread throughout the world and significantly impacted all aspects of the economy. The whole economic catastrophe has hit an astounding number of industries, crippling them to a large extent. This is projected that the effect of COVID-19 on the Indian economy during 2020 could cross almost 8.8 tn of Indian rupees (Keelery, 2020). This disease outbreak has caused an immense loss to the economy and has had a huge impact on global education. As per UNESCO, 63 million teachers have been affected in 165 countries.The record of 1.3 billion students around the world have not been able to attend school or university, and about 32.07.13.810 learners are affected in India alone (UNESCO, 2020). The Head of the Policy and Lifelong Learning Services Division also emphasized the problem that long-term school closures may have significant consequences for education, learning, evaluation and qualifications. The interruption of teaching and evaluation has slowed the student's progress and has resulted in a wider socio-economic effect. In India, the government has declared the closure and closure of educational institutions as a rational solution for the implementation of social distances within societies.In respect of their announcement, the Department of Human Resources Development shared in its press release (March 21, 2020) various free digital e-learning platforms, such as the National Technology Enhanced Learning Programme, the Active Young Expiring Minds Web Research (SWAYAM), e-Pathshala, DIKSHA portal, SWAYAM Prabha, the National Open Educational Repository, etc., for students, so that they can capitalise on them (MHRD, 2020a). The Ministry also gave advice to HEIs to continue teaching online and asked teachers to teach from home.COVID-19 has shifted the conventional teaching model to the Education Technology (EdTech) model, where teachers and students have been introduced to new and innovative educational methodologies. In keeping with the government's decision, several higher education institutions (HEIs) have begun their efforts to use technology to support distance learning, distance learning and online learning during the COVID-19 pandemic. Renowned HEIs such as the Institute of Technology, Indian Institutes of Management, Jawaharlal Nehru University, Symbiosis International University, Netaji Subhas University of Technology, IGNOU, Jamia Millia Islamia, ICFAI University and Delhi University offer their studio online classes.
Nonetheless, this is worth noting that several Educational institutions in India are not well prepared with institutionally funded technologies such as Moodle, Blackboard (teaching app), Microsoft Teams and Zoom; however, it has made it mandatory for teachers to use open-source online teaching platforms such

as WhatsApp, YouTube, Skype and Google to offer online sessions. Teaching method is completely unproven and unparalleled, and student online tests are still being performed with several uncertainties. It is relevant that online teaching cannot be effective without the participation of teachers, as they are the frontline staff of any educational institution.Just several research had tackled obstacles to online learning in emerging or developing countries such as Germany, Luxembourg, Japan (Sutherland), FL (Shea), but very limited studies have been performed in developing countries (Stoffregen et al., 2016; Sutherland, 2014; Shea, 2007). Digital learning is a relatively recent phenomenon in developing countries like India. COVID-19 outbreak has made it mandatory for teachers in developing countries to use online teaching and evaluation tools to support the education sector. Teachers need to adapt the technology for the effective implementation of online teaching and evaluation. Online teaching is not very common in India.
The Educational institutions advised their teachers should take classes from everyones homes without clear instructions on the effect of coronavirus pandemics and recommendations. They expected elderly teachers who are not technically sound to teach online (Sharma, 2020). Teachers have also found it difficult to manage students in remote teaching. The several times students intentionally create indiscipline by playing music, making noise, posting bad comments through fake users, eating and playing games in different windows (Punit and Qz.com, 2020). Learning in the home environment has been confirmed as exhausting and demotivating experience by the instructors.Many universities do use the open-source online teaching tool, which poses concerns about quality evaluation and confidentiality. This also raises questions about the consistency of the student's evaluation, which could also be undermined due to the lack of instructor knowledge on the assessment pattern and on-line assessment platforms. Online teaching and assessment in the home setting have different problems than online teaching and assessment in the university environment. The university community has a favourable environment in which all services are accessible at ease.The purpose of this analysis is to find the constraints that schools experience during online teaching and evaluation in the home environment setting in the Indian context. The results of the study can be of assistance to the regulatory authorities and employers of HEIs who are preparing to implement online teaching and evaluation as a daily practise in the future.

II. LITERATURE REVIEW

Online education is a well-researched component of education, particularly in distance learning situations. Mixed education and the complementary use of online learning management platforms have also received attention beyond distance learning contexts. There are pockets of excellence that demonstrate the viability of online learning in all its facets and different modes of delivery.Throughout journals such as The International Review of Research in Open and Distance Learning and Distance Education are devoted entirely to investigate throughout this field.The COVID-19 disease outbreak led to a situation in which teachers who are habituated to on-campus contact classroom instruction had to move quickly to remote learning; referred to by Hodges, Moore, Lockee, Trust and Bond (2020) as 'beginnings remote teaching.' Such authors claim that the well-planned online education perceptions are significantly different from those currently offered in times of national emergency or disaster,' where teachers have to 'modify quick fixes in less-than-ideal circumstances' (Hodges et al. 2020) (Hodges et al. 2020) (Hodges et al. 2020).
The COVID-19 pandemic has put the education system in difficulty.The hurdle thus enforced may have to be welcomed by educational institutions in order to take advantage of asynchronous learning that works best in digital formats. Digital learning is very different from the traditional learning, the shift from conventional higher education to the online mechanism that teachers need to change their pedagogy. Adapting technology to online teaching within a short timeframe was a major challenge for Indian teachers. Individuals were required to perform online assessments, that further aggravated their problems. From this point of view, Punit and Qz.com (2020) reported that online classes in the middle of the lockdown were a terrible experience for teachers.The study taken by QS I GAUGE discovered that India's technology environment has not gained a high level of quality to ensure the sound delivery of online classes to students (QS-ERA, 2020) Mishra (2020) has also raised concerns about the digital divide and the infrastructural dimensions of teaching through online educational platforms in India. Only few more scholars have discussed the difficulties that teachers face in learning and teaching online.

The same as Gratz and Looney (2020)'s investigation of faculty members' willingness to teach online and their resistance to change in Los Angeles, where teachers reported lack of online teaching skills, lack of time to prepare online courses, and their subject or course is not suited to online teaching. Similarly, Arora and Srinivasan (2020) reported on network issues, lack of training, lack of awareness, loss of enthusiasm, lack of participation, lack of personal contact and lack of interaction as major challenges

faced by teachers in the online learning experience.In addition, Kaup et al. (2020) identified challenges related to technology, training and student engagement in the sustainability of academics during the COVID-19 pandemic. Teachers do not have a sufficient infrastructure, such as configured laptops, the internet and microphones, to provide education efficiently. Several more teachers face connection problems, system failure, bandwidth issues, etc. while conducting online sessions, and are unable to solve problems due to lack of technical assistance. Along with contract, Verma et al. (2020) noted that many institutions had not trained teachers who could work remotely through online platforms and face a struggle to accept the transition.

The Educational institutions advised their teachers should take classes from everyones homes without clear instructions on the effect of coronavirus pandemics and recommendations. They expected elderly teachers who are not technically sound to teach online (Sharma, 2020). Teachers have also found it difficult to manage students in remote teaching. The several times students intentionally create indiscipline by playing music, making noise, posting bad comments through fake users, eating and playing games in different windows (Punit and Qz.com, 2020). Learning in the home environment has been confirmed as exhausting and demotivating experience by the teachers.Existing studies identified challenges to "technological innovation" in online teaching. Buabeng-Andoh (2012) has generally believed that teacher-level, school-level and scrum framework discourage teachers from using technology during the teaching process. Lloyd et al. (2012) identified institutional barriers, interpersonal barriers, training, technology barriers, and cost/benefit analysis of barriers perceived for online teaching in south-eastern institutions in the United States. In addition, Haber and Mills (2008) pointed out that the lack of training, the size of the institutions and the complexity of the programmes were perceived as barriers to effective online teaching in Florida.

Throughout, Al-Senaidi et al. (2009) found that the lack of equipment, lack of institutional support, lack of trust in information and communications technology (ICT) benefits, lack of confidence and lack of time are major barriers to the adoption of teaching and learning technology in Oman. In regards, Berge and Mrozowski (1999) categorise hurdles to online teaching in nine categories such as academic, fiscal, geographic, labour, legal, student, technical and cultural.A few other instructors have avoided moving online format due to negative attitudes, lack of time, lack of ICT skills, lack of technological support, lack of recognition of computers, lack of online translation of course content, which are barriers to online teaching (Prottas et al., 2016; Keengwe et al., 2008 Yuen and Ma,2008; Chen, 2010; Peralta and Costata, 2007). Numerous organisations do not provide time, support and financial resources to help develop quality online courses (Taylor, 2002).

III. METHODOLOGY

Methods are an essential component of every research work to make every study reliable and cogent. The selection of the methods shows the intensity and flaw of the study (Case and Light (2011). In order to obtain the best result, a substantial methodology is used in this work since this study measures the impact of the waves of the Covid-19 era in excavating the digital divide in the education system. A systematic survey was developed for the primary data collection of respondents in Delhi and NCR to achieve this objective.

The questionnaire was ready to gather information that could be used to construct the indicators considered in the study. The survey provides information on the differentvariables that increase this digital gap in the education system. A collection of categories has been built on the basis of literature surveys and expert opinions. For this study a questionnaire was prepared to collect the primary data. The study is conducted on the 175 teachers and 325 students were selected to fill the questionnaire.The convenience method of sampling was used for the collection of information. This analysis compares the mean results for the variables to provide a statistical basis. Some statistical methods, such as descriptive static, logistic regression and chi-sq, and correlation, have been used to ensure a meaningful analysis of the data. From the above discussion, it can be said that this study will certainly help practitioners to develop organizational policies because that may help to mitigate this digital gap in the education system. Informative organization techniques can also be built on the basis of the study.

sResearch methods

- Logistic regression- it a regression technique which is applied when the data is qualitative and the independent variable is binary for ex. Yes or no. We have used this technique to see the effect of different variables on the overall impact of the Covid-19 Era on the digital gap in education.
- Chi-square test- this is test is used for different aspects. Here we have used the chi- square test for association. We can use this test for qualitative as correlation cannot be used for qualitative data.

Table 1: Respondents' Profile

Category *N* = 500	*N*	%
Teachers	175	34.83
Students	325	65.17
Age	*N*	%
18–35	148	29.5
36–45	255	51
Above 45	97	19.5
Education *N* % Graduate 145 29 Postgraduate 305 61 Others 50 10		
Experience of taking online classes	*N*	%
2 weeks	107	21.62
3–6 weeks	221	44.16
More than 6 weeks	172	34.22

In the sample, there is a fair inclusion of respondents across gender—34.83% males and 65.17% females, and good representation of each age group, education level, and experience of conducting online classes. Table 1 reports the characteristics of respondents in more details.

IV. Results and Discussion

4.1 Logistic regression

The table below gives the statistics for the logistic regression which is used to check effect of various factors of the Covid-19 on the digital divide in the education sector. The independent variable is binary variable and independents are categorical and binary both.

Table 2: Logistic regression

Dependent		**B**	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
Step 1[a]	Implementationof online Education	-.106	.295	.130	1	.718	.899
	Communicationin online education system (easy/difficult)	-.072	.180	.158	1	.691	.931
	Rating on participation	.100	.108	.847	1	.357	1.105
	Level of satisfaction with online education system	-.084	.101	.696	1	.404	.919
	Regular Check over the E-education system	.150	.186	.655	1	.418	1.162
	online education	.048	.097	.245	1	.620	1.049

	excavating digital divide						
	Online E-education system is beneficial for the currentenvironment	-.183	.192	.903	1	.342	.833
	Constant	1.909	.650	8.616	1	.003	6.744
a. Variable(s) entered on step 1.							

Sources: Authors Calculation

From the above logistic regression model one can easily observe that the significance value for the different variables is greater than .05, so none of the dependent variable found to be significant for predicting the independent variable.

4.2 Chi-square test

The opportunities of the E-education system *the major strengths of the online Education System

Table 3: Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)		
				Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pearson Chi-Square	2485.302[a]	25	.000	.000[b]	.000	.006
Likelihood Ratio	1752.898	25	.000	.000[b]	.000	.006
Fisher's Exact Test	1647.881			.000[b]	.000	.006
N of Valid Cases	433					
a. 3 cells (8.3%) have expected count less than 5. The minimum expected count is 1.70.						
b. Based on 500 sampled tables.						

Sources: Authors Calculation

The above chi-square test is conducted to see association or the direct relationship between the opportunities of the E-education system *the major strengths of the online Education System. As from the above table it can be seen that P<.05 so we can reject the null hypothesis that these two are not related and we may accept that the benefits of the E-education system is related to the strengths of maintaining a communication between different stakeholder of the education system.

4.3 Findings of the analysis

- 42% respondents believed that the digital education system has created a digital gap in the present system but given the current scenario, it is playing a critical roleas it is required at each level like at strategy, planning, implementation and evaluation level.
- It is observed that most of the work of the education department, management, and outside agencies conducted the through using the digital services that is also increasing this digital gap.
- In most of educational system a new programme is planned to implement this new system but few of them are still facing difficulties such no access to digital service.
- An equal impact of this new system found on different segments of education sector like, organization expertise, management support and time efficiency.
- 500 respondents were asked if implementation of this new system is valuable for their organization. Out of them 215(49.65%) responded in yes and 218 (50.34%) responded in no. After that the respondents who responded in yes were asked that it adds more either to organization or to participates only. Then out of these 49.65% respondents then 53% said it is more valuable to participates only and 47% said it is valuable for organization in the current scenario of the world. On total 23 % of the respondents thinks that this new system is valuable for the organization but yes it contributing to a digitaldivides too.

- When the respondents were asked about the steps which should be taken to improve the process of this new system the most frequent answer was conducting it through an outside agency that have some specialisation in this system.
- It is observed that that most of the respondents thinks that regular implementation of this new system may result in communication effectiveness among publics, efficiency in communication process. A similar amount of respondents thinks it has no effect and lack of confidence which is surprising. Only a few thinks that it will secure confidence.
- Logistic regression was used to study whether the positive impact of this new system is effected by the process (i.e. it is easy or difficult), level of people's participation in this new system, if people think it is valuable, level of satisfaction with the this new system, level of thinking about importance of this new system, level of thinking about benefits of the digital education System. The results of regression analysis shows that for this data these factors do not affect the positive impact of this new system significantly.
- The chi-square test is conducted to see association or the direct relationship between the opportunities in this new system and the major strengths of the digital education System. As from the above table it can be seen that P<.05 so we can reject the null hypothesis that these two are not related and we may accept that the benefits of conduction of this new system is related to the strengths of communication in the Covid-19 era.

V. RECOMMENDATIONS

India must also create original techniques to make sure that students have feasible access to education during the COVID-19 era. Indian reforms must involve different groups of people from diverse backgrounds, including remote regions, marginalised and minority groups, for effective delivery. Immediate action is needed to reduce the impact of the pandemic on job opportunities, internship programmes and research projects. So several virtual education systems offer various programmes on the same subjects with varying degrees of certification, methodology and assessment parameters. Thus, the performance of programmes can vary across different online learning platforms.The institution of monitoring and evaluation and quality benchmarks for online learning should therefore be formed and decided to offer by the Institutions Of Higher education in India, with a view to the rapid growth of online learning platforms across the globe, Indian traditional knowledge is well known for its scientific innovations, values and benefits in developing sustainable technology.Local educational institutions should expect to begin their educational activities in order to maintain social distances. 30-40 per cent of students and teachers may attend school/college in two shifts per day to carry out educational activities in accordance with the COVID-19 guidelines. Exposure to technology and the Internet is a matter of urgency at the present time. Digital capabilities and the infrastructure needed must therefore reach out to the remotest and poorest communities in order to make it easier for students to continue their education during the pandemic. There is a need to deploy public funds to address the Internet gap and ensure that students keep learning digitally.State and local governments institutions should offer suggestions to tackle this question of digital education. A number of key issues related to distance learning strategies, such as availability and access to digital devices with Internet connectivity, the need for safe learning spaces, the ability of teachers, families and students to operate and navigate digital devices, and the need to engage in lesson plans for disabled students and other marginalised groups, should be addressed by the Government. And the stakeholders, too.

VI. CONCLUSION

COVID-19 has had a huge impact on the education sector in India. As several hurdles have arisen, different opportunities have also continued to evolve. The Government of India and stakeholder groups in education have explored the possibility of Open and Distance Learning (ODL) by implementing appropriate new technologies to deal with the current crisis of COVID-19. India is not properly stocked to ensure that education reaches all areas of the nation through digital platforms. Students who are not privileged as others will suffer the consequences of the current choice of digital platforms. But academic institutions and the Indian institute are relentlessly seeking a solution to this major issue.The primary concern ought to be to use digital technology to create a favourable position for millions of young indian students. This is time for academic institutions to enhance their information and knowledge sustainability dimensions so that they are ready to face similar situations with COVID-19. Even though the downturn of COVID-19 continues, there is an urgent need to make strategy to gain the use of online platforms so that

students not only complete their degree in this academic year, but also prepare for the future digital-oriented environment. The concept of "homework" is more relevant in such a pandemic situation to reduce the spread of COVID-19.India must find innovative approaches to ensure that the students have feasible access to learning during the COVID-19 pandemic. Indian initiatives must involve different individuals from diverse backgrounds, including remote regions, marginalised and minority groups, in order to provide effective education. As online practise benefits students immensely, it should be continued after the lockdown. Further extensive empirical studies may be performed to analyse the effect of COVID-19 on India's educational sector.

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