

EFFECTIVENESS OF ONLINE RESOURCES, TEACHING-LEARNING TECHNIQUES, AND LEARNING OUTCOMES DURING COVID-19 PANDEMIC

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Abstract *This article aims at providing a comprehensive report on the impact of COVID-19 pandemic on online teaching and learning. The outbreak of COVID-19 affected people worldwide since its origin in December 2019 in China. All the countries stopped their normal activities in all the fields, and online teaching was the only approach to continue the teaching-learning activities. Both the government and the public are in fear, and are following various protocols to stay safe, like washing the hands frequently, wearing face masks, physical distancing, and avoiding mass gatherings and assemblies. Educational institutes are also closed; however, they have changed the teaching-learning methodology to cope with the situation. At present, a culture of virtual and online classes and using online teaching-learning tools has been adopted. Strategies for lockdown and staying home are very important to save more lives, and to flatten the curve and control the transmission of the disease. The article deals with strategies and steps taken to continue the teaching-learning process in educational institutions. The study uses a survey-based approach to analyse the effectiveness of online teaching-learning activities conducted by the institutes, and the use of ICT in education to manage online educational resources for future use. A total of 330 respondents, including students, teachers, parents, research scholars, and administrative officials were part of the study. They submitted their online feedback regarding effectiveness, significance, pros and cons, teaching tools, usage, time durations, and students' behaviour during the online teaching-learning strategies. Various learning outcomes, problems, challenges, and suggestions are also included in the present study. It is observed during the study that most of the people are satisfied with online teaching-learning and almost all the respondents think that online teaching has enhanced the quality and reputation of institutions.*

Keywords: *COVID-19, Pandemic, Online Classes, Virtual Classroom, OER, Learning Outcomes, ICT, Institutional Repository, MOOCs, Online Content*

INTRODUCTION

Our education system has been facing a crisis after the emergence of COVID-19, for the past 20 months. “This pandemic not only made the largest disruption of education systems in human history but also created major challenges for the students and teachers. COVID-19 pandemic affected nearly 1.6 billion learners in more than 200 countries. This shut down the schools, college, institutions and other learning spaces have impacted more than 94% of the world’s student population. All the educational institutes have changed their teaching learning practices and discontinued face-to-face teaching” (UNO Policy Brief, 2020).

Many other issues, like online teaching-learning, online exams, OER, and other restrictive movement policies have significantly disturbed our traditional educational system.

Nobody knows how many more months of disruptions may be caused by this pandemic. Reopening schools after lifting the lockdown is another challenge, with many new standard operating procedures put in place. The COVID-19 pandemic has provided us with new challenges and opportunities to pave the way for introducing online learning.

During the COVID-19 pandemic, a number of trends and technologies resulted in the teaching-learning process. Our traditional classroom learning transformed into online and virtual classrooms. Various innovative methods are being used to cope with the situation and to satisfy the need of the hour. These innovative methods and technologies have already been identified the last few years and all of these methods have been adopted as part of the traditional teaching-learning tools. The advancement in the technology, emergence of a new breed of information species in the form

of digital documents, and behavioural change in the attitude of the information-seeking users has created a new challenge for the educational institutions, to change their traditional pattern to digitalisation.

REVIEW OF THE LITERATURE

In order to understand the impact of COVID-19 on the teaching-learning process, a review of the literature is an appropriate tool to analyse the issues and challenges. According to United Nations (2020), “As of July 2020, 98.6% of learners worldwide were affected by the pandemic, representing 1.725 billion children and youth, from pre-primary to higher education, in 200 countries. Therefore, making learning possible and available from home-schooling has been the need of the hour. The shock of the COVID-19 crisis on education has been unprecedented. It has set the clock back on the attainment of international education goals, and disproportionately affected the poorer and most vulnerable. And yet, the education community has proved resilient, laying a groundwork for the rebound.”

The Secretary-General of UNO, Mr Antonio Guterres (2020), said that “Education is the key to personal development and the future of societies. It unlocks opportunities and narrows inequalities. It is the bedrock of informed, tolerant societies, and a primary driver of sustainable development. The COVID-19 pandemic has led to the largest disruption of education ever.”

According to Hodges, Moore and Lockee (2020), “well-planned online learning is totally different from shifting online in response to a crisis, as the speed with which this shift is done could be shocking to faculty members and learners”.

As per Petrie (2020), “As schools have been closed to cope with the global pandemic, students, parents and educators around the globe have felt the unexpected ripple effect of the COVID-19 pandemic. While governments, frontline workers and health officials are doing their best slowing down the outbreak, education systems are trying to continue imparting quality education for all during these difficult times. Many students at home/living space have undergone psychological and emotional distress and have been unable to engage productively. The best practices for online homeschooling are yet to be explored.”

Pokhrel and Khhetri (2020) compiled a literature review on the impact of COVID-19 on the teaching-learning programme all over the world. “They observed that lockdown and social distancing measures due to the COVID-19 pandemic have led to closures of schools, training institutes and higher education facilities in most countries. There is a paradigm shift in the way educators deliver quality education—through various online platforms.”

The study conducted by Subedi et al. (2020) stated that “Digital and e-learning tools have played an important and crucial role during the pandemic, helping schools and universities facilitate student learning during the closure of universities and schools.”

Said (2020) observed that “COVID-19 has dramatically reshaped the way global education is delivered. Millions of learners were affected by educational institution closures due to the pandemic, which resulted in the largest online movement in the history of education. With this sudden shift away from classrooms in many parts of the globe, universities had to rapidly shift to virtual and digital strategies. Many believe that the adoption of online distance learning will persist after pandemic. A new hybrid model of education is expected to emerge, and, given the digital divide, new shifts in education approaches could widen equality gaps.”

The research by Hjelmsvold, Bahmani and Loras (2021) “is also one of the first studies which investigated educators’ feedback on the distance learning during the COVID-19 lockdown, as a result of a survey conducted on 303 university students and 56 educators in Norway. The study reported that short time and lack of ready resources were important barriers to sudden shift to distant learning.”

Cavanaugh and Jacquemin (2015) “compared grade based learning outcomes between online and face-to-face course taught at Ohio University, using a large dataset of 5,000 courses taught by over 100 faculty members over a period of ten academic terms at a large, public, 4-year university”.

As per the study conducted by Raheem and Khan (2020), “offering a wide range of possibilities for sharing information and uploading documents with different formats, e-learning has certain features that facilitate and nurture the learning-teaching process. Because it is a web-based system, the installation of additional tools is not required, and once uploaded, the content is available for users at any time.”

OBJECTIVES OF STUDY

The main objectives of the study are as follows:

- To know the quality enhancement of the educational institutes via online teaching methods.
- To find out the various potential threats to and opportunities in the education system, due to COVID-19.
- To find out online educational resources, and ICT tools and techniques used by the teachers for online and virtual classes.
- To investigate various online platforms used for teaching-learning.
- To observe the behaviours of the learners during online classes.

- Total time spent by the educators and learners in online classes.
- To observe various positive and negative impacts of COVID-19 pandemic on the education sector, students, teachers, and parents.
- To observe the various challenges faced by the students, teachers, and parents to shift from traditional classrooms to virtual classrooms.
- To explore the new trends in education post-COVID-19 pandemic, in order to gain best practices to cope with this problem and improve learning/teaching process.
- To find out various suggestions related to virtual and online teaching-learning technologies given by the students, teachers, and parents for the future.

METHODOLOGY

Survey-based approach is used to analyse the effectiveness of online resources and teaching-learning activities conducted by the institutes, and the use of ICT in education to manage online educational resources for future use. An online Google form is created and circulated among the

teachers, educators, research scholars, parents, and students to know their opinion and views related to effectiveness of online teaching-learning activities during the coronavirus pandemic.

The survey was posted in the Kendriya Vidyalaya OEF Hazratpur blog and the survey was also sent to the faculty members and students via e-mail and WhatsApp groups. All the students, teachers, and parents were encouraged to fill the survey online. All the teachers, students, research scholars, and parents were informed that the main objective of the study is to enhance the online learning experience and skills required for an online and virtual environment in the present scenario.

SURVEY SAMPLE

- *Respondents:* A total of 330 respondents submitted their online responses, which included school students, college students, school teachers, professors, parents, principals/vice principals, and others.

The distribution of responses may be observed category-wise in Table 1.

Table 1: Response

| Sr. No. | Respondents | Number of Responses | Percentage (%) |
|---------|--|---------------------|----------------|
| 1 | School Students | 136 | 41.21 |
| 2 | School Teachers | 45 | 13.64 |
| 3 | Teachers (Higher Education) | 42 | 12.73 |
| 4 | Parents | 13 | 3.93 |
| 5 | Admin. Officers, including Principal and VPs | 09 | 2.73 |
| 6 | Others, including College Students/Research Scholars/Social Workers, and so on | 85 | 25.76 |
| | Total | 330 | 100 |

- *Sample Size:* Total sample size and institute or parent body-wise responses are shown in Fig. 1.

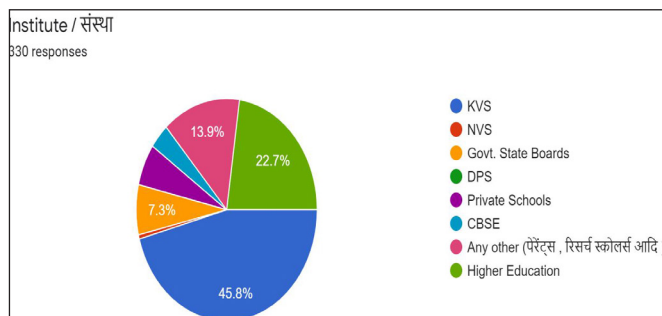


Fig. 1: Sample Size of the Study

It is clearly observed that out of 330 respondents, 151 (45.80 %) responses are from Kendriya Vidyalaya Sangathan,

75 (22.70%) are from higher education teachers, followed by 46 (13.90%) from parents and research scholars. Around 24 (7.30%) responses are from the teachers of state boards and 34 (10.30%) are from other teaching and professionals institutions, viz Delhi Public School, CBSE, Navodaya Vidyalaya Samiti, and other private organisations.

RESULTS AND DISCUSSION

Online Education Enhances the Quality and Reputation of the Institute

The first question was concerned with the quality and reputation of the institute. Do you think that online education enhanced the quality and reputation of your institute?

As per the data collected (see Fig. 2), 244 (73.90%) respondents agreed that online and virtual education has

enhanced the quality and reputation of their institutes, 28 (8.50%) respondents did not agree with the statement, while 58 (17.60%) respondents were neutral.

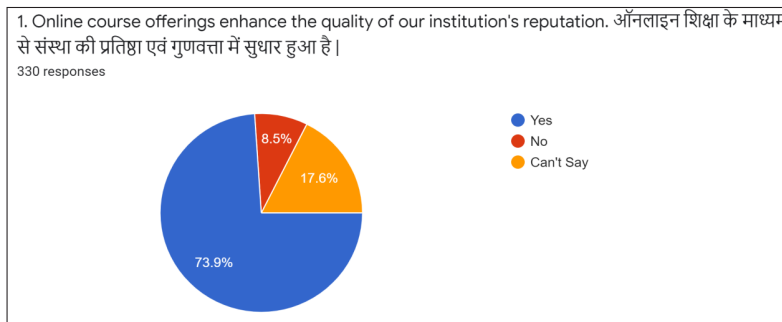


Fig. 2

Online Education and Learning Activities are Emerging as an Effective Tool for Teaching-Learning during the COVID-19 Pandemic

According to Fig. 3, out of 330 respondents, 242 (73.30%) agreed, 20 (6.10%) disagreed, 56 (17.00%) agree to some extent, and only 12 (3.60%) are not able to decide and say anything about the statement.

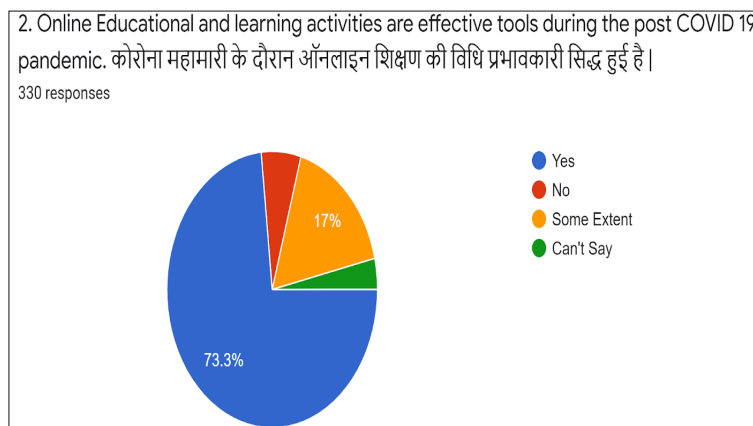


Fig. 3

Teaching-Learning Resources used by the Students and Teachers

According to Fig. 4, a majority of the respondents are using free mobile applications (53.90%) for their study,

for the teaching-learning purpose. Around 51.50% are using NCERT online resources, 47.90% Open Educational Resources (OER), 31.50% CBSE, 21.20% UGC, and 2.10% are using CIET online resources.

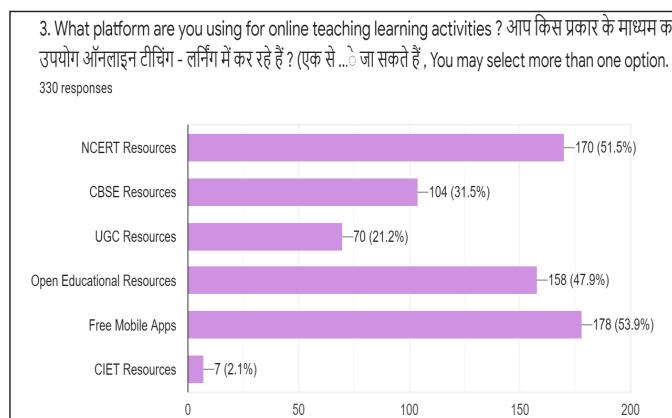


Fig. 4

Online Teaching Platform Usage

During the pandemic, various teaching-learning platforms were being used by the teachers, students, and educators. A majority (82.70%) were using WhatsApp as a teaching-learning platform, followed by YouTube (73.60%), Zoom (46.70%), Google classroom (34.80%), and Google Meet

(29.70%). Users also used webinars (37%), phone calls (18%), blogs (11.50%), and SMS services (10.30%) as teaching-learning platforms. Teachers and students used Librivix, Radio, Webex, Microsoft Team, Google scholar, Facebook, DIKSHA, and SWAYAM portals to satisfy their needs (See Fig. 5).

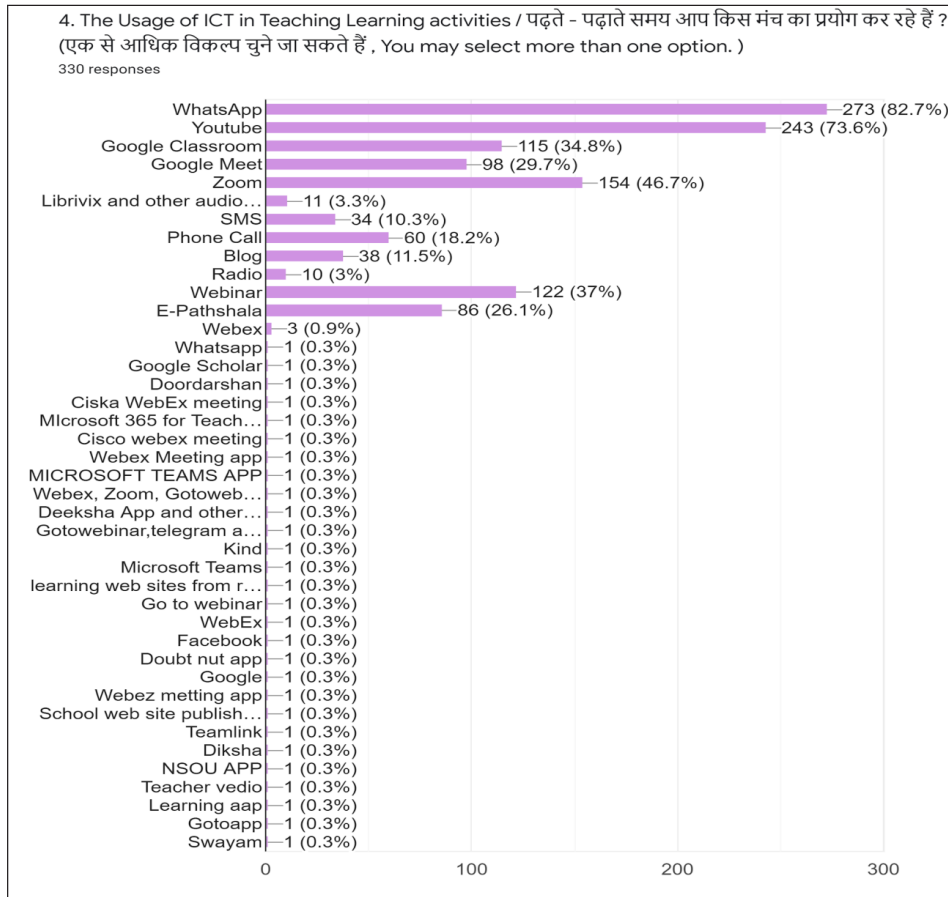


Fig. 5

Problems in using ICT Applications

Fig. 6 clearly indicates that approximately 54% of the users

faced difficulties in using online ICT tools and techniques used for teaching-learning. Around 20.90% did not have any problems, and more than 25% were not sure about the specified problem.

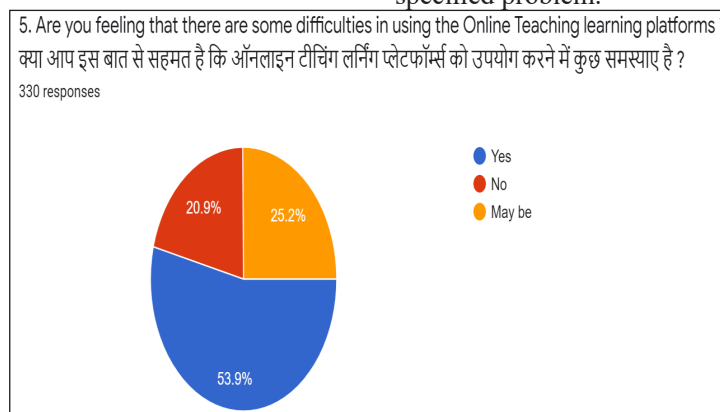


Fig. 6

Cause of Problem

According to the response received (as shown in Fig. 7), it is observed that respondents are facing numerous problems in using ICT and online teaching-learning platforms, tools, and techniques. Most of them are facing the problem of ‘poor Internet connection or slow Internet speed’. Various users are having difficulties in mobile scrolling and lack of

ICT skills and training. They also have a problem with the expensive data packages. Nearly 30% of the parents do not have an Android-based mobile phone, and more than 47% of the parents do not have desktops/laptops for their children. Most of the students may have stress and depression because they have to stay at home to be able to pursue online classes and do their assignments, while in traditional learning they could divide their time between school and home.

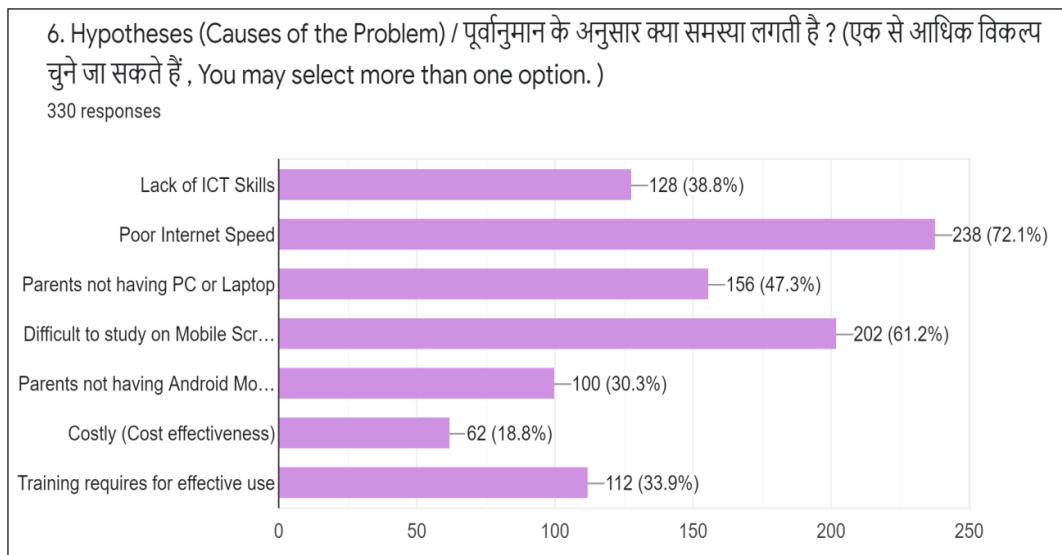


Fig. 7

Time Spent by the Students and Teachers in Online Teaching

As we may observe from Fig. 8, 38.5% of the users spend 2-4 hours in online teaching activities, while 26.40% spend

4-6 hours, followed by 25.80% users spending only 1-2 hours a day. It is a most important point that only 9.4% of the students and teachers are putting in more than 6 hours a day for online teaching-learning activities.

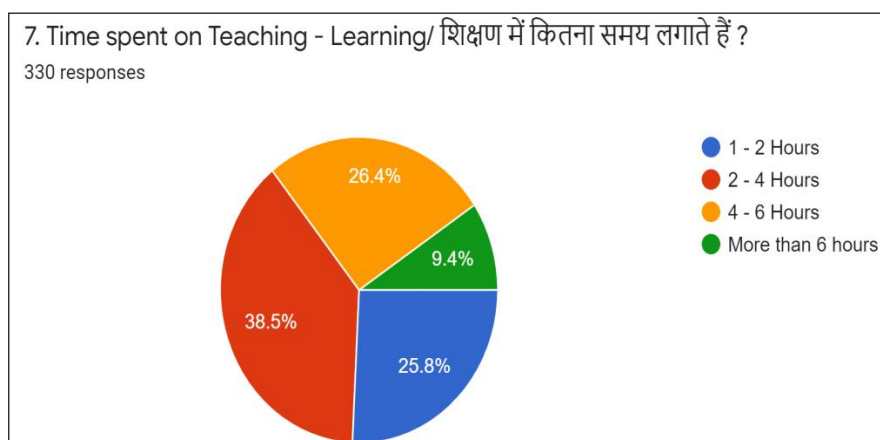


Fig. 8

The Type of Challenges Faced by a Student, Parent, or Teacher in Online Teaching

According to Fig. 9, most of the users accept that lack of motivation, untrained teachers, erratic schedules of teaching, heavy audio-video files, and language barriers are some of

the factors affecting the effectiveness of online and virtual learning. It is also noted that 30.50% are in fear of loss or theft of personal data and 20.30% are facing problems due to non-cooperation from the parent side. Around 31.80% of the users agreed that life skills are being ignored during online and virtual learning.

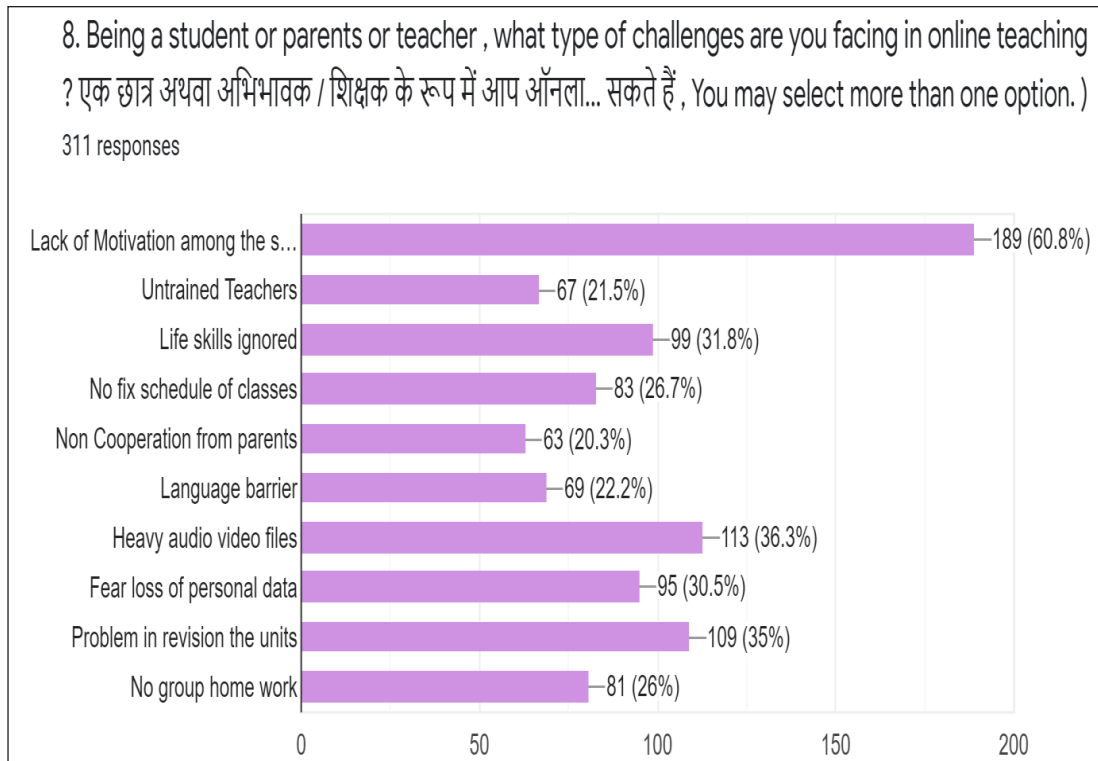


Fig. 9

Other Challenges, Issues, and Opportunities not Included above, According to the Respondents' Experience

Various suggestions were received from the respondents. Some of them are as follows:

- Time and distance will not be a barrier for communication in the future.
- Level of quality will increase in the educational content.
- Creation of new portals for 'on-demand' delivery of educational content.
- The role of the teacher will become more important in the coming years.
- New job opportunities will be developed through online and virtual classrooms.
- Parents are advised to support and cooperate with the teaching-learning programme of the institute.
- During the pandemic, women teachers were overburdened because of the work at home, and despite the delivery of lessons by radio, television, and through online platforms.
- After all the best efforts of teachers and parents, many students still remain out of reach.
- Most of the respondents have a straight view, regarding the online and virtual environment of teaching, that

after the COVID-19 pandemic, when normal classes resume, educators and students should be encouraged to continue using such online and electronic tools to enhance teaching and learning.

- Taking online exams and assessment is a challenging task for the teachers and educational experts have to find new ways for conducting online exams and assessments.

Learning Outcomes

- In the present scenario, students alone are able to search, use, store, and disseminate the relevant online content and material as per the needs.
- Children are using Online Educational Resources (OER) for their studies, which not only enhances the quality of studies, but also opens new horizons of information and knowledge.
- Teachers are also taking this pandemic as an opportunity for innovation, and they are developing various innovative methods for online teaching and learning.
- Online and virtual learning is a time saver for students and scholars as they can work at their own pace.
- Lifelong learning, like training, workplace learning, continuous education, skill development programmes, orientation and refresher courses, digital learning, open

and distance learning, and so on, are easily possible with the help of online and virtual learning.

- Online classes are not only the better option for effective teaching-learning tool, it is also a concrete step towards making our society an eco-friendly environment. We may save more paper, and energy and transportation expenditure compared to traditional classes. Cost of content development may be reduced by sharing and reusing.
- Institutional Repository (IR) is an emerging concept developed during the pandemic to collect, preserve, and disseminate the digital copies of the intellectual output of an institution.
- When technology is incorporated into the classroom, miraculous transformations can occur in the ways teachers teach and students learn.

- The school dropout rates may be controlled by enrolling more students in the online and virtual classroom.

Students' Behaviour during Online Classes

In response to the query related to the students' behaviour, it is observed (Fig. 10) that only 26.90% of the students were taking the practice of online teaching sincerely, while 58.10% were not very sincere. Only 27.60% of the teachers had the support of the students and 58.10% of the users said that they need motivation to shift from traditional classrooms to virtual classrooms. It is also noted that only 36% of the users were satisfied with the educational content delivered by the teachers.

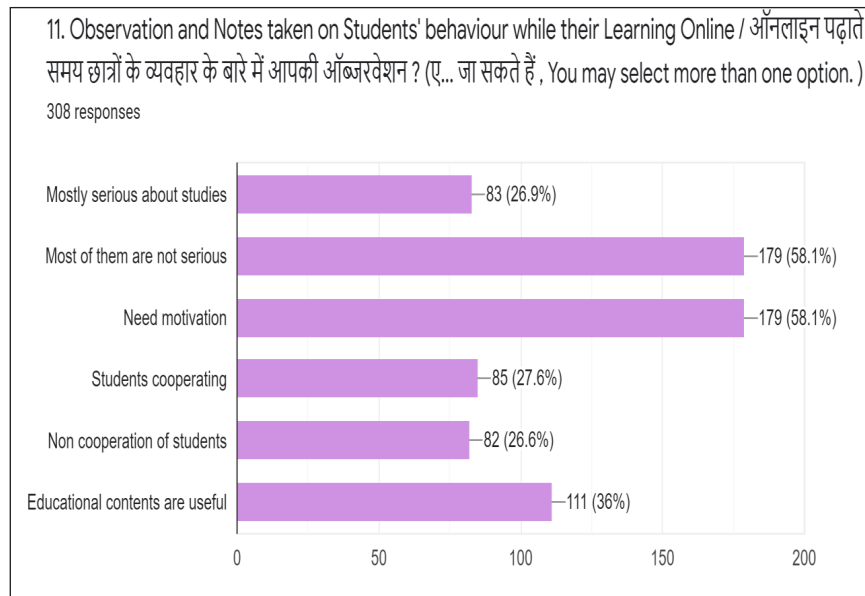


Fig. 10

Ideal Time Suggested by the Users for Online Teaching-Learning Activities

Most of the respondents (42.70%) agreed that one should spend only 2-4 hours a day for online teaching-learning activities. Around 31.80% of the users suggested 1-2 hours of online studies and 20.30% are in favour of 4-6 hours of online teaching activities per day. However, approximately, only 5% of the respondents suggested the use of online teaching-learning activities for more than 6 hours per day (Fig. 11).

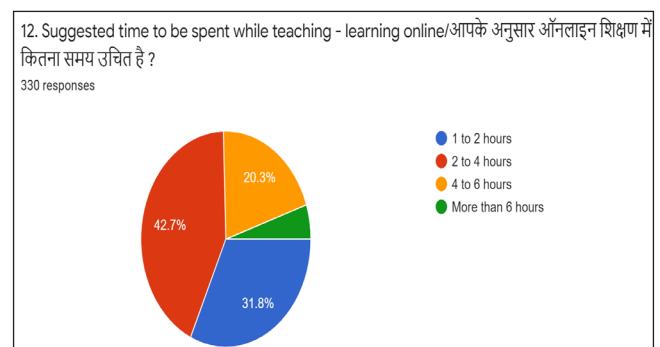


Fig. 11

CONCLUSION

COVID-19 pandemic has had a very broad and measurable impact, not only on the personal life of people, but also on the education system. There is a big chance that after COVID-19 our educational system will definitely change and all the techniques and technologies will continue for an effective teaching-learning programme. The pandemic has changed the perceptions and understandings of traditional classroom teaching-learning process for the first time in history; classrooms have completely shifted to online learning and will continue to change in terms of the methods, approaches, strategies, and policies for education in the coming years.

It is observed through this study that traditional classrooms will be back, but with the addition of innovative practices and technology. The future of education will focus more on distance learning, community engagement, international collaboration, and entertainment in education. Privacy and security challenges will be important topics for discussion in the virtual and online teaching-learning.

We should learn from the pandemic that education after COVID-19 will not be the same as traditional teaching-learning; therefore, our education system must be ready for implementing new innovations and strategies, adopt more ICT equipment, MOOCs, cloud platforms, social networking applications, and other latest technological aids.

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