

An Analysis Of COVID-19's Impact On The Educational System: With Specific Emphasis To EDU-TECH

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ABSTRACT

An extension of a physical classroom into a digital environment is called a digital classroom. These schools use websites and apps that provide educational content to improve student learning. An infectious condition called coronavirus disease (COVID-19) is brought on by a recently identified coronavirus. We look into the sudden impact of such a pandemic on the education system and how it affects the conventional way of teaching and learning. This study is a synthesis of both basic research designs vis-à-vis Exploratory and Descriptive research. The school sector had faced a number of opportunities and difficulties as a result of COVID-19. The employment of digital classes in the time of epidemic was relevant and reliable. Yet there were troubles due to poor internet connectivity and limited access to digital technologies. The government should solve these problems at the earliest for the advancement of education system to the next level in the country. Since students are greatly benefiting from the online platform, it should remain even after COVID-19.

INTRODUCTION

Without a doubt, the COVID-19 epidemic has posed one of the biggest obstacles to the international education system and India has been no exception. As the virus spread, educational institutions across the country were forced to close their doors, leaving students and teachers scrambling to adapt to a new, technology-driven mode of learning.

The impact of the pandemic on education in India has been multi-faceted. (Madhushree et al., 2020) The outbreak forced approximately 32 crore students to stop attending schools and colleges, disrupting the traditional classroom-based learning environment. The pandemic brought about drastic changes in teaching, learning process across the world, least expected changes in the near future, till the 3rd week of March 2020 everything stood normal, but with the sudden invasion of COVID-19 changed the entire system of teaching learning process to a new scenario. After the outbreak of corona virus pandemic social distancing got popularised and in order to reduce the spread majority of the country's shutdown their colleges and schools. All assessments, including entrance exams, for schools, colleges, and universities were postponed while classes were suspended. The shutdown consequently totally altered the instructional schedule. Because of COVID-19, this year will go down in education history as the year that the classroom teaching and learning process abruptly transitioned to a new era of digital models. At first, both teachers and students were clueless about how to handle this unexpected problem. In India online courses were offered only by selected number of colleges and number of learners where limited, with the arrival of epidemic teachers and students had no other option than to adapt new technique called EDU-TECH (Education through Technology). Teachers and students now have a renewed hope to continue their educational activities online thanks to EDU-TECH. The instructors used various apps, such as Zoom, Google Meet, WhatsApp, Skype, and others, to conduct video conferences during lectures and provide homework to the students. For the purposes of this study, we therefore would have liked to investigate the following: the current state of online technology's ability to facilitate effective learning; future directions for educational interventions; and potential improvements to the methods used in this pilot course.

This research study focuses on COVID-19's effects on the Indian educational system, with special focus on the State of Kerala, and a specific emphasis on the role of technology in this transformation. It aims to explore how the pandemic-induced shift to digital learning has affected students, educators, and institutions. By examining educational access, quality, and equity, this study seeks to provide a comprehensive understanding of the short-term disruptions and long-term implications for Indian education.

Literature Review

(Bozkurt, 2022)The big reset, changing educational landscape, digital pedagogy, emergency remote education, pedagogy of care, social equity, and the future of education are the seven themes that emerged from this study's bibliometric analysis of 1150 publications on COVID-19 and education. The results emphasize the necessity of practical measures to guarantee school continuity during emergencies.

Ms. Toshika Pareek and Dr. Kiran Soni (2020) conducted a thorough investigation into the effects of the COVID-19 pandemic on Indian schooling. In discussing the effects of COVID-19 on Indian schools, this study highlights the value of online learning as well as the detrimental affects the pandemic has on children. It highlights the significant disruption caused by the pandemic, affecting approximately 32 crore students in India.

Sumitra Pokhrel and Roshan Chhetri (2021) did a study on the Impact of COVID-19 Pandemic on Teaching and Learning. This review examined the impact of COVID-19 on education systems globally, noting that the pandemic has created the largest disruption in human history, affecting nearly 1.6 billion learners. It emphasizes the need for educators to adapt to new methods and technologies to ensure continuity of education.

Akmal Zamani, Maslawati Mohamad, Aishath Reesha, Rafidah Kamarudin did a study named "The Impact of Covid-19: A Literature Review on the Challenges in E-Learning". This paper examines how COVID-19 has affected educational systems, emphasizing the difficulties that both teachers and students must overcome. It draws attention to the necessity for politicians to create plans to deal with the systemic problems brought on by the pandemic.

Muhaimin, Akhmad Habibi, Yasir Riady, Turki Mesfer Alqahtani, Anis Yohana Chaerunisaa, Tommy Tanu Wijaya, Tiana Milanda, Farrah Dina Yusop & Nour Awni Albelbisi did a study named "Covid-19 distance and online learning: a systematic literature review in pharmacy education". This study investigates the impact of the pandemic on online learning, noting that the pandemic has accelerated the shift towards digital education. It emphasizes the importance of teacher training and infrastructure development to support online learning.

Noor Aisha, Amiteshwar Ratra (2022) examined the advantages, difficulties, and psychological effects of online learning in the context of the COVID-19 epidemic for both educators and students. The current study not only gave them a plethora of options during a crisis, but it also brought attention to the abrupt adoption of online learning amid the COVID-19 pandemic and brought up a host of issues and psychological fallout for both teachers and students.

During COVID-19, Surbhi Dayal (2023) conducted research on the impact of online learning on educators. The results show that the existing widespread disparity in availability to smart devices, internet connectivity, and teacher preparation—all essential for a smooth transition to an online learning environment—was exacerbated by the COVID-19 pandemic. Nevertheless, instructors quickly adapted to teaching online with the help of in-person instruction and self-study materials.

Yifei Yank, Lina Vyas, Alfred M. Wu &Stuti Rawat (2022) did a study named" Effective online education under COVID-19: Perspectives from teachers and students". The study offered policy recommendations that can more successfully promote effective online involvement by addressing the concerns brought forward by participants at the teaching and learning ends of online education.

Manash Pratim Goswami, Jyoti Thanvi, Soubhagya Ranjan Padhi (2021) conducted a survey among university students during the epidemic to examine the effects of online learning in India. The study's conclusions indicate that a significant amount of funding needs to be allocated to the construction of infrastructure and the formulation of national policies in order to address issues encountered during the temporary setup of the teaching-learning process and maintain it as a stand-alone mode of instruction even after the pandemic is over.

Z Armoed did a study named "The Covid-19 Pandemic: Online Teaching and Learning at Higher Education Institutes". The purpose of this study is to investigate the challenges that students and faculty members have when utilizing virtual classroom environments in institutions of higher learning.

OBJECTIVES

Primary Objective

- To identify the effect of a pandemic on the educational system and how it affects the conventional way of teaching and learning

Secondary Objectives

- To understand the levels at which technology was used in classes before Covid 19
- To study the changes in teaching and learning procedure
- To assess the impact of online classes on students and teachers
- To understand the issues faced by teachers and learners in the digital classroom
- To identify the scope of the actions the government has implemented to facilitate online learning

RESEARCH METHODOLOGY

Research designs can be classified into three categories: explanatory, exploratory, and descriptive. The investigator utilized a descriptive research design with an explanatory focus. This study is a synthesis of both basic research designs vis-à-vis Exploratory and Descriptive research. This study is undertaken in various private and public educational institutions under various education boards and universities and colleges under the UGC. The study is limited to the geographical area of Kerala, India. Various institutions coming under the education sector were taken for the study including both teachers and students. Being the leading education providers of the state and also of the country the alternative teaching-learning systems implemented here should be of the highest standard. So, it can represent the collective idea on the varied alternate systems of providing education across different types of institutions of the education sector. There were 255 people in all that participated in the study. For this investigation, a non-probability sampling technique was employed. A Google Forms-coded questionnaire served as the data gathering tool. The study participants received a link to the questionnaire via WhatsApp. A questionnaire was the tool employed in the study to collect data. The responders' questionnaire was closed-ended. The structured questionnaire is the research tool that is utilized to gather data. Descriptive statistical metrics, such as percentages and frequency distributions, are the data analysis method that is utilized to display the questionnaire response rate. In less than a week, data was gathered. The study was briefly explained to the participants, however due to the global pandemic, the researcher was unable to visit the location to distribute the questionnaires. The participants were informed in advance of the time the researcher would need their response. In the event that they required more clarification, the researcher provided them with a phone number. Priorities were assigned to participants based on their desire to participate; those who select "Yes" will then go on to complete the questionnaire.

DATA ANALYSIS AND INTERPRETATION

The data needs to be effectively analysed and interpreted to draw meaningful conclusions and communicate the findings. Effective data interpretation enables to identify the most significant findings and draw conclusions that are supported by the data. This process requires a deep understanding of the research question, the data collection methods, and the data itself.

Percentage analysis has been done to offer a clear and concise method for understanding the distribution and proportions within the dataset. It has helped in simplifying the complex data, making it more comprehensible for both technical and non-technical audiences.

A. Understanding the levels at which technology was used in classes before Covid 19

• On the basis of type of institution

Table 01: Technology usage in Class before Covid19

			Tech Use in Class before Covid19				Total
			None	Minimum	Moderate	Regular	
Working or studying in	Government Institution	Count	10	19	11	6	46
		% within Tech Use in Class before Covid19	16.4%	16.1%	20.8%	18.2%	17.4%
		% of Total	3.8%	7.2%	4.2%	2.3%	17.4%
	Aided Institution	Count	34	74	24	11	143
		% within Tech Use in Class before Covid19	55.7%	62.7%	45.3%	33.3%	54.0%
		% of Total	12.8%	27.9%	9.1%	4.2%	54.0%
	Private Institution	Count	17	25	18	16	76
		% within Tech Use in Class before Covid19	27.9%	21.2%	34.0%	48.5%	28.7%
		% of Total	6.4%	9.4%	6.8%	6.0%	28.7%
Total		Count	61	118	53	33	265
		% within Tech Use in Class before Covid19	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	23.0%	44.5%	20.0%	12.5%	100.0%

From the analysis it is clear that more than 55 per cent of respondents have none to minimum exposure to technology in every type of institution.

On the basis of level of education**Table 02: Technology usage in Class before Covid19**

			Response				Total
			None	Minimum	Moderate	Regular	Total
Educational Level	Lower Primary/Upper Primary	Count	0	2	5	3	10
		% within Tech Use in Class before Covid19	0.0%	1.7%	9.4%	9.1%	3.8%
		% of Total	0.0%	0.8%	1.9%	1.1%	3.8%
	Secondary school	Count	3	0	3	1	7
		% within Tech Use in Class before Covid19	4.9%	0.0%	5.7%	3.0%	2.6%
		% of Total	1.1%	0.0%	1.1%	0.4%	2.6%
	Higher Secondary	Count	0	5	0	0	5
		% within Tech Use in Class before Covid19	0.0%	4.2%	0.0%	0.0%	1.9%
		% of Total	0.0%	1.9%	0.0%	0.0%	1.9%
	Undergraduates/Postgraduates	Count	57	111	45	28	241
		% within Tech Use in Class before Covid19	93.4%	94.1%	84.9%	84.8%	90.9%
		% of Total	21.5%	41.9%	17.0%	10.6%	90.9%
	Coaching Institutes	Count	1	0	0	1	2
		% within Tech Use in Class before Covid19	1.6%	0.0%	0.0%	3.0%	0.8%
		% of Total	0.4%	0.0%	0.0%	0.4%	0.8%
Total		Count	61	118	53	33	265
		% within Tech Use in Class before Covid19	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	23.0%	44.5%	20.0%	12.5%	100.0%

Majority of the participants use minimum to moderate level of technology in every level of education except in coaching institute where it is either none or regular.

B. To study the changes in teaching-learning process**Table 03: Experience with Digital class until now**

			Response			Total
			Worse	Same	Better	Total
\$App_Used ^a	Application Used WebEx	Count	13	14	2	29
		% within Experience with Digital class until now	12.9%	9.7%	10.5%	
		% of Total	4.9%	5.3%	0.8%	10.9%
	Application Used Zoom	Count	32	40	13	85
		% within Experience with Digital class until now	31.7%	27.6%	68.4%	
		% of Total	12.1%	15.1%	4.9%	32.1%
	Application Used Google Classroom	Count	52	92	12	156
		% within Experience with Digital class until now	51.5%	63.4%	63.2%	
		% of Total	19.6%	34.7%	4.5%	58.9%
	Application Used Google Meet	Count	62	109	16	187
		% within Experience with Digital class until now	61.4%	75.2%	84.2%	
		% of Total	23.4%	41.1%	6.0%	70.6%
	Application Used Television	Count	1	1	0	2
		% within Experience with Digital class until now	1.0%	0.7%	0.0%	
		% of Total	0.4%	0.4%	0.0%	0.8%
	Application Used YouTube	Count	22	44	4	70
		% within Experience with Digital class until now	21.8%	30.3%	21.1%	
		% of Total	8.3%	16.6%	1.5%	26.4%
	Application Used WhatsApp	Count	40	69	9	118
		% within Experience with Digital class until now	39.6%	47.6%	47.4%	
		% of Total	15.1%	26.0%	3.4%	44.5%
Application Used Others	Count	19	20	2	41	
	% within Experience with Digital class until now	18.8%	13.8%	10.5%		

		% of Total	7.2%	7.5%	0.8%	15.5%
	Application Used None	Count	2	0	0	2
		% within Experience with Digital class until now	2.0%	0.0%	0.0%	
		% of Total	0.8%	0.0%	0.0%	0.8%
Total		Count	102	145	18	265
		% of Total	38.5%	54.7%	6.8%	100.0%

Multiple applications are used by the students as well as teachers for varied purposes like attending or taking classes or submitting assignments etc. More than 100 of the participants are using applications like Google Meet, Google Classroom and WhatsApp for the classes, and majority of them are having the same or better experience from these online classes than on an ordinary classroom. And even in the total count more than 60% of the respondents have same or better experience with online classes using these applications.

C. To assess the impact of online classes on students and teachers on their teaching learning process

Table 04: Impact of online classes on students and teachers

Responses	Count	Percentage
Better (Felt as if their teaching/understanding was better than usual)	19	7.2%
Same (Felt as if their teaching/understanding was as good as usual)	145	54.7%
Worse (Didn't felt as if their teaching/understanding was better than usual)	101	38.1%
Total	265	100%

The impact of online class on teachers and students on their teaching-learning process as per the chart remains the same for the majority of the participants (54.7%). That is, in this online class also they feel that their teaching/understanding is as good as it was in a normal classroom setting. And; only 7.2% of the participants feel online classes are better than conventional way whereas 38.1% feel that online classes are worse than normal classrooms.

D. Preferred teaching/learning method

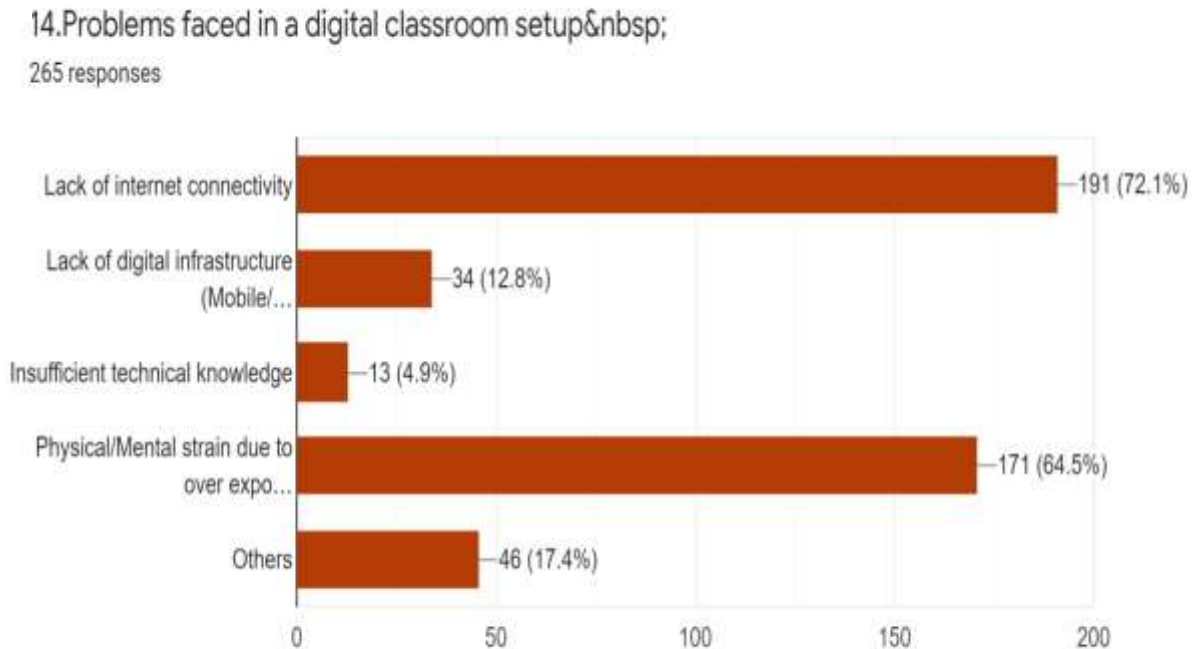
Table 05: Preference of learning or teaching method

Preferred method	Count	Percentage
Classroom	248	93.6%
Online Class	17	6.4%
Total	265	100%

Even after a majority had the same or better experience in online classes an overwhelming 93.6% of the respondents prefer to go back to their ordinary classrooms.

E. Understanding the challenges that educators and learners encounter in the digital classroom

Graph 01: Issues faced by educators and learners in the digital classroom



The main problem faced by 72% of those who were in digital classes was that they didn't have proper internet connectivity i.e.: they either had weak signal from the service provider or the broadband connections in their areas didn't have enough bandwidth strength for a class to function uninterrupted or was not smooth enough. The second most problem that was encountered by many is that of the physical and mental strain that they had to go through by the continuous exposure to the screen. Even though the classes are held in similar manner to that of how it was in a normal classroom, digital classrooms are taking a toll on everyone.

F. Determining the extent of the actions the government has implemented to facilitate online learning

- **On the basis of assistance provided by Government/Management (Financial Aid or Technical Assistance)**

Table 06: Provision of Financial Aid or Technical assistance by Government /Management

			Financial Aid or Tech Assist by Government /Management		Total
			No	Yes	
Assistance Provided by Government Management	Financial/Monetary	Count	2	5	7
		% within Financial Aid or Tech Assist by Government /Management	0.8%	20.0%	2.6%
		% of Total	0.8%	1.9%	2.6%
	Equipment for taking/attending classes	Count	8	5	13
		% within Financial Aid or Tech Assist by Government /Management	3.3%	20.0%	4.9%
		% of Total	3.0%	1.9%	4.9%
Training/Guidance	Count	42	12	54	

		% within Financial Aid or Tech Assist by Government /Management	17.5%	48.0%	20.4%
		% of Total	15.8%	4.5%	20.4%
	None	Count	188	3	191
		% within Financial Aid or Tech Assist by Government /Management	78.3%	12.0%	72.1%
		% of Total	70.9%	1.1%	72.1%
Total		Count	240	25	265
		% within Financial Aid or Tech Assist by Government /Management	100.0%	100.0%	100.0%
		% of Total	90.6%	9.4%	100.0%

The crosstab shows whether the government or the management had given the educator or pupil any monetary or technical assistance for the digital classes. And if they have, in what ways it was provided, was it financial, technical etc. In this crosstab only 25 of the respondents got the help they needed to take the classes effectively either from the government or the management and the rest had to resort to other means to find ways to conduct digital classrooms on their own.

DISCUSSION

The goal of the study was to determine how a pandemic impacts the educational system and how traditional methods of instruction and learning are affected. Initially, the study sought to assess the changes in the teaching-learning process. The study found that multiple applications are used by the students as well as teachers for varied purposes like attending or taking classes or submitting assignments etc. Furthermore, in the total count more than 60% of the respondents have the same or better experience with online classes using these applications. Furthermore, the effectiveness and goal of the current system are accurate. Additionally, the conduction of digital classes are honestly and fairly done as the majority of them were able to follow up on the classes. The employment of digital classes in the time of Covid 19 is relevant and reliable. Majority had the same or better experience in online classes as that of in an ordinary classroom.

Secondly, the research sought to evaluate the impact of digital classes on students and teachers on their teaching learning process. Nevertheless, the impact of online class on teachers and pupils on their teaching-learning process remains the same for the majority. Furthermore, a small percentage of the participants feel online classes are better than conventional ways.

Thirdly, to understand the issues that educators and learners in the digital classroom are facing. Here, the main problem faced by those who were in digital classes was that of not having proper internet connectivity and of weak signal from the service provider or the broadband connections. Furthermore, of the physical and mental strain due to the continuous exposure to the screen. Also, lack of digital infrastructure, insufficient technical knowledge and various other problems affect teachers and students in a digital classroom.

Lastly, the study sought to identify the scope of the steps the government has made to encourage online education. Not only aforementioned problems affecting the educators and pupils. Furthermore, the bare minimum help that one gets from the government and/or management affects the productivity and output intended to achieve through the digital classes.

LIMITATIONS

There is a chance to frame further research within the same parameters as this one. The study used in this paper was conducted under highly limited circumstances brought on by the epidemic. It will be challenging to assign a precise number or position to each study, though, as not every scenario covered in this work can be easily measured and contrasted with research from the future. This study is confined to the students and educators of Kerala. So, the result of the analysis cannot be generalized. And of that too only select number of the entire population is used which is limited to 265.

FINDINGS

Digital technology use for educational delivery has advanced due to COVID-19. Educational establishments shifted to a mixed learning environment. It inspired all educators and learners to become more adept with technology. Additionally, it provides access to many students at once.

Devising and usage of new learning management systems exclusively for teaching by educational establishments and educators developed a strong demand. Even though it was mostly by privately managed institutions there were some in the government funded institutions also.

Because they were unable to retrieve their hard copies of study materials during lockdowns, the majority of pupils used soft copies as a source of information. The epidemic has led to a sharp increase in the availability of webinars, e-conferences, virtual meetings, and teleconferencing. People's awareness of and proficiency with digital technologies has increased as a result of the pandemic.

Throughout the epidemic, the government, educational institutions, and other groups also came up with innovative ways to guarantee that every child had sustained access to school. COVID-19 but in certain cases it fell short so the government should introduce fool proof plan and provide adequate financial support for the needy ones.

SUGGESTIONS

- ❖ Having access to technology and the internet is vital in the present circumstances. Therefore, in order to enable students to continue their education during pandemics, internet coverage needs to spread to the most rural and underprivileged regions at a reasonable fee.
- ❖ The teaching learning process has entered a new era of EDU-TECH and therefore the majority doesn't have enough knowledge on technology so there should be more training programs for both teachers and students.
- ❖ The government and educational institutions had to strategize to sustain the educational endeavors while upholding social separation. 30–40% of teachers and students may work two shifts a day at schools or colleges in order to comply with COVID-19 regulations and continue with their study.
- ❖ The working hours of digital class should be reduced to 3 hours per day for better health care of teachers and students.

CONCLUSION

The country's education system was significantly impacted by the pandemic. This has created many challenges and opportunities to the education system. The government of India has realized potential of open and distance learning in education through digital technologies in the current scenario. The employment of digital classes in the time of epidemic was relevant and reliable, majority had the same experience that of ordinary classes but the major troubles were the poor internet connectivity and limited access to digital technologies. The government should solve these problems at the earliest for the advancement of education system to the next level in the country. Since students are greatly benefiting from the online platform, it should remain even after COVID-19.

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