Research Article

Digital Integration in School Education and the Role of COVID-19 Crisis

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Abstract

The COVID-19 pandemic struck human life as a disaster worldwide and left no choice for people other than to keep themselves locked inside their houses for months to years. Many professional and developmental activities in daily life were interrupted completely in the early phase of the pandemic, including school education. Digital tools, technologies, and digital media were adopted as the lifelines for social connectivity, professional work, information sharing, and, most importantly, continuing education in virtual classrooms. As utilizing digital tools and technology was the best choice, among few others, to continue education both for teachers and students, they adopted it and tried their best to search and utilize the best options of such tools and techniques available at that time, and the search is still going on. A study was conducted in different types of schools in Delhi to explore digital integration in school education during and post COVID-19 crisis. The study attempted to understand the role of the crisis created by the COVID-19 pandemic in digital integration in school. While interacting with principals/heads of the schools, teachers, parents, and students from different types of schools in Delhi, they shared their experiences of becoming digitally well-skilled during that period. Despite the digital divide regarding the availability of digital tools, digital skills, and network data, they tried to find ways. Necessities that emerged due to the COVID-19 crisis played the role of a catalyst in the process of developing digitally well-skilled teachers and students that would speed up the process of achieving the goal of "NEP 2020".

Keywords: COVID, Pandemic, school education, Digital tools, digital skills, digital integration

Abbreviations: COVID (Corona Virus Disease), GoI (Government of India), ICT (Information and Communication Technology), NEP (National Education Policy), PoA (Programme of Action)

Introduction

The report of The Education Commission 1964-66 (Government of India, Part 1.01 of chapter-1, 1970) states, "the destiny of India is being shaped in her classrooms". Therefore, the classroom is the place that gives the framework, direction, and demonstration through its experiences at ground level to decide in which shape, up to what extent, and how it would be done. National Education Policy (NEP) 2020 talks about developing digital and skilled India, and the process has already begun in our school education. Children in schools today will become the future of the country tomorrow, creating a digitally skilled workforce to participate in the development of the country.

The COVID-19 pandemic struck the life of human beings as a disaster (announcement of the COVID-19

pandemic on March 12, 2020, by the World Health Organization, 2020) and left no choice other than to keep themselves locked inside their house for months to years. People of all ages had to face this situation, including school students, teachers and parents. This horrible situation forced everyone to maintain physical distancing, resulting in social distancing too in physical form. As it is a universal fact that necessity is the mother of invention, so the necessity of how to connect socially with friends, relatives, and colleagues while taking care of physical distancing is motivated towards massive use of social media platforms, which are majorly based on digital media nowadays. Digital tools and technology became the major means and methods to continue teaching and learning along with becoming a major source of communication while sitting at home due to lockdown.

Though the seed of digital integration was sown in the past in the field of education in India at all levels, including school education and germination took place much before the COVID-19 pandemic through Computer Literacy And Studies in School (CLASS) project in 1984-85, PoA in 1992, Government of India (GoI, 1995)), ICT @ School in 2004 (GoI, 2004) and National Policy on ICT In School Education (GoI, 2012). However, the growth was not as vigorous as it became during the pandemic due to digital and online school education. Just like a catalyst in a chemical reaction, necessities that arose due to the pandemic worked to enhance the process of developing digital and online education in schools, resulting in vigorous digital integration in school education.

While reviewing the literature, it was found that CLASS projects could not become very successful due to the lack of hands-on experience for the learner teachers (Gupta, 1996). The national policy on education (GoI,1986) found modern communication technology capable of managing the constraints of time and distance, but nothing more was described about the integration of such technologies in education. In PoA,1992 (GoI, 1995), it was proposed to expand CLASS project. With the purpose of providing opportunities to build the capacity of secondary-stage students in ICT skills, the ICT@ school was launched in December 2004 and revised in 2010 (GoI,2004). "National Policy on ICT in school education (GoI, 2012)" emphasized on ICT literacy for teachers and students and their ICT competency enhancements. NEP (GoI, 2020), which was unveiled during the pandemic, placed more emphasis on utilizing digital technology to make teaching, learning, and evaluation effective by integrating such technologies in education in different forms and for different purposes.

Kanvaria (2011) reported that Google groups were quite helpful to learn in a face-to-face in-service training program for teachers. Bordoloi et.al. (2024) reported that ICT helped in promoting learning as perceived by the head teachers of secondary schools. In a study conducted by Arora & Chander (2024), teachers opined that the academic performance of students was enhanced by using social media for learning. In the same study, parents said that it helped their children clear doubts, gain knowledge and develop awareness.

Moreira et al. (2019) opined that better integration of information and communication technology required sufficient training, which helped teachers for strong educational

integration of ICTs in school. Rathnabai (2023) reported that online training resulted in the creation of an environment of learning and integrating technology in the self-interest of the teachers. Wadhwani & Abraham (2017) reported that there was no orientation for teachers by the manufacturers for using different tools of smart class, resulting in their underutilization. After the arrival of the COVID-19 pandemic and the beginning of the lockdown situation, many countries began to look for digital resources and technology to provide the opportunity for remote learning to students, as reported by the World Bank (2020). Many digital activities were provided in India also, to be utilized for school education (India Report: Digital Education, GoI, 2020). Jena (2020) reported that many students had no digital tools for learning purposes. NCERT survey found that 27 per cent of students did not have digital devices to attend online classes (PTI, 2020). Dhawan (2020) reported the challenge for education to move to online mode from offline mode. Jain et al. (2020) reported that teachers were not trained to cater to the situation of online learning. Grover & Mathew (2022) reported that teachers needed to develop their own teaching resources in the initial phase of lockdown as there was no availability of ready-to-use resources. They tried to learn how to conduct online classes, and most of them learned to some extent before getting any formal training. School teachers were reported to have a positive view of teaching online during the COVID-19 crisis (Kamal & Illiyan, 2021). The massive rise in conferences, seminars, and meetings in virtual form due to COVID-19 has been observed as a positive feature by Dar & Lone (2021).

Digital technology was considered just a resource to be utilized by teachers and learners if they wanted to do so, as evidenced by the literature available before the pandemic. However, during the pandemic, it became a need to integrate such technology into teaching and learning, again evident from the literature available during and after the pandemic, which led to the objectives of this study.

The rationale of the study

Though it is evident from the literature, news sources and real-time observation during the COVID-19 crisis that digital tools and technology were adopted as the main source for continuing education at all levels, there is a lack of evidence directly from the field to understand the live experiences of the head of the schools, teachers, parents and students. There are studies conducted during lockdown through virtual media to understand the problems of teachers in conducting online classes and the efforts made by them, but only a few studies are about students. There is a lack of study on the students, parents, and teachers at the upper primary level. Various studies conducted to explore online education depicted the problems faced by teachers and students in conducting online education and the efforts made by the government, schools and some techno-savvy teachers. But other aspects, like the efforts made by students, their family and friends, and by the teachers who had nominal knowledge of digital technology before this pandemic, were given a nominal place in the exploration and discussion. This study was conducted on upper primary level school education to understand the efforts made by teachers, students, and parents to integrate digital technology

into education to overcome the challenges created by the COVID-19 crisis and lockdown. Delhi has been chosen as the area of this study due to the wide socio-economic divide that creates a divide in the context of the availability of resources and the environment at home for teaching and learning.

Objectives

1. To understand the role of the crisis created by the COVID-19 pandemic in digital integration in schools.
2. To explore digital integration in schools during and just after the COVID-19 crisis.

Methodology

The study was conducted in different types of schools in Delhi to explore digital integration in school education during the COVID-19 crisis and just after the reopening of schools. It is qualitative in nature based on the focus group discussion and purposive interaction with school students, principals/school heads, teachers, and parents from different types of schools in Delhi. The study was conducted in 12 schools, out of which 6 schools belong to the Directorate of Education, Delhi Government, 4 belong to Kendriya Vidyalaya Sangathan, Government of India, and 2 belong to private management. Formal interaction with different stakeholders was done after unlocking of schools for classes 6th, 7th and 8th in the year 2022.

Sampling and data collection

12 focus group discussions were conducted with students, one in each school, through a random selection of members for each group from classes 6th, 7th, and 8th. Another 12 focus group discussions with teachers were done, one group in each school selected through purposive sampling, who taught at the upper primary level during the lockdown and just after the unlocking. The interaction with parents was done in small groups through purposive selection for each school. School heads also shared their experiences about the role of the crisis of the COVID-19 pandemic in the integration of digital technology in school education.

Tool

The tool adopted was a semi-structured group discussion/interaction schedule comprising a few questions about their (samples') digital skills learned before the pandemic, their experience with the need for those skills in their day-to-day teaching and learning at that time, and the availability of digital tools with them during that phase. Other questions were related to their experience with the need for new digital skills in their day-to-day teaching and learning during the COVID-19 crisis, their digital skills learned and developed during the pandemic, and the need for digital tools created due to that situation and how they manage to equip them with digital tools and skills during that phase (Table-1).

A qualitative thematic analysis technique was adopted to analyze the responses and to reach a conclusion.

Table-1: Samples and Semi-structured Group Discussion/interactionSchedule

S. No.	Sample type	sample	Semi-structured Group Discussion/ interaction Schedule (questions were based on the following semi-structured group discussion schedule)
1	Students from classes 6th ,7th and 8th	12 groups (having 10-15 students in each group), 1 group from each school	Digital skills learned before the pandemic, their experience with the need for those skills in their academic work at that time, and the availability of digital tools with them during that phase. Need for new digital skills in their day-to-day academic work during the COVID-19 crisis, their digital skills learned and developed during the pandemic, and the need for digital tools created due to that situation and how they manage to equip them with digital tools and skills during that phase
2	Teachers	12 groups (having 5-9 teachers who taught upper primary level during the COVID-19 phase), 1 group from each school	
3	Parents	12 groups (having 4-5 parents of the students of upper primary level)	
4	Principals/ Heads of the schools	12	

Findings and discussions

Necessities arisen due to the pandemic pushed to search out the ways, means and methods

As the pandemic continued to expand, different types of means and methods were being searched, tried, and utilized by teachers, students, parents, and school administration for teaching, evaluating, and all-round development of students. On the basis of responses from different groups (teachers, parents, and students), it was found that most of those means and methods were based on digital tools and techniques, which was mentioned by the World Bank (2020) also. Most of them were being utilized till the date of interaction, even after the reopening of schools.

Though it was not possible to meet face to face physically to play and to learn together, at least it became possible to see each other and to communicate through digital media. It became possible to learn in virtual classrooms in the absence of real classrooms. Students were happy to share their experiences during the group discussion that they learned together and celebrated important days and festivals together, even celebrated their birthdays with their teachers and classmates in virtual classrooms. Teachers, too, expressed their happiness about how they tried day and night to search and to learn to use various digital skills and applications to keep communicating with their colleagues and students and to continue to provide education to their students.

Pressures of Lockdown and the New Found Opportunity of Virtual Learning

The scenario was different for almost everyone, either the teachers the students or the parents. The closure of schools due to the COVID-19 pandemic left children to be educated at home (Moroni et al., 2020). In the beginning, students felt difficulty in joining classes, participating in different classroom activities, doing assignments, downloading and uploading question

papers and answer scripts, etc., as expressed by them during the group discussion. But they learned quickly, with the help of parents, teachers, friends, and relatives through social media, how to open and log into their virtual classes, download their assignments and question papers, and upload their completed assignments and answer scripts. They enjoyed learning various digital skills. Their curiosity kept on rising, and they learned to search for new resources and new Apps to improve their learning, similar to what was reported by Deschaine (2021). Rasmitadil et al. (2021) reported that collaboration among various stakeholders in school education resulted in the success of online education during the situation of crisis in Indonesia. Such collaboration has also been observed in the case of India, in these schools in Delhi, but only in cases where digital tools and the opportunities to learn digital skills were available to the stakeholders.

Thus, this pandemic crisis pushed the stakeholders of school education, mainly teachers and students, to learn digital skills and to make themselves digitally skilled for their professional work.

Dependence on digital tools and techniques

It has been observed through the interaction with school heads and group discussions with teachers that in the beginning phase of the pandemic, most of the schools, teachers, and students were waiting for the situation to be normal for around 2-3 weeks. After that, WhatsApp was selected as the initial digital platform to begin the regular exchange of information among different members of the school through WhatsApp groups created either before the pandemic or just after the arrival of the pandemic for the nominal formal exchange of information. The WhatsApp platform was then utilized for educational purposes as a beginner tool to share notes, question papers, links to educational resources, information about new tools and technologies, etc., and to share the latest updates on COVID-19 by the teachers among themselves and with parents and students.

Searching and utilizing new tools and techniques

Slowly, virtual classrooms began to take shape through the introduction of other Applications like Facebook Live, Zoom, Google Meet, Google Classroom, etc. There was no option for teachers, students, and even parents other than to learn the skills to utilize these platforms for continuing teaching-learning. Step by step, the process of sharing, teaching, learning, and evaluating began to evolve as teachers, learners, and parents began to search and find new ways, new tools, and new techniques to fulfil their necessities. Most of the teachers, parents, and students expressed during the discussion that they were puzzled in the beginning; some of them were nervous about how to learn so many digital skills in such a hurry. But they learned. Though there was a big digital divide among students, they tried to search their ways, shared a single device among siblings, keeping in view their requirements, managed to share a digital device with friends in their neighbourhood, and took help from relatives having a digital device and living in the neighbourhood. Even parents suffering from financial problems tried to buy a mobile phone on loan for their children to enable them to continue their education. Some of the parents bought new smartphones, but some managed to buy second-hand used mobile phones, and only a few of them got old second-hand mobiles as a donation from school teachers, relatives, etc. Though many students did

not attend their online classes regularly due to various reasons, they attended now and then. If they had access to a mobile phone and internet data, they would have taken an interest in learning digital skills to do their class work and homework online. Self-interest, self-motivation, and peer motivation among students played a great role in the process of learning these skills, as stated by both students and parents during focus group discussions. Even, some parents made efforts to learn digital skills instructed by the teachers for online classes to help their children while facing any technical problems during online classes and examinations. Teachers learned either due to self-motivation or group motivation or due to situational demand and many other reasons, like fear of lagging behind and fear of not being digitally skilled at a time of high demand for digitally skilled teachers.

Rising needs and demands of new Apps: giving a boost to organizations and industries dealing with digital tools and technology

Some groups of teachers expressed that when the use of digital tools and techniques was growing day by day, different types of needs were being felt by the users, resulting in demands for new applications and new digital tools with advanced features like; interactive classrooms and online interactive writing boards to give the ease and feel of a real classroom, online markers to check the answer scrips, etc. Such needs motivated the professionals in the field of software and hardware development to create new tools and Apps to serve the purpose, which gave a push to develop a digitally skilled society and gave a boost to both software and hardware industries to develop new applications (Apps) and new devices with advanced features. Such developments were needed throughout the world, including India, resulting in a push to develop digital India. The government of India provided free digital resources for teachers and students (India Report: Digital Education, GoI, 2020), for example, the National Repository of Open Educational Resources portal, DIKSHA portal, e-Pathshala App, Swayam Prabha, NCERT app, etc. which were utilized along with YouTube and other online resources during the absence of offline classes and were still being utilized by school teachers and students, as reported by them during the interaction with the researcher. Qshala, an offline quizzing platform (Bangalore-based ed-tech startup) for students, was converted into an online mode during the pandemic in the form of a Sunday family quiz (India Today, 2021-12-22). Similarly, Digital Aristotle, an online platform, helped students with a learning-based approach. Such online educational platforms and tools gave students, teachers, and educational institutions the opportunity to continue learning online. Indian Edtech companies are expected to soon start their expansion into other countries also due to the benefits of online learning felt by students, teachers, and parents (Shekhar, 2021).

Series of online meetings, workshops and webinars

Teachers said that as the dependence on digital tools, techniques, and digital media kept rising, the need to learn to utilize them also kept rising, resulting in conducting a series of online workshops and webinars. Various online workshops and webinars were being organized continuously for the teachers, even by the teachers other than those organized by the government, educational boards, organizations, and management of the institutions for catering to the demand of learning digital skills, which were proved like an opportunity in disaster (Aapda me awasar) that helped

to prepare them for virtual classes and to become digitally resourceful. Such workshops and webinars also helped teachers to share the ease and difficulties of working in a highly transformed new teaching-learning environment in virtual form and to find solutions to the problems that emerged in professional work. Groups of teachers organized online meetings among themselves to create teaching-learning resources in collaboration for their subjects of teaching and shared those resources among the group members to be utilized by all. It helped to save their time and energy and to make their teaching-learning effective in spite of working from home. Once the teachers became digitally skilled, they helped students also to learn those skills. Many teachers from all these different types of schools said that students also helped teachers and parents learn digital skills in some cases.

Achieving the objectives of the study

Though all the major points of findings discussed above achieved both of the objectives of this study, the initial three points are more helpful in achieving the first objective of the study, and the other three points are more helpful in achieving the second objective of the study. It has been observed that both teachers and students faded up with too much technology and long screen hours when the lockdown continued for a longer period, and they had been waiting eagerly for offline classes to commence. However, most of them felt that they were now equipped with such digital skills that would help them in their teaching and learning in the present as well as in the future.

Conclusion

The slogan "Aapda me awasar (opportunity in disaster)" was taken seriously by different stakeholders in school education, especially by the teachers. They tried their best to learn from others and to share what they had learned with others. Teachers helped their students also to learn digital skills that they had learned to conduct virtual classes, utilize online resources, and create their own digital resources. Some of the students even helped their parents and teachers learn new digital skills as they emerged as quick learners of various digital skills during this critical situation. The best thing was that most of the parents gave their full support to their children in this process, though they were not digitally skilled for educational purposes. Some of them even sat with the children in virtual classes and learned digital skills taught by the teachers to help their children. Thus, it is concluded that though the integration of digital technology in school education was initiated many years back and is going on continuously, it has been enhanced due to the role played by the necessities that emerged due to the COVID-19 crisis as a catalyst in the process that demanded to switch over to online mode of education from offline mode during the lockdown. It left no choice other than to trigger the process of developing digitally well-skilled teachers and students that would speed up the process of achieving one of the goals of NEP 2020 (GoI, 2020), which emphasizes "integrating digital technology in school and teacher education, and developing the use of alternative modes of quality education in case of impossibility of traditional and face to face in-person modes of education.".

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