"The Impact of Online Education on Learning and Well-being of Students during COVID-19 Pandemic"

A Dissertation Submitted to the Panjab University, Chandigarh for the Award of Master of Philosophy in Social Sciences, in Partial Fulfillment of the Requirement for the Advance Professional Programme in Public Administration (APPPA)

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<u>Undertaking</u>

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CERTIFICATE

I have the pleasure to certify that **Ram Narayan Yadav,** has pursued his research work and prepared the present dissertation titled **'The Impact of Online Education on Learning and Well-being of Students during COVID-19 Pandemic'** under my guidance and supervision. The same is result of research done by him and to best of my knowledge; no part of the same has been part of any monograph, dissertation or book earlier. This is being submitted to the Panjab University, Chandigarh, for the purpose of Master of Philosophy in Social Sciences in partial fulfillment of the requirement for the Advanced Professional Programme in Public Administration (APPPA) of Indian Institute of Public Administration (IIPA), New Delhi.

I recommend that the dissertation of **Ram Narayan Yadav** is worthy of consideration for the award of M. Phil degree of the Panjab University, Chandigarh.

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List of Abbreviations

AAP	American Academy of Pediatrics
AEES	Atomic Energy Education Society
AI	Artificial Intelligence
ANM	Auxiliary Nursing Midwives
B2C	Business to Customer
CAI	Computer-Assisted Instructional
CBSE	Central Board of Secondary Education
CDAC	Centre for Development of Advanced Computing
CDC	Centers for Disease Control and Prevention
CEC	Consortium for Educational Communication
CICSE	Council for the Indian School Certificate Examinations
CSC	Common Service Centers
CTSA	Central Tibetan Schools Administration
DAISY	Digitally Accessible Information System
DCUL	Disrupted Classes Undisrupted Learning
DIP	Digital India Program
DoT	Department of Telecommunication
DSE&L	Department of School Education and Literacy
DTH	Direct To Home
EDUSAT	Educational Satellite
EMRS	Eklavya Model Residential School
ERNET	Education and Research Network
FTTH	Fibre To The Home
GEANT	pan-European Education and Research Network
GoI	Government of India

GSAT	Geostationary Satellite
ICT	Information Communication Technology
IECT	Information Electronics Communication Technology
IGNOU	Indira Gandhi National Open University
iGOT	Integrated Govt. Online training'
IIT	Indian Institutes of Technology
ILLL	Institute of Lifelong Learning
INFLIBNET	Information and Library Network
IoT	Internet of Things
KVS	Kendriya Vidyalaya Sangathan
LMS	Learning Management Systems
MeitY	Ministry of Electronics & Information Technology
MHRD	Ministry of Human Resource Development
MoD	Ministry of Defence
MoE	Ministry of Education
MOOC	Massive Open Online Courses
MoTA	Minority Outreach Technical Assistance
NCC	National Cadet Corps
NCERT	National Council of Educational Research and Training
NDLI	National Digital Library of India
NDLM	National Digital Literacy Mission
NEP	New Education Policy
NESTS	National Entrance Screening Test
NIELIT	National Institute of Electronics & Information Technology
NIOS	National Institute of Open Schooling
NISHTHA	National initiative for School Heads and Teachers Holistic Advancement
NMEICT	National Mission on Education through ICT

NOFN	National Optical Fibre Network
NPTEL	National Programme on Technology Enhanced Learning
NSP	National Scholarship Portal
NVS	Navodya Vidyalaya Samiti
NYKS	NehruYuva Kendra Sangathan
OLABS	Online Labs
PE	Physical Education
PMG Disha	Pradhan Mantry Gramin Digital Saksharta Abhiyaan
PPP	Public- Private Partnership
RMSA	Rashtriya Madhyamik Shiksha Abhiyan
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus -2
SDG	Sustainable Development Goal
SSA	Sarva Shiksha Abhiyan
STEM	Science, Technology, Engineering and Math
SWAYAM	Study Webs of Active-Learning for Young Aspiring Minds
TE	Teacher Education
TEIN	Trans Eurasia Information Network
TRAI	Telecom Regulatory Authority of India
UGC	University Grants Commission
UNESCO	United Nations Education, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
UP	Uttar Pradesh
USOF	Universal Service Obligation Fund
WASH	water, sanitation and hygiene
WHO	World Health Organization

Executive Summery

The World Health Organization (WHO) declared COVID-19 as a global public health emergency of international concern on 30th January 2020 as well as a pandemic on 11th March 2020. The Government of India also imposed total lockdown since 25 March 2020 and life came to an unusual impasse due to spread of Corona Virus Disease- 2019 (COVID-19). To mitigate the impact of the pandemic, schools are not only have to remodel and reimaging the way teaching and learning have happened so far, but will also need to introduce a suitable method of delivering quality education through a healthy mix of schooling at home and schooling at school.

The online education has opened a new ray of light for continuity in education during pandemic. It now becomes omnipresent. The digitalization of education has kept the students in-sync with the modern and contemporary world. Student can get the feeling of being in a virtual class anywhere, anytime, without being burdened by the complete weight of books.

In this pandemic situation keeping in line with countrywide measures taken to continue schooling, The Government of India has issued the PRAGYATA guidelines in July 2020 for Digital Education in India. The guidelines have been developed from the perspective of learners, with a focus on online/blended/digital education for students who are presently at home due to lockdown. These guidelines also provide a roadmap or pointers for carrying forward online education to enhance the quality of education. The guidelines are relevant and useful for a diverse set of stakeholders including school heads, teachers, parents, teacher educators and students. The

government of a national capital of Delhi and Uttar Pradesh also took various ad-hoc policy decisions while also talking with existing pedagogies.

In the literature review of different study, it is found that the Online teaching is no more an option, it is a necessity in present time and everybody i.e., teachers, students and institutions has accepted it now. But they suggest that Infrastructure is a prerequisite for online learning. Infrastructure needs to be so strong that it can provide unhindered services during and after the crisis. It is best option available in time of crisis for continuity of education.

The aim of this study is to review the Government of India initiative for digitization of education, Digital infrastructure initiatives and the impact of online education on learning and well-being of schools students of Delhi and UP in perspective of students, teachers and parents. This was carried out through a desk based analysis of secondary data and primary data. A primary survey has been conducted from 25th December 2021 to 2nd February 2022 and feedback from 407 participants (200 students, 100 teachers and 107 parents of Delhi and UP area has been taken during survey.

Government Initiatives for online education

In the time of pandemic when all schools and colleges were closed for physical classes, Digital technologies are playing a very most crucial role in achieving "Quality education for all". Government of India has established IT infrastructure through Common Service Centres (CSCs), BharatNet project, 4G, rural Wifi Project etc for assessing internet and its applications. The educational institutes are connected through initiatives like ERNET and NKN and further mandated existing institutes like Media Lab Asia to focus on the core mandate of universalizing ICTs in education.

Study Webs of Active-Learning for Young Aspiring Minds (SWAYAM) is to provide best teaching learning resources to all, including the most disadvantaged group of society. The NISHTHA (National initiative for School Heads and Teachers Holistic Advancement) is a capacity building programme for "Improving Quality of School Education through Integrated Teacher Training".

Impact of online education on learning and well-being of students

Most of students, teachers and parents agreed that online education has badly affected students' subject learning, social behaviour, physical and mental growth. The digital facilities for online education such as high speed uninterrupted internet connectivity, laptop and uninterrupted electricity is not available to all students. Even a separate room for online class is also not available for many students. It is also found that the most of students are doing their online class on mobile.

It is found that students are not taking class seriously. Their scoring in examination is also decreased. They do not learn, write and read subject as doing during schools in front of teachers. However, it is help in getting continuity in education and save complete 2 year session loss of students. They students at least learned something in spite of complete loss of study due school closure. It also found that maximum students, teachers and parents agreed that the physical activities of students is not happening and students becoming lazy and suffering with different kind of physical problems such as low eye vision, hearing problem and weak bones, migraine etc. The some students are suffering from obesity during this period. Many teachers and parents agreed that students addicted to online gaming during this time.

However, there was some positive impact found in students. It is found that most of students learned all new thing of computer era such as use of emails, social media,

web media, editing of video and documents etc. All students, teachers and parents agree that students become more tech savvy during this period of online education. They become more confidents in working with computers; internet base service such as e-commerce, e-banking, e-application etc during this 2 year period otherwise same level of computer confidence may be achieved by students in 10 to 12 years.

CHAPTER 1

INTRODUCTION

1.1. Background

The World Health Organization (WHO) declared COVID-19 as a global public health emergency of international concern on 30th January 2020 as well as a pandemic on 11th March 2020. The Government of India also imposed total lockdown since 25 March 2020 and life came to an unusual impasse due to spread of Corona Virus Disease- 2019 (COVID-19).

COVID-19 pandemic has led to secure disruptions in normal life, including closure of schools. It has impacted over 240 million children of the country who are enrolled in schools. Extended school closures may cause loss of learning. To mitigate the impact of the pandemic, schools are not only have to remodel and reimaging the way teaching and learning have happened so far, but will also need to introduce a suitable method of delivering quality education through a healthy mix of schooling at home and schooling at school[1].

Almost everything around us is either digital or getting to it at a fast pace. This is the age of having virtual conversations, virtual meetings, virtual shopping, and virtual relationships – a virtual life indeed. Since every things becoming a virtual, then how can the education sector be far behind? Online education has become the latest trend and has broken the age-old rampart of the brick and mortar institutions. Online

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[1] https://www.education.gov.in/sites/upload_files/mhrd/files/pragyata-guidelines_0.pdf on page 5.

education has gained immense popularity among working professionals and students pursuing higher education. These categories of online learners find immense benefit in the autonomy and flexibility that these courses offer. Online courses can be planned around their schedule which may include full-time employment, internships and caring for family. Online education can also help them take out some quiet time to study. While digital or online education cannot replace classroom learning, it has some advantages. It allows flexible and personalized learning at the speed of the learner and one can continuously augment and expand content through digital means. The rapid increase in internet penetration and various government initiatives such as Digital India campaign have created a conducive environment for moving towards digital education.

1.2 Digitization of Education

The online education has become omnipresent. The digitalization of education has kept the students in-sync with the modern and contemporary world. Student can get the feeling of being in a virtual class anywhere, anytime, without being burdened by the complete weight of books. Online learning also provides many additional benefits beyond satisfaction and financial savings. An independent approach to online education teaches the student to be a more effective time manager and to develop the technological skills needed in their future careers. Knowledge of the functions of the Internet, web applications, digital platform, typing and software programs are necessary to be considered digitally literate, and online learning helps in strengthening these skills. Online education also makes learning more engaging and effective.

The traditional Physical Education (PE) has been widely acknowledged as a key vehicle for promoting physical activity among children is not available now due to

lockdown. The physical, social and emotional benefits of physical activity during childhood are well known and accepted by society that PE provides the opportunity for children to develop the knowledge and skills to lead a physically active lifestyle[2]. The PE provides students to interact with their friends, teachers of all subjects and use ground of schools for sports activities. Every day they wake up in time to catch their school bus. Parents also involved in preparing their kids for going to schools. In schools, students start their day with school prayers and some time Yoga class in morning. All students were taking their lunch together and sharing their belonging among friends. So PE provided many opportunities to developed overall personality of students.

1.3 Strategy for continuation of education during pandemic

The sudden closure of educational institutions providing physical education and subsequently widespread deployment of online mode of learning were the immediate offshoot of the response to the COVID-19 in country. To compensate the 'learning losses' and give learners a sense of continuity in their education, 'the online mode of learning is considered the best possible opportunity out of the COVID-19 crisis to palliate its impact on the education sector. However, given the fact that 'the education in contemporary India is marked by sharp inequalities rising aspiration, and diverse and deeply contested this discourses regarding meaning and purpose of education, the adoption of online mode came with distinctive implication for the children of all category i.e. either rural or urban areas, financially reach or poor, either of any stream of learning or any medium of teaching.

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[2] https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1033.7545&rep=rep1&type=pdf. Assessed on 12.01.2022

Online education has helped students to become independent learners before they make their way into the real world. Students got opportunities to explore new learning applications and platforms during the class, which helped them to develop new skills and capabilities accelerating their growth trajectory. Some of the students have been responding well to the active learning environment created online by the teachers whereas others need a push in fits and starts[3].

Certainly, like many other aspects of everyday life, COVID-19 has had a serious impact on students, instructors, and educational organizations around the globe. The existing online education platform has created new way for providing education i.e. Primary, secondary and higher education's to the students when all schools and colleges were closed due to COVID 19 pandemic for last one and a half years. The Government of India has issued the PRAGYATA guidelines in July 2020 for Digital Education in India[4] during COVID 19 Period. The guidelines have been developed from the perspective of learners, with a focus on online/blended/digital education for students who are presently at home due to lockdown. These guidelines also provide a roadmap or pointers for carrying forward online education to enhance the quality of education. The guidelines are relevant and useful for a diverse set of stakeholders including school heads, teachers, parents, teacher educators and students. The online education is a very important due to following points.

Online education has become the latest trend and has broken the age-old bastion of the brick and mortar institutions. The digitalization of education has kept the students

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[3] https://timesofindia.indiatimes.com/readersblog/expressons4b/the-impact-of-online-classes-on-students. assessed on 03.02.2022.
[4] https://www.education.gov.in/sites/upload_files/mhrd/files/pragyata-guidelines_0.pdf on page 5.

in-sync with the contemporary world. The World Health Organization (WHO) declared COVID-19 as a global public health emergency of international concern on 30th January 2020 as well as a pandemic on 11th March 2020. Certainly, like many other aspects of everyday life, COVID-19 has a serious impact on students, instructors, and educational organizations around the globe. The online Education has created a new way for providing education to the students in Primary, secondary and higher education Institutions especially when all schools and colleges were closed due to COVID 19 pandemic.

1.4 Challenges pertaining to online education

The biggest challenges of online education which are many students face is the struggle to focus on screen for long durations. Not to mention, there is a plethora of distracting content available online which attracts and distracts the students more often than not. To avoid this and help the students stay focused on the class, the teachers have made strenuous efforts and designed their online classes to be crisp, engaging, and interactive. Online classes are not completely reliable as internet connectivity plays a vital role. While access to the internet has drastically improved over the past few years, in some parts of the country, people still lack access to decent internet speed and connectivity. Inconsistent internet connectivity has emerged as one of the top excuses for the students to dodge some important requirements such as an active visual presence which is imperative for due vigilance. With the cameras turned off there is a disconnection between the teachers and students. It is observed widely that students would log into the class and then get distracted with other activities. Given that students are free from the regulations and boundaries of an appropriate classroom environment, it is perceived that the curriculum is not given importance by

the students. The notebook work may have been taken lightly. There are high chances of the students distracting themselves while learning online. Traditional classroom education offers the benefit of face-to-face interactions with peers which are typically moderated by a teacher. Physical classroom interaction provides children, especially those in their early developmental years, with a stable environment for social interactions, helping them develop skills like empathy and cooperation. It helps them in their overall development and real-life situations[5].

In this pandemic situation keeping in line with countrywide measures taken to continue schooling, the government of a national capital of Delhi and Uttar Pradesh took various ad-hoc policy decisions while also talking with existing pedagogies. It is primarily in this context that the present study attempts to assess the school education with focus on impact of online education on student's learning and well being of Delhi and Uttar Pradesh.

1.5 Statement of Problem

The online education has started since 10 to 12 years back with spread of high speed internet all over world. Now COVID 19 - pandemic had come in world since January 2020 and all colleges and schools have been closed to avoid spread of disease by all the governments in the world for the safety of students. Now a day's Online education has been the new normal. However, of late some physical, mental and social development issues of students were being noticed due to online education. Moreover, there are many digital infrastructure challenges faced by the students, parents and teachers pertaining to availability of proper facility for on-line education such as PC, Phones, Laptop, Tablets and internet connectivity. Therefore, it becomes

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[5] https://timesofindia.indiatimes.com/readersblog/expressons4b/the-impact-of-online-classes-on-students.

critical to assess the aforesaid issues related to learning, physical, mental and social well being of the students as a result of online education. This study would also make an attempt to explore the issues such as digital infrastructure resources, online educational material availability etc faced by students, teachers and parents pertaining to implementation of on line education.

1.6 Rationale or Justification

The online education is become necessity for continuation of education during COVID-19. It has impacted overall growth of the students. This study has conducted to finds impact of online education and to recommend measures to handle the challenges pertaining to on-line education in schools. Every institution is forced to provide on-line education during COVID-19 from primary to higher education. While it offers many advantages, there are many drawbacks of it as well. The online learning has provided just in time and flexible learning to the students Moreover, students have become tech savvy and are very well aware of internet and its uses. As a result of this online education, it has been observed that students are facing many mental and social challenges as well. They have become more aggressive, isolated and self centered. The students are forced to sit in front of PC/Laptop/phones for attending their classes. Students are also being evaluated in an online mode. This creates a lot of physical ailments such as problems pertaining to their eyes, ears and spine etc.

Therefore, an attempt has been made to assess various issues and challenges face by students during COVID-19 due to Online Education.

CHAPTER 2

LITERATURE REVIEW

2.1 Impact of pandemic on education

The traditional education institutions are closed either partially at some tome or fully since last 2 years due to fear of spread of COVID 19 pandemic in world. The education institutions and Government have found a great difficulty that how the education to students of country should continue to some extent and CORONA Virus also not spread. In view this; the online mode of Education comes in mind of policy maker. Every Government of world has issue instructions to start classes for all students in online mode so that their academic year should not suffer. Many researchers have study the online education before CPVID 19 and during COVID Period and found this aspect of online education and its impact on students.

i.) Aithal & Aithal (2016) stated in their study on the impact of on-line education on higher education system that Education is the most important thing for any country to develop and prosper. Education frames the character and intelligence of individuals. It also provides the talent and motivation to every person. The physical education system at higher education level is analogous to brick and mortar type business system, where a student gets systematic education from college/University by personally attending required courses regularly (Full time/part Time). They stated that online education has seen a fast progress in the recent years, making it one of the most discussed subjects in the education domain. It has taken away some of the major limitations of the classroom based education, such as location, accessibility,

transportation and cost. They stated that online education has made rapid progress in the recent times, making it one of the most analyzed and discussed subject in higher education system. However the researcher use selected education information portal and feedback of teachers and students has not taken on side effects of online education on health of students.

ii) Rovai & Barnum (2003) mentioned that technology will denigrate higher education and destroy the special relationships instructors have with their students and students have with each other in their study of On-Line Course on Student Interactions and Perceptions of Learning. Many people are concerned that distance education is compromising the quality of education. Some on-line courses seems similar to the traditional lecture course, others come across as self-paced correspondence courses with no student-student interaction and limited instructor feedback, whereas others are designed to encourage interaction between students and between students and the instructor. Some on-line courses include collaborative group work and others do not, and some are taught completely on line, whereas others include face-to-face meetings. In addition, some on-line instructors are well and proper trained in on-line course design and teaching methods whereas others receive no training. Consequently, generalizing course effectiveness research findings across all on-line courses is a problem unless confounding variables such as course design, content, pedagogy, technology, and student characteristics and needs are controlled and generalizations are restricted to on-line courses with similar characteristics. They stated that online education has made rapid progress in the recent times, making it one of the most analyzed and discussed subject in higher education system.

Iii) Jena, (2020) stated that COVID-19 has impacted immensely to the education sector of India. India was not fully equipped to make education reach all corners of

the nation via digital platforms. He mentioned that   Covid-19 has affected nearly 68% of total world's student population as per the data taken during 1st week of June 2020. Outbreak of Covid-19 has impacted about 1.2 billion students and youths across the globe by school and university closures.

2.2 Strategy adapted by institutions

i.) Chakraborty, Mittal, Gupta, Yadav, & Arora (2020) have mentioned that the pandemic forced different organizations to suddenly modify their workflow strategies and adopt new technologies in their study of   opinion of students on online education during the COVID-19 pandemic. In most cases, these organizations did not get enough time to reflect upon how the new strategies and the associated technologies should be introduced and integrated to their existing setup. Universities around the world were no exception. Many universities were moving from classroom-based education to online education because of the raging pandemic. They have mentioned that students feel that they learn better in physical classrooms than through online education. Students miss the help they receive from their classmate in classrooms and laboratories and access to library. Nevertheless, students feel that online education helped them to continue their study during the pandemic. Universities are now using innovative strategies to ensure continuity of education for their students. Professors are now delivering course content through various platforms. Professors are using online educational platforms, videoconferencing software, and social media to teach their courses. Online educational platforms, like Google Classroom and Blackboard, allow professors to share notes and multimedia resources related to their courses with students. The online educational platforms also allow students to turn in their assignments and professors to keep track of the progress of the students. Video

conferencing tools, like Google Meet, Zoom, and Microsoft Teams, help in organizing online lectures and discussion sessions .The researchers have conducted a survey in which some question was asked to undergraduate students in an Indian university about their opinion on different aspects of online education during the ongoing pandemic. They found that the students appreciated the software and online study materials being used to support online education. However, the students felt that online education is stressful and affecting their health and social life.

ii.) Dhawan, (2020) has stated that Online Teaching is no more an Option, It is a Necessity in present time and everybody i.e Teachers, students and institutions has accepted it now in her study of Online learning: A Panacea in the Time of COVID-19 Crisis. He stated that the educational institutions (schools, colleges, and universities) in India are currently based only on traditional methods of learning, that is, they follow the traditional set up of face-to-face lectures in a classroom. Although many academic units have also started mingle learning, still a lot of them are stuck with old procedures. The sudden outburst of a deadly disease called Covid-19 caused by a Corona Virus (SARS-CoV-2) shook the entire world. The World Health Organization declared it as a pandemic on 10th march 2020. This situation challenged the entire education system across the world and forced educators to shift to an online mode of teaching overnight. Many academic institutions that were earlier reluctant to change their traditional bookish approach had no option but to shift entirely too online teaching–learning. The secondary data is used by researchers to get their finding. She stated that College became more resilient to online learning after that disastrous event. Technology helped them overcome the barriers in those difficult times. She mentioned that infrastructure needs to be so strong that it can provide unhindered services during and after the crisis.

2.3 Academic stress during online education

i.) Chandra,(2020) has discussed Online education during COVID-19: perception of academic stress and emotional intelligence coping strategies among college students. She analyzed the primary data on academic stress among college students. Researchers and educators across the globe are trying their best to come up with more enhanced learning techniques based on the current situation, one of its types is designed by Ilmiyah and Setiawan which is a "student worksheet", to guide distance learning based on scientific literacy indicators in the COVID-19 topic. Researchers in the past have also employed self-efficacy instruments in various academic and technology-related courses and observed that it has a positive influence on students' achievement and persistence in specific tasks. A report by Bullen (1990) quoted that Utopian possibilities of classroom instructions using technology-based instruction have further observed distance learning's practical implications as a supplement to enhance learning. She found that significant differences were observed between the fear of academic failure and online and home environment among male and female students. The studied were limited to a small sample from selected institutions and cities, which cannot be used to generalize to a large population.

ii.) Brahler, Peterson & Johnson (1999) have discussed Developing on-line learning materials for higher education: An overview of current issues. The secondary data are used in study. They study the combined effects of increased faculty workloads, changing students and learners needs, and improved instructional technologies have resulted in increased demands for on-line learning contents. Numerous approaches have been taken to develop these contents, but with limited success in fulfilling the need for on-line learning materials. Initially, the use of computer-assisted instructional

(CAI) materials to enhance conventional teaching was a novel concept. However, increasing pressures at all levels of education perpetuated a need for time efficient, conceptual and innovative, effective teaching modalities that maintained the quality of teaching. CAI was considered to be a feasible   solution to these problems. However some deficiency were found by institution to develop CAI based material. Many universities have tried to increase usage of educational technologies such by providing workshops and technical consultation to faculty to assist them in reengineering their own courses to use technology. However, this approach has had limited success. Expecting faculty to convert their own teaching materials into a media-rich, computer-based format is unrealistic because:

- Typically, the institution cannot provide faculty release time from other responsibilities to the extent required to develop educationally stimulating CAI.

- Faculty generally lack the comprehensive technical skill base required to develop educationally stimulating, digital learning materials that involve students actively in the learning process, and accommodate diverse learner needs. The individual-developer approach is not conducive to establishing these skills.

- Faculty may have many learner-centered, innovative teaching ideas. But in many cases, attempts to convert these to electronic learning materials result in a significant proportion digressing to linear representations of didactic materials, due to insufficient technical abilities.

- The individual-developer approach does not spread capitalization costs out over a large number of projects, therefore making the development cost per project much higher than necessary.

They suggest that Implementation of multimedia-rich computer-assisted instructional materials into curricula can enhance the learning experience. Well-developed, high-quality multimedia materials can stimulate different learners based on their preferred learning styles, as well as expand distance learning opportunities. One important point is that the computer-based learning materials are not designed to replace faculty, or even reduce faculty numbers. On-line learning materials require revision and updating every time they are delivered. The faculty's new role with increased technology will be to keep the information updated and current in the computer-based materials, and to enhance their mentoring and research commitments with the time liberated by replacing stand up lectures.

Edwards & Hodge has discussed about Lessons Learned by Comparing On-line Education Strategies across Disciplines. They stated that students made greater use of the online discussion forum than faculty. The discussion board was the most used feature, with the different topics ranging from curriculum issues to event announcements to personal issues and achievements. Students who used the website wanted the website maintained and considered it a valuable resource. They reported a greater sense of community with the department and with each other. They also noted that it helped to increase their knowledge of departmental matters. Both disciplines are applied fields, requiring an eclectic array of skills and knowledge. Both courses serve non-traditional students who are returning professionals, often balancing professional work, family, and education. Such students often have a strong motivation to learn and to pursue program objectives on their own. Both social work and computer science also require the development of skills that enhance critical thinking. Students need to apply concepts, develop a sense of professional practice, and learn to critically evaluate their work as well as the work of others.

2.4 Advantage of internet in education

i.) Casebeer (2020) has stated that that nearly all physicians have access to the Internet, know how to use it, and access it for medical information in his study of physician internet medical information seeking and on-line continuing education use patterns. Internet knowledge is very important for communication with patients and other medical information.

ii.) DiPiro (1999) had discussed The Virtual University—Higher Education 'On-Line'. Our colleges are confronting influences and interests from within and outside the university that may dramatically alter the way instructional programs are provided. Some of the influences relate to technology, such as interactive television, web-based material, and multimedia presentations. These technologies along with needs to increase access and reduce costs are encouraging the development of distance learning programs. He stated that the online education from the student perspective, while access to courses may be enhanced by virtual universities, both course quality and direct interaction with instructors may suffer. At this time, there appears to be a tremendous range in the quality of the courses offered electronically, as exists with traditional higher education. Some virtual universities are actively addressing the quality issues by creating standards and policies to assure that academic standards are maintained. The Open University has achieved recognition for high academic standards in comparison with traditional British universities. On the one hand, today's students have been described as "...technologically sophisticated consumers who expect services that are as user- friendly, accessible, and convenient as automatic teller machines. A potential advantage of virtual universities to administrators and public officials directing higher education is that the growing

demands on higher education may be met in a more cost effective manner. By one estimate, the creation of 25 courses could serve an estimated 80 percent of total undergraduate enrollment in core courses. These programs may reduce the expenditures for physical facilities and reduce or eliminate fulltime and tenured faculty. However, electronic courses may require much more time of instructors; require state-of-the-art computers as well as technical and administrative support.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Objectives

Certainly, like many other aspects of everyday life, COVID-19 has a serious impact on students, instructors, and educational organizations around the globe. The existing online education platform has created new way for providing education i.e. Primary, secondary and higher education's to the students when all schools and colleges were closed due to COVID 19 pandemic for last one and a half years. However the impact of it on learning and well being of school students is required to find future road maps for school educations.

 The study under consideration has following objectives.

i. To study government initiatives for online education in schools in India.

ii. To explore the digital infrastructure challenges faced by students and teachers in implementation of on-line education.

iii. To study the impact of on-line education on learning of students from Students', Teachers' & Parents' perspective.

iv. To assess the impact of on-line education on physical, social & mental well being of students from Students', Teachers' and Parents' perspective.

v. To recommend measures to handle the challenges pertaining to on-line education in schools.

3.2   The Research Strategy

The Research Strategy is mix of both Quantitative and qualitative. Descriptive and Exploratory research design is being used. Primary and secondary data pertaining digital infrastructure, government initiatives and educational material is used. The primarily data is collected through Google survey form for taking feedback from Students, Teachers and Parents of schools situated in Delhi and Uttar Pradesh (UP) during 27 December 2021 to 02 February 2022. Secondary source of data is also collected on different aspects of online education available in public domain.

3.4 Sample Size

The sample has taken from students of Class - 6th to 12th standard. The parents and teachers of all type of schools students have been taken during survey. The students, parents and teachers are selected from schools situated in Delhi and UP so that metro and non metro environment in respect of digital infrastructure for online education can be assessed during research. The sample include male, female, Arts and Science Students so that a fair assessment of online education on all type of school students can assess during research. The sample size of participants has been taken from both Urban and Rural back ground. The Convenient sampling technique has been used for selecting the students, teachers and parents. This sample size has been chosen on the basis of following calculation to give true picture of impact of online education.

Assumptions[6]:

Precision   = 5.00 %
Prevalence   = 50.00 %
Population size   = infinite

95% Confidence Interval specified limits [45%   --   55%]
(These limits equal prevalence plus or minus precision)

Estimated sample size:
    n =   **385**

95% Binomial Exact Confidence Interval with n =   385

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[6] https://www.calculator.net/sample-size-calculator.html?type=1&cl=95&ci=5&pp=50&ps=&x=87&y=26 assessed on 22.12.2021.

And n * prevalence =   193 observed events:
[45.0212%   -- 55.2365%]

This means 385 or more measurements/surveys are needed to have a confidence level of 95% that the real value is within ±5% of the measured/surveyed value. Hence the sample size of 407 (200 students, 100 teachers and 107 parents) has been taken during survey and feedback has been taken through Google forms. This method has been chosen due to peak of COVID 19 in India and hardcopy of formed is not suitable during this period due to different restrictions imposed by Government of Delhi and UP. All respondents were explained that this is used for only education purpose and you are free to give your independent feedback/answer by submitting Google questionnaire response.

3.5 Research Methodology and Data Source

The primary data is collected from following method during research.

a) Surveys

The survey is taken from 407 participants including Students, Teachers and Parents on Likert scale[7]. The Likert scale is a five (or seven) point scale which is used to allow the individual to express how much they agree or disagree with a particular statements. The sample has been chosen by convenience sampling technique due to limitation of time and cost.

 b) Focused group Discussions

The group discussion was held with some students, teachers and parents about effectiveness of online education on physical, mental and social development of students during field visit of rural UP.

c)   Questionnaire & Interviews

The 30 questionnaire has been prepared to assess the impact of Online Education on learning and well being of school student during COVID-19 period of 2020 & 2021.

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[7] https://www.simplypsychology.org/likert-scale.html#:~:text=A%20Likert%20scale%20assumes%20that,that%20attitudes%20can%20be%20measured.

The 8 questions were related to learning, it includes subject learning, subject knowledge, writing skill, creativity, analytical skill, understanding of subject, scoring of subject and inquisitiveness about subject. The 3 questions were related to social activity/behavior and 2 question related to mental health. The well being of students means a good health of students, and development of good habits in students. It include development of a good habits such sleeping, eating, interaction to friend, classmate, teachers and relatives, addiction and interest too any things. The 7 question related to physical health. The 8 questions is related to digital infrastructure such platform availability, internet speed, PC/Mobile, availability of separate room for class, availability of electricity etc. The feedback on these questions were taken through three Google forms prepared for students, teachers and parents respectively during 27 December 2021 to 2nd February 2022 of Delhi and UP.

d). The literature, websites, documents, books , journals articles on the subject from institutes, online articles, Government instruction and guidelines for online Education in India and other available source in World has been read for collecting secondary data.

3.6 Research Questions

The research questions sought to be answered through this study are the following:

RQ1. What are government initiatives to promote online education?

RQ2 What are challenges pertaining to digital infrastructure faced by students' teachers' and parents in implementation of on-line education in Delhi and UP?

RQ3 What is the impact of on-line education on learning of students from students', teachers' and parents' perspective?

RQ4 What is the impact of on-line education on social and behavior of students from students', teachers' and parents' perspective?

RQ5 What is the impact of on-line education on physical health of students from students', teachers' & parents' perspective?

RQ6 What is the impact of on-line education on mental and overall growth of students from students', teachers' & parents' perspective?

RQ7 What is the way forward to handle the challenges pertaining to on-line education?

3.7 Limitations and Scope

The online education has vide range such distance learning, coaching and other field of research. However, this research is limited to study of impact of online education on schools students study in schools situated in Delhi and UP area only due to limitation of time and money. The feedback has been taken through online facility due to restriction of COVID-19 during this time. The study can also includes collages, coaching and other students if time permit. The further impact of online education can be study on different gender wise, subject wise and different socio economical groups of students. The further research can be done for assessing impact of online education on students of professional course.

CHAPTER 4

GOVERNMENT INITIATIVES FOR ONLINE EDUCATION

4.1 Background

Learning is a lifelong   process and formal education might be a very small part of this lifelong learning but plays a very important part in how our lives change thereafter.

In the time of pandemic when all schools and colleges were closed for physical classes, Digital technologies are playing a very most crucial role in achieving "Quality education for all" Sustainable Development Goal (SDG) 4[8] by ensuring that learning stays a student-centric process by:

- Making education more enjoyable, student friendly, interesting by designing engaging and interactive content.

- Making education more accessible by delivering it through different mediums like smart-phones, satellite, social media, internet, virtual private network, web-portals, community radios, digital Televisions etc.

- Managing the whole teaching organization more effectively by digitizing systems related to management of school, teachers and students' performance, dashboard and digital platform for different reports, assignments, laboratory session etc.

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[8] The Sustainable Development Goals (SDG), set in 2015 by the United Nations General Assembly, are a collection of 17 global goals designed to achieve a better and more sustainable future for all. SDG4 ensures inclusive and equitable quality education and promote lifelong learning opportunities for all

'Digital technologies' is a broad term that includes predominately emerging technologies including Artificial Intelligence (AI), Internet of Things (IoT)[9] etc and also rely on Information Communication Technology (ICT) category such as, SMAC technologies, web-technologies, 4G, Fibre To The Home (FTTH) , Wifi etc .Therefore, depending on the need and availability of resources, at their organizational level, different schools/ colleges/educational institutions are building different digital resources including creation of Learning Management Systems (LMS)[10], Virtual Classroom, virtual Blackboard, virtual simulation for experimental lab, Digital Library, Digital Lab, Data Centre and Management Information Systems for managing Administration and academics.

 These benefits have been more recognized and the role of technology has become predominant and its impact is felt much more comprehensive in the field of education during present turbulent pandemic times when schools and universities were closed but education must continue hence extensive reliance on digital technologies. Online Education using various technologies can not only bring in transformational change in online education experience, it can also boost and supplement regular classroom based schooling. The New Education Policy (NEP), announced on July 29, 2020 also focuses on digital technology use and its integration for major reforms in current education system of India.

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[9] The Internet of Things (IoT) is a generic term for connected devices that communicate with other connected devices via embedded sensors and wireless networks

[10]LMS is a software application for the Administration, Documentation, Tracking, Reporting and Delivery of education or training content,e.g. Moodle

4.2 Information Communication Technology (ICT) in Education Sector

Government of India (GoI) had long since appreciated the increasing use of digital technologies in education sector and hence made concerted efforts the same with the objective of 'universalizing' it for all students. Indian education sector had employed communication media such as television (Gyan Darshan, launched in 2000) and radio (GyanVani, launched in 2001) for educating the underprivileged population in remote and hilly areas. Further, an exclusive satellite, EDUSAT, was launched in September, 2004. The purpose of this satellite was to stream multimedia multi-centric ambidextrous educational content in digital interactive classrooms for schools, colleges, technical institution and higher levels of education and to support non-formal education too including developmental communication (Malhotra , 2014)[11].

GoI has also established IT infrastructure through Common Service Centres (CSCs), BharatNet project, 4G, rural Wifi Project etc and tried providing better digital connectivity to educational institutes through initiatives like Education and Research Network (ERNET) and National Knowledge Network (NKN) and further mandated existing institutes like Media Lab Asia to focus on the core mandate of universalizing ICTs in education.

Common Services Centres (CSCs)

Common Services Centres (CSCs) are the access points for delivery of essential public utility services, social welfare schemes, facilitator for filling of online competitive form, facilitator for healthcare, financial, education, and facilitator of e-service and agriculture services, apart from host of Business to Customer (B2C)

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[11]CharruMalhotra (2014). Building Blocks of e-Literacy, Vision Digital India-Towards an Empowered Knowledge Economy, *Microsoft Perspective*, pp: 17-19.

services to citizens in rural and remote areas of the country. It is a pan-India network catering to regional, geographic, linguistic and cultural diversity of the country, thus enabling the Government's mandate of a socially, educationally, financially and digitally inclusive society. The project is being carried out by a joint collaborative approach between government and private sectors under Public- Private Partnership Model (PPP).

To achieve the mission of providing government services at an affordable cost and integrated manner at the doorstep of the citizen, erstwhile Department of Information & Technology (now MeitY[12]), Government of India, in the year 2011, had rollout over 100,000 Common Services Centres (CSCs) across the country with a focus on the rural areas, which has now been enhanced to 2, 68,385 CSCs as on 31.03.2020. Each CSC is meant to serve a cluster of six to seven villages, thereby covering more than six lakhs villages across India. CSCs can be seen as a single window for the front-end delivery points for government, private and social sector services for citizens of India in the areas of telecom, agriculture, health, education, entertainment, FMCG products, banking and financial services, utility payments, etc.

ERNET (Education and Research Network)

ERNET India is the National Research and Education Network was initiated in 1986 by Department of Electronics, Government of India. It was established in 1998 as an autonomous scientific society under the Ministry of Electronics & Information Technology (MeitY), Government of India. It operates ERNET network – a pan-Indian terrestrial and satellite network with 5 points of presence at premier research and academic institutions to support the needs of the research and education community within the country. ERNET is presently serving more than 1200

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[12] Ministry of Electronics and Information Technology

institutions in various sectors, namely, health, agriculture, higher education, schools and science & technology. ERNET has also served as the nodal network for India to be connected through high-speed link to the pan-European Education and Research Network (GEANT) during 2006 to 2010. .The ERNET-GEANT connectivity is now available through Trans Eurasia Information Network (TEIN3[13]).

NKN (National Knowledge Network)

NKN is a project initiated in 2010 to connect all higher educational institutions. NKN is a state-of-the-art Pan-India network and is a far-reaching step towards creating a knowledge society without boundaries. It provides unmatched benefits to the knowledge community and mankind at large. It will facilitate the development of India's information infrastructure, motivate research, and create next generation applications and services. The objective of NKN is to interconnect all institutions of higher learning and research with a high speed data communication network to facilitate knowledge sharing and collaborative research. It will facilitate advanced distance education in specialized fields like engineering, science, medicine etc. It will enable an ultra-high speed e-Governance backbone and bridge the existing knowledge gap in the country and to help the country (India) evolves as a Knowledge Society.

BharatNet

BharatNet programme was earlier known as National Optical Fibre Network (NOFN)[14]. NOFN programme was initiated in the year 2011 with a vision to connect over 2, 50,000 Gram Panchayats across the country. The programme aims is taking

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[13] The Trans-Eurasia Information Network (TEIN) initiative was launched at the Asia Europe Meeting (ASEM) Summit in Seoul in 2000 to improve Euro-Asian research networking. TEIN3 Point of Presence (PoP) has been co-located at ERNET PoP at Mumbai and is acting as the hub for connecting research networks in South Asia except Pakistan. The network of ERNET India is connected to TEIN3 PoP in Mumbai.
[14] https://bbnl.nic.in, assessed on 18.01.2022

broadband connectivity to every nook and corner of the country by using optical fibre. It is considered as one of the biggest rural telecom project in the world. The project is now an integral part of the Digital India programme. Through Bharat Net, the government envisages providing a minimum of 100 Mbps bandwidth at each Gram Panchayat through fibre media so that online services can be accessed by everyone, especially those in rural India. The project is helping connecting all village panchayat, school, health centre with high speed internet. The wifi HotsSpot is also established at different rural market place for better data connectivity to public through support of Universal Service Obligation Fund (USOF) unit of DoT.

BharatNet and NKN, both are ambitious broadband projects of the government, but Bharat Net is part of the Department of Telecommunication (DoT) under ministry of communication, while NKN is under the purview of Ministry of Electronics and Information Technology.

4.3 Establishment of Institutions

The Government of India has established different institutional to encourage online educational facilities. Some of these are mentioned here.

Media Lab Asia

The Media Lab Asia (presently called as Digital India Corporation), an institute under MeitY (erstwhile DeitY[15]), was established in the year 2001.It provides the strategic support to Ministries/Departments of Centre/States for carrying forward the mission of Digital India by way of Capacity Building for e-Governance projects, encouraging best practices, promoting Public-Private Partnerships (PPP), nurturing innovations

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[15] Department of Electronics and Information Technology. In 2012 it was made into full-fledged ministry, which henceforth is known as the Ministry of Electronics and Information Technology

and technologies in various domains. It also helps state government for digitisation of office records and promoting e-office in day to day functioning.

National Institute of Electronics & Information Technology (NIELIT)

National Institute of Electronics & Information Technology (NIELIT) is engaged both in formal and non-formal education in the area of Information Electronics Communication Technology (IECT) besides development of industry oriented quality education and training programmes in the state-of-the-art areas. IECT is helps in development of E-Governance, Multimedia and Entertainment based content[16]. Electronic governance is application of Information Electronics and Communication Technology in running an effective governance system for people. Communication refers to sharing of information between parties like common people, government, business, etc. Almost every government sector has changed to IECT like rail reservation system, gas subsidy disbursal, etc. Multimedia refers to combination of text, audio, video, graphics, animation, etc. It is one of applications of IECT. Multimedia is used to improve quality of presentation by incorporating information sharing, usage of graphics and animation, motion capture, etc. NIELIT has endeavoured to establish standards to be the country's premier institution for examination and certification in the field of IECT. It is also one of the National Examination Body, which accredits institutes/organisations for conducting courses in IT in the non-formal sector.

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[16] https://www.tutorialspoint.com/computer_concepts/computer_concepts_applications_of_iect.htm

4.4 Government Schemes for promoting Online Education

National Mission on Education through ICT (NMEICT)

The National Mission on Education through Information and Communication Technology (ICT)[17] has been envisaged in the year 2009, as a Centrally Sponsored Scheme under the Department of Higher Education, Ministry of Human Resource Development (MHRD), to grasp the potential of ICT, in teaching and learning process for the benefit of all the learners in Higher Education Institutions in any time any where mode. It was approved to achieve following objectives:

- To leverage the potential of ICT in teaching and learning processes, for the benefits of all the learners in Higher Education Institutions in any-time anywhere mode.

- To bridge the digital divide gap between rural and urban students.

- To make provision for the availability of e-knowledge contents, e-library facility and service, free of cost to Indians.

- To provide e-books, e-articles and e-journals free to the learners and researchers.

- To focus on content generation, content sharing, providing connectivity, providing facility for research and development.

- To standardize, innovate and assure quality of contents to make them world class educational materials.

- To provide support for the creation of virtual technological universities and colleges in India.

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[17] http://www.nmeict.ac.in/ assessed on 18.01.2022.

The some important initiatives under the NMEICT programme are:

SWAYAM (Study Webs of Active-Learning for Young Aspiring Minds)

SWAYAM was launched by Ministry of Human Resource Development, Government of India on July 09, 2017. It was designed to achieve the three cardinal principles of Education Policy viz., access, equity and quality. The objective of SWAYAM is to provide best teaching learning resources to all, including the most disadvantaged. The courses hosted on SWAYAM are in 4 quadrants – (1) video lecture, (2) specially prepared reading material that can be downloaded/printed (3) self-assessment tests through tests and quizzes and (4) an online discussion forum for clearing the doubts. Steps have been taken to enhance the learning experience by using audio-video and multi-media and state of the art pedagogy / technology. The platform offers free access to everyone and hosts courses from class 9 till post-graduation.

Courses delivered through SWAYAM are available free of cost to the learners, however learners wanting a SWAYAM certificate should register for the final proctored exams that come at a fee and attend in-person at designated centres on specified dates. Eligibility for the certificate will be announced on the course page and learners will get certificates only if these criteria are matched. Universities/colleges approving credit transfer for these courses can use the marks/certificate obtained in these courses for the same.

SWAYAM PRABHA

The SWAYAM PRABHA is an initiative of the Ministry of Human Resources Development to provide a group of 22 DTH channels devoted to telecasting of high-quality educational programmes on 24X7 bases using the GSAT-15 satellite.

Everyday new content for at least 4 hours are telecast and it is repeated 5 more times in a day, allowing the students to choose the time of their convenience. The contents are provided by NPTEL, IITs, UGC, CEC, IGNOU, NCERT and NIOS. The Information and Library Network (INFLIBNET) Centre maintains the web portal. The DTH Channels shall cover the following:

- Higher Education: Curriculum-based course contents at post-graduate and under-graduate level covering diverse disciplines such as arts, science, commerce, performing arts, social sciences and humanities, engineering, technology, law, medicine, agriculture, animal husbandry, etc. All courses would be certification-ready in their detailed offering through SWAYAM, the platform being developed for offering Massive Open Online Courses (MOOCs).

- School education (9-12 levels): modules for teacher's training as well as teaching and learning aids for children of India to help them understand the subjects better, developed analytical knowledge of subject and also help them in preparing for competitive examinations for admissions to professional degree programmes.

- Curriculum-based courses that can meet the needs of life-long learners of Indian citizens in India and abroad.

- Assist students (class 11th & 12th) prepare for competitive exams for admission in engineering and medical collages after 12th class.

National Digital Library of India (NDLI)

Ministry of Human Resource Development (MHRD) under its NMEICT programme has initiated the National Digital Library of India (NDLI) project to develop a framework of virtual depositary of learning resources with a single-window search facility. It is a digital depositary containing textbooks, articles, videos, audio books,

lectures, simulations, fiction, research paper and all other kinds of learning media. The NDLI provides free of cost access too many books in the Indian languages and English.

Spoken Tutorials

It is one of the recent initiatives of NMEICT to promote IT Literacy through Open Source Software. It is a digital repository containing textbooks, articles, videos, audio books, lectures, simulations, fiction and all other kinds of learning media. Spoken Tutorial is a multi-award winning educational content portal. Here one can learn different Free and Open Source Software all by oneself. These self-paced, multi-lingual courses ensure that anybody with a computer and a desire for learning can learn from any place, at any time and in a language of their choice.

National initiative for School Heads and Teachers Holistic Advancement (NISHTHA)

The NISHTHA (National initiative for School Heads and Teachers Holistic Advancement) programme has launched by Ministry of HRD in August 2019. It is a capacity building programme for "Improving Quality of School Education through Integrated Teacher Training". It aims to build competencies among all the teachers and school principals at the initial stage. The functionaries (at the state, district, block, cluster level) shall be trained in an integrated manner on learning outcomes, school based assessment, learner – centred pedagogy, new initiatives in education, addressing divergent needs of children through multiple pedagogies, etc. To realize the vision of NEP-2020, recently NCERT under the aegis of Ministry of Education (MoE), Department of School Education and Literacy (DSE&L), Govt. of India in collaboration with States / UTs and autonomous bodies under MoE, MoD and MoTA

(CBSE, KVS, NVS, CTSA, AEES, Sainik School, CICSE, EMRS - NESTS etc.) have initiated the NISHTHA integrated training programme 1.0, 2.0, and 3.0 online for various stages of school education - Teachers, Head Teachers/Principals and other stakeholders in Educational Management and Administration.

- NISHTHA 1.0 for Elementary level (Classes I-VIII)
- NISHTHA 2.0 for Secondary level (Classes IX-XII)
- NISHTHA 3.0 for NIPUN Bharat (ECCE to Class V)

4.5 National Policy on ICT in School Education

Apart from this, Ministry of Human Resource Development, GoI is also the driving force for implementation of National Policy on ICT in school education that focuses on following objectives :-

- To improve the service delivery of school education, efficiency of school administration and governance.
- To ensure e-learning, capacity building with help of client-end infrastructure and network connectivity at schools.
- Serves in elements of Learning Support Services, School Management Services and School Governance Services.

Rashtriya Madhyamik Shiksha Abhiyan (RMSA)

Government of India, had also initiated Rashtriya Madhyamik Shiksha Abhiyan (RMSA) scheme for Government as well as Government aided Secondary and Higher secondary schools in December 2004 (revised in the year 2010), that prominently includes the application of ICTs in schools. This provided opportunities to build ICT capacities of the secondary students and make them learn through computer aided

learning process thereby bridging the digital divide amongst students who cannot afford these digital facilities. The scheme also provides support to States/UTs to establish computer labs in these schools.

4.6 Schemes/ Initiatives for Digital Literacy

E-Bhasha

The 'e-Bhasha' is a central level mission mode project and it is jointly driven by the Ministry of Electronics and Information and Technology and Technology Development for Indian languages (TDIL). The aim of this project is to create digital content, digital reading material in different languages and technical solutions in various Indian languages[18].

IT for Masses

The objective of the programme is to promote activities in ICT for focused groups from all section of society and beneficiaries residing in focused areas for inclusive growth of the IT Sector. The focused group involves the women, scheduled caste, schedule tribe, senior citizens, other backward class, challenged and the economically weaker section. The focused areas are North Eastern Region, Backward Districts and Blocks & Districts having more than 40% SC/ST population.

Pradhan Mantry Gramin Digital Saksharta Abhiyaan (PMG Disha)

The scheme's vision is to empower at least one person per household with crucial digital literacy skills by end of 2020. The project aims at helping adults with low technological literacy develop the skills they need to interact in an increasingly digital world. It helps in bridging digital divide gap between rural and urban citizen specially focusing digital training in rural area.

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[18] http://www.ebhashasetu.com, assessed on 02.02.2022

National Digital Literacy Mission-NDLM (Also known as Digital Saksharta Abhiyan -DISHA)

The Scheme has been formulated to impart IT training to 52.5 lakh persons, including Anganwadi and ASHA workers and authorized ration dealers in all the States/UTs across the country so that the non-IT literate citizens are trained to become IT literate so as to enable them to actively and effectively participate in the democratic and developmental process and also enhance their livelihood.

4.7 Digital India

Digital India Program (DIP) is an ambitious programme of Government of India that weaves together a large number of technologies with governance processes and services to empower Indian citizens. It has three vision areas *viz.* 'Digital Infrastructure as a Utility to Every Citizen', 'Governance and Services on Demand', and 'Digital Empowerment of Citizens' and nine pillars. Some of the nine pillars of Digital India are - 'Broadband for all', 'e-Kranti', IT for Jobs', 'Digital Literacy for All' and so on. Fifth pillar referred as 'e-Kranti', denotes to 'Electronic delivery of services'. E-Kranti, at present, includes forty four mission mode projects related to governance services, one of which is focused on 'Education', as summarized herewith.

Technology for Education – e-Education

It is one of the national level initiatives launched under e-Kranti pillar of Digital India. Under this initiative all schools are connected with broadband. Free Wi-Fi is provided in all secondary and higher secondary schools (coverage would be around 250,000 schools) MOOCs –Massive Online Open Courses platform is developed and leveraged for e-Education.

Government has launched various schemes under 'Technology for Education'; some of the schemes are Visvesvaraya PhD[19] scheme for Electronics and IT, Online Labs (OLABS), National Scholarship Portal (NSP), National Career Service Portal and e-Granthalaya.

Technology for Education also includes initiatives like Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA)/ National Digital Literacy Mission (NDLM) as well as web initiatives including SWAYAM portal, National Scholarship Portal, National Mission for Education through ICT, e-Pariksha, e-PG Pathshala, e-Basta thereby eliminating digital divide in the education realm. Some of the major national projects that leverage the power of ICTs to increase the outreach of educational services in the country are Sakshat, eGyanKosh, Flexilearn, NPTEL, Virtual Labs, MeLT, N-LIST, CEC, Institute of Lifelong Learning (ILLL) etc. (Ministry of Human Resource Development, 2018[20]).

4.8 Pandemic Times & the Latest Digital Initiatives in Education

As indicated above, mobile apps and LMS[21] are already being employed a lot across the country. Apart from the mentioned initiatives, Government of India has reinforced its emphasis on some of the earlier initiatives and announced some new ones too including:

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[19] Ministry of Electronics and Information Technology, Government of India initiated "Visvesvaraya PhD Scheme for Electronics and IT" with an objective to enhance the number of PhDs in Electronics System Design & Manufacturing (ESDM) and IT/IT Enabled Services (IT/ITES) sectors in the country.

[20] Human Resource Development (MHRD), Government of India (2018). *Information and Communication Technology.* Retrieved from http://mhrd.gov.in/ict_overview; last updated on 11 March, 2016

[21] LMS is a software application for the Administration, Documentation, Tracking, Reporting and Delivery of education or training content, e.g. Moodle

- Online Digital Training Platform (iGOT[22])

- Digital education (PMG-DISHA and PM-eVidya[23]—DIKSHA portal, 289 community radio stations, CBSE Podcast Shikshavani[24], Digitally Accessible Information System (DAISY), Swayam Prabha- a group of 32 DTH channels devoted to telecast of high-quality educational programmes)

- Public Awareness (PIB, @Cyber Dost).

(Details of some of these bolded initiatives in the table below)

Table 4.1: List of Major ICT based Initiatives in Education Domain by GoI

S no.	Name of the Initiative	Details
1	**e-PG Pathshala**	High quality, curriculum-based, interactive content in different subjects across all disciplines of social sciences, arts, fine arts & humanities, natural & mathematical sciences, linguistics and languages is being developed under this initiative named e-PG Pathshala.
2	**e-Basta**	It is a framework to make school books accessible in digital form as e-books to be read and used on tablets and laptops and provides easy access to interactive and dynamic content augmented with text, charts, graphics,

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[22] To take care of the training needs of the frontline workers, the Government of India has launched a training module for management of COVID-19 named 'Integrated Govt. Online training' (iGOT) portal on Ministry of HRD's DIKSHA platform for the capacity building of frontline workers to handle the pandemic efficiently.

[23] In order to promote digital education in the country and make e- learning feasible for students and teachers, Government of India has launched PM eVidya programme.With this scheme, students and teachers will get multimode access to digital education.

[24] It is an app launched by the Central Board of Secondary Education, to broadcast vital information to students and parents promptly and to keep them updated about the latest news and events of the CBSE

		videos and auxiliary resource. It also provides teachers who contribute content / generate more relevant collections nation-wide visibility
3	**Shodh Ganga**	Shodh Ganga is a digital repository of Indian electronic theses and dissertations set-up by the Information and Library Network (INFLIBNET) Centre. In 2016, University Grants Commission (UGC) has released a notification on Minimum Standards & Procedure for Award of M.Phil. / Ph.D Degree, Regulation, that mandates submission of electronic version of theses and dissertations by the researchers in universities with an aim to facilitate open access to Indian theses and dissertations to the academic community world-wide.
4	**Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA)**	The scheme's vision is to empower at least one person per household with crucial digital literacy skills by end of 2020. The project aims at helping adults with low technological
5	**Digital Infrastructure Knowledge Sharing'**	DIKSHA portal serves as National Digital Infrastructure for Teachers. It enables, accelerate and amplify solutions in realm of teacher education. Its aim is to help teachers to learn and train themselves for which assessment

	(DIKSHA) portal	resources are available. All teachers across nation will be equipped with advanced digital technology.
6	**National Scholarship Portal (NSP)**	National Scholarships Portal is one-stop solution through which various services starting from student application, application receipt, processing, sanction and disbursal of various scholarships to Students are enabled.
		This initiative aims at providing a Simplified, Mission-oriented, Accountable, Responsive & Transparent 'SMART' System for faster & effective disposal of Scholarships applications and delivery of funds directly into beneficiaries account without any leakages.
7	**Online Labs(OLABS),**	Online Labs (OLabs) is a project jointly developed by Amrita University and CDAC. The project was sponsored by Ministry of Electronics and Information Technology, India. OLabs. OLabs offers an excellent online learning platform for STEM (Science, Technology, Engineering and Math) education.
		The OLabs is based on the idea that lab experiments can be taught using the Internet, more efficiently and less expensively.
8	**Sakshat**	Sakshat is a one-stop education portal. It addresses the educational requirements of learners from Kindergarten

		to PhD. All the e-learning contents would be disseminated through this portal free of cost, The portal, developed by eGyanKosh of IGNOU, was launched by the then President of India Dr. APJ Abdul Kalam on October 2006.
9	**eGyanKosh**	It is a National Digital Repository to stores, index, preserve, distribute, stores, and share the digital learning resources developed by the Open and Distance learning institutions in the country. Items in e GyanKosh are protected by copyright, with all rights reserve by IGNOU, unless otherwise indicated.
10	**Integrated Government Online Training (iGOT)**	To take care of the training needs of the frontline workers, the Government of India has launched a training module for management of COVID-19 named 'Integrated Govt. Online training' (iGOT) portal on Ministry of HRD's DIKSHA platform for the capacity building of frontline workers to handle the pandemic efficiently. Courses on iGOT have been launched for Doctors, Nurses, Paramedics, Hygiene Workers, Technicians, Auxiliary Nursing Midwives (ANMs), State Government Officers, Civil Defence Officers, Various Police Organisations, National Cadet Corps(NCC), NehruYuva Kendra Sangathan (NYKS), National Service Scheme, Indian Red Cross Society, Bharat Scouts and Guides and

		other volunteers at the stage.
11	**PM-eVidya**	The main objective of PM e-Vidya program is to educate students through digital platforms so that the education of students does not suffer due to nationwide lockdown
12	**Digitally Accessible Information System (DAISY)**	DAISY refers to a way to create work called DTB<u>s</u> or Digital Talking Books. This means "digital textbooks, or a combination of synchronized audio and text books. DAISY is often used by people with disabilities,
13	**SWAYAM PRABHA**	The SWAYAM PRABHA is an initiative of the Ministry of Human Resources Development to provide a group of 32 DTH channels devoted to telecasting of high-quality educational programmes on 24X7 basis using the GSAT-15 satellite

Source: Library& Information Science Portal

4.9 Some Other Initiatives

Apart from efforts by central government, some states have also come up with their own initiatives, some of which are narrated below:

- **Shaala Darpan:** KV Shaala Darpan is an e-Governance platform for all KendriyaVidyalayas in the country. It provides school information services that include profile management of the school as well as student, student attendance, SMS alerts for Parents, etc. It aims to improve quality of learning and efficiency of school administration.

- **Saransh:** Saransh Portal is a decision support system (DSS) developed by the Central Board of Secondary Education (CBSE) that helps in coordinating students, teachers and parents to look upon the performance of the student.

- **Samagra Shiksha:** It is a Centrally Sponsored Scheme launched in the year 2000, implemented by Government of India in partnership with State Governments. The scheme has been prepared with the broader goal of improving school effectiveness measured in terms of equal opportunities for schooling, bridging of gender and social category gaps in education and equitable learning outcomes. It subsumes the three schemes of Sarva Shiksha Abhiyan(SSA), Rashtriya MadhyamikShikshaAbhiyan (RMSA) and Teacher Education (TE).

4.10 New Education Technologies

World over, the new version of edu-tech are employing newer technologies such as podcasts, wikis, webinars etc.

- **Podcasts:** A digital audio file available as a podcast, typically available as a series, new instalments of which can be received by subscribers automatically.

- **Webinars:** Web Seminars

- **Blogs:** A discussion or informational site published on the World Wide Web and consisting of discrete entries ("posts") typically displayed in reverse chronological order (the most recent post appears first).

- **Wikis:** A website/database developed collaboratively by a community of users, allowing any user to add and edit content.

4.11 Steps taken for continuation of education in other countries of world during pandemic

Practice followed in world for school education during COVID -19 are almost same as followed in India. The status of education during COVID-19 in other countries is given below.

In USA

The American Academy of Paediatrics (AAP) continues to strongly advocate that all policy considerations for school plans start with the goal of in-person learning. Strategies to reduce the risk of transmission of COVID-19 will keep students and staff safe and

physically present in school. There must be a continued focus on keeping students safe, particularly because not all students have had the opportunity or are eligible to be vaccinated against COVID-19 at this time. Evidence to support safe return to in-person learning continues to evolve. Remote learning – which exacerbated existing educational inequities - was detrimental to the educational attainment of students of all ages and worsened the growing mental health crisis among children and adolescents. Opening schools generally does not significantly increase community transmission, especially when guidance outlined by the World Health Organization (WHO), United Nations Children's Fund (UNICEF), and Centres for Disease Control and Prevention (CDC) is followed. Transmission of SARS-CoV-2 in schools can still occur. The risk may be greater for individuals and families who have chosen not to be vaccinated or are not eligible to be vaccinated.

The American Academy of Paediatrics (AAP) strongly advocated that Schools and school-supported programs are fundamental to child and adolescent development and well-being and provide our children and adolescents with academic instruction; social and emotional skills, safety, reliable nutrition, physical/occupational/speech therapy, mental health services, health services, preventive oral health care, and opportunities for physical activity, among other benefits. They state that the families rely on schools to provide a safe, stimulating and enriching space for children to learn, appropriate supervision of children, opportunity for socialization, access to school-based mental, physical, speech, oral, and nutritional health services; and universal support to cope with crisis and loss associated with the pandemic[25].

In china

The People's Republic of China (hereafter 'China') has the most extensive education system in the world, with 282 million students and 17.32 million full-time teachers in over 530,000 schools across the country. The pandemic had an immense impact on all aspects of life in China, including the education sector. Globally, China was the first country to deal with COVID-19.

A holistic and combined effort was made to respond effectively to the emergency at the ministry, provincial, municipal, and school levels, and a national distance education strategy was deployed to reduce the impact of the pandemic. Measures were taken in the following dimensions: Learning continuity: Disrupted Classes Undisrupted Learning (DCUL) was delivered to ensure learning continuity for students. Overall, 22 provincial online learning platforms plus one TV channel were

[25] https://www.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/covid-19-planning-considerations-return-to-in-person-education-in-schools

mobilized at the national level, while various provincial, municipal and school-based platforms and TV programming complemented them. Online learning resources were made available on the National Network Cloud-Platform for Educational Resources and Public Service, which allowed access via computer, mobile phones and tablet PCs. Free textbooks and learning packages were posted to children without access to internet or TV. Private education companies contributed both their products and services to enable free access to teachers and students. a Safe operations and community participation: The government developed and updated policies and protocols on epidemic prevention and control, hand washing habits and methods, distancing measures, etc., to guide schools and prepare for reopening. Communities took active measures to reduce safety risks. Efforts were specially made to strengthen water, sanitation and hygiene (WASH) facilities such as increasing the student-water tap ratio from 50:1 to 20:14. All schools were reopened in September 2020 and have operated safely, with few intermittent school closures thereafter[26].

Health and well-being: The Ministry of Education of the People's Republic of China (MoE) prioritized the health and well-being of all children. The curriculum allowed space for physical exercise, and comprehensive psychological support was offered at three stages ('Prior to reopening', 'Part of the reopening process', and 'With schools reopened'). This support included protocols, hotlines, online lessons and videos. Guidance was also provided through parent committees and parent schools. Due to online learning through digital devices, the rate of myopia increased, so eyesight protection was focused upon by key stakeholders. MoE also worked jointly with the

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[26] https://www.unicef.org/eap/media/9321/file/Sit%20An%20-%20China%20Case%20Study.pdf

other five departments to create a healthy network environment to protect students from cyber bullying, games, and inappropriate sexual content, etc. An array of measures were introduced to enable an agile and rapid response, and to support the economic recovery process. A set of supportive policies were issued at each of the aforementioned three stages. Financial assistance was provided to ensure education continuity, including fee reduction, exemption of tuition, and subsidies, etc. Free devices and take-away learning packages, an internet subsidy, and a special living allowance were among initiatives offered to vulnerable groups to guarantee their education access and promote equitable schooling.

In Germany

In Germany, the spread of COVID-19 is commenced in late January 2020 with the reporting of the first official case. Soon, Germany faced quickly rising infection numbers, and both federal and local governments enforced contact limitations and other social-distancing requirements. School closures were first introduced by one district on February 28, 2020 after having recorded a local spike in infection numbers. Two weeks later on March 13, 2020 educational facilities were shut down nationwide (Anger et al. 2020). This decision was taken by the 16 federal states as these hold the legislative and executive power over public education. The only exemption to these measures was young children of parents in so-called system-relevant occupations (e.g., health, public safety, public transportation, and groceries) who could attend emergency services in schools.

This first period of school closures in Germany was characterized by a lack of centralized concepts for distance teaching and remote learning, leaving the implementation of such measures at the discretion of the individual schools and

teachers. In the second half of April 2020, the state education ministers decided to gradually re-open schools. Students in graduation classes were the first ones to return to school. During May and June, also other grades re-started in-person teaching, often on a reduced schedule with alternating halves of students per classroom in daily or weekly shifts, accompanied by strict hygiene rules. Again, there was no national strategy on school openings, and the specific timing and the procedures implemented varied widely across federal states[27].

After the summer break, schools re-opened in September—initially, with in-person teaching for all students. State education ministers proclaimed that everything should be done to ensure in-person teaching, and that open schools should be a priority over other societal concerns. However, the second wave of rising COVID-19 infection numbers in Germany worsened the situation during the months of October and November so that the chancellor Angela Merkel and the heads of the federal states jointly decided for nation-wide school closures in mid-December. Schools remained almost completely closed for in-person teaching for about two months for most students, and gradually re-opened based on state-specific guidelines thereafter.

An interesting feature of Germany's education policy during the COVID-19 pandemic is that the lines of responsibility for education decision making seemed to become more and more unfocussed. While by constitution, the federal states are generally responsible for public education, a number of recent education-policy decisions have been jointly taken by the state ministers and Chancellor Angela Merkel—for instance,

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[27] https://link.springer.com/article/10.1007/s41358-021-00262-7.

the decision to close schools at the end of 2020. These federal decisions were prominently featured in the media and the public discourse at large.

In general, all existing studies on the impacts of school closures find substantial detrimental consequences on students' learning. For instance, in the Netherlands, the eight-week school closures in spring 2020 resulted in a loss of students' performance in achievement tests as large as 20% (Engzell et al. 2021). Unfortunately, since no comparable dataset is available for Germany, the effects of the school closures on students' skills and knowledge are mostly unknown.

In contrast to actual skills, learning-time losses due to the COVID-19-induced school closures in Germany are well-documented. In particular, Grewenig et al. (2020) draw on a large-scale online survey of parents of school children conducted after the first period of school closures in June 2020. The authors collected detailed time-use data on how many hours students spent with a range of different activities per day both before and during the period when schools were closed. The amount of time students spent on school-related activities was cut in half during the school closures, from 7.4 h to 3.6 h per day. More than one-third of students only spent a maximum of 2 h per day on school-related activities, and three-quarters spent at most 4 h.

To substitute the reduced learning time, children substantially increased time spent on more detrimental activities such as watching TV, playing computer games, or consuming social media (from 4.0 h to 5.2 h per day). In contrast, time spent on more conducive activities such as reading, playing music, creative work, or physical exercise increased only slightly from 2.9 h to 3.2 h. In sum, these results suggest that the school closures led to substantial skill and knowledge losses among students in Germany. Furthermore, in their heterogeneity analysis, Grewenig et al. (2020) find

that lower-performing students decreased their learning time significantly more than higher-performing students, implying that the school closures further aggravated educational inequality[28].

Turning to education policy, Grewenig et al. (2020) also study the extent to which schools and teachers succeeded in mitigating the detrimental impact of the school closures through distance-teaching activities. Disappointingly, schools and teachers only carried out a fraction of their usual teaching operations during the school closures. For example, only 29% of students had online classes more than once a week and only 6% had them daily. Students had even less individual contact with their teachers: Only 17% had contact more than once a week. For almost all children and adolescents, the main teaching mode during the school closures was to complete provided exercise sheets. 87% received exercise sheets more than once a week, but only 37% received feedback on the completed exercises more than once a week. In sum, education policy during this period was largely unsuccessful in compensating the losses in learning time induced by the school closures. Unsurprisingly, more than a third of surveyed parents state that the school closures were a great psychological burden for their child and for themselves.

The unpredictable nature of the first COVID-19-related school closures in spring may justify the inability of education policy to compensate for the loss of in-person instructional time with appropriate distance-teaching concepts. In contrast, the second school closures at the beginning of 2021 were foreseeable and policy makers had sufficient lead time. Yet, they have still not established distance-learning concepts that

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[28] https://link.springer.com/article/10.1007/s41358-021-00262-7 assessed on 15.01.2022.

would ensure appropriate schooling when schools are closed. In their parent survey on student learning during the second school closures, Woessmann et al. (2021) show that learning time was only slightly higher than during the first school closures, but nowhere near the level prior to the COVID-19 pandemic. In addition, the majority of parents report that the effectiveness of learning at home is lower compared to learning at school. Thus, ignoring urgent appeals from parents and scientists, the responsible actors have failed to implement policies to prevent further COVID-19-related learning losses.

More than one year after the first COVID-19-induced school closures, and despite urgent appeals from parents and scientists, education policy makers in Germany still have not succeeded in establishing distance learning concepts that ensure appropriate education for all children.

Effort made by UNESCO in response to COVID-19

UNESCO is the United Nations Education, Scientific and Cultural Organization. It seeks to build peace through international cooperation in education, science and culture. UNESCO programmes contribute to the achievement of the Sustainable Development Goals defied in the 2030 Agenda adapted by the UN General Assembly 2015[29].

UNESCO helps countries to adopt international standards and manages programmes that foster the free flow of ideas and the exchange of knowledge. Since its outbreak two years ago, the COVID-19 pandemic has disrupted education systems globally,

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[29] https://www.unesco.org/en/introducing-unesco. Assessed on 15.01.2022.

affecting the most vulnerable learners the hardest. It has increased inequalities and exacerbated a pre-existing education crisis. School closures have ranged from no closures in a handful of countries to up to more than a full school year. Lack of connectivity and devices excluded at least one third of students from pursuing learning remotely.

Today, despite the Omicron variant, schools are open in the majority of countries, supported by health and safety protocols and vaccination programmes. But the costs stand to be tremendous in terms of learning losses, health and well-being and drop-out. Prioritizing education as a public good is important to avoid a generational catastrophe and drive a sustainable recovery. To be more resilient, equitable and inclusive, education systems must transform, revolved to cope with new challenge, leveraging technology to benefit all learners and building on the innovations and partnerships catalyzed throughout this crisis.

UNESCO is supporting countries in their efforts to reduce the impact of school closures, address learning losses, support teachers and adapt education systems, particularly for vulnerable and disadvantaged communities.

To mobilize and support learning continuity, UNESCO has established the Global Education Coalition[30] which today counts 175 members working around three central themes: Gender, connectivity and teachers.

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[30] https://en.unesco.org/covid19/educationresponse

As per UNESCO COVID-19 response team, There were 29, 81, 45, 295 students[31] were affected from school closure in India. Out of this Total male students are 14, 18, 54,922 and female students are 15, 62, and 90,373.

Figure 4.1. The status of affected learner in India

Global monitoring of school closures caused by COVID-19

India

Status: Partially open
Affected learners: 298,145,295

Total females 141,854,922
**Total males**　　156,290,373

School type	Females	Males	Total
PrePrimary	20,257,029	22,144,753	42,401,782
Primary	58,441,303	63,258,910	121,700,213
Secondary	63,156,590	70,886,710	134,043,300

Partially open　　Closed due to COVID-19　　Fully open　　Academ

Source: UNESCO Report

The all countries adapted closing of school so that CORONA Virus could not spread. The Indian government was also response on similar manner. However the different country adapted different strategy to opening and closing of schools depending on status of COVID 019 in that country. As per UNESCO COVID response team, There were different level of spread of COVID -19 in different country so the closure of school in response to COVID-19 is vary from country to country. As per Data available at UNESCO COVID response site the school closure was more the 82

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[31] https://en.unesco.org/covid19/educationresponse

weeks in India which was higher side as compare to other country of world and same is shown in figure given below[32].

Figure 4.2: Total Duration of school closure in world during COVID 19.
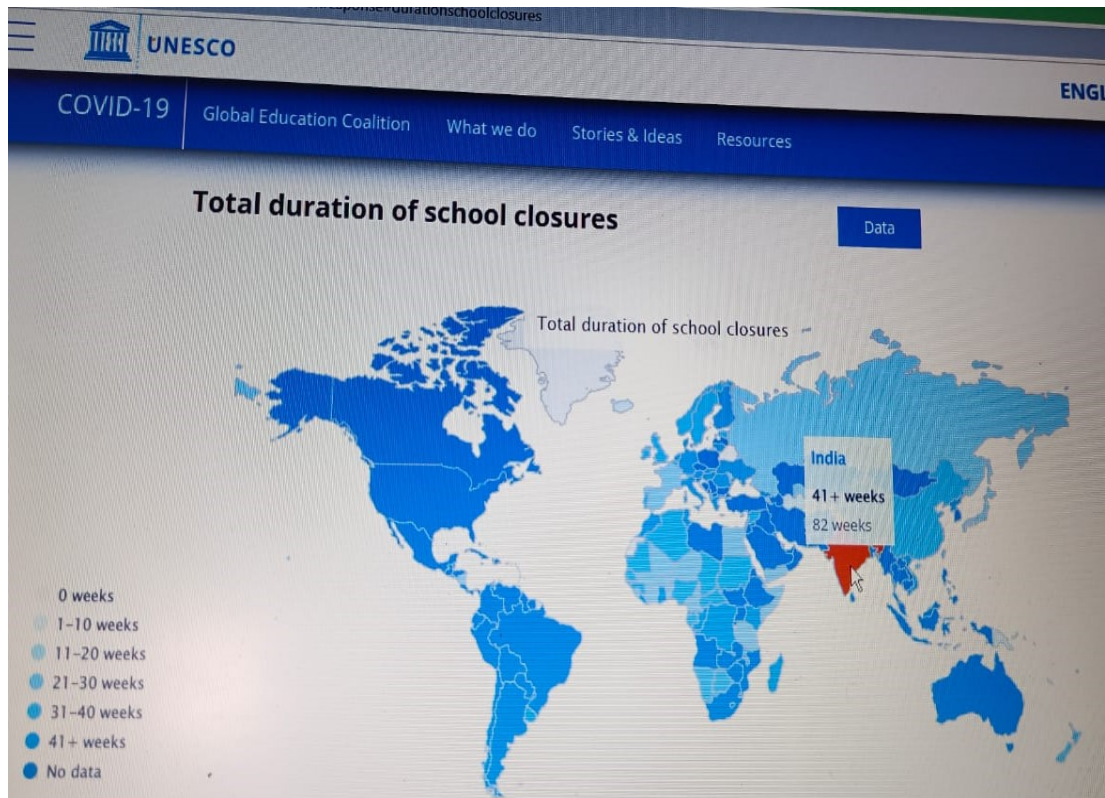
Source: UNESCO Report

As per article published in The Time of India Dated 01.02.2022, School closure creating gaps in learning between different groups of students such digitally equipped and digitally ill equipped student.[33].The education plays most vital role in shaping vital role in shaping individuals and children's holistic development. The

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[32] https://en.unesco.org/covid19/educationresponse

[33] https://timesofindia.indiatimes.com/home/education/news/school-closure-creating-gaps-in-learning-delhi-private-school-body/articleshow/89267885.cms assessed on 08.02.2022.

schools had pandemic driven closures for more than 2 years in Delhi and this has taken massive toll on mental and physical health of children of all age's.[34]. They are not getting proper learning in home. They may not groom as others students when school was not closed.

School Data of Delhi and UP for Year 2015-2016

As per data available for year 2015-2016 the total numbers of schools and number of students in Delhi and UP are given below[35].

Table 4.2: No of Schools in Delhi and UP during 2015-2016

No of School	Delhi	Uttar Pradesh
No. of Primary School	2755	155756
No. of Upper Primary School	939	75644
No. of Secondary School	377	8632
No. of Sr. Secondary School	1684	15937
Total	5415	255969

Source: Ministry of Education

The above data show that more than 5415 schools in Delhi and 255969 schools in UP were closed and they were not able to provide traditional mode of education to students.

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[34] https://timesofindia.indiatimes.com/city/delhi/13-lakh-kids-in-delhi-never-go-to-any-school/articleshow/61634822.cms assessed on 08.02.2022.

[35] https://www.education.gov.in/sites/upload_files/mhrd/files/statistics-new/ESAG-2018.pdf assessed on 07.02.2022.

Table 4.3: No of Student enrol during session 2015-2016 in Delhi and UP

No. of Student enrolled during (2015-2016) for Grade I-XII	Delhi		Uttar Pradesh	
	Government School	Private School	Government School	Private School
Boys	1190154	1050679	8183646	16638907
Girls	1257928	716400	8905864	14553925
Total	2448082	1767079	17089510	31192832
Grand Total		4215161		48282342

Source: Ministry of Education

All schools were closed during COVID -19 epidemic and traditional medium of learning for more than 42 Lakhs school students of Delhi and more than 4.82 Cr school students of Uttar Pradesh were affected as per table 4.3.

So the COVID-19 has badly affected education systems in every part of world and different country has taken different steps such as some offline and some online mode of teaching to minimise the educational losses to their children.

CHAPTER 5

DATA ANALYSIS PERTAINING TO DIGITAL INFRASTRUCTURE CHALLENGES

5.1 Background

The digital facility is most important need for providing Online Education. The Telecom sector is core sector for extending digital connectivity to every citizen of India since independence. The Government of India had opened the Telecom sector for private operator under Liberalization , Globalization and Privatization of Industrial policy 1991. Much company has started offering telecom service such as mobile based on 2G, 3G and 4G technology. They also offer internet service to every part of India. The year 2019–20 has witnessed many unforeseen challenges and so did the telecommunication services sector. At the beginning of April, 2019, India embraced the exciting technological advancements, such as the introduction of the 'In-Flight Connectivity' based on the recommendations of TRAI, and the expected rollout of the 5G Services to provide seamless coverage, high data speed, low latency, and highly reliable communication. However, by the end of March, 2020, the mood changed with the outbreak of the corona virus (COVID-19) pandemic across the world and the resultant illness, loss of jobs, lives, lockdown, and the subsequent 'Work-from-Home' culture.

During this intricate period, the telecommunication sector in India stood out all the challenges and provided flawless connectivity to the country despite many impediments. The telecommunication sector became an 'essential service' for connectivity during these difficult times. The sector facilitated the smooth functioning

of many activities and services of the economy. The 'Work from Home', banking, education, entertainment, news and several other important services were carried out with seamless connectivity; and were accessible safely from home besides ensuring connectivity with family and friends far away.

With the conducive atmosphere created by TRAI's initiatives in the last two decades, mobile service providers, device manufacturers, infrastructure providers, and the Internet companies have built a digital world for us to live, work, and play. The sector has emerged as the key enabler of Digital India with various new services/applications like digital payments, Aadhar, e-governance, e-education, e-trade etc. Telecom services are the backbone for enabling these applications and for various important service sectors of the economy like banking, health, education, and many other services, which boost the overall economic growth of the country. With the increased availability of smart phones at much more affordable prices, the mobile phone has become more than a communication device, and services are becoming increasingly linked through mobile, the Internet and other digital modes of delivery. The growth of 4G services gave an impetus to the advent of the data revolution, which used these services[36]. At the end of March, 2020, the subscriber base was 1177.97 million, out of which 1157.75 million were wireless subscribers. During the year, wireless subscriber base recorded a decrease of 4.06 million, with the overall tele-density of 87.37% at the end of March, 2020. The Internet subscriber base in the country as on 31 March, 2020 stood at 743.19 million as compared to 636.73 million as on 31 March, 2019.

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[36] https://www.trai.gov.in/sites/default/files/Annaul_Report_02032021_0.pdf page 10-11. assessed on 09.02.2022.

The total broadband subscriber base in the country has increased from 563.31 million at the end of 31 March, 2019 to 687.44 million at the end of March, 2020[37].

5.2 Description about participants

Although digital facilities extended to citizen and its help in providing online education to students when all schools and colleges were forced to close to COVID-19 since last 2 years. However these facilities are still an obstacle for online education. An attempt has been made in study to take view of students, teachers and parents on availabilities of digital facility required for online education and impact on online education on school students learning and well being epidemic time on likert scale. Likert scale (typically) provides five possible answers to a statement or question that allows respondents to indicate their positive-to-negative strength of agreement or strength of feeling regarding the question or statement.

A similar 3 set of questionnaire is prepared and shared with students, teachers and parents respectively of Delhi and UP area for their feedback through Google formed independently. All participants had submitted their view independently and without any bias against each question. Total 200 students, 100 teachers and 107 parents had participated in survey. The different category of participants had given in table 5.1.

Out of total 200 students, 53% are male and 47% are female. Out of total 100 teachers 68% are male and 32% are female. Out of total 107 parents 72.9% are male and 27.10% are female. Out of total students, 67.5% are studying in Government school and 32.5% are studying in private school. Out of total teachers, 59% are teaches in government school and 41% are teaches in private school. Out of total

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[37] https://www.trai.gov.in/sites/default/files/Annaul_Report_02032021_0.pdf page 12 assessed on 09.02.2022.

parents, 80.4% are sending their children in government school for study and 19.6% are sending their children in private school for study.

Out of total students, 6 % study in class 6, 5.5 % study in class 7, 7% study in Class 8, 24% study in class 9, 17.5% study in class 10, 15.5% study in class 11 and 24.5% study in class 12. Out of total teachers, 60% are teaches from class 6 to 8 , 27% teaches from class 9 to 12 and 13% teaches class 6 to 12. Out of total parents, their children studying are 7.5 % in class 6, 9.3 % in class 7, 7.5% in Class 8, 6.5% in class 9, 18.70% in class 10, 15% in class 11 and 35.5% in class 12. Out of total students, 20.5% study arts, 10.5 % study commerce, 57.5% study science and 11.5 % study other streams. Out of total teachers, 38% are teaches arts, 41% teaches science and 21% teaches other streams to students. Out of total parents, their children studying are 19.6 % arts, 3.7% commerce, 61.7% science and 15% other stream.

 Out of total students, 43.5% are studying in Hindi medium and 56.5% are in English medium. Out of total teachers 69% are teaches in Hindi medium and 31% are English medium. Out of total parents, 47.7% parent's children study in Hindi medium and 52.30 % parent's children study in English medium. Out of total students, 53.50 % are belonging to rural area and 46.5% are belonging to urban area. Out of total teachers 82% are teaches in rural area and 18% teaches in urban area. Out of total parents, 40.2% are from rural area and 59.80 % are from urban area. The summery of participant is given in table 5.1.

Table No: 5.1 – Summary of participants' category

Sl. No.	Category	Type	Participants		
			Students	Teachers	Parents
1	Total -407	No. of Participant	200	100	107
2	Gender (% of Participants)	Male	53%	68%	72.90%
3		Female	47%	32%	27.10%
4	Type of School (% of Participants)	Government	67.50%	59%	80.40%
5		Private	32.50%	41%	19.60%
6	Class (% of Participants)	Class 6	6%	60%	7.50%
7		Class 7	5.50%		9.30%
8		Class 8	7%		7.50%
9		Class 9	24%	27%	6.50%
10		Class 10	17.50%		18.70%
11		Class 11	15.50%		15%
12		Class 12	24.50%		35.50%
13		Class 6 to 12		13%	
14	Stream (% of Participants)	Arts	20.50%	38%	19.60%
15		Commerce	10.50%	0%	3.70%
16		Science	57.50%	41%	61.70%
17		Others	11.50%	21%	15%
18	Medium (% of Participants)	Hindi	43.50%	69%	47.70%
17		English	56.50%	31%	52.30%
20	Location (% of Participants)	Rural	53.50%	82%	40.20%
21		Urban	46.50%	18%	59.80%

Source: Primary survey

5.3 Data analysis of responses on digital infrastructure challenges

For conducting primary survey for dissertation work, a questionnaire of 8 questions for students, teachers and parents is prepared on three different Google form for students, teachers and parents respectively for finding their response on impact of online education to school student learning and well being during COVID-19 in Delhi and UP area. Some question has given option of 'Yes' or 'No' and some question given different multiple choices with permission to choose any one. These questions were asked to take their response on challenges faced by students due to availability /

non availability of digital infrastructure facilities for online classes. The response received from students, teachers and parents on questions related to challenges faced about digital infrastructure during online classes are compiled and given below.

Question 1: Which Platform was used for online Class by the students?

For taking online class, a platform is essential needs for every student and teacher. This question was asked to known which platform is most used during online class and this may help to developed similar indigenous application for Indian students.

Students' Response

As per figure 5.1, 61% students used Zoom, 24% students used Google meet, 5.5 % used Microsoft, 3% students used webex and 6.5 % used other platform during class. It means maximum students opined that they used Zoom platform for online class.

Figure 5.1: Responses of students regarding use of platform

The platform used by you to take online classes
200 responses

- Webex
- Zoom
- Google meet
- Microsoft team
- Others
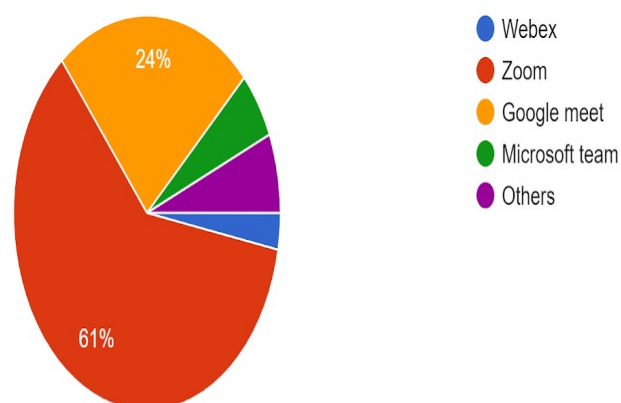
Teachers' Response

The response of teacher is shown in figure 5.2, as per this, 84 % teachers opined that zoom is mostly used by students for online classes. 11% opined that Google meet is used by students and 5 % used other platform.

Figure: 5.2: Responses of teachers regarding use of platform

The platform used by students to take online classes
100 responses
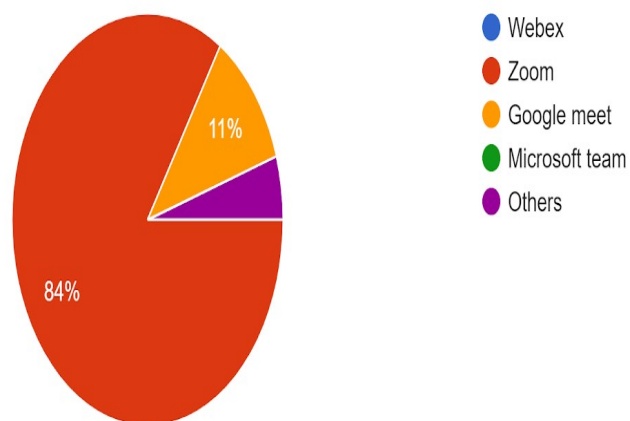
Parents' Response

As per figure 5.3, 59.8 % parents opined that zoom platform is used by my child for online class.23.4 % used Google meet, 8.4 % used others, 4.7% use Microsoft team and 3.7 % used Webex for online class. On the basis all three responses, it is clear that Zoom platform are most used platform by students for online class.

Figure 5.3: Responses of parents regarding use of platform

The platform used by your child to take online classes

107 responses

- Webex
- Zoom
- Google meet
- Microsoft team
- Others

23.4%

8.4%

59.8%
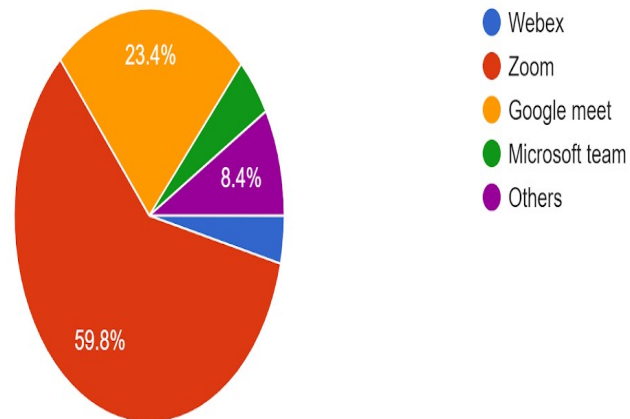
**Question 2: Which digital device was used by the students for online class?**

The digital device is tools used during online class by students and teachers. A device with big screen such as desktop and laptop is better for doing online class as compare to small screen device such as mobile and tablet. This help in finding real needs of students for online class while making policy for online class.

Students' Response

As per figure 5.4, 78.5% students opined that they are taking online class on mobile, 17.5% taking class on laptop, 3% on tablet and 1% on desktop.

Figure 5.4: Responses of students regarding use of digital device

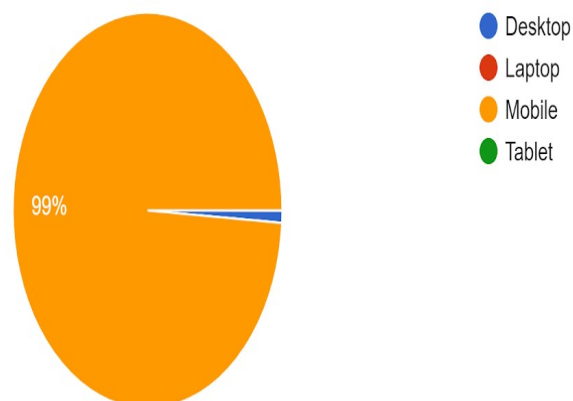I take online classes on
200 responses

78.5%

17.5%

- Desktop
- Laptop
- Mobile
- Tablet
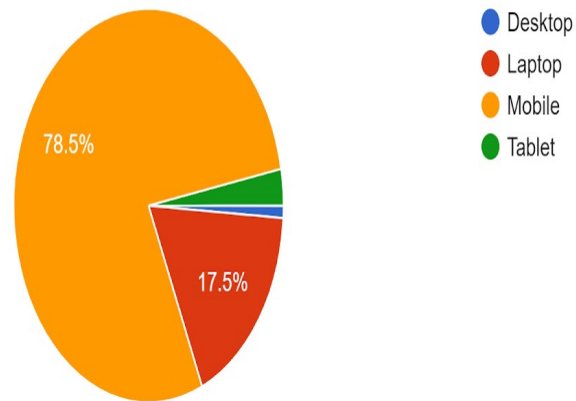
Teachers' Response

As per figure 5.5, 99% teachers opined that student taking online class on mobile and 1% on desktop.

Figure 5.5: Responses of teachers regarding use of digital device

Maximum students take online classes on
100 responses

99%

- Desktop
- Laptop
- Mobile
- Tablet

Parents' Response

As per figure 5.6, 56.1 % parents opined that student doing class on mobile, 42.1% students doing class on laptop, 0.9% on desktop and tablet each.

Figure 5.6: Responses of parents regarding use of digital device

Your child take online classes on
107 responses
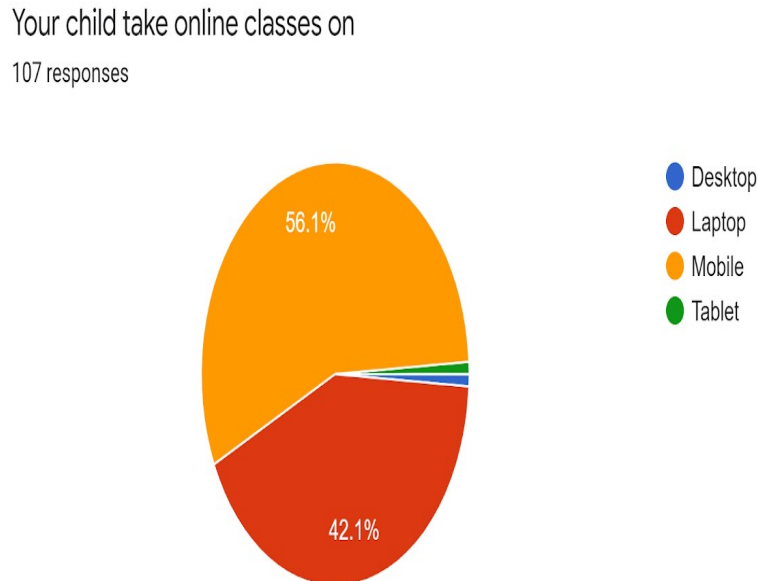
As per above maximum participant agree that more that 56% students doing online class on mobile.

Question 3: Whether students have separate room for online class?

A separate room for reading is needed to every student and is available to Indian students.

Students' Response

As figure 5.7, 78.5 % students opined that they have not room separately for online class while 21.5 % say that they have separate room for online class.
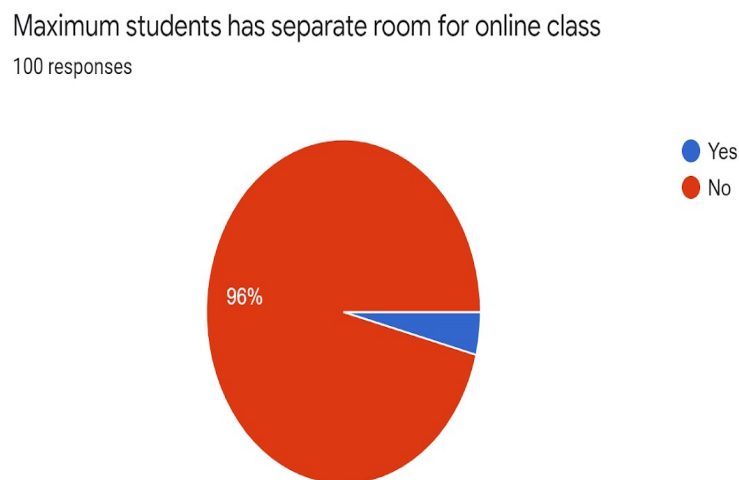
Figure 5.7: Responses of students regarding availability of separate room

I have separate room for online class
200 responses

Legend:
● Yes
● No

78.5%

21.5%
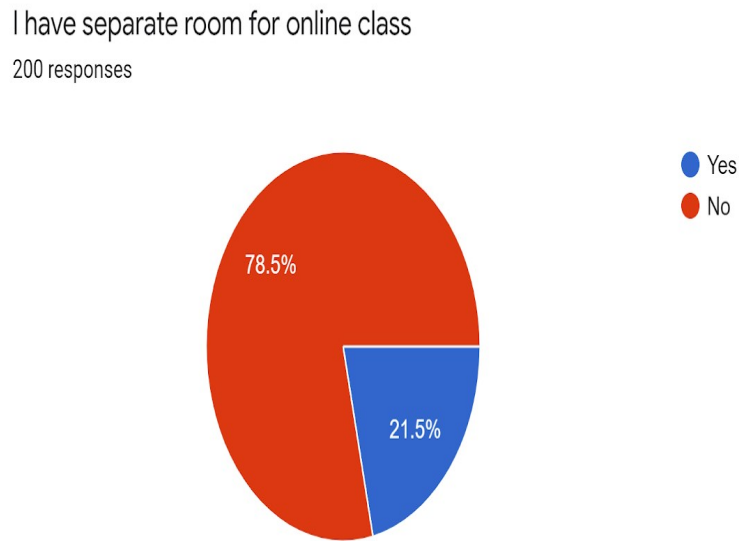
Teacher's response

As per figure 5.8, 96% teachers opined that maximum student do not have separate room for online class. Only 4 % opined that students have separate room for online class.

Figure 5.8: Responses of teachers regarding availability of separate room

Maximum students has separate room for online class
100 responses

Legend:
● Yes
● No

96%

Parents' Response

As per figure 5.9 below, 59.8% parents say that their children do not have separate room for online class while 40.2% say that their children have separate room for online class.

Figure 5.9: Responses of parents regarding availability of separate room

Your child has separate room for online class
107 responses
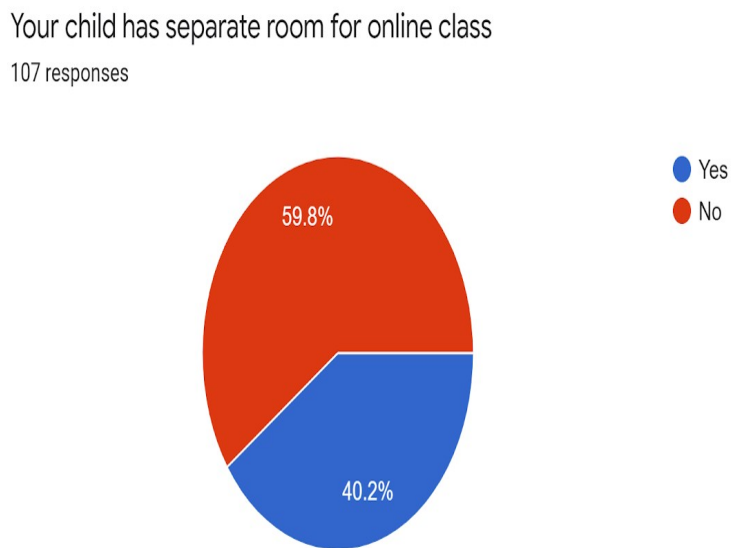
As per above response of all participants, it is clear that more than 59.8 % students do not have separate room for online class. A separate room for online class is must for concentration in class otherwise it affect learning of subject when teacher teaching to students.

**Question 4: Whether good internet connectivity is available for online class?**

The digital connectivity is most important requirement for online class to students and teachers. The response of this is helping in understand the real problem faced by

Indian students while doing online class and how it helping widening of digital divide gap. If there was a problem in internet connectivity they cannot do online class.

Students' Response

As per figure 5.10, 69.5% students opined that they do not have good internet connectivity for online class while 30.5 % opined that they have good internet connectivity for online class.

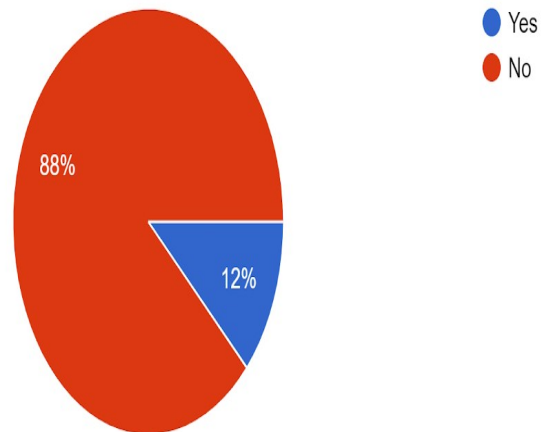Figure 5.10: Response of students regarding availability of good internet speed

I have good internet connectivity for online classes
200 responses
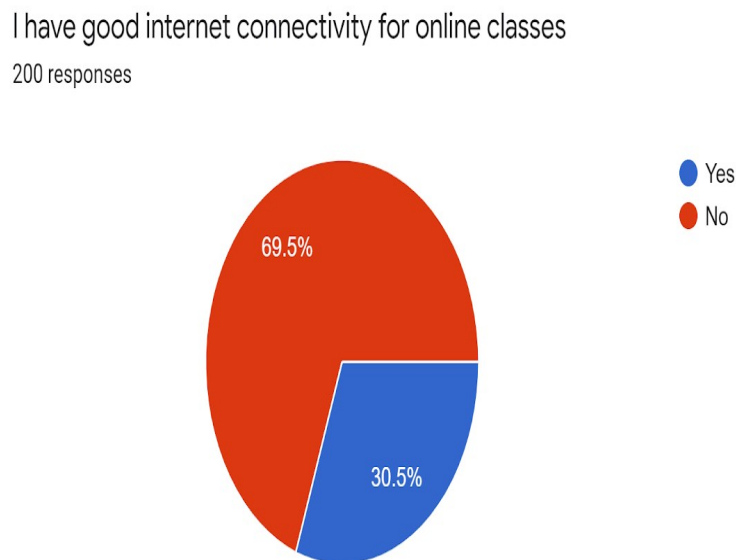
Teachers' Response

As per figure 5.11, 88% teachers opined that a good internet connectivity is not available for taking online class while only 12 % opined that they is no problem of a good internet connectivity for taking online class.

Fig 5.11: Responses of teachers regarding availability of good internet speed

The good internet connectivity available for online classes.
100 responses

- Yes
- No

88%

12%

Parents' Response

As per figure 5.12, 52.3 % parents opined that a good internet is not available for online class to children while 47.7 % opined that good internet connectivity is available for online class to students.

Figure 5.12: Responses of parents regarding availability of good internet speed

Your child has good internet connectivity for online classes
107 responses

Yes
No

52.3%

47.7%
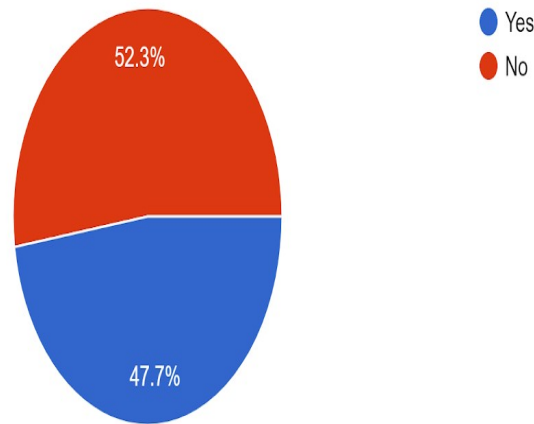
It cleared from above response that more that 52.3% participant opined that good internet is challenge for online line class to students and teachers.

Question 5: Whether headphones are available to the students for online class?

The availability of headphone to students is help in listening lecture of teachers properly during online class. It also helps in better interaction with teachers. It response helps in understand real problem of students for less understanding of subject. It also help in seating in proper position during online class which help less health issue due to online class.
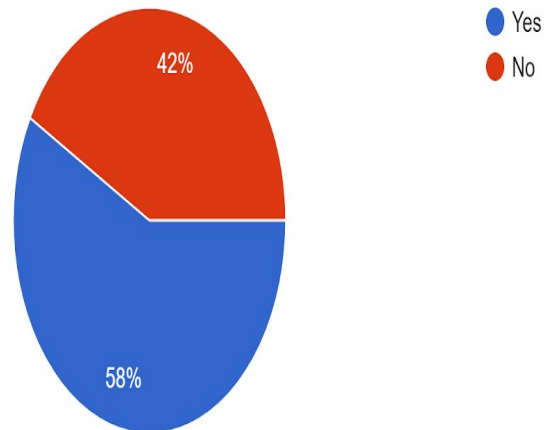
Students' Response

As per figure 5.13, 58% student opined that they do not used head phone for online class while 42% say that they are using head phone for online class.

Fig 5.13: Responses of students regarding availability of head phone
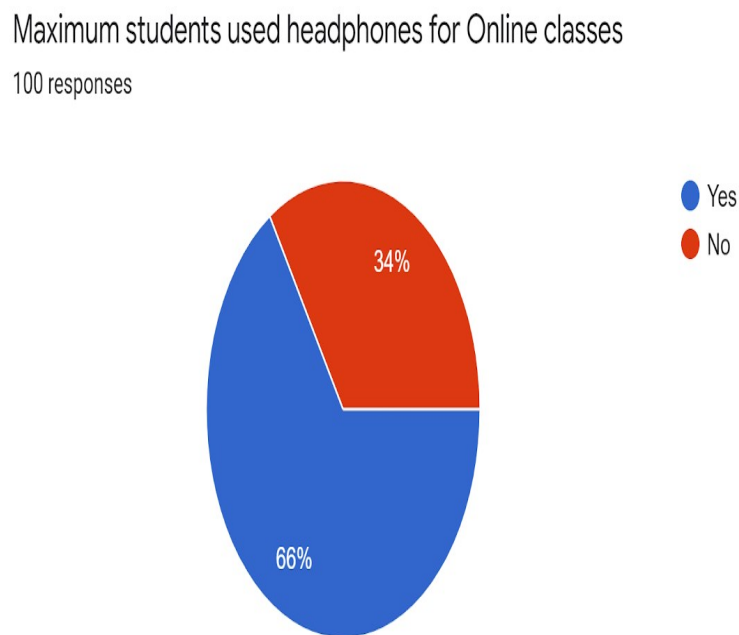
I use headphones for Online classes

200 responses

Legend:
- Yes (blue)
- No (red)

42%

58%

Teachers' Response

As per figure 5.14, 66% teacher's opined that students used head phone for online class while 34% say that they do not used head phone for online class.

Figure 5.14: Responses of teachers regarding availability of head phone

Maximum students used headphones for Online classes

100 responses

Parents' Response

As per figure 5.15, 78.5% parents opined that their children using head phone for online class while only 21.5 % say that their children do not used head phone for online class.

Figure 5.15: Responses of parents regarding availability of head phone

Your child use headphones for Online classes
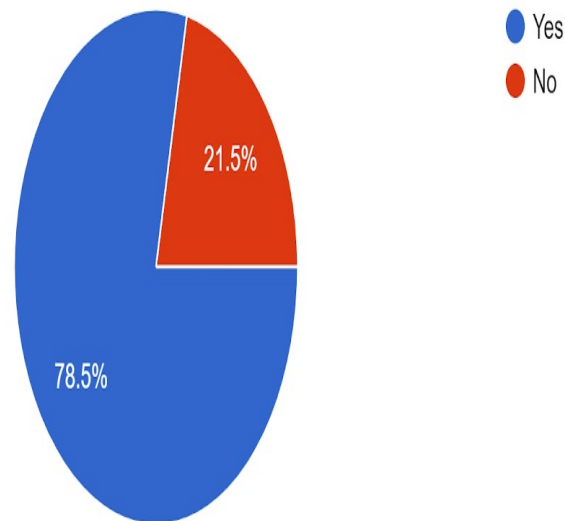
107 responses

As per responses of all participants, it is clear that more than 58% students have head phone and used it for online classes.

Question 6: Whether students have found it difficult to afford expenditure of online class?

The online class required a mobile/laptop/desktop to be purchased and given to students by parents. A monthly internet and electricity bill required to be paid. So it put additional burden on parents in spite of school fee. It response helps in understand that every student are able to get equal opportunity for online class.
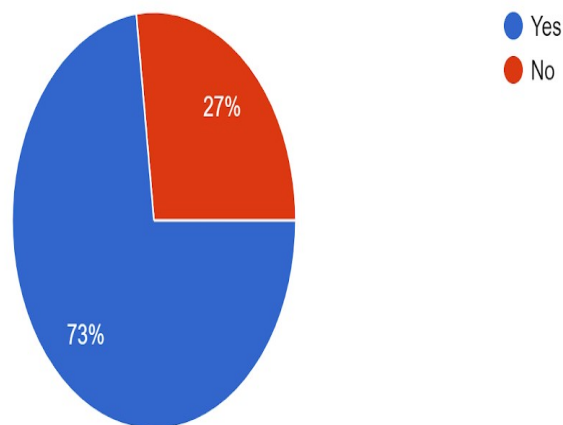
Students' Response

As per figure 5.16, 73% students opined that their parents found it difficult to afford expenditure of online class while 27 % students opined that their parents are able afford the expenditure of online class.

Figure 5.16: Responses of students regarding difficulty to afford expenditure

It was difficult to afford online classes expenditure for my parents
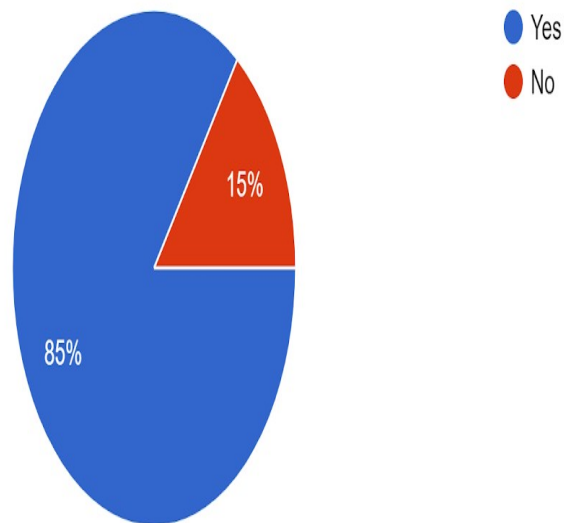200 responses

Teachers' Response

As per figure 5.17, 85 % teachers opined that parents of their students found difficult to afford expenditure of online class while only 15 % teachers opined that parents of their students is able to afford expenditure of online class.

Figure 5.17: Responses of teachers regarding difficulty to afford expenditure

Parents found difficult to afford online classes expenditure.

100 responses
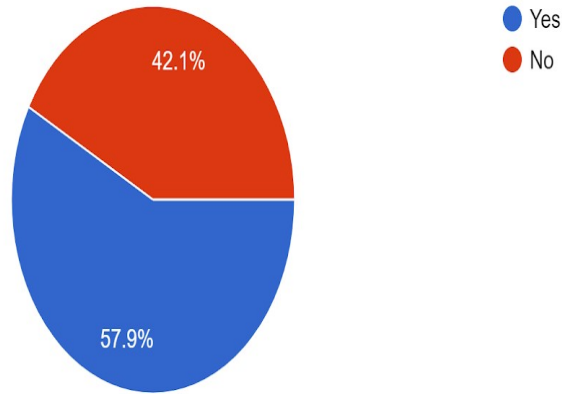

Parents' Response

As per figure 5.18 , 57.9 % parents opined that they found it difficult to afford expenditure of online class while 42.1 % opined that they is not a problem about expenditure against online class of their students.

Figure 5.18: Responses of parents regarding difficulty to afford expenditure

You found difficult to afford online classes expenditure.
107 responses

- Yes
- No

42.1%

57.9%

As per response, it is clear that more that maximum parents found difficult the afford expenditure of online class.

Question 7: Whether digital reading material is provided to the students?

The reading material is important for learning of subject. The availability to it helps students to understand subject thoroughly. The response of this help in understands students further needs to make more effective online education.
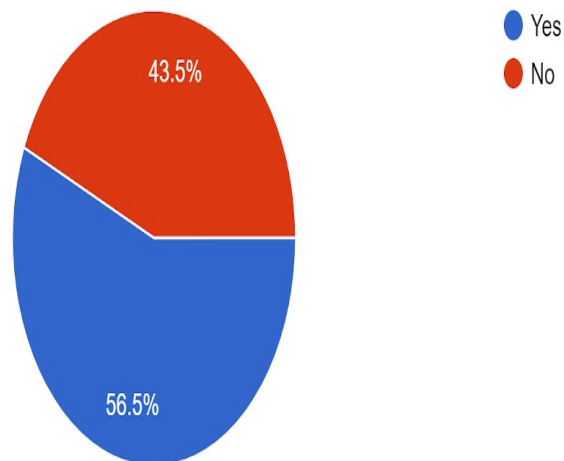
Students' Response

As per figure 5.19, 56.5 % students opined that they are getting digital reading material for online class while 43.5 % say that they do not get digital reading material.

Figure 5.19: Responses of students regarding digital reading material

Were you provided with digital reading material
200 responses

Teachers' Response

As per figure 5.20, 64 % teachers opined that they do not provided digital reading material to students while 36 % opined that they providing digital reading material to students.

Figure 5.20: Responses of teachers regarding digital reading material

Digital learning material provided by you
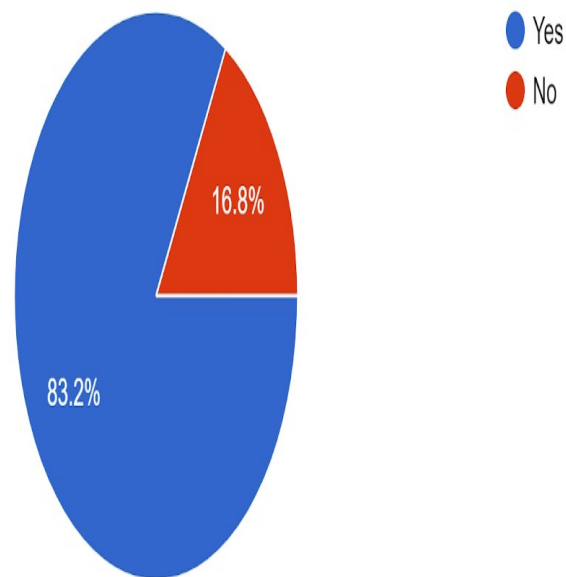100 responses

● Yes
● No

64%

36%
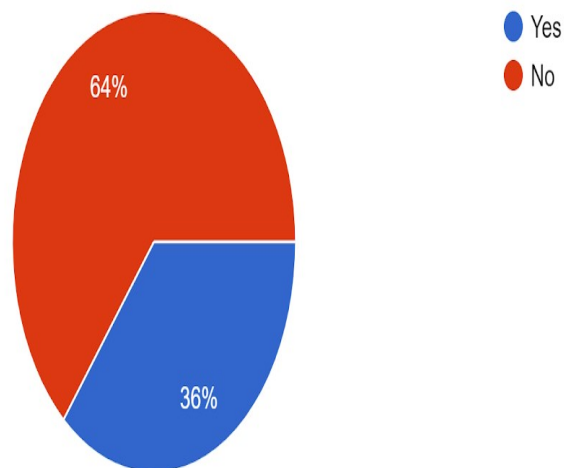
Parents' Response

As per figure 5.21, 83.2 % parents opined that their children are getting digital reading material and only 16.8 % opined that their do not getting digital reading material.

Figure 5.21: Responses of parents regarding digital reading material

Digital reading material is provided to your child
107 responses

Yes
No

16.8%

83.2%

As per above response of all participants, it is clear that maximum students have digital reading material for online class.

Question 8: Whether electricity is a problem for online class of students?

The electricity is essential for charging of mobile, laptop, desktop, tablet etc. It also needed for proper visibility during online classes and reading the books. It no availability creates disparity among students and many students are able to attend online class regularly. The response of this question helps to understand how great this challenge in getting digital divide gap.

Students' Response

As per figure 5.22, 65.5 % students opined that they are facing electricity problem during online class while 34.5% students opined that there is no problem of electricity during online class.

Figure 5.22: Responses of students regarding availability of electricity

Was availability of electricity a problem for you while taking online classes
200 responses
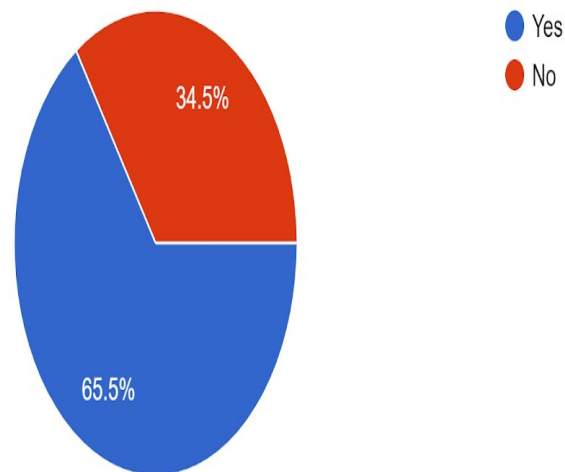
Teachers' Response

As per figure 5.23, 85 % teacher opined that   availability of electricity is problem while only 15% say that electricity is not a problem.

Figure 5.23: Responses of teachers regarding availability of electricity

Was availability of electricity a problem for your child while taking online classes
100 responses

Parents' Response

As per figure 5.24, 52.5 % parents opined that there is a problem of electricity for their children for doing online class while 47.7 % opined that electricity is not problem for doing online class for their children.

Figure 5.24: Responses of parents regarding availability of electricity

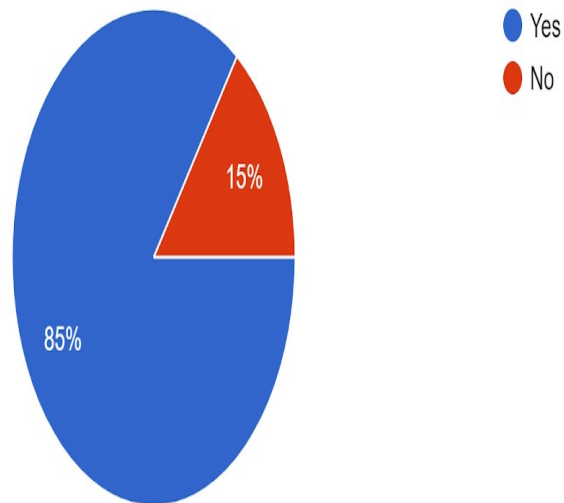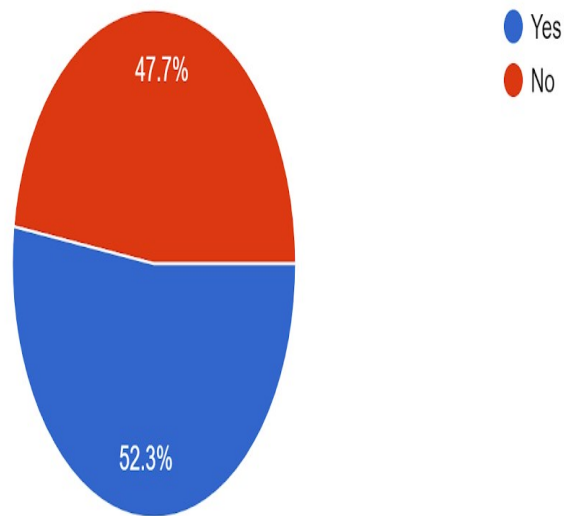Was availability of electricity a problem for your child while taking online classes
107 responses

As per above, all participants say that availability of electricity is a problem for online class.

On the basis of above responses it is cleared that the digital infrastructure for online education is not good. It is affecting learning of student's especially rural area where high speed internet and electricity is a major concerned. Most of participant agreed that many students did not have separate room for online class. So they are not able to concentrate in class. Maximum students were doing their online class through mobile. The small screen of mobile was also affecting their concentration in study.

CHAPTER 6

DATA ANALYSIS OF IMPACT ON LEARNING AND WELL-BEING

6.1 Background

The children of today are gearing up to become adult citizens of tomorrow. The growth is parallel to the future of our country, reflected through quality of the present education system. A school must energizing curiosity in the young, impressionable minds and equip them with tools to be better human beings. It is universally accepted that the learning process is instrumental in shaping one's personality and the way he/she deals with situations of life. The shift of thoughts from bookish knowledge to knowledge of life, in schools, has brought forth a sea of change. People have warmed up to the idea of education being the key to all-around development instead of just a mean to acquire degrees and monetary success in life. Education must facilitate the cultivation of a healthy thought process and groom our cognitive abilities. In the present ambitious world, education is a basic necessity for human beings after food, clothes and shelter. School education must focus on the following aspects, which contribute immensely to the development of the young minds as they step into adulthood.

Mental aspect

School is the foremost fountain of knowledge children are exposed to. It gives a chance for them to acquire knowledge on different fields of education such as people, literature, history, mathematics, politics, and other numerous subjects. This

contributes to cultivation in the thought process. When one is exposed to the influences coming from different cultural sources, his/her on world and existence becomes vast.

Social aspect

School is the first avenue of socializing for a child. Up till then, parents and immediate family members are the only people the child has human interactions with. And familiarity is a nurturing ground of stagnancy. With schools, children are exposed not only to new ideas but also to same aged fellow citizen. This instills sociable practices such as togetherness, friendship, participation, assistance which turn out to be important in their adulthood.

Physical aspect

A child, after conception, goes through various physical developments. While home provides a restricted outlet, in school, a child can siphon his energy into more sociable avenues. Studies have pointed out that while in familiar environment, the child is equipped to deal with sudden bursts of energy, the learns to be at his/her best habits only when exposed to same-aged individuals. Plus, familiarity leads to taking advantage of situations, while in school, the playing field is leveled. Also, the presence of activities such as sports, craft helps children direct their limitless energy into something productive.

Overall development

Earlier, schools were considered as places to learn events in history chapter solve tough mathematical problems or recite poems and sonnets. In the current educational scenario, a child learns to go beyond the conventional way of rote learning. They are taught to develop a mind of their own and through the flexible curriculum, curiosity is

promoted. The child is freed from the bonds of mental blocks and lets his/her imagination run its course. Importance of imagination is stressed upon extensively. Play enactions and an enclose curriculum lead to a well-developed cognitive system.

Life is also about learning, apart from living. While we can learn to a certain extent from our parents, they tend to be unilateral. At school, children are exposed to various sources from which they can sip immense knowledge, instrumental for their development. Hence school is necessary for children to inculcate the workings of life" Education forms the foundation of any society. It is responsible for the economic, social, and political growth and development of society in general. The theme of the growth of society depends upon the quality of education that is being imparted. So schools are playing a crucial role in moulding a nation's future by facilitating all round development of its future citizens[38].

The spread of COVID 19 has forces the closure of schools and collages since March 2020 in India. The schools are teaches their students through online mode. So an attempt has made through survey to get feedback from all stake holder i.e. students, teachers and parents about impact of online education on learning, well being and overall development of students. A set 22 similar questions were prepared and share with school students, teachers and parents respectively of Delhi and UP through Google form between 27.12.2021 to 02.02.2022. The questions and their response are compiled. The details of participants are given in table 5.1.

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[38] https://www.educationworld.in/the-importance-of-school-education-in-child-development/#:~:text=School%20is%20the%20foremost%20fountain,cultivation%20in%20the%20thought%20process assessed on 13.02.2022.

6.2 Data analysis of responses regarding impact on learning

The eight questions were prepared to take feedback on impact of online education to students on subject learning, understanding and overall development of subject knowledge in students. The three questions were asked to know the impact of online education on   social activity/behaviour of students. The seven questions were asked to know the impact of online education on   physical growth of students. The two asked to know the impact on mental health of the students. The questions had 5 multiple choice option for participants on Likert scale i.e. 'Strongly Disagree', 'Disagree', 'Neutral', 'Agree' and Strongly agree. Somewhere disagree is wrongly written as disagree, so it is treated as disagree in analysis of data.

Question1: Is online education enhanced the students' learning of subject?

The learning of subject is important feature of education. The students learned many things during school class. The response helps in understanding on impact on learning of students.
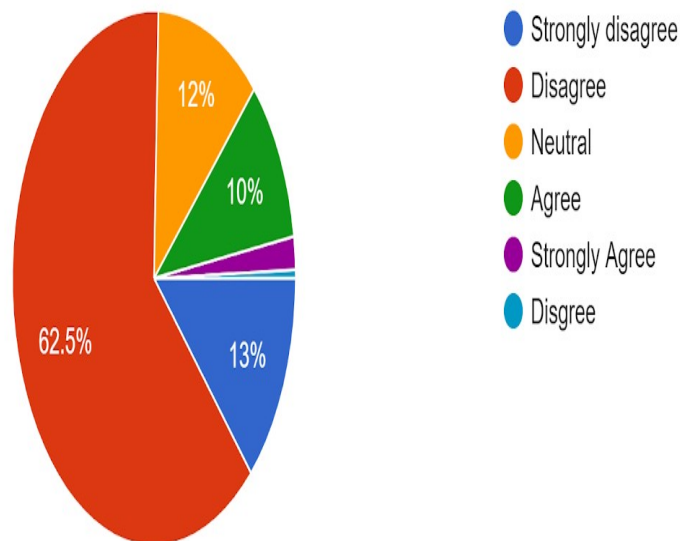
Students' Response

As per figure 6.1, 13 % students are strongly disagreeing, 62.5 % Disagree, 12 % Neutral, 10% agree and 2.5% strongly agree that their subject leaning enhance due to online class.

Figure 6.1: Responses of students regarding impact on learning skills

Online Education has enhanced our Learning

200 responses

Legend:
- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
- Disgree

Pie chart values: 12%, 10%, 62.5%, 13%

Teachers' Response

As per figure 6.2, 18 % teachers are strongly disagreeing, 67 % Disagree, 10 % Neutral, 5% agree and no one strongly agree that subject leaning of students enhance due to online class.

Figure 6.2: Responses of teachers regarding impact on learning skills

Online Education has enhanced students learning of subject.

100 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
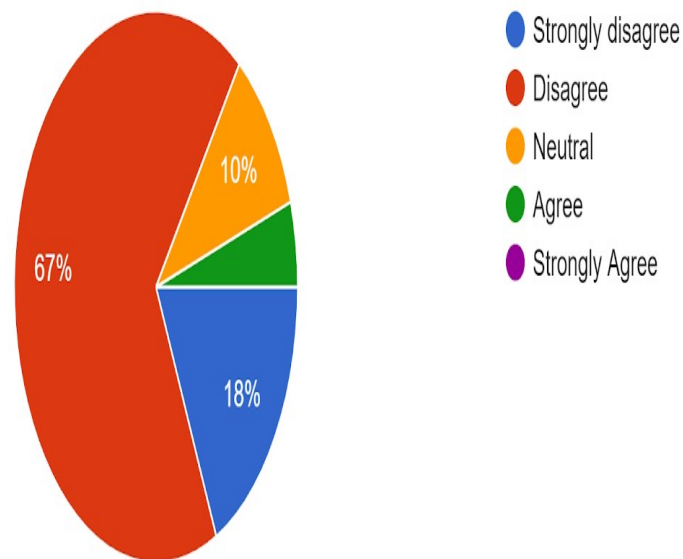
Parents' Response

As per figure 6.3, 6.5 % parents are strongly disagreeing, 67.3 % Disagree, 14 % Neutral, 10.3% agree and 1.9% strongly agree that subject leaning of students enhance due to online class.

Figure 6.3: Responses of parents regarding impact on learning skills

Online Education has enhanced your child in learning of subject.
107 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
- Disgree

14%
64.5%
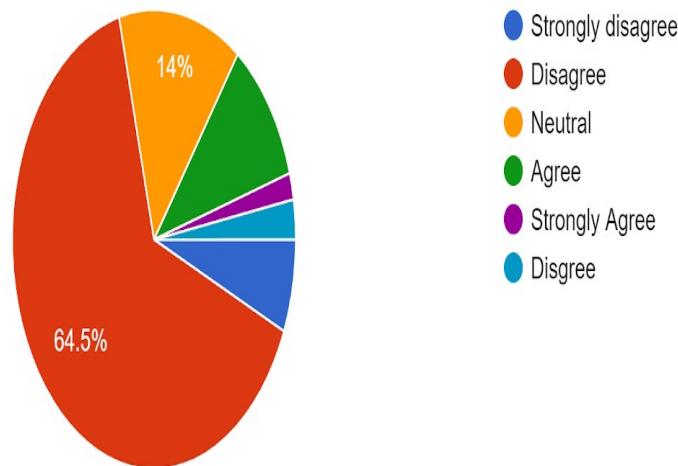
As per above more than 62.5 % participants opined that student's subject learning does not enhanced due to online educations. It opined that subject learning of students is downgraded during COVID 19 period.

Question 2: Is online education enhanced the students' subject knowledge?

The good subject knowledge is very important for students. The subject is taught by teachers during online class. This response is help in finding the effectiveness of online class on subject knowledge to students.
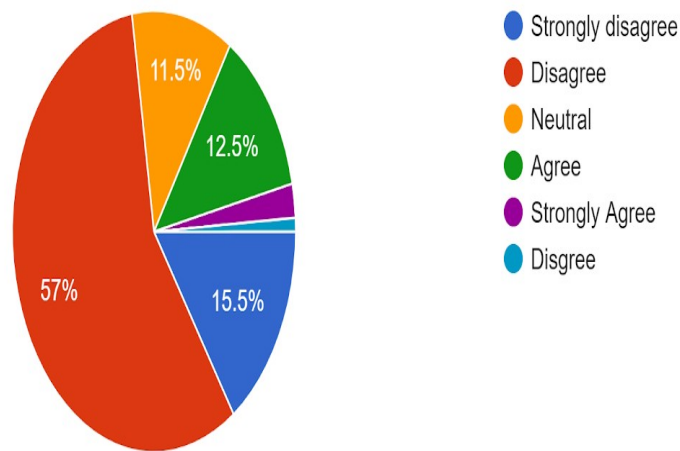
Students' Response

As per response given in figure 6.4, 15.5% strongly disagree, 57% student disagree, 11.5% Neutral, 12.5% Agree and 3.5 % strongly agree that online education enhanced

student subject knowledge. It means 72.5% students opined that their subject knowledge decreases due to online education.

Figure 6.4: Responses of students regarding impact on subject knowledge

Online Education has enhanced our subject knowledge
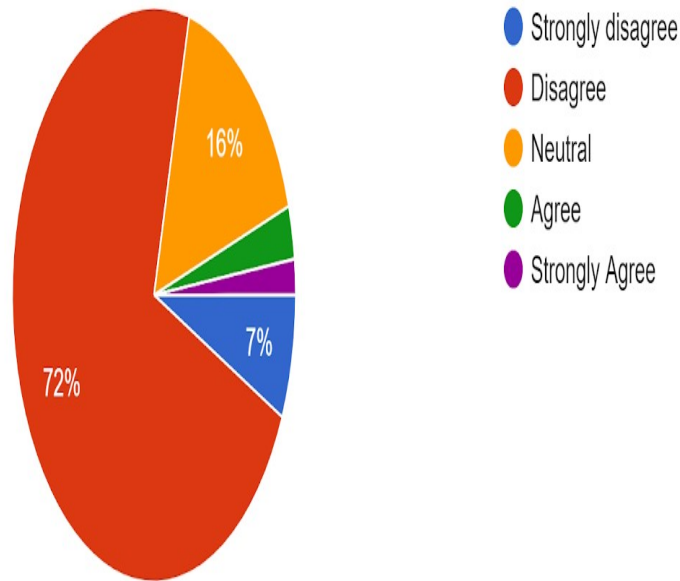200 responses

Teachers' Response

As per response given in figure 6.5, 7% strongly disagree, 72% disagree, 16% Neutral, 3% Agree and 2 % strongly agree that online education enhanced student subject knowledge. It means 79% teachers opined that the subject knowledge of students not enhanced due to online education.

Figure: 6.5: Responses of teachers regarding impact on subject knowledge

Online Education has enhanced students subject knowledge
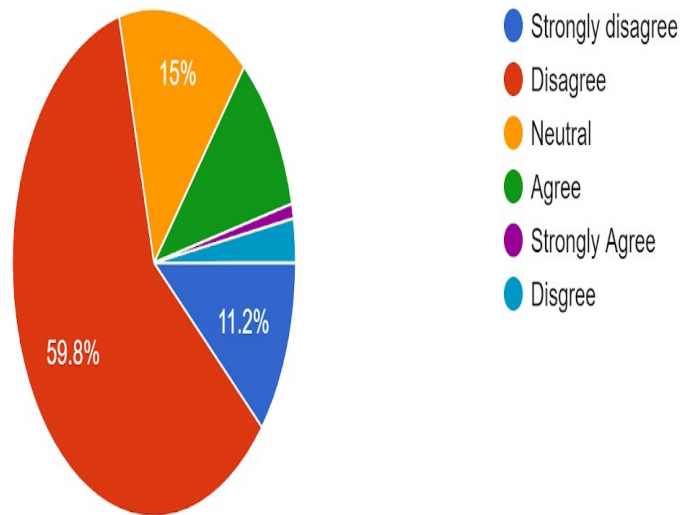
100 responses

Parents' Response

As per response given in figure 6.6, 11.2% parents strongly disagree, 62.6% disagree, 15% Neutral, 10.3% Agree and 0.9 % strongly agree that online education enhanced student subject knowledge. It means 73% parents opined that the subject knowledge of students not enhanced due to online education.

Figure: 6.6: Responses of parents regarding impact on subject knowledge

Online Education has enhanced your child Subject knowledge

107 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
- Disgree

15%

59.8%

11.2%

Question 3:   Is online education enhanced the students' writing skills?

The learning of good writing skill is developed during off line classes. Now students are not writing much and they are doing work on computer. The response is help in finding the impact of online education on development of writing skill in students.

Students' Response

As per response given in figure 6.7, 18.5% students strongly disagree, 60% disagree, 11% Neutral, 9.5% Agree and 1 % strongly agree that online education enhanced student subject knowledge. It means 78.5% students opined that their writing skill not enhanced due to online education.

Figure 6.7: Responses of students regarding impact on writing skills

Online Education has enhanced our Writing skills

200 responses

Teachers' Response

As per response given in figure 6.8, 13% teachers strongly disagree, 73% disagree, and 13% Neutral, 1% Agree and 0 % strongly agree that online education enhanced student subject knowledge. It means 86% teachers opined that writing skill of student not enhanced due to online education.

Figure 6.8: Responses of teachers regarding impact on writing skills

Online Education has enhanced students writing skills

100 responses

- Strongly disagree
- Disagree
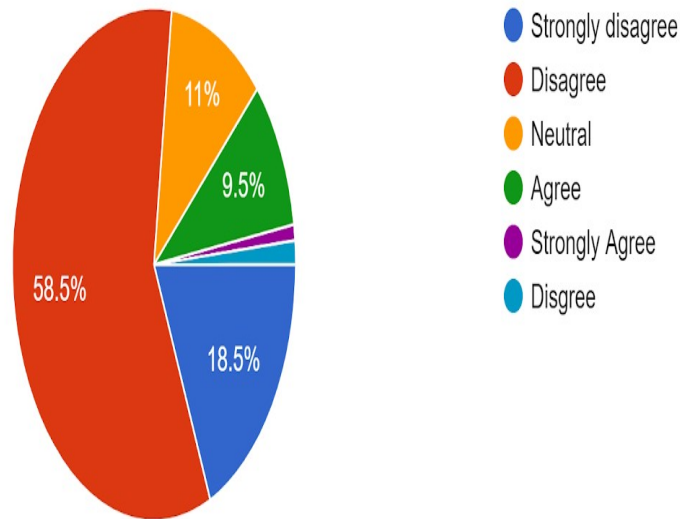- Neutral
- Agree
- Strongly Agree

73%
13%
13%

Parents' Response

As per response given in figure 6.9, 25.2% parents strongly disagree, 62.6 % disagree, 7.5% Neutral, 2.8% Agree and 1.9 % strongly agree that online education enhanced student subject knowledge. It means 88.1% parents opined that writing skill of student did not enhanced due to online education

Figure 6.9: Responses of parents regarding impact on writing skills

Online Education has enhanced your child writing skills
107 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
- Disgree

59.8%

25.2%
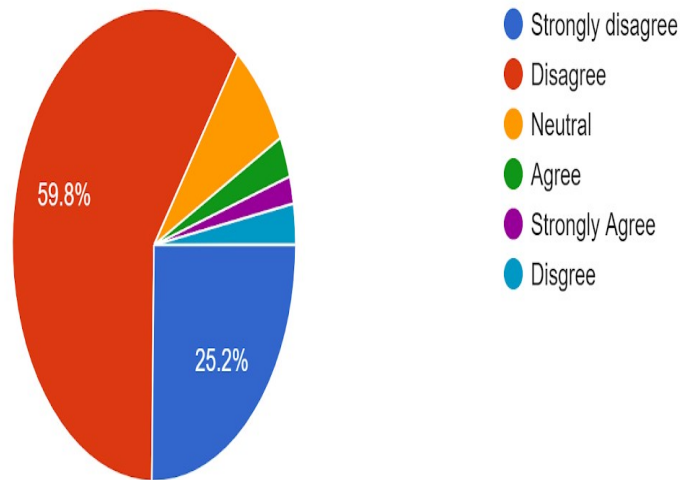
Question 4:   Is online education enhanced students' analytical skills?

The development of analytical skill in student is very important for taking decision on any situation faced in life. All students learned it during regular classroom courses and hope that same level of skill developed during online course. The response of participants helps in find the level of impact of online education on this skill.

Students' Response

As per response given in figure 6.10, 10% students strongly disagree, 55.5% disagree, 19.5% Neutral, 12.5% Agree and 2.5 % strongly agree that online education enhanced student analytical skill. It means 65.5% students opined that their analytical skill not enhanced due to online education.

Figure 6.10: Responses of students regarding impact on analytical skills

Online Education has enhanced our analytical skills
200 responses

- Strongly disagree
- Disagree
- Neutral
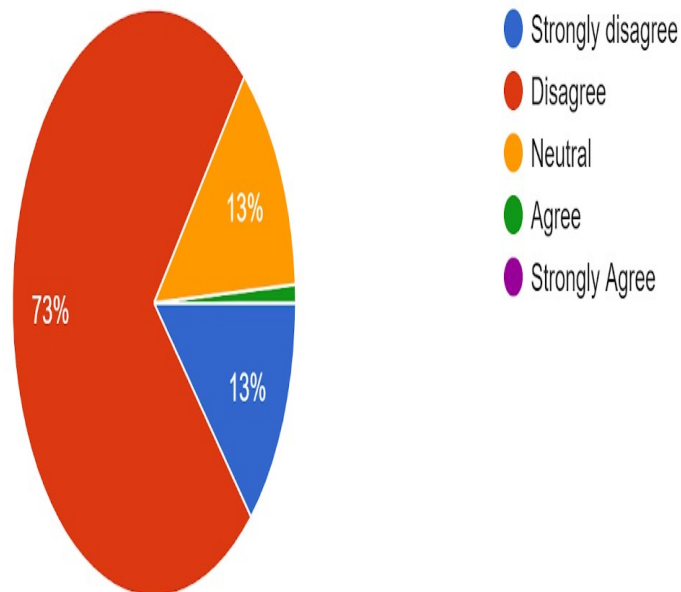- Agree
- Strongly Agree
- Disgree

19.5%
12.5%
10%
54%

Teachers' Response

As per response given in figure 6.11, 4% teachers strongly disagree, 71% disagree, 19% Neutral, 6% Agree and 0 % strongly agree that online education enhanced student analytical. It means 75% teachers opined that analytical skill of student not enhanced due to online education.

Figure 6.11: Responses of teachers regarding impact on analytical skills

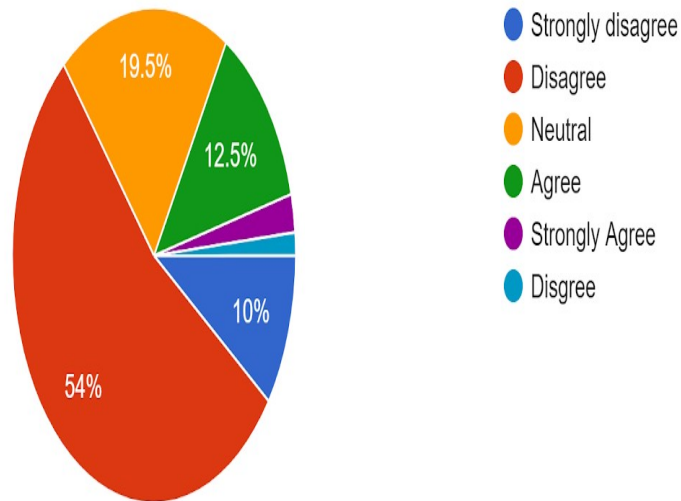Online Education has enhanced students analytical skills

100 responses

Parents' Response

As per response given in figure 6.12, 13.1% parents strongly disagree, 58 % disagree, 18.7 % Neutral, 9.3% Agree and 0.9 % strongly agree that online education enhanced student analytical. It means 71.1% parents opined that analytical skill of student did not enhanced due to online education

Fig 6.12: Responses of parents regarding impact on analytical skills

Online Education has enhanced your child analytical skills
107 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
- Disgree

18.7%
9.3%
56.1%
13.1%
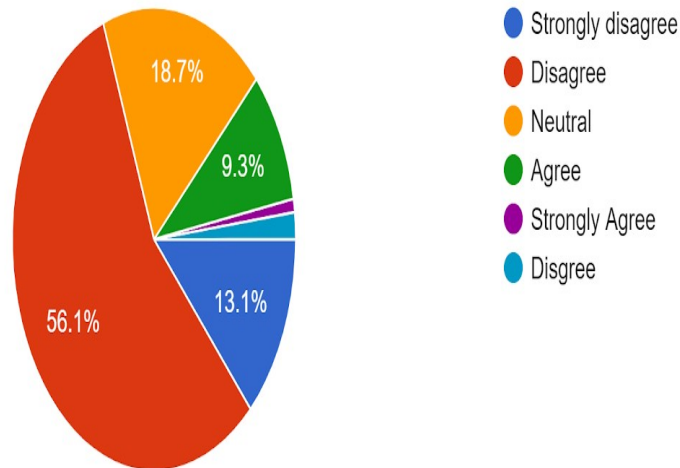
Question 5:   Is online education enhanced students' inquisitiveness?

The development of inquisitiveness in student is very important for learning new things with deep knowledge. All students learned it during regular classroom courses and hope that same level of skill developed during online course. The response of participants helps in find the level of impact of online education on this skill.

Students' Response

As per response given in figure 6.13, 9% students strongly disagree, 46% disagree, 32.5% Neutral, 10.5% Agree and 2 % strongly agree that online education enhanced student inquisitiveness. It means 55% students opined that their inquisitiveness skill not enhanced due to online education.

Figure 6.13: Responses of students regarding impact on inquisitiveness

Online Education has enhanced our inquisitiveness

200 responses

32.5%

10.5%

9%

45.5%

- Strongly disagree
- Disagree
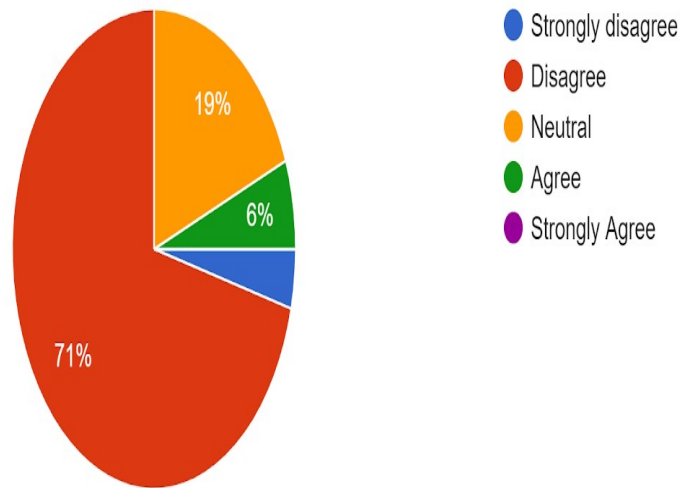- Neutral
- Agree
- Strongly Agree
- Disgree

Teachers' Response

As per response given in figure 6.14, 6% teachers strongly disagree, 66% disagree, 23% Neutral, 4% Agree and 1 % strongly agree that online education enhanced student inquisitiveness. It means 72% teachers opined that inquisitiveness skill of student not enhanced due to online education.

Figure 6.14: Responses of teachers regarding impact on inquisitiveness

Online Education has enhanced students Inquisitiveness
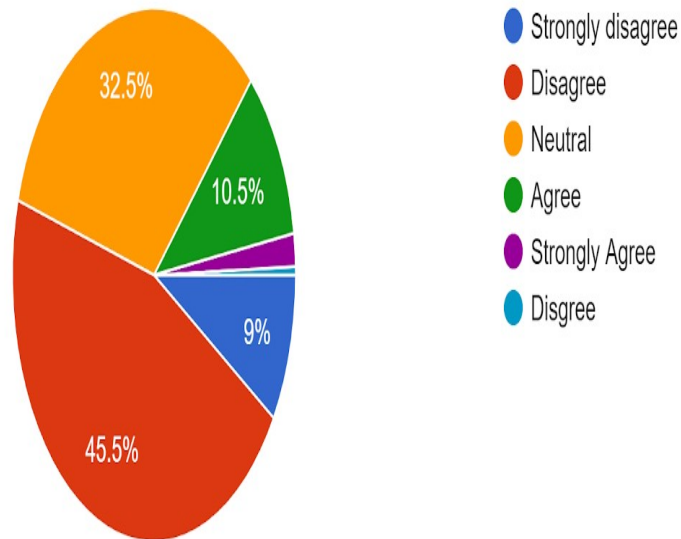
100 responses
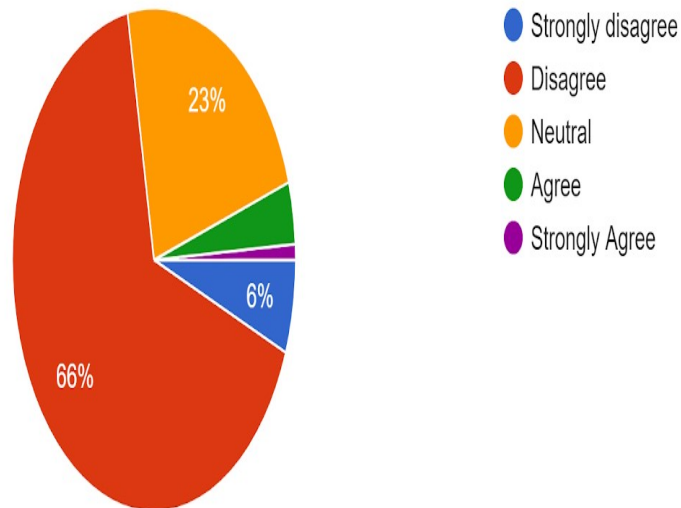
Parents' Response

As per response given in figure 6.15, 12.1% parents strongly disagree, 52.6% disagree, 23.4% Neutral, 10.3% Agree and 1.9 % strongly agree that online education enhanced student inquisitiveness. It means 64.7% parents opined that inquisitiveness skill of student did not enhance due to online education.

Figure 6.15: Responses of parents regarding impact on inquisitiveness

Online Education has enhanced your child Inquisitiveness

107 responses

Question 6:   Is online education enhanced students' understanding of subject?

The understanding of subject by student is very important for scoring good marks. All students learned it during regular classroom courses and hope that same level of skill developed during online course. The response of participants helps in find the level of impact of online education on this skill.

Students' Response

As per response given in figure 6.16, 9% students strongly disagree, 51% disagree, 26.5% Neutral, 10% Agree and 3.5 % strongly agree that online education enhanced student understanding of subject. It means 60% students opined that their understanding of subject not enhanced due to online education.

Figure 6.16: Responses of students regarding impact on understanding of the subject

Online Education has enhanced our overall understanding of the subject
200 responses

Legend:
- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
- Disgree

Pie chart values: 26.5%, 10%, 9%, 50%

Teachers' Response

As per response given in figure 6.17, 4% teachers strongly disagree, 59% disagree, 30 % Neutral, 6% Agree and 1 % strongly agree that online education enhanced student understanding of subject. It means 86% teachers opined that understanding of subject of student not enhanced due to online education.

Figure 6.17: Responses of teachers regarding impact on understanding of subject

Online Education has enhanced students overall understanding of the subject.
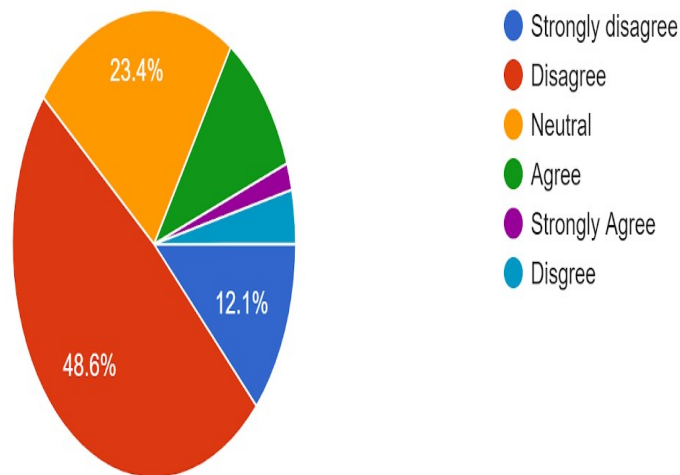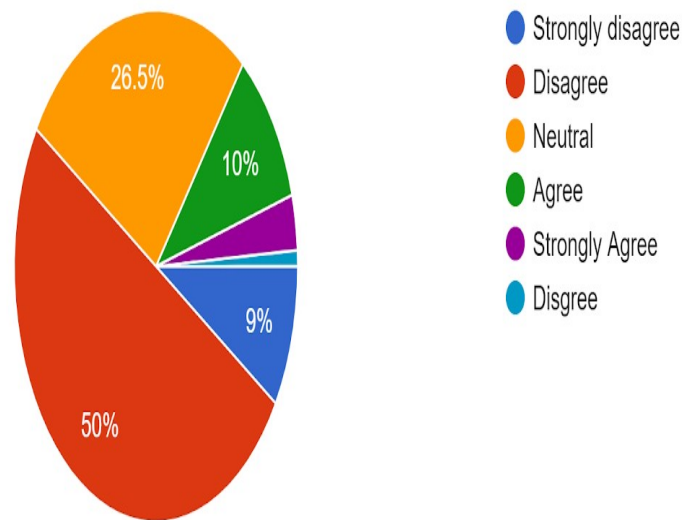
100 responses

Parents' Response

As per response given in figure 6.18, 10.3% parents strongly disagree, 52.3 % disagree, 24.3% Neutral, 12.1% Agree and 1 % strongly agree that online education enhanced student understanding of subject. It means 62.6% parent opined that understanding of subject of student did not enhanced due to online education

Figure 6.18: Responses of parents regarding impact on understanding of subject

Online Education has enhanced your child overall understanding of the subject
107 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
- Disgree

24.3%
12.1%
10.3%
49.5%
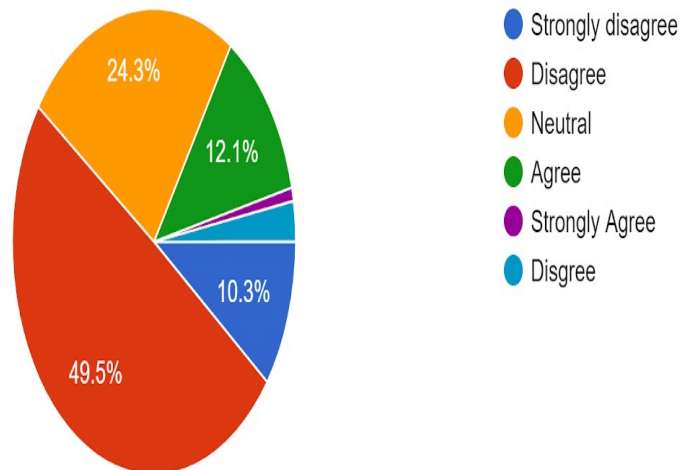
Question 7: Is online education enhanced students' scoring of marks in subject?

The scoring of marks in subject by student is very important for development of confidence building. All students learned it during regular classroom courses and hope that same level of skill developed during online course. The response of participants helps in find the level of impact of online education on this skill.

Students' Response

As per response given in figure 6.19, 12.5% students strongly disagree, 53.5% disagree, 17.5% Neutral, 12.5% Agree and 4 % strongly agree that online education enhanced student scoring of marks in subject. It means 66% students opined that their scoring of marks in subject not enhanced due to online education.

Figure 6.19: Responses of students regarding impact on scoring of marks

Online Education has enhanced our scoring of marks in subject
200 responses

Legend:
- Strongly disagree
- Disagree
- Neutral
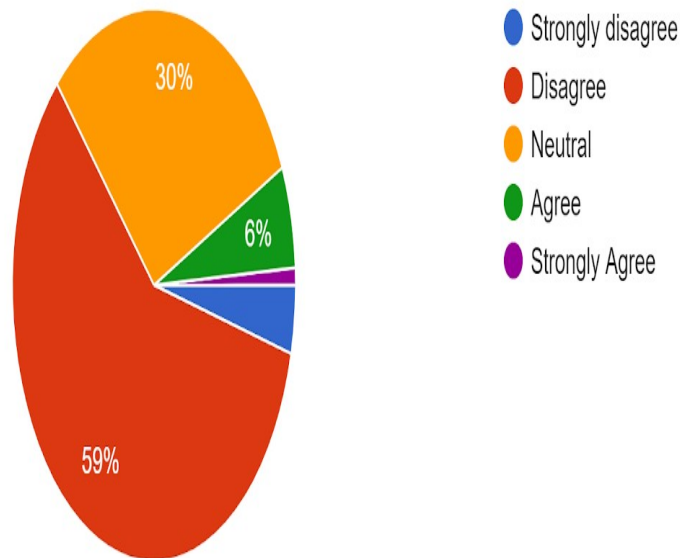- Agree
- Strongly Agree
- Disgree

Teachers' Response

As per response given in figure 6.20, 6% teachers strongly disagree, 58% disagree, 28% Neutral, 7% Agree and 1 % strongly agree that online education enhanced student scoring of marks in subject. It means 64% teachers say that scoring of marks in subject of student not enhanced due to online education.

Fig 6.20: Responses of teachers regarding impact on scoring of marks

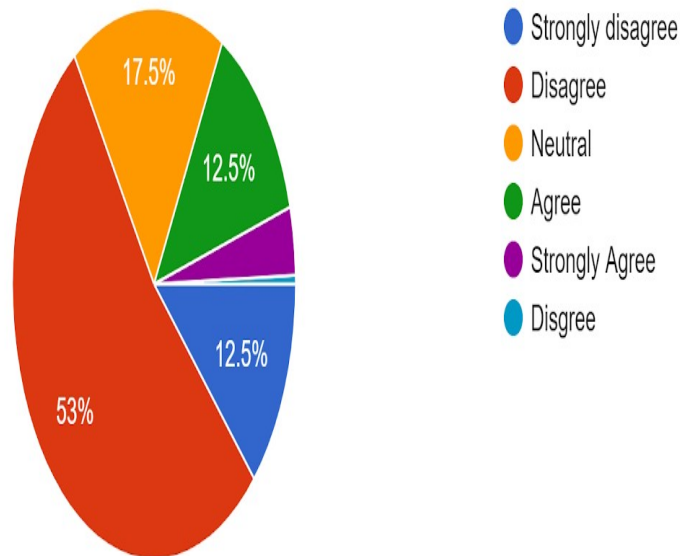Online Education has enhanced students scoring of marks in subject

100 responses

Parents' Response

As per response given in figure 6.21, 8.4% parents strongly disagree, 49.6 % disagree, 26.2% Neutral, 14% Agree and 1.9 % strongly agree that online education enhanced student scoring of marks in subject. It means 58% parent opined that scoring of marks in subject of student did not enhanced due to online education

Figure 6.21: Responses of parents regarding impact on scoring of marks

Online Education has enhanced your child scoring of marks in subject
107 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
- Disgree

26.2%
14%
8.4%
47.7%
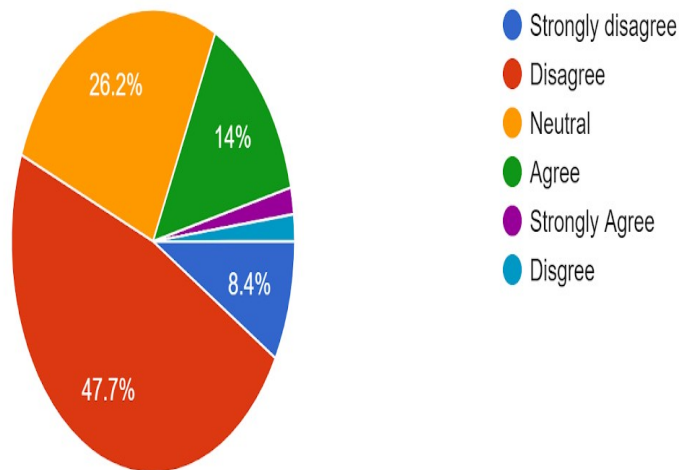
Question 8: Is online education enhanced the students' creative ability?

The development of creative ability in student is very important for creating any new thing in life. All students learned it during regular classroom courses and hope that same level of skill developed during online course. The response of participants helps in find the level of impact of online education on this skill.

Students' Response

As per response given in figure 6.22, 7.5% students strongly disagree, 54% disagree, 23% Neutral, 13% Agree and 2.5 % strongly agree that online education enhanced student creative ability. It means 61.5% students opined that their creative ability has not enhanced due to online education.

Figure 6.22: Responses of students regarding impact on creative ability

Online Education has enhanced our creative ability

200 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
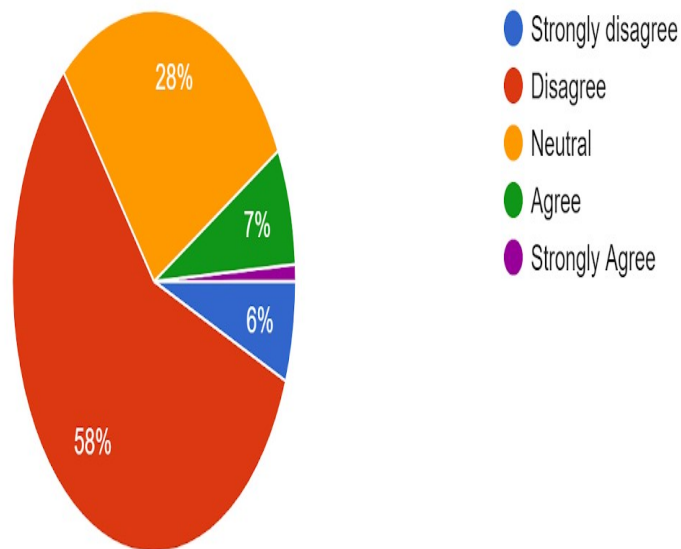- Strongly Agree
- Disgree

23%

13%

7.5%

53%

Teachers' Response

As per response given in figure 6.23, 3% teachers strongly disagree, 49% disagree, 42% Neutral, 5% Agree and 1 % strongly agree that online education enhanced student creative ability. It means more than 52% teachers opined that creative ability of student not enhanced due to online education.

Figure 6.23: Responses of teachers regarding impact on creative ability

Online Education has enhanced students creative ability
100 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

42%

49%

Parents' Response

As per response given in figure 6.24, 12.1% parents strongly disagree, 50.5 % disagree, 23.4% Neutral, 11.2% Agree and 2.8 % strongly agree that online education enhanced student creative ability. It means 62.6% parent opined that creative ability of student did not enhanced due to online education.

Figure 6.24: Responses of parents regarding impact on creative ability

Online Education has enhanced your child creative ability

107 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
- Disgree

23.4%
11.2%
12.1%
48.6%
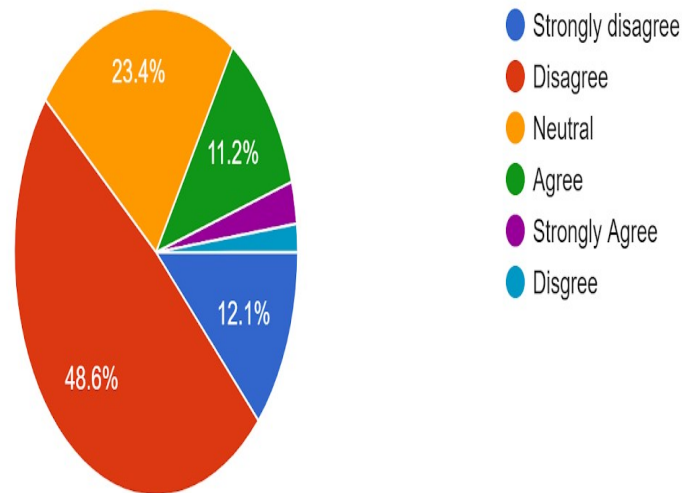
6.3 Data analysis of responses regarding impact on Social activity and Behaviour

Question 1: Is online education has enhanced the students' interaction with teachers?

The development of a good behaviour in student is very important character of human being. All students learned it during regular classroom courses with interaction with teachers and hope that same level of skill developed during online course. The response of participants helps in find the level of impact of online education on this skill.
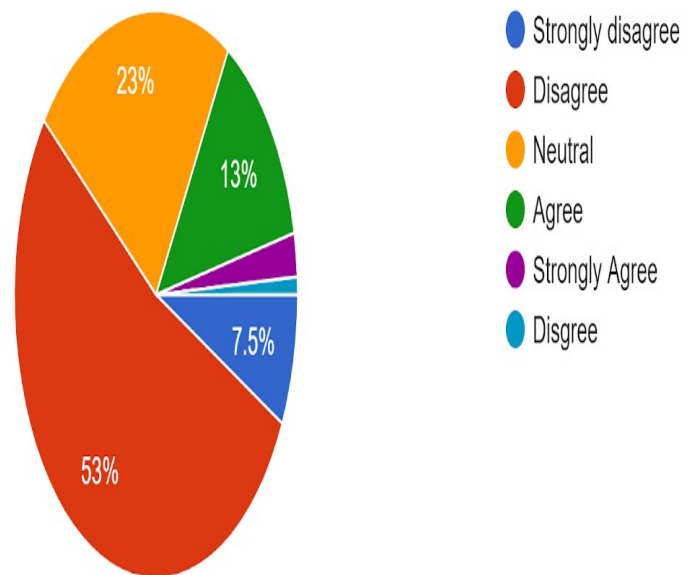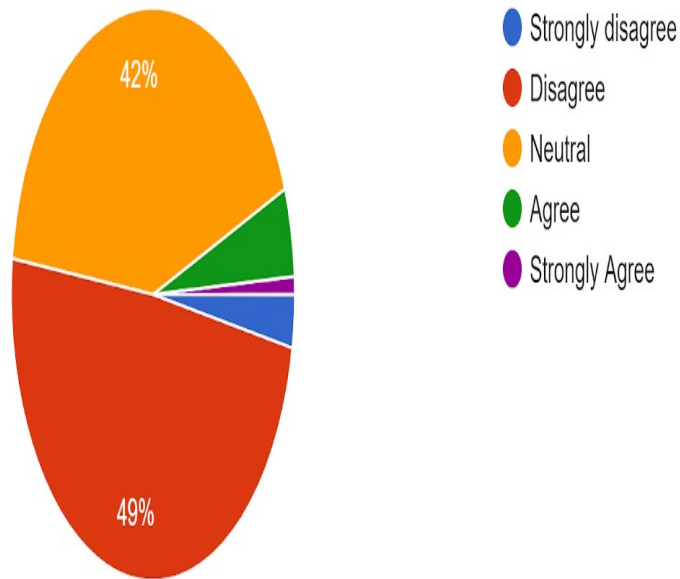
Students' Response

As per response given in figure 6.25, 17.5% students strongly disagree, 60% disagree, 9% Neutral, 9.5% Agree and 4 % strongly agree that online education enhanced student interaction with teachers. It means 77.5% students opined that their interaction with teachers not enhanced due to online education.

Figure 6.25: Responses of students regarding impact on interaction with teachers

Online Education has enhanced our interaction with teachers
200 responses

Teachers' Response

As per response given in figure 6.26, 4% teachers strongly disagree, 77% disagree, 14% Neutral, 4% Agree and 1 % strongly agree that online education enhanced student interaction with teachers. It means 81% teachers opined that student interaction with teachers not enhanced due to online education.

Figure 6.26: Responses of teachers regarding impact on interaction with teachers

Online Education has enhanced students interaction with teachers
100 responses

Legend:
- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Parents' Response

As per response given in figure 6.27, 13.1% parents strongly disagree, 72.9 % disagree, 7.5% Neutral, 4.7 % Agree and 1.9 % strongly agree that online education enhanced student interaction with teachers. It means 86 % parent opined say that student interaction with teachers did not enhanced due to online education.

Figure 6.27: Responses of parents regarding impact on interaction with teachers

Online Education has enhanced your child interaction with teachers

107 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
- Disgree

70.1%

13.1%

Question 2: Is online education has enhanced the students' interaction with classmates?

The development of socialism and caring nature in student is very important for society. All students learned it during regular classroom courses and hope that same level of skill developed during online course. The response of participants helps in find the level of impact of online education on this skill.
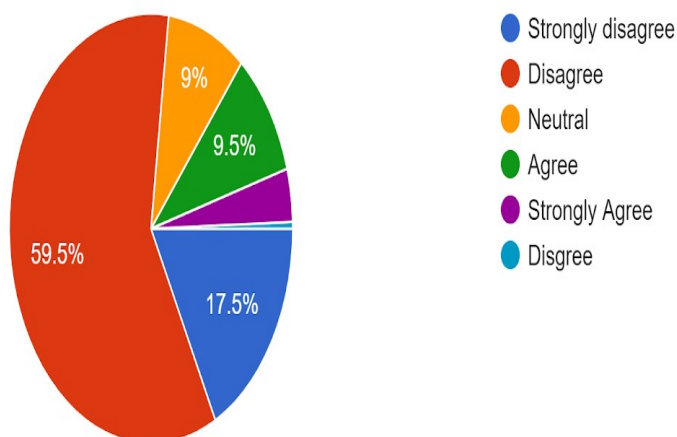
Students' Response

As per response given in figure 6.28, 17.5% students strongly disagree, 61.5% disagree, 12% neutral, 7 % agree and 1 % strongly agrees that online education

enhanced student interaction with classmates. It means 79% students opined that their interaction with classmates not enhanced due to online education.

Figure 6.28: Responses of students regarding impact on interaction with classmates

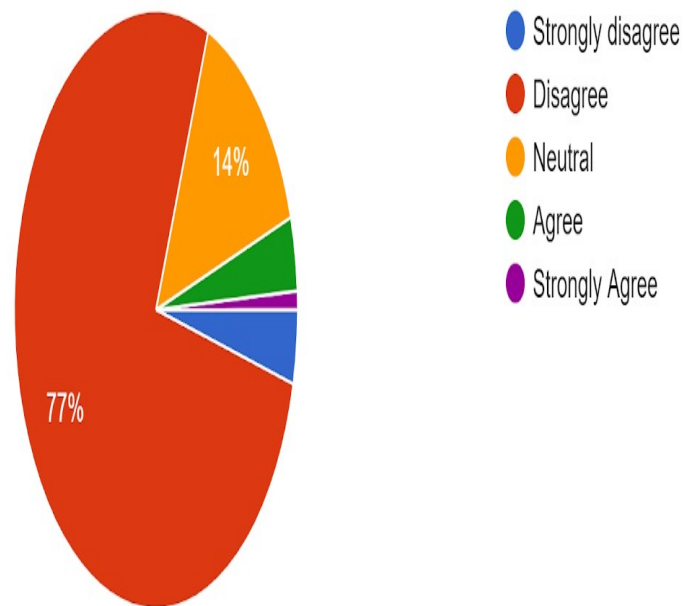Online Education has enhanced our Interaction with classmates
200 responses

Teachers' Response

As per response given in figure 6.29, 9% teachers strongly disagree, 74% disagree, and 16% Neutral, 1% Agree and 0 % strongly agree that online education enhanced student interaction with classmates. It means 83% teachers opined that student interaction with classmates not enhanced due to online education.

Figure 6.29: Responses of teachers regarding impact on interaction with classmates

Online Education has enhanced students interaction with classmates
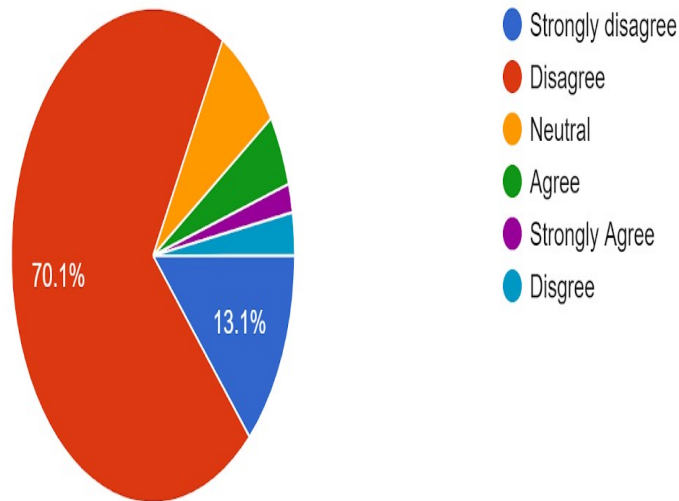100 responses

Parents' Response

As per response given in figure 6.30, 18.7% parents strongly disagree, 66.4 % disagree, 9.3% Neutral, 3.7% Agree and 1.9 % strongly agree that online education enhanced student interaction with classmates. It means 85.1% parent opined that student interaction with classmates did not enhance due to online education.

Figure 6.30: Responses of parents regarding impact on interaction with classmates

Online Education has enhanced your child Interaction with classmates
107 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
- Disgree

Question 3: Is online education has negatively impacted on the students' behaviour?

The development a good behaviour in student is very important work of education. These students are future of a country. The students learned it during regular classroom courses and hope that same level of behaviour skill developed during online course. The response of participants helps in find the level of impact of online education on this skill.
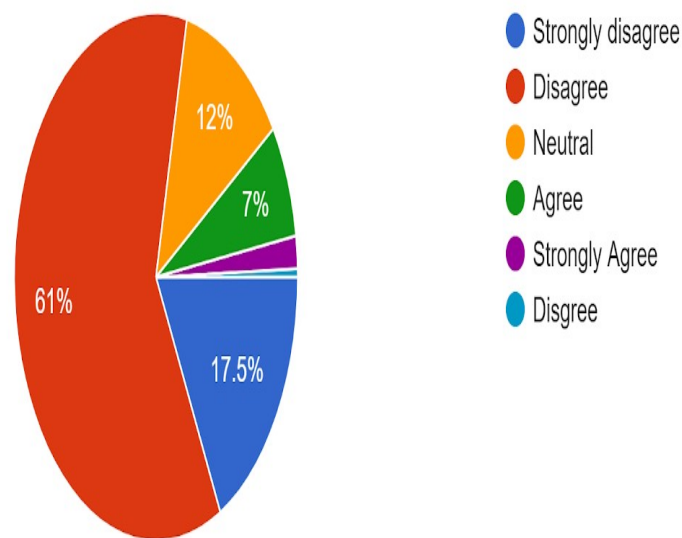
Student's response:

As per response given in figure 6.31, 3.5% students strongly disagree, 9% disagree, 12% Neutral, 64% agree and 11.5 % strongly agree that online education negatively impacted on development of student behaviour. It means 75.5% students opined that online education negatively impacted on development of their behaviour.

Figure 6.31: Responses of students regarding impact on behaviour

Online Education has negatively impacted on my behaviour
200 responses

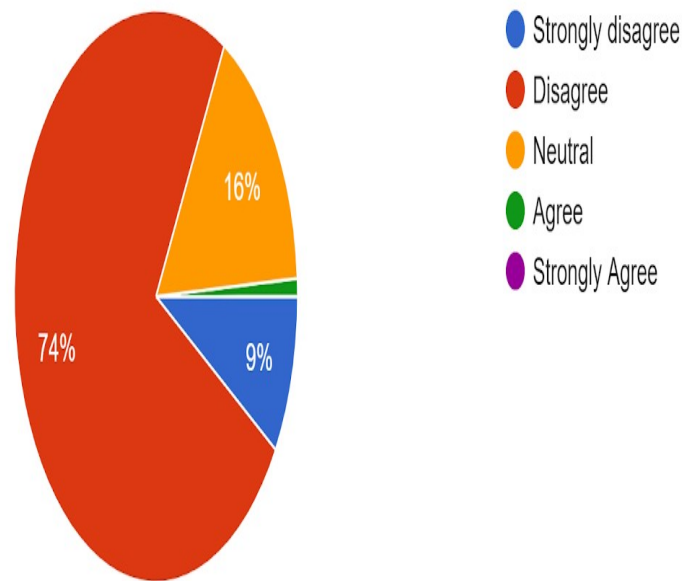- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Teachers' Response

As per response given in figure 6.32, 1% teachers strongly disagree, 2% disagree, 5% Neutral, 82% Agree and 10 % strongly agree that online education negatively

impacted on development of student behaviour. It means 92% teachers opined that online education negatively impacted on development of student behaviour.

Figure 6.32: Response of teachers regarding impact on behaviour

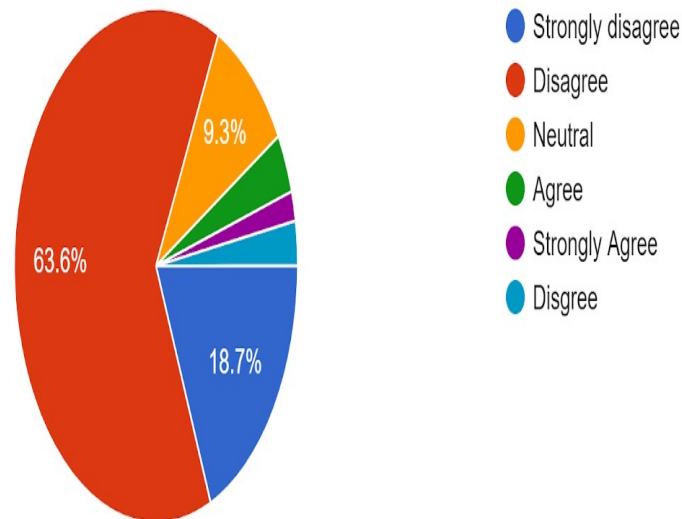Online Education has negatively impacted on behaviour of students.

100 responses

Parents' Response

As per response given in figure 6.33, 0% parents strongly disagree, 6.5 % disagree, 10.3% Neutral, 69.2% agree and 14 % strongly agree that online education negatively impacted on development of student behaviour. It means 83.2% parent opined that online education negatively impacted on development of student behaviour.

Figure 6.33: Responses of parents regarding impact on behaviour

Online Education has negatively impacted on behaviour of your child.
107 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

14%

69.2%
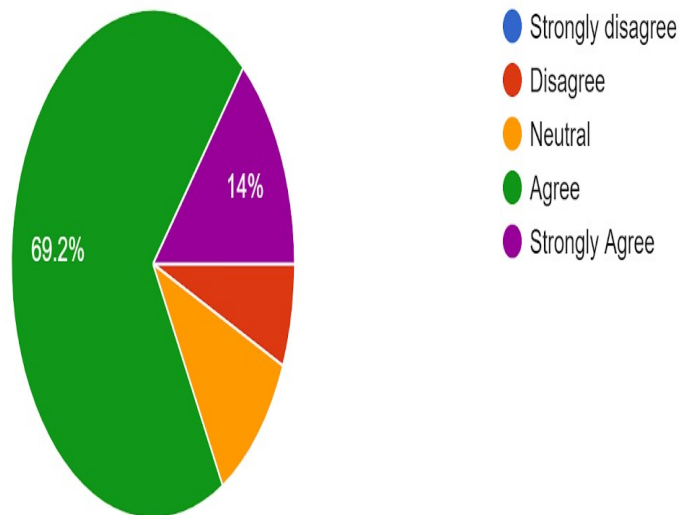
6.4 Data analysis of responses regarding impact on Well-being of students

Question 1: Is online education has negatively impacted on the students sleeping pattern?

The development of a good habit of daily life is very important. Good sleeping habits made life easy and free from any decease. All students learned it during regular classroom courses with their friends, going to class timely and hope that same level of skill developed during online course also. The response of participants helps in find the level of impact of online education on this habit.

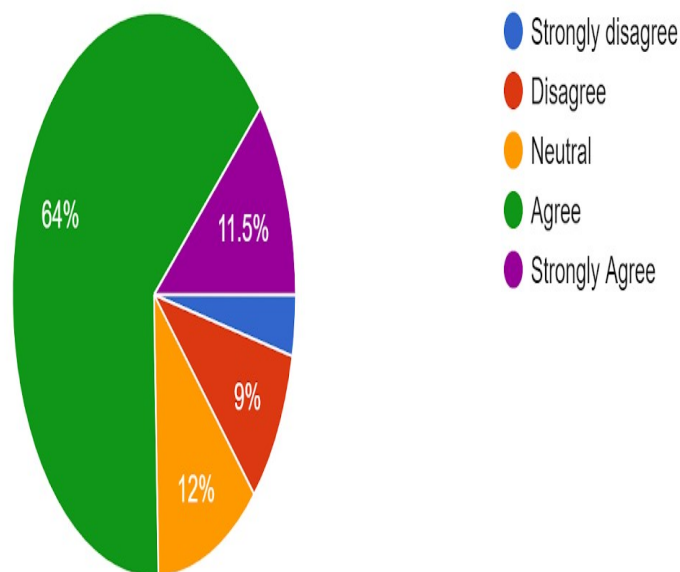**Students' Response**

As per response given in figure 6.34, 2% students strongly disagree, 10.5% disagree, 7.5% Neutral, 68% agree and 12 % strongly agree that online education negatively impacted on student sleeping pattern. It means 80% students opined that online education negatively impacted on their sleeping pattern.

Figure 6.34: Responses of students regarding impact on sleeping pattern

Online Education has negatively impacted on my sleeping pattern
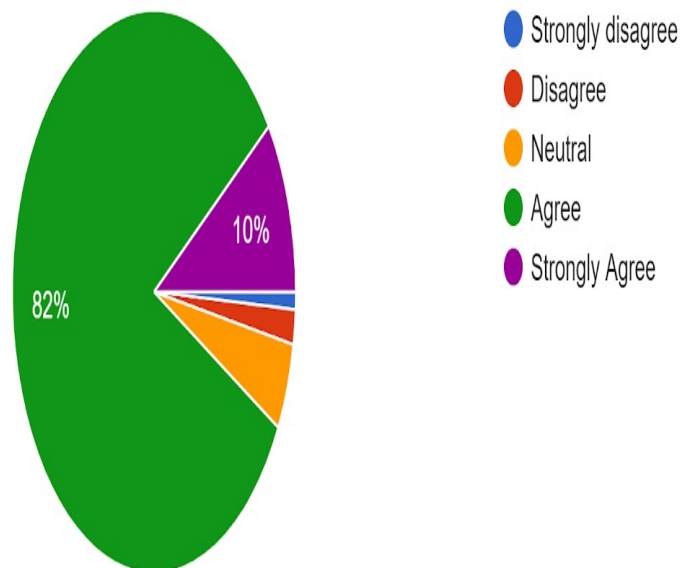200 responses

Teachers' Response

As per response given in figure 6.35, 1% teachers strongly disagree, 2% disagree, 3% Neutral, 86% Agree and 5 % strongly agree that online education negatively impacted on student sleeping pattern. It means 96% teacher say that online education negatively impacted on student sleeping pattern.

Figure 6.35: Responses of teachers regarding impact on sleeping pattern

Online Education has negatively impacted on sleeping pattern of students .
100 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Parents' Response

As per response given in figure 6.36, 0.9% parents strongly disagree, 6.5% disagree, 5.6% Neutral, 70.1% agree and 16.8 % strongly agree that online education negatively impacted on student sleeping pattern. It means 86.9% teacher opined that online education negatively impacted on children sleeping pattern.

Figure 6.36: Responses of parents regarding impact on sleeping pattern

Online Education has negatively impacted on sleeping pattern of your child.
107 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

16.8%

70.1%

Question 2: Is online education has negatively impacted on student eating habit?

The development of good eating habit in student is very important. All students learned it during regular classroom courses with friends during lunch hour but now no such interaction. The response of participants helps in find the level of impact of online education on this habit.
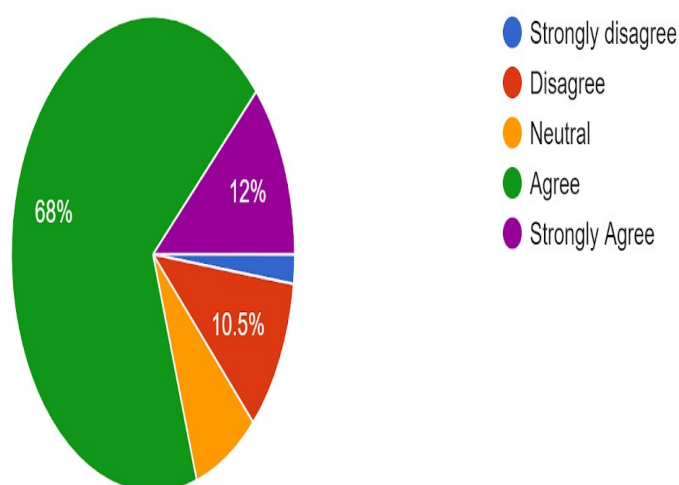
Students' Response

As per response given in figure 6.37, 4.5% students strongly disagree, 10% disagree, 11% Neutral, 61.5% agree and 13 % strongly agree that online education negatively impacted on student eating habit. It means more than 74.5% students opined that online education negatively impacted on their eating habit.

Figure 6.37: Responses of students regarding impact on eating habit

Online Education has negatively impacted on my eating habit
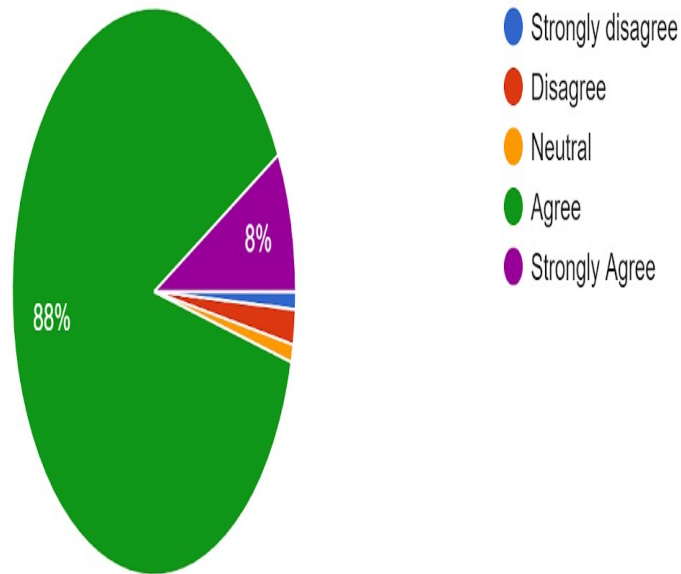
200 responses

Teachers' Response

As per response given in figure 6.38, 2% teachers strongly disagree, 4% disagree, 3% Neutral, 86% agree and 5 % strongly agree that online education negatively impacted on student eating habit. It means 91% teachers opined that online education negatively impacted on students eating habit.

Figure 6.38: Responses of teachers regarding impact on eating habit

Online Education has negatively impacted on eating habit of students.
100 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
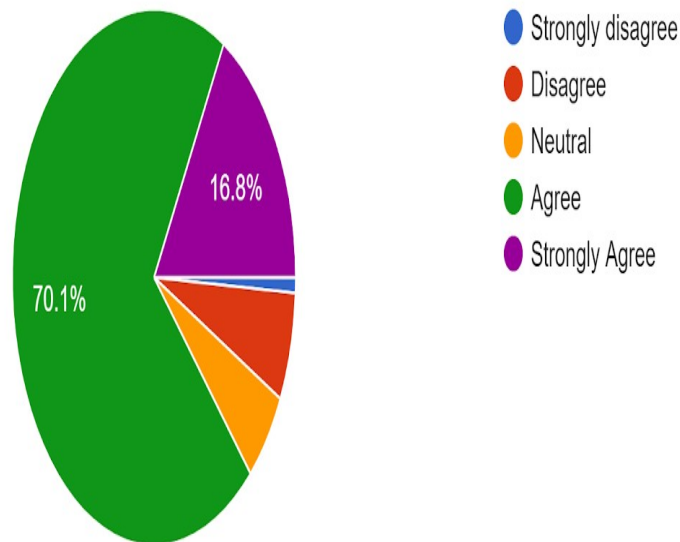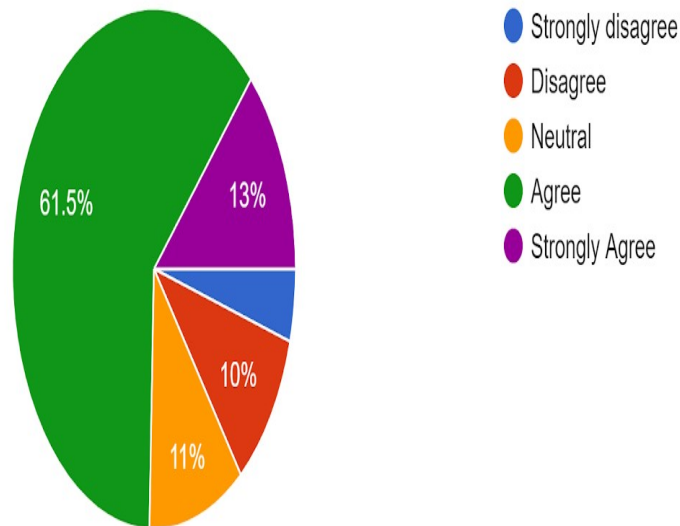- Strongly Agree

86%
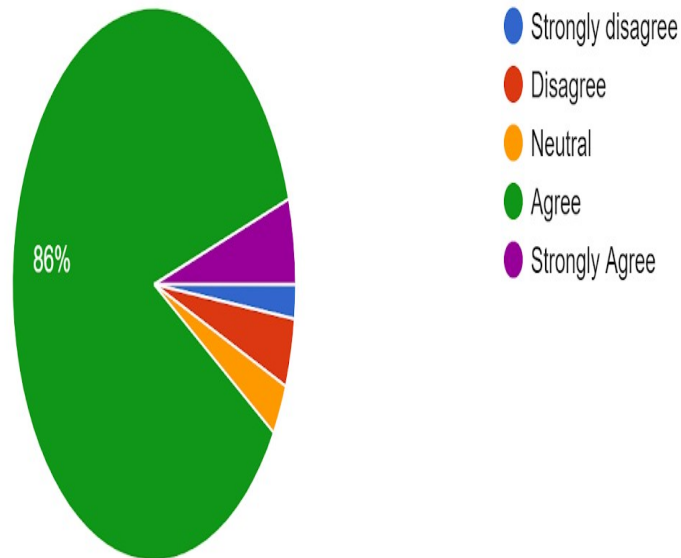
Parents' Response

As per response given in figure 6.39, 0.9% parents strongly disagree, 6.5 % disagree, 10.3% Neutral, 72% agree and 10.3 % strongly agree that online education negatively impacted on student eating habit. It means 82.3% parents say that online education negatively impacted on children eating habit.

Figure 6.39: Responses of parents regarding impact on eating habit

Online Education has negatively impacted on eating habit of your child.

107 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

72%

10.3%
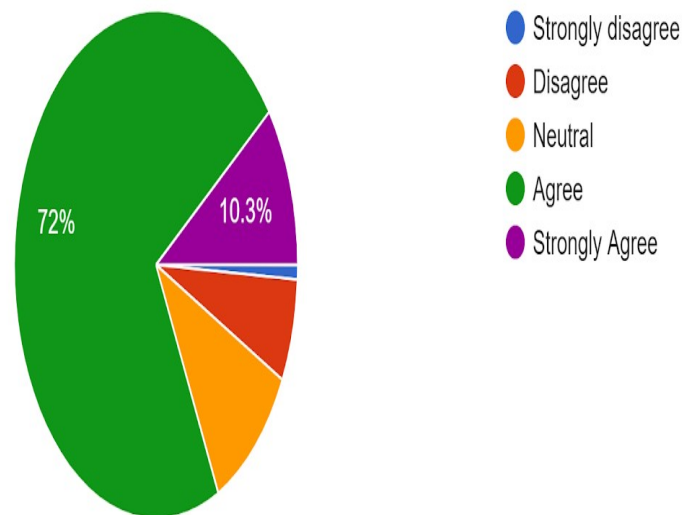
Question 3: Do you think that during this pandemic period students become addicted to mobile/computer game?

Now most of time students are doing online classes on digital device. This also provides opportunity to attract toward digital games and social media. The response of participants helps in find the level of impact of online education on this habit.

Students' Response

As per response given in figure 6.40, 83.7% student say 'Yes' and 16.3 % say 'No' that during this pandemic period students become addicted to mobile/computer game. It means 83.7% students opined that they are addicted to mobile/computer game during pandemic.

Figure 6.40: Responses of students regarding impact on addiction to mobile games

Do you think that during this pandemic period you have become addicted to mobile/computer games.

166 responses

Teachers' Response

As per response given in figure 6.41, 99% teachers say 'Yes' and 1 % say 'No' that during this pandemic period students become addicted to mobile/computer game. It means 99% teachers opined that students are addicted to mobile/computer game during pandemic.

Figure 6.41: Responses of teachers regarding impact on addiction to mobile games

Do you think that during this pandemic period students have become addicted to mobile/computer games.

100 responses

Parents' Response

As per response given in figure 6.42, 92.4% parent say 'Yes' and 7.6 % say 'No' that during this pandemic period students become addicted to mobile/computer game. It means 92.4% parent opined that children are addicted to mobile/computer game during pandemic.

Figure 6.42: Responses of parents regarding impact on addiction to mobile games

Do you think that during this pandemic period your has become addicted to mobile/computer games.

79 responses

- Yes
- No

7.6%

92.4%

Question 4: Do you think during this pandemic period student become more tech savvy?

Now most of time students are doing online classes on digital device. This also provides opportunity to learn many things through internet such as email, uploading of documents, sharing of information using social media etc. The response of participants helps in find the level of impact of online education on this skill.
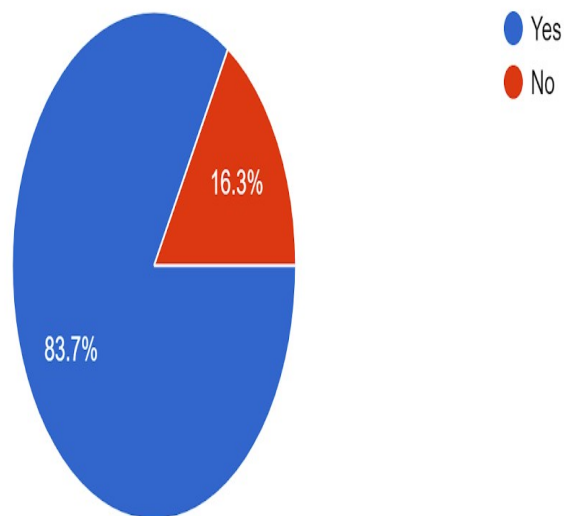
Students' Response

As per response given in figure 6.43, 79.5% student say 'Yes' and 20.5 % say 'No' that during this pandemic period student become more tech savvy. It means 79.5% students opined that they become more tech savvy during this pandemic period due to online education.

Figure 6.43: Responses of students regarding impact on tech savvy

Do you think that during this pandemic period you have now become more tech savvy.
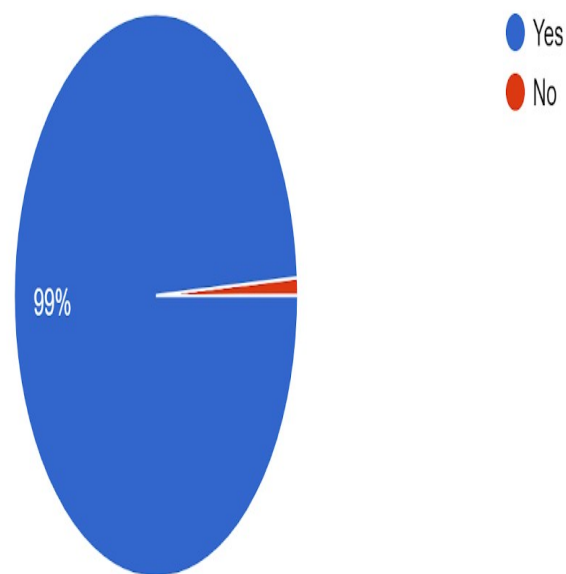166 responses
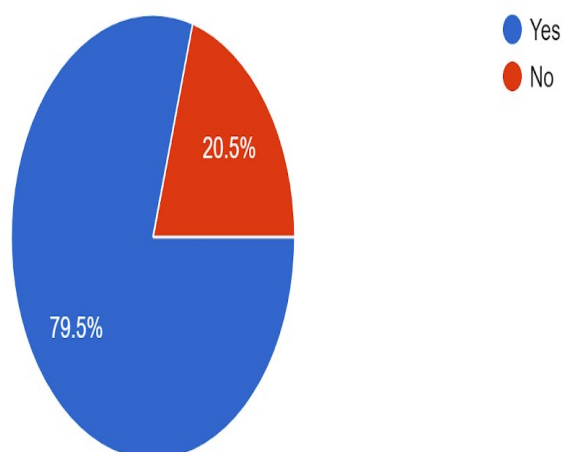
Teachers' Response

As per response given in figure 6.44, 96% teachers say 'Yes' and 20.5 % say 'No' that during this pandemic period student become more tech savvy. It means 96% teachers say that student become more tech savvy during this pandemic period due to online education.

Figure 6.44: Responses of teachers regarding impact on tech savvy

Do you think that during this pandemic period students have now become more tech savvy.
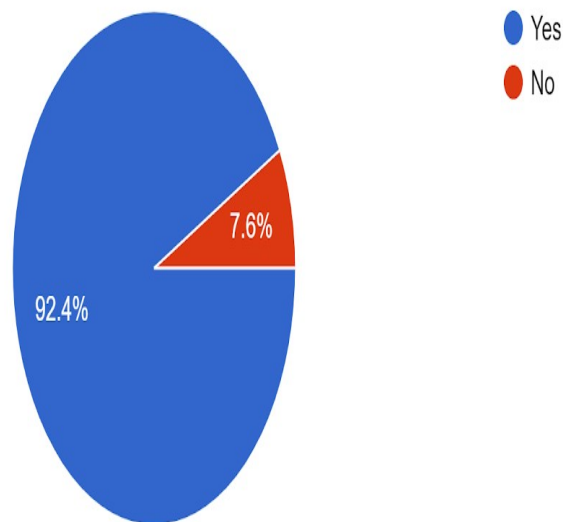
100 responses

- Yes
- No

96%
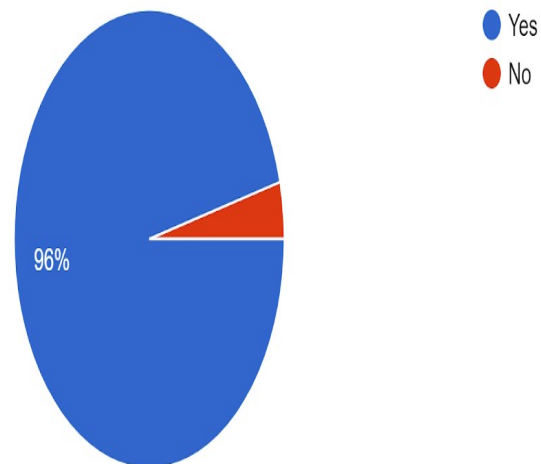
Parents' Response

As per response given in figure 6.45, 91.1% parent say 'Yes' and 20.5 % say 'No' that during this pandemic period student become more tech savvy. It means 91.1% parent opined that children become more tech savvy during this pandemic period due to online education.

Figure 6.45: Responses of parents regarding impact on tech savvy

Do you think that during this pandemic period your child have now become more tech savvy.
79 responses
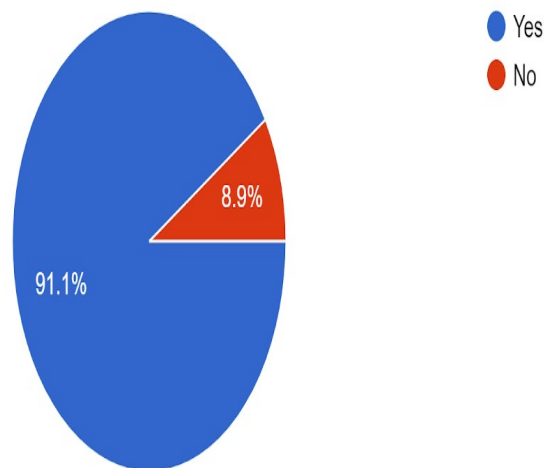
Question 5: Is online education has negatively impacted on student eye vision?

A good health is very important for life. Now students are doing online class and continuously spending more time on digital device. The response of participants helps in finding how much it impacted on eye vision of students.

Student' Response

As per response given in figure 6.46, 4% students strongly disagree, 8% disagree, 4.5% Neutral, 22% Agree and 63.5 % strongly agree that online education negatively impacted on student eye vision. It means 85.5% students opined that online class has negatively impacted on my eye vision.

Figure 6.46: Responses of students regarding impact on eye vision

Online Education has negatively impacted on my eye vision

200 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

63.5%

8%

22%
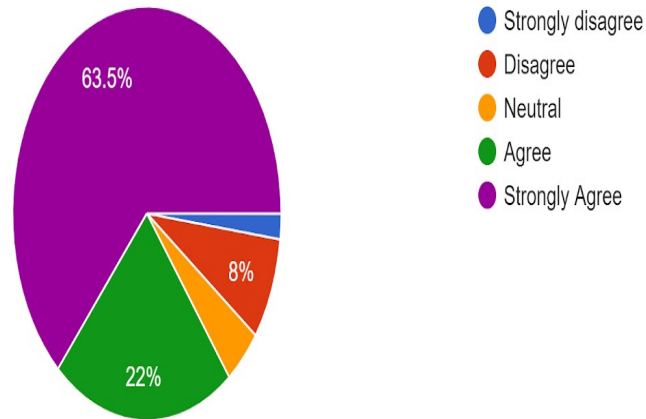
Teachers' Response

As per response given in figure 6.47, 1% teachers strongly disagree, 1% disagrees, 1% Neutral, 11% agree and 86 % strongly agree that online education negatively impacted on student eye vision. It means 97% teachers say that online class has negatively impacted on student eye vision.

Fig 6.47: Responses of teachers regarding impact on eye vision

Online Education has negatively impacted on students eye vision
100 responses

Legend:
- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

86%
11%

Parents' Response

As per response given in figure 6.48, 1.9% parent strongly disagrees, 8.4% disagree, 5.6% neutral, 34.6% agree and 49.5 % strongly agree that online education negatively impacted on student eye vision. It means 84.1% parent opined that online class has negatively impacted on children eye vision.

Figure 6.48: Responses of parents regarding impact on eye vision

Online Education has negatively impacted on your child eye vision

107 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
- Disgree

49.5%

34.6%
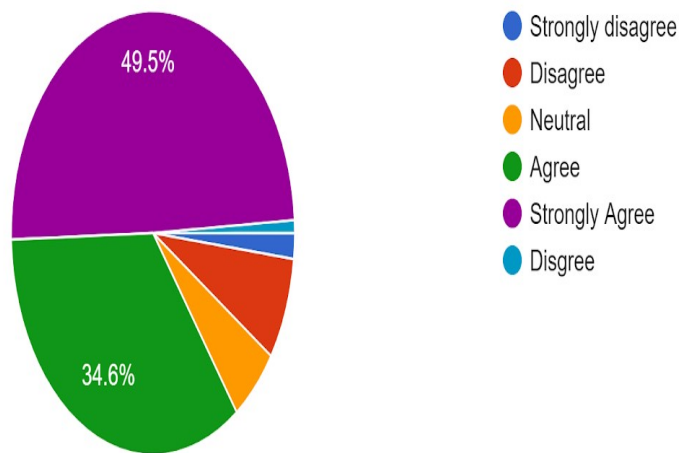
Question 6: Is online education has negatively impacted on student hearing capability?

A good health is very important for life. Now students are doing online class and continuously spending more time on digital device and using head phone for online classes. The response of participants helps in finding how much it impacted on hearing capability of students.

Students' Response

As per response given in figure 6.49, 3.5% students strongly disagree, 12.5% disagree, 5.5% neutral, 56% agree and 22.5 % strongly agree that online education

negatively impacted on student hearing capability. It means 78.5% students opined say that online class has negatively impacted on my hearing capability.

Fig 6.49: Responses of students regarding impact on hearing capability

Online Education has negatively impacted on my hearing capability
200 responses

- ● Strongly disagree
- ● Disagree
- ● Neutral
- ● Agree
- ● Strongly Agree

Teachers' Response

As per response given in figure 6.50, 1% teachers strongly disagree, 1% disagree, 3% neutral, 51% agree and 44 % strongly agree that online education negatively impacted on student hearing capability. It means 95% teachers opined that online class has negatively impacted on student hearing capability.

. Figure 6.50: Responses of teachers regarding impact on hearing capability

Online Education has negatively impacted on hearing capability of students.
100 responses

Parents' Response

As per response given in fig 6.51, 2.8% parent strongly disagrees, 10.3% disagree, 15.9% neutral, 57% agree and 14 % strongly agree that online education negatively impacted on student hearing capability. It means 71% parent opined that online class has negatively impacted on children hearing capability.

Figure 6.51: Responses of parents regarding impact on hearing capability

Online Education has negatively impacted on hearing capability of your child
107 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

57%   14%

15.9%

Question 7: Is online education has negatively impacted on student spinal cord?

A good health is very important for life. Now students are doing online class and continuously spending more time on digital device. They are forced to sit in same position for long time. The response of participants helps in finding how much it impacted on spinal cord of students.
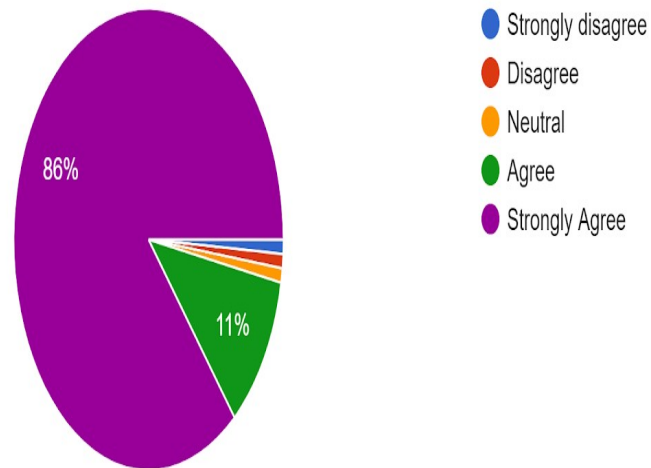
Students' Response

As per response given in figure 6.52, 1.5% students strongly disagree, 12% disagree, 5.5% neutral, 62% agree and 19 % strongly agree that online education negatively impacted on student spinal cord. It means 81% students opined that online class has negatively impacted on my spinal cord.

Figure 6.52: Responses of students regarding impact on spinal cord

Online Education has negatively impacted on my spinal cord
200 responses

Legend:
- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Values shown: 19%, 62%, 12%

Teachers' Response

As per response given in figure 6.53, 1% teachers strongly disagree, 4% disagree, 4% neutral, 71% agree and 20 % strongly agree that online education negatively impacted on student spinal cord. It means 91% teachers say that online class has negatively impacted on student spinal cord.

Figure 6.53: Responses of teachers regarding impact on spinal cord

Online Education has negatively impacted on spinal cord of students due to sitting in front of PC/Laptop.

100 responses

- Strongly disagree
- Disagree
- Neutral
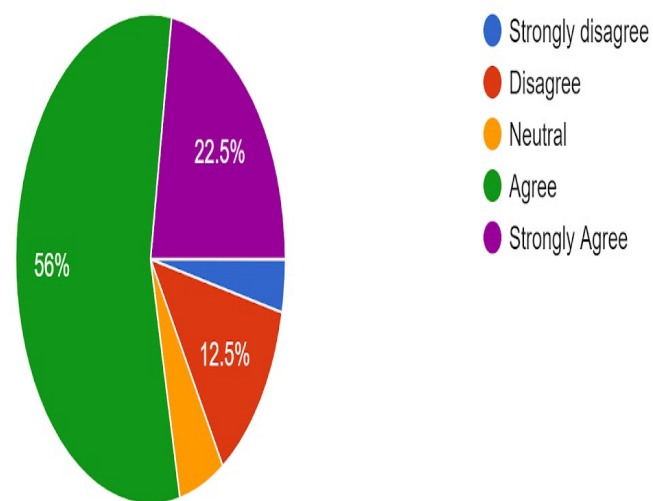- Agree
- Strongly Agree

Parents' Response

As per response given in figure 6.54, 0.9% parent strongly disagrees, 8.4% disagree, 15.9% neutral, 57.9% agree and 16.8 % strongly agree that online education negatively impacted on student spinal cord. It means 74.7% parent opined that online class has negatively impacted on children spinal cord.

Figure 6.54: Responses of parents regarding impact on spinal cord

Online Education has negatively impacted on spinal cord of your child due sitting in front of PC/Laptop.

107 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
- Disgree

16.8%

57.9%

7.5%

15.9%
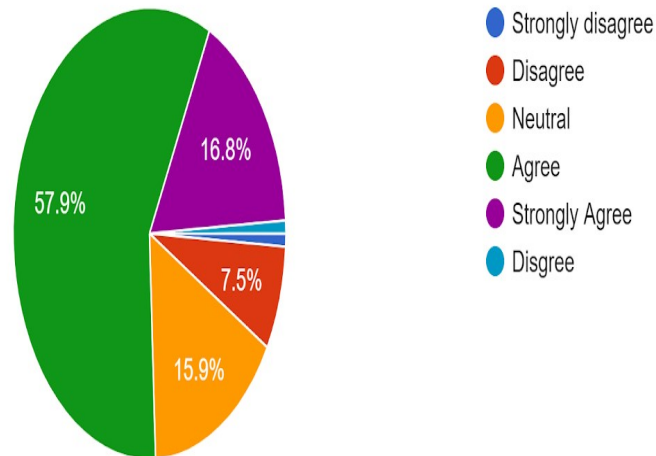
Question 8: Is online education negatively impacted on student mental health?

A good mental health is very important for life. Now students are doing online class and continuously spending more time on digital device. They are not playing with friends as happen during school days. The response of participants helps in finding how much it impacted on mental health of students.

Students' Response

As per response given in figure 6.55, 3% students strongly disagree, 9% disagree, 6.5% neutral, 67% agree and 14.5 % strongly agree that online education negatively impacted on student mental health. It means 81.5% students opined that online class has negatively impacted on their mental health.

Figure 6.55: Responses of students regarding impact on mental health

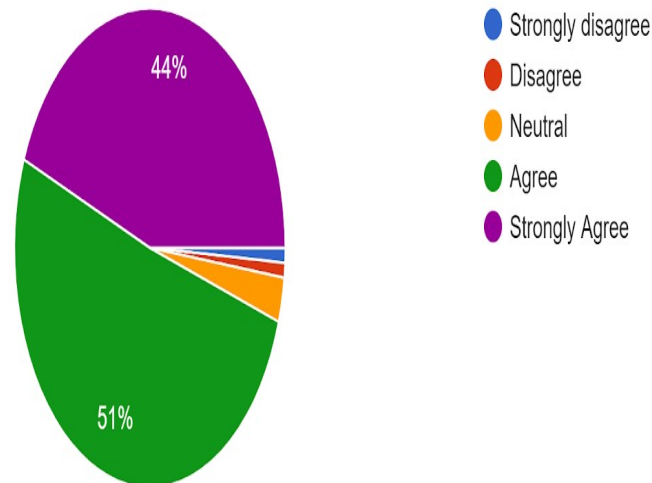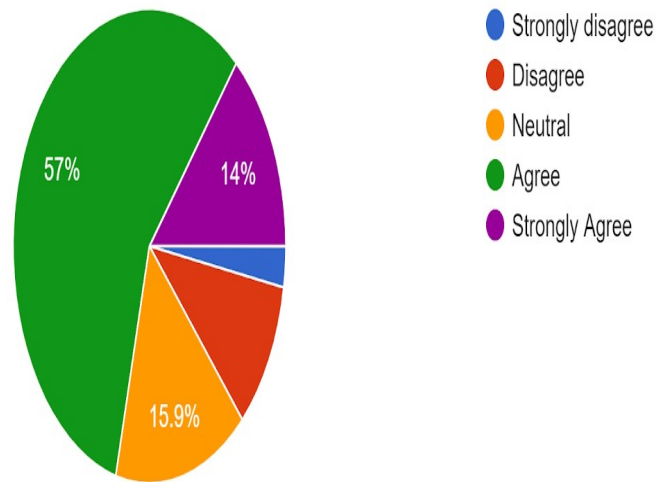Online Education has negatively impacted on my mental health
200 responses

Teachers' Response

As per response given in figure 6.56, 1% teachers strongly disagree, 3% disagree, 3% neutral, 80% agree and 13 % strongly agree that online education negatively impacted on student mental health. It means 81% teachers opined that online class has negatively impacted on student mental health.

Figure 6.56: Responses of teachers regarding impact on mental health

Online Education has negatively impacted on mental health of students.
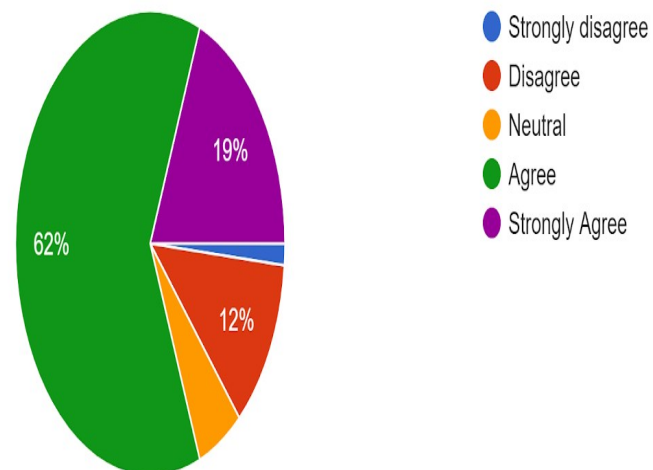100 responses

Parents' Response

As per response given in figure 6.57, 0.9% parent strongly disagrees, 7.4% disagree, 10.3% neutral, 66.4% agree and 15 % strongly agree that online education negatively impacted on student mental health. It means 79.9% parents opined that online class has negatively impacted on children mental health.

Figure 6.57: Responses of parents regarding impact on mental health

Online Education has negatively impacted on mental health of your child.

107 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
- Disgree

66.4%

15%
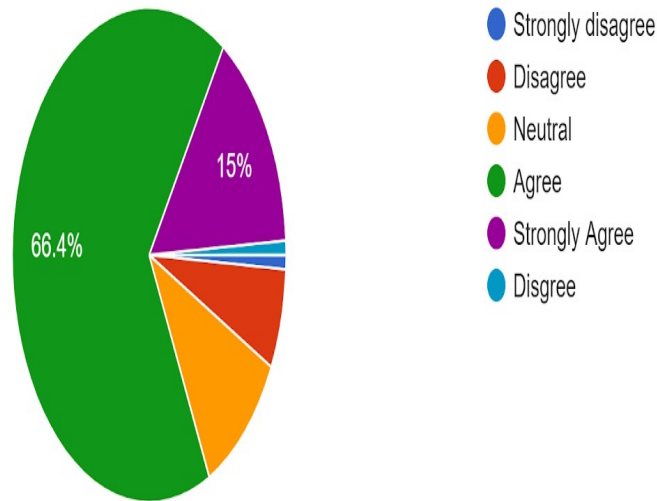
Question 9: Is online education has negatively impacted on student physical growth?

A good health is very important for life. Now students are doing online class and continuously spending more time on digital device. They are not playing sports as doing earlier in school. The response of participants helps in finding how much it impacted on physical growth of students.

Students' Response

As per response given in figure 6.58, 2% students strongly disagree, 8.5% disagree, 13.5% neutral, 64% agree and 12 % strongly agree that online education negatively impacted on student physical growth. It means 76% students opined that online education negatively impacted on their physical growth.

143

Fig 6.58: Responses of students regarding impact on physical growth

Online Education has negatively impacted on my physical growth

200 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
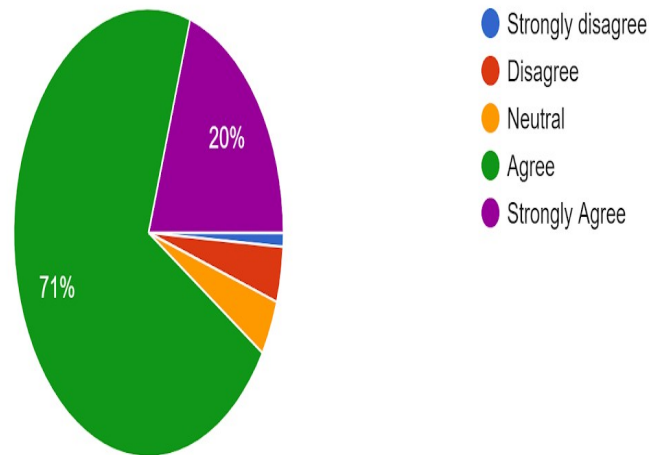- Strongly Agree

64% 12% 8.5% 13.5%

Teachers' Response

As per response given in figure 6.59, 1% teacher strongly disagrees, 3% disagree, 10% neutral, 74% agree and 12 % strongly agree that online education negatively impacted on student physical growth. It means 76% teachers opined that online education negatively impacted on student physical growth.

Fig 6.59: Responses of teachers regarding impact on physical growth

Online Education has negatively impacted on physical growth of students
100 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
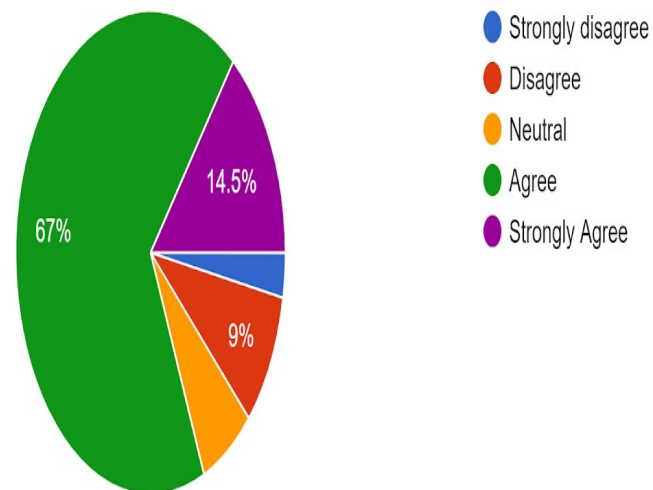- Strongly Agree

74%
12%
10%

Parents' Response

As per response given in figure 6.60, 1.9% parent strongly disagrees, 5.6% disagree, 10.3% neutral, 64.5% agree and 17.8 % strongly agree that online education negatively impacted on student physical growth. It means 82.3% students opined that online education negatively impacted on children physical growth.

Figure 6.60: Responses of parents regarding impact on physical growth

Online Education has negatively impacted on physical growth of your child.
107 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

17.8%
64.5%
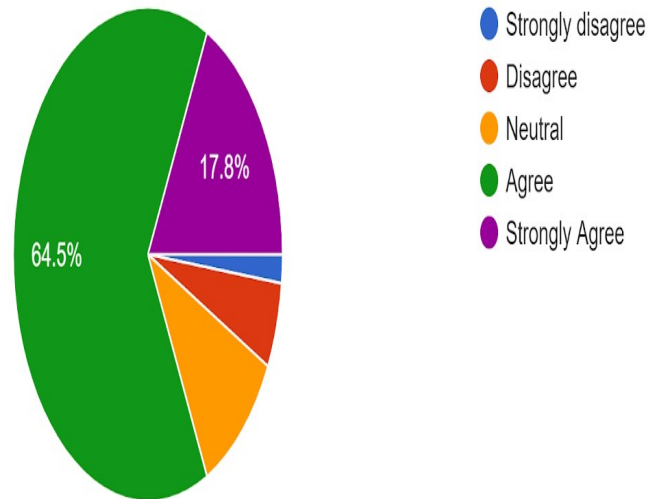
Question 10: Is online education has negatively impacted on student physical activity?

A good health is very important for life. Now students are doing online class and continuously spending more time on digital device. They are not going to outside home due to online class and COVID-19 epidemic. The response of participants helps in finding how much it impacted on students.
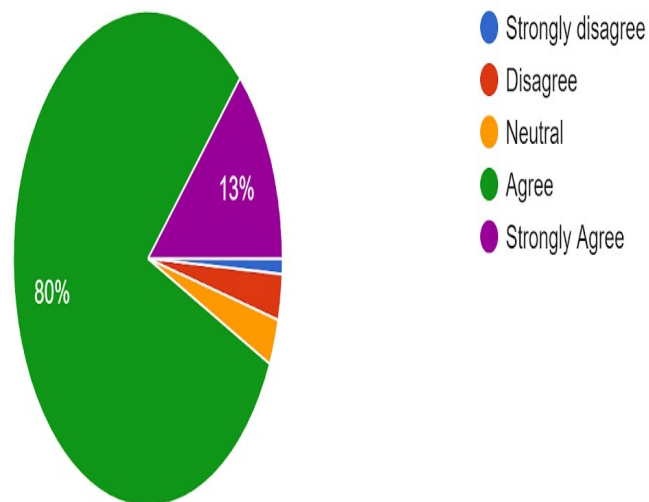
Students' Response

As per response given in figure 6.61, 3.5% students strongly disagree, 10% disagree, 8.5% neutral, 62% agree and 16 % strongly agree that online education has negatively impacted on student physical activity. It means more than 78.5% students opined that online education has negatively impacted on their physical activity

Figure 6.61: Responses of students regarding impact on physical activity

Online Education has negatively impacted on my physical activity
200 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
- Disgree

16%
62%
9.5%
8.5%

Teachers' Response

As per response given in figure 6.62, 1% teachers strongly disagree, 1% disagree, 5% neutral, 81% agree and 12 % strongly agree that online education has negatively impacted on student physical activity. It means 93% teachers opined that online education has negatively impacted on student physical activity.

. Figure 6.62: Responses of teachers regarding impact on physical activity

Online Education has negatively impacted on physical activity of students.

100 responses

● Strongly disagree
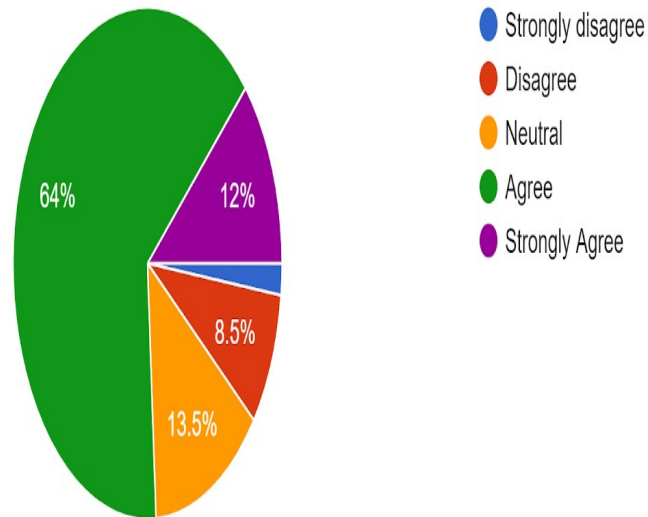● Disagree
● Neutral
● Agree
● Strongly Agree
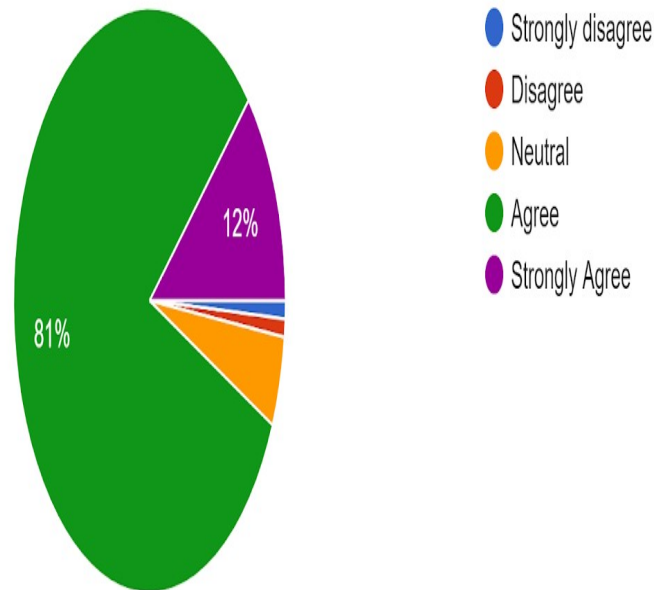
Parents' Response

As per response given in figure 6.63, 0% parent strongly disagrees, 4.7% disagree, 3.7% neutral, 72% agree and 19.6 % strongly agree that online education has negatively impacted on student physical activity. It means 91.6% parents opined that online education has negatively impacted on children physical activity

Fig 6.63: Responses of parents regarding impact on physical activity

Online Education has negatively impacted on physical activity of your child.
107 responses

Legend:
- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

19.6%
72%
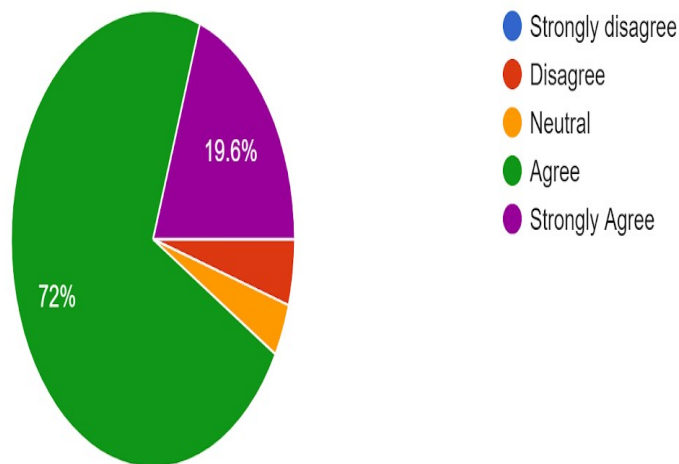
Question 11: Is online education has negatively impacted on student overall growth?

A good health is very important for life. Now students are doing online class and continuously spending more time on digital device. The response of participants helps in finding how much it impacted on students overall growth.

Students' Response

As per response given in figure 6.64, 3% students strongly disagree, 9.5% disagree, 23% neutral, 54.5% agree and 10 % strongly agree that online education negatively impacted on student overall growth. It means 64.5% students opined that online education negatively impacted on their overall growth.

Figure 6.64: Responses of students regarding impact on overall growth

Online Education has negatively impacted on my overall growth
200 responses

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
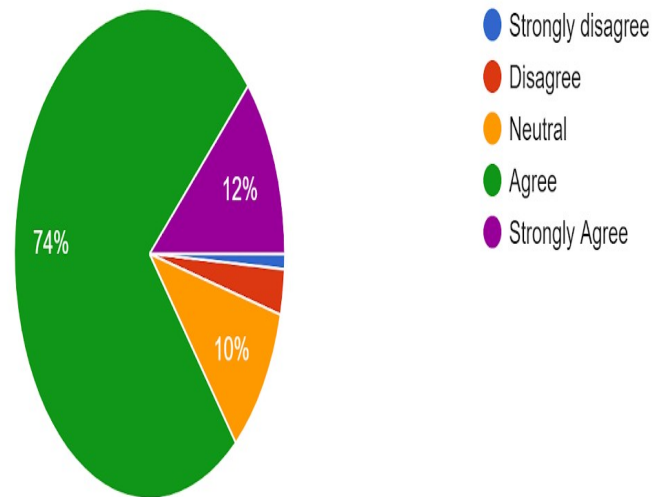
54.5%
10%
9.5%
23%
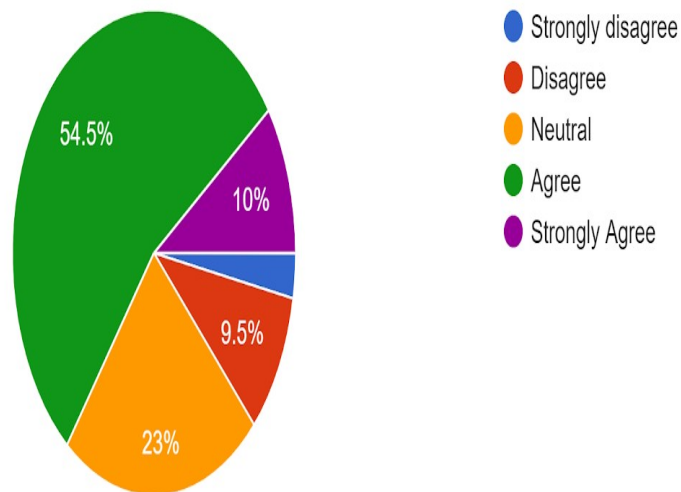
Teachers' Response

As per response given in figure 6.65, 1% teachers strongly disagree, 1% disagree, 10% neutral, 78% agree and 10 % strongly agree that online education negatively impacted on student overall growth. It means 88% teachers opined that online education negatively impacted on student overall growth.

Figure 6.65: Responses of teachers regarding impact on overall growth

Online Education has negatively impacted on overall growth of students.

100 responses

Strongly disagree
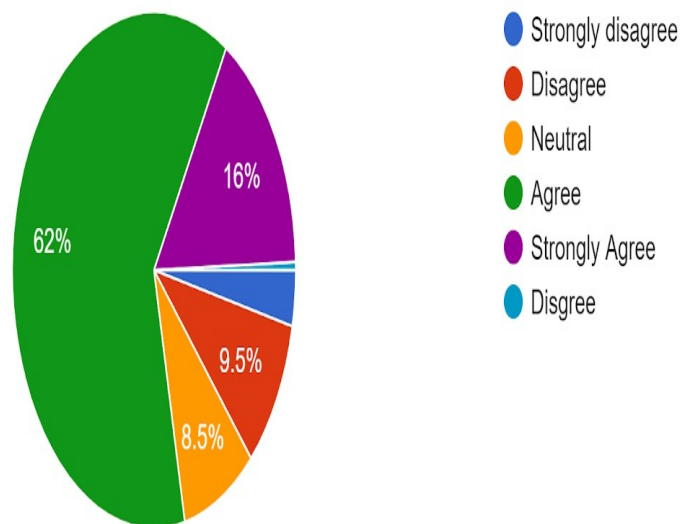Disagree
Neutral
Agree
Strongly Agree

10%

78%

10%
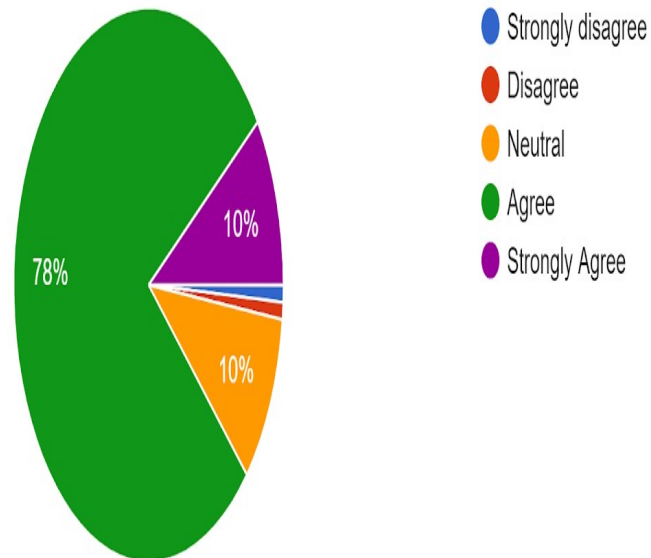
Parents' Response

As per response given in figure 6.66, 0.9% parent strongly disagree, 4.7% disagree, 9.3% neutral, 70.1% agree and 15 % strongly agree that online education negatively impacted on student overall growth. It means 85.1% parent opined that online education negatively impacted on children overall growth.

Figure 6.66: Response of parents regarding impact on overall growth

Online Education has negatively impacted on overall growth of your child.
107 responses
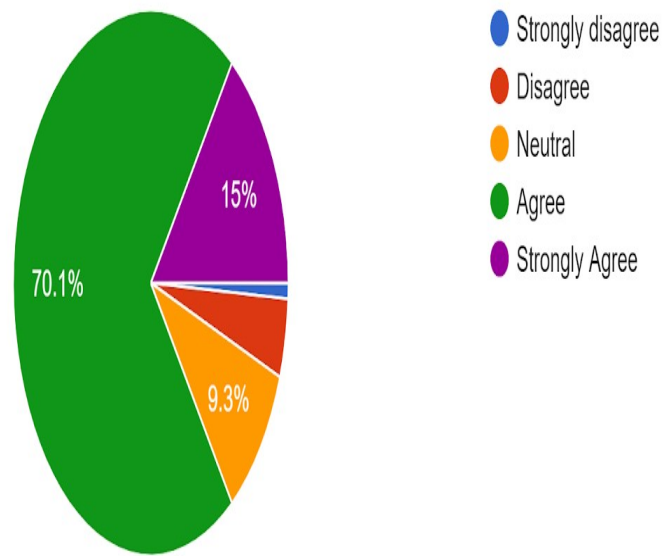
On the basis of above responses, it is cleared that most of students, teachers and parents agreed that online education badly affected the health of students. It also affected the subject learning, social and mental development. It also affected the student behaviour attitudes towards family, friends and teachers.

CHAPTER 7

FINDINGS AND DISCUSSION

7.1 Background

The education is important for overall development of children of a country. A primary survey was conducted on likert scale for assessing impact of online education on learning and well being of school students. Various kinds of rating scales have been developed to measure attitudes directly (i.e. the person knows their attitude is being studied). The most widely used is the Likert scale (1932)[39]. The likert scale data can summarize using mean and mode of data of survey. The all questions and answer is codify to represent in excel sheet and evaluate using a mathematical tools to summarized the results. Total 200 students, 100 teachers and 107 parents participated in survey. The questions are divided into 4 groups.

i) Total 8 questions asked for assessing the impact on learning growth of students

.ii). Total 3 questions were asked for assessing the impact on social behavior and social development for student.

iii) Total 7 questions were asked for assessing the impact of physical and 2 question on mental development of students. All questions and response is downloaded in

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[39] https://www.simplypsychology.org/likert-scale.html#:~:text=A%20Likert%20scale%20assumes%20that,that%20attitudes%20can%20be%20measured. Assessed on 25.12.2021.

excel sheet. The responses are converted in Likert scale from 1 to 5. The question and

responses code are given in table 7.1.

Table 7.1: Primary survey question, answer options and its code for analysis

Question Sl. No	Question for primary survey	Code
1	Online Education has enhanced our Learning	E_LRNG
2	Online Education has enhanced our subject knowledge	E_SBKN
3	Online Education has enhanced our Writing skills	E_WRSK
4	Online Education has enhanced our analytical skills	E_ANSK
5	Online Education has enhanced our interaction with teachers	E_ITTR
6	Online Education has enhanced our Interaction with classmates	E_ITCL
7	Online Education has enhanced our inquisitiveness	E_INQU
8	Online Education has enhanced our overall understanding of the subject	E_USSB
9	Online Education has enhanced our scoring of marks in subject	E_SCSB
10	Online Education has enhanced our creative ability	E_CRAB
11	Online Education has negatively impacted on my eye vision	N_EYVI
12	Online Education has negatively impacted on my hearing capability	N_HRCP
13	Online Education has negatively impacted on my spinal cord	N_SPCD
14	Online Education has negatively impacted on my mental health	N_MNHT
15	Online Education has negatively impacted on my physical growth	N_PHGT
16	Online Education has negatively impacted on my behavior	N_BEHV
17	Online Education has negatively impacted on my sleeping pattern	N_SLPT
18	Online Education has negatively impacted on my eating habit	N_ETHB
19	Online Education has negatively impacted on my overall growth	N_OVGT
20	Online Education has negatively impacted on my physical activity	N_PHAT
Option for answer question by participants	**Option for answer in question Sl.No. 1 to 20 in Likert scale**	
	Strongly disagree	1
	Disagree	2
	Neutral	3
	Agree	4
	Strongly Agree	5

Source: Primary Survey

The feedback was taken during survey for assessing the impact of online education in

Delhi and UP area from students, teachers and parents. The mean and mode of all

responses received from students, teachers and parents is calculated and given in table 7.2.

Table 7.2: Mean and Mode of Participants Responses

Category of skill	Question code	Mean and mode of response received from participants							
		Students		Teachers		Parents		All participants	
		Mean	Mode	Mean	Mode	Mean	Mode	Mean	Mode
Learning	*E_LRNG	2.33	2	2.02	2	2.34	2	2.22	2
	E_SBKN	2.39	2	2.21	2	2.27	2	2.26	2
	E_WRSK	2.23	2	2.02	2	1.93	2	2.06	2
	E_ANSK	2.52	2	2.27	2	2.27	2	2.34	2
	E_INQU	2.59	2	2.28	2	2.37	2	2.42	2
	E_USSB	2.55	2	2.41	2	2.41	2	2.44	2
	E_SCSB	2.51	2	2.39	2	2.51	2	2.44	2
	E_CRAB	2.60	2	2.52	2	2.42	2	2.48	2
	Average	**2.46**	**2**	**2.27**	**2**	**2.32**	**2**	**2.33**	**2**
Social Activity/ Behaviour	E_ITTR	2.28	2	2.21	2	2.04	2	2.19	2
	E_ITCL	2.20	2	2.09	2	2.37	2	2.10	2
	*N_BEHV	4.24	5	3.98	4	3.91	4	3.83	4
Physical health	N_EYVI	3.96	4	4.80	5	4.21	5	4.43	5
	N_HRCP	4.15	4	4.36	4	3.69	4	3.92	4
	N_SPCD	4.28	5	4.05	4	3.81	4	3.89	4
	N_PHGT	4.28	5	3.93	4	3.91	4	3.84	4
	N_SLPT	4.34	5	4.00	4	3.95	4	3.88	4
	N_ETHB	4.17	5	3.88	4	3.84	4	3.77	4
	N_PHAT	4.23	5	4.02	4	4.07	4	3.91	4
	Average	**4.20**	**5**	**4.15**	**4**	**3.93**	**4**	**3.95**	**4**
Mental health	N_MNHT	4.34	5	4.01	4	3.87	4	3.87	4
	N_OVGT	4.04	5	3.95	4	3.93	4	3.77	4

Source: Primary Survey

* E- Indicated Enhanced

*N- Indicated Negatively Impacted

Mean: Mean is the average of the given numbers and is calculated by dividing the sum of given numbers by the total number of numbers. It show central tendency of answer to a question.

Mode: A mode is defined as the value that has a higher frequency in a given set of values. It is the value that appears the most number of times.It means response which maximum respondent answer for a question.

7.2 Discussion and findings on learning

School education is an important source for learning along with growth of a child and becoming a good country citizen. Since all schools are doing online classes for lost 2 years so students are not going to schools and doing class from home most of time. In primary survey, 8 questions have been asked from students, teachers and parents to assessed impact on learning. The mean and mode of response of these is calculated to summarize the result in table 7.2.

i)   Online education enhanced the learning of students

As per table 7.2, the means of students, teachers and parents response are 2.33, 2.02 and 2.34 respectively. The mean of all participants is 2.22. All mean value of all participants is less than 2.5 and the mode of student, teachers and parents is also 2. So it indicated that   maximum students, teachers and parents are disagreeing with question statement. It is found that learning skill of students is deteriorated due to online education.

ii)   Online Education has enhanced our subject knowledge

As per table 7.2, the means of students, teachers and parents response are 2.39, 2.21 and 2.27 respectively. The mean of all participants is 2.26. All mean values are less than 2.5 and the mode of student, teachers and parents is also 2. So it is found that all students, teachers and parents are disagreeing that online education enhance the subject knowledge of students during survey.

i.   Online Education has enhanced students writing skill

As per table 7.2, the means of students, teachers and parents response are 2.23, 2.02 and 1.93 respectively. The mean of all participants is 2.06. All mean value is less than 2.5 and the mode of student, teachers and parents is also 2. So it is found that all students, teachers and parents are disagreeing that online education enhance the learning of students during survey.

iv)   Online Education has enhanced students analytical skill

As per table 7.2, the means of students, teachers and parents response are 2.33, 2.02 and 2.34 respectively. The mean of all participants is 2.22 and it is less than 2.5. The mode of student, teachers and parents is also 2. So it is found that all students, teachers and parents are disagreeing that online education enhance the learning of students.

v)   Online Education has enhanced students inquisitiveness

As per table 7.2, the means of students, teachers and parents response are 2.33, 2.02 and 2.34 respectively. The mean of all participants is 2.22 and it is less than 2.5. The mode of student, teachers and parents is also 2. So   It found that all students, teachers and parents are disagreeing that online education enhance the learning of students.

vi)   Online Education has enhanced student understanding of subject

As per table 7.2, the means of students, teachers and parents response are 2.55, 2.41 and 2.41 respectively. The mean of all participants is 2.44 and it is less than 2.5. The mode of student, teachers and parents is also 2. So it is found that all students, teachers and parents are disagree that online education enhance the learning of students.

vii)   Online Education has enhanced our subject knowledge

As per table 7.2, the means of students, teachers and parents response are 2.51, 2.39 and 2.51 respectively. The mean of all participants is 2.44 and it is less than 2.5. The mode of student, teachers and parents is 2. So it is found that all students, teachers and parents are disagree that online education enhance the learning of students.

Viii   Online Education has enhanced students' creative ability

The means of students, teachers and parent's response are 2.60, 2.52 and 2.42 respectively. The mean of all participants is 2.48 and it is less than 2.5. The mode of student, teachers and parents is also 2. So it is found that all students, teachers and parents are disagree that online education enhance the learning of students

Summary of findings on learning

As shown in figure 7.1, it clear that height of column of response of students, teachers and parents is less than 2.5. It indicates that all participants agree that student learning does not increase during online education.

Figure 7.1: Summery chart of responses regarding impact on Learning
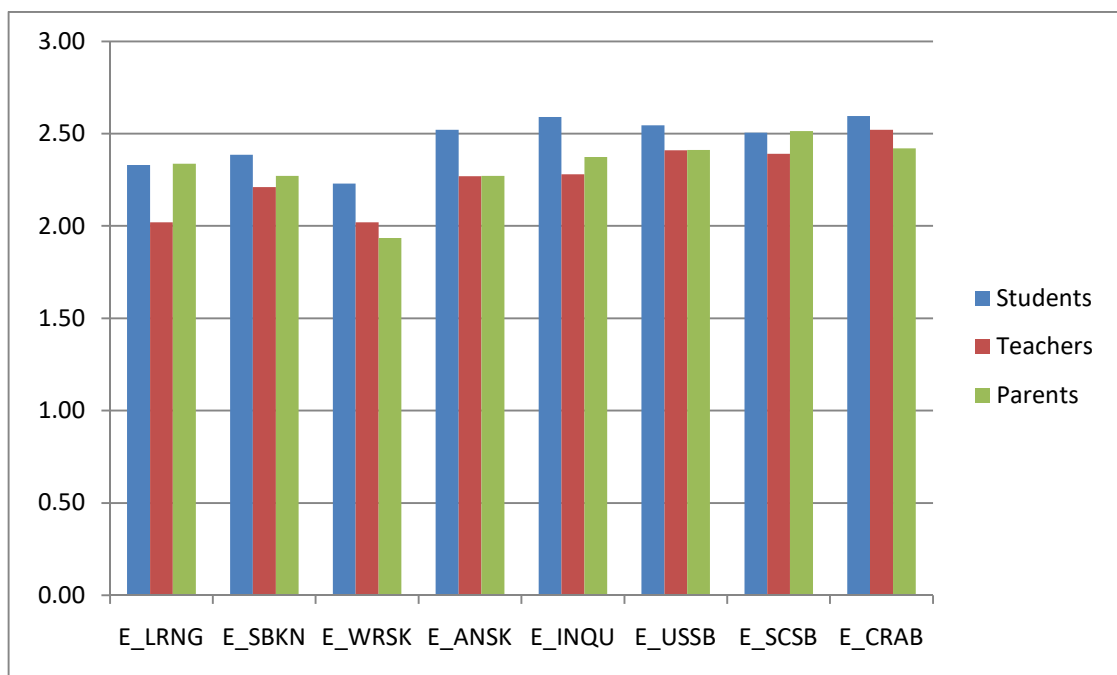
X-Axis show– Question code   and Y- Axis show mean value of response

As per responses it is cleared that students learning growth is badly affected due to online education. All teachers and parents saying for need for improvement in teaching pattern so learning and subject understanding should be improved. It is also found that students are taking class seriously. Their scoring in examination is also decreased. They do not learn, write and read subject as doing during schools in front of teachers. So it is necessary to open the schools after observing COVID protocols otherwise students education level is suffer a lot in their life.

7.3 Discussion and findings on Social activity and Behaviour

The education is also shaping students behaviour toward society, classmate, teachers and parents by teaching moral values during school class. They learn good habits such sharing, eating, timely going to school etc. They are enjoying friends circle and their mental health is also developed during education properly. In survey, 7 questions were asked to students, teachers and parents to assess the impact of online education on these qualities of students.

i) Online Education has enhanced our interaction with teachers

As per table 7.2, the means of students, teachers and parents response are 2.28, 2.21 and 2.04 respectively. The mean of all participants is 2.19 and it is less than 2.5. The mode of student, teachers and parents is also 2. So it is found that all students, teachers and parents are disagreeing that online education enhance students interaction with teachers.

ii) Online Education has enhanced our Interaction with classmates

As per table 7.2, the means of students, teachers and parents response are 2.20, 2.09 and 2.27 respectively. The mean of all participants is 2.10and it is less than 2.5. The mode of student, teachers and parents is also 2. So it is found that all students,

teachers and parents are disagreeing that online education enhance interaction with classmate. It means all participants opined that students becoming more introvert during online education.

iii) Online Education has negatively impacted on my behaviour

As per table 7.2, the means of students, teachers and parents response are 4.24, 3.98 and 3.91 respectively. The mean of all participants is 3.83 and it is more than 2.5. The mode of student, teachers and parents response is 5,4and 4 respectively. So it is found that all participants agreeing that online education have negatively impacted on behavior of students.

Summary of finding on social activity and behavior

The summery chart shown in figure 7.2, the column size of students, teachers and parent's response for enhancement in interaction with teachers and classmate are almost same. The graph size of student, teachers and parents response on behavior question is also almost same. This indicates that all participants agreed that social activity and behavior of students   has been deteriorating during online education. All suggest that some moral and social teaching may be provided to students. It helps them to make responsible about society. It is also found that students are becoming self centric and continually engage in doing some activity in either in mobile or laptop.

Figure 7.2: Summery chart of responses regarding impact on Social Activity and Behavior

X-Axis show– Question code and Y- Axis show mean value of response

7.4 Discussion and findings on Physical health

The health is more important for development of child in their cycle of development from child to an adult. The schools are providing a place to play with friends. Now schools are closed and students doing their classes on digital device from home. The 7 questions were asked from participants on physical developments of child.

i) Online Education has negatively impacted on my eye vision

As per table 7.2, the means of students, teachers and parents response are 4.34, 4 and 3.95 respectively. The mean of all participants is 3.88 and it is more than 2.5. The mode of student, teachers and parents is 5, 4 and 4 respectively. So it indicates that most of students agree that their eye vision is badly affected due to online education. However teachers and parents are strongly agreed that online education negatively

impacted on student's eye vision. It indicates that all participants are showing strong concern about health of eye of students.
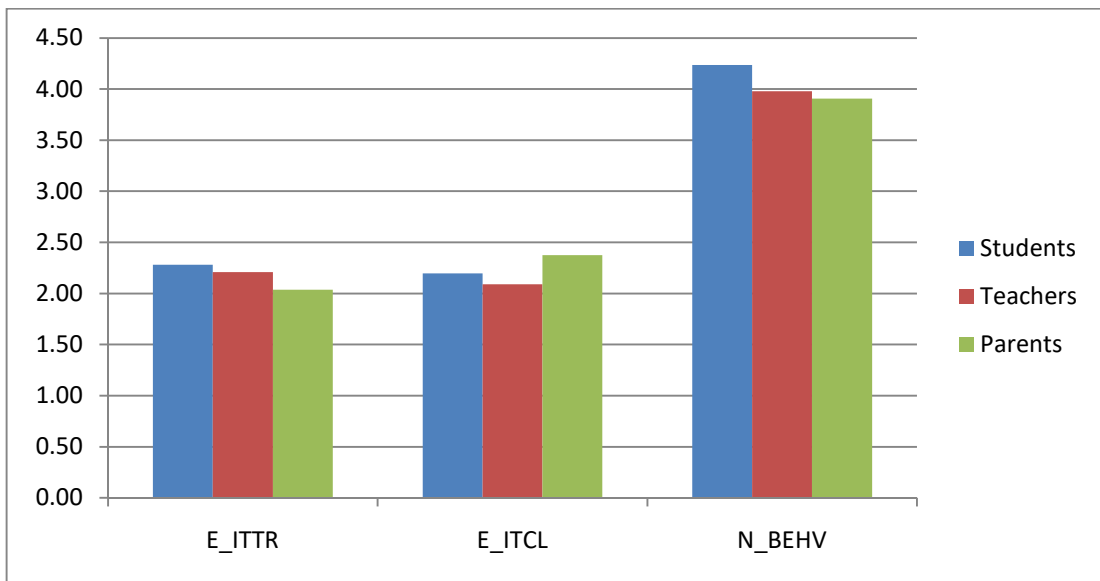
ii) Online Education has negatively impacted on my hearing capability

As per table 7.2, the means of students, teachers and parents response are 4.15, 4.36 and 3.69 respectively. The mean of all participants is 3.92 and it is more than 2.5. The mode of student, teachers and parents is also 4. It indicates that most of students, teachers and parents are agreed that online education negatively impacted on my hearing capability of students.

iii) Online Education has negatively impacted on my spinal cord

As per table 7.2, the means of students, teachers and parents response are 4.28, 4.05 and 3.81 respectively. The mean of all participants is 3.89 and it is more than 2.5. The mode of student, teachers and parents is 5, 4 and 4 respectively. It shows that most of students strongly agreed that their spinal cord is badly affected due to long sitting in same posture during online classes. The most of teachers and parents are also agreed that online education negatively impacted on spinal cord of students. It is also found that students are started suffering from backbone pain and neck pains now days in very early stage of life.

iv) Online Education has negatively impacted on my physical growth

As per table 7.2, The means of students, teachers and parents response are 4.28, 3.93 and 3.91 respectively. The mean of all participants is 3.84 and it is more than 2.5. The mode of student, teachers and parents is 5, 4 and 4 respectively. It shows that most of students strongly agree that their physical growth is badly affected during online class. The most of teachers and parents are agreed that online education negatively impacted

on physical growth of students. It means the student body is not growing as doing during school education.

v) Online Education has negatively impacted on my sleeping pattern.

As per table 7.2, the means of students, teachers and parents response are 4.34, 4 and 3.95 respectively. The mean of all participants is 3.88 and it is more than 2.5. The mode of student, teachers and parents is 5, 4 and 4 respectively. It indicates that most of students, teachers and parents are agreed that online education negatively impacted on sleeping pattern of students. All participants say that the students are sleeping late in night and sleep till late in morning. Their morning routine works is also disturbed. It is affecting their health and study both.

vi) Online Education has negatively impacted on my eating habit

As per table 7.2, the means of students, teachers and parents response are 4.17, 3.88 and 3.84 respectively. The mean of all participants is 3.77and it is more than 2.5. The mode of student, teachers and parents is 5, 4 and 4 respectively. It indicates that all students, teachers and parents are agreed that online education negatively impacted on students eating habit. The students are not taking breakfast, lunch and dinner in timely. They are asking foods at any times. Majority of parents and teachers agree that students' food habits are change during online education.

vii) Online Education has negatively impacted on my physical activity

As per table 7.2, the means of students, teachers and parents response are 4.23, 4.02 and 4.07 respectively. The mean of all participants is 3.91 and it is more than 2.5. The mode of student, teachers and parents is 5,4 and 4 respectively. So it shows that most of students, teachers and parents are agreed that online education negatively impacted on physical activity of students.

Figure 7.3: Summery chart of responses regarding impact on physical health
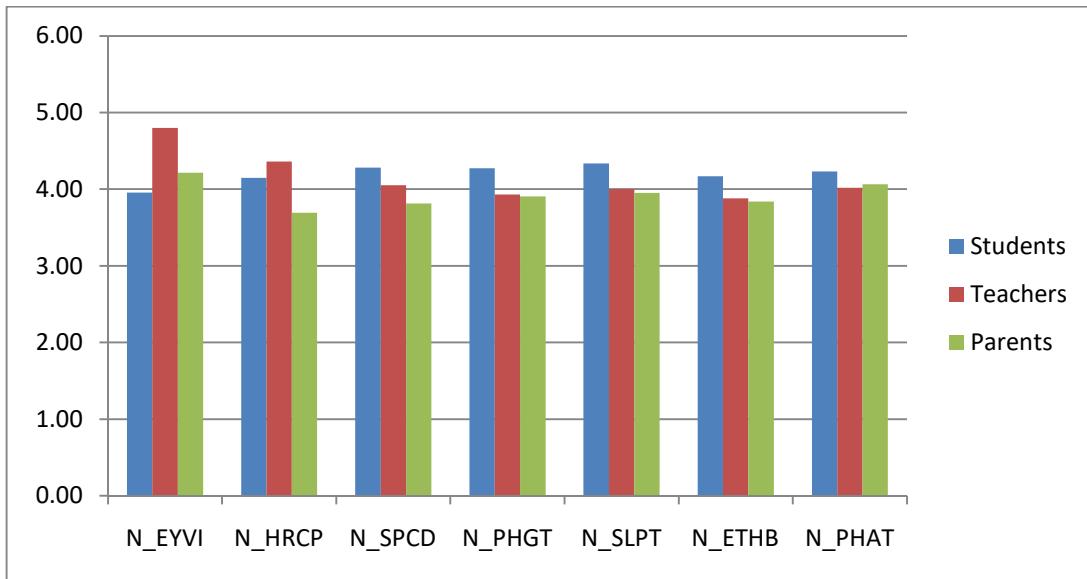
X-Axis show– Question code   and Y- Axis show mean value of response

Summary of finding on physical health

As per figure 7.3, it is found that size of graph of students, teachers and parents response are almost same and it clearly show that all agree that the physical health of students is badly affected to online education. The students are confined in home due to online education during COVID 19 period. The effect it clearly found in survey and all participants suggested that physical activity is must for student developments. They want that online education must include physical activity in their class time table. The schools must be opened with proper COVID protocols.

**7.5 Discussion and finding on mental health developments and overall growth**

i) Online Education has negatively impacted on my mental health

As per table 7.2, the means of students, teachers and parents response are 4.34, 4.01 and 3.87 respectively. The mean of all participants is 3.87. The mode of student,

teachers and parents is 5, 4 and 4 respectively. It shows that most of students strongly agree that their mental health is badly affected due to online education. However teachers and parents are agreed that online education negatively impacted on students' mental health.

ii) Online Education has negatively impacted on my overall   growth

As per table 7.2, the means of students, teachers and parents response are 4.04, 3.95 and 3.93 respectively. The mean of all participants is 3.77. The mode of student, teachers and parents is 5, 4 and 4 respectively. It shows that most of students, teachers and parents are agreed that online education negatively impacted on overall growth of students.

Figure 7.4: Summery chart of responses regarding impact on mental health and overall growth.
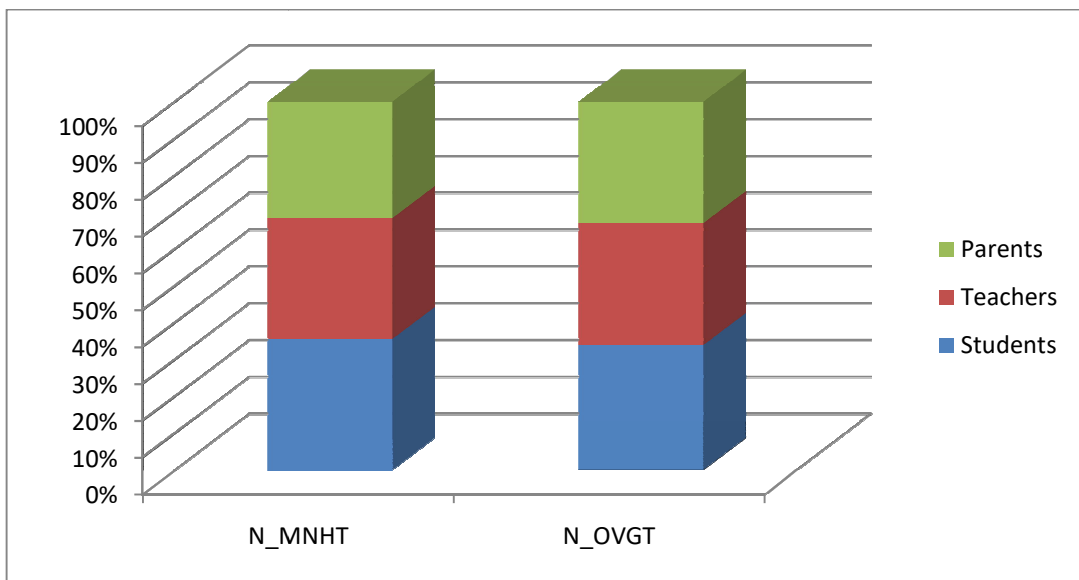
N- Negatively impacted

Summary of finding on mental health

School education is most important for overall development of students from child to an adult man. The figure 7.4 indicate that size of stack of response from students, teachers and parents are almost same. It indicated that all participants agreed that the mental health of student is also badly affected due to online education. The overall development is also deteriorating during this period. The online education is not helping in properly for students to get all around developments.

7.6 Discussion and finding pertaining to digital infrastructure challenges

India is big country and availability of a good digital infrastructure for everybody is a big challenging task. As per discussion in chapter 4, The Government of India has launches Digital India program to connect every citizen to new world by internet. There are many e-scheme launches by governments to train teachers, learner and institutions for promotion of online education. The online mode education was necessary for continuation of education in time of COVID-19. All students schooling is going in online mode for last 2 years. The 8 question were asked to participants to assess the infrastructure challenges faced for online class. As per discussion in chapter 5, it is found that Most of participants opined that many student faced challenges of availability of digital device, internet, quite place and electricity for attending online class. The response discussed in chapter 5. All participants are opined that most of students do not have a separate room for class and doing their online classes on mobile. They faced slow internet speed during online class. In rural area electricity is also a problem for online class. Most of students, teachers and parents agreed that

students are addicted to mobile game during this period however they some extent become tech savvy during this period.

These problems clearly reflected negative impact in learning and health growth of students which is found in survey. However students become more tech savvy during this period.

On the basis of above findings, it is cleared that most of students, teachers and parents opined that online education could not help in improving any parameters of educations except computer literacy. It required many area of focus for policy makers, institutions and teachers so that it can help in developing a child as a good potential citizen. In view of above some recommendations are given in chapter 8.

CHAPTER 8

CONCLUSION AND RECOMMENDATIONS

8.1 Conclusion

Based on the review of literature and the analysis undertaken it emerge that the sudden closure of educational institutions providing physical education and subsequently widespread deployment of online mode of learning were the immediate offshoot of the response to the COVID-19 in country. To compensate the 'learning losses' and give learners a sense of continuity in their education, 'the online mode of learning is considered the best possible opportunity out of the COVID-19 crisis to palliate its impact on the education sector.

However it is observed widely that students would log into the class and then get distracted with other activities. Given that students are free from the regulations and boundaries of an appropriate classroom environment, it is perceived that the curriculum is not given importance by the students. The notebook work may have been taken lightly. There are high chances of the students distracting themselves while learning online. Traditional classroom education offers the benefit of face-to-face interactions with peers which are typically moderated by a teacher. Physical classroom interaction provides children, especially those in their early developmental years, with a stable environment for social interactions, helping them develop skills like empathy and cooperation. It helps them in their overall development and get ready to face real-life situations properly.

The government of all other countries in world has taken different strategy for continuation of education along with restriction imposes to minimize human loss during COVID-19 epidemic. Some country like china and USA follow some time complete online class and some time offline class observing all COVID-19 protocol. Some use TV, Radio and social media platform for online class.

Governments' initiatives for online education

In answer to RQ1, it is found that The Government of India has issued the PRAGYATA guidelines in July 2020 for Digital Education in India during COVID 19 period. All educational institutions have started online classes for all students. The online education is a new way of education and many digital facilities is not available to all students to attend online classes. The government has enhanced the focus on Digital India program to connect all citizen and students with digital network. Various schemes such as SWAYAM (Study Webs of Active-Learning for Young Aspiring Minds, Rashtriya Madhyamik Shiksha Abhiyan (RMSA), e-PG Pathshala e-Basta Shodh Ganga Digital Infrastructure Knowledge Sharing' (DIKSHA) portal PM-eVidya etc has been promoted for online education.

A primary survey has been conducted during study the impact of online education on learning and well being of students. The feedback from 407 participants (200 students, 100 teachers and 107 parents has been taken during survey. It is observe during study that students are not fully prepared to adapt this type of education and suddenly they were forced to attend their class in online mode from sitting at home. During study under consideration, it was observed that online education impacted on learning and well being of students.

Digital Infrastructure challenges faced by students

In answer RQ2, it is found that most of students, teachers and parents opined that many student faced challenges of availability of digital device, internet, quite place and electricity for attending online class. All participants are opined that most of students do not have a separate room for class and doing their online classes on mobile. They faced slow internet speed during online class. In rural area electricity is also a problem for online class.

Impact on learning

As per finding in chapter 7 in answer to RQ3, Most of students, teachers and parents agreed that online education has badly affected students' subject learning, social behavior , physical and mental growth. The digital facilities for online education such as high speed uninterrupted internet connectivity, laptop and uninterrupted electricity is not available to all students. Even a separate room for online class is also not available for many students. The most of students are doing their online class on mobile. The All teachers and parents saying for need for improvement in teaching pattern so learning and subject understanding should be improved. It is also found that students are not taking class seriously. Their scoring in examination is also decreased. They do not learn, write and read subject as doing during schools in front of teachers. However, it is help in getting continuity in education and save complete 2 year session loss of students. They students at least learned something in spite of complete loss of study due school closure.

Impact on social activity and behavior of students

As per finding of study in chapter 7 in answer to RQ4, it is found that maximum students, teachers and parents agreed that students' behavior such as interaction with

friend and relatives has deteriorated due to online education. They do not interact with teachers and classmate during online class. They do not interested in asking their doubt with teachers and same is reflected in their scoring of marks.

Impact on physical health

 As per finding in chapter 7 in answer to RQ 5, it is found that students do not complete their routine work such as sleeping, eating and bathing in time. It also found that maximum students, teachers and parents agreed that the students are not performing any regular physical activities and them becoming lazy and suffering with different kind of physical problems such as low eye vision, hearing problem and weak bones, migraine etc. The some students are suffering from obesity during this period. Many teachers and parents agreed that students addicted to online gaming during this time.

Impact on mental health and overall growth

As per finding in chapter 7 in answer to RQ6, It is found that maximum students, teachers and parents opined that student mental health is deteriorating during COVID-19. However

It is found that most of students learned all new thing of computer era such as use of emails, social media, web media, editing of video and documents etc. All students, teachers and parents agree that students become more tech savvy during this period of online education. They become more confidence in working with computers, internet base service such as e-commerce, e-banking, e-application etc during this 2 year period otherwise it may happen in 10 to 12 years time to get same level of tech literacy. Answer of RQ7 is given in recommendation.

8.2 Recommendations

In lights of finding and conclusions reached as result of this research to answer RQ 7, some recommendations are offered:

A. Digital infrastructure Related

In view of finding of digital infrastructure challenges faced by students mention in conclusion, the following points are recommended for improvement of these facilities.

i. An important issue for consideration is in order to take the online educations forward is the providing digital facility to the every student on concession basis such as laptop and headphones. The laptop should be provided with parental lock facility.

ii. The digital India program may be expedited to reach a good internet facility in rural area. Every student may be provided with dongle facilities for accessing the internet for online class. The government may frame a policy for a concessional internet tariff to students in consultation with all Telecom Service Providers.

iii. All students and collages may be connects through virtual private network (VPN) for online classes so that they could not access other internet material during online class.

iv. An indigenous portal for online class such as zoom/Google meet with teachers control feature may be get developed under Atma Nirbhar Bharat scheme for online educations. The same portal may be allowed to use by all education institutions. This helps teachers to monitor the students during class.

v. The parents may be educated to provide an independent room to students during online class if practically feasible. Schools should opened observing

COVID protocol whenever possible because school environment can not be possible at home.

B. Learning Related

The learning of students is an important part of education. The education system is evolving in such a way that learning growth of students should not be compromised. On the basis of finding of study mention in conclusion, following suggestions is recommended to improve learning.

i. The special training may be provided to teachers about teaching using different effective online tools such as power point, graphics, video and audio files.

ii. The students should be given regular assignment of subject and it should be checked by teachers regularly. The assignment should include written and verbal. The verbal question may be asked to students during class. It helps in improving writing and reading skill of students.

iii. The students should be evaluated by random class test after end of any chapters it helps in understanding of subject by students.

iv. The duration of class may be kept 30 minutes so that concentration on digital tools may be maintained throughout class.

v. Some creative task including extracurricular activities may be given to students during class.

C. Physical and mental health related

The development of physical and mental health of students is an important aim of education. As per finding of research as mention in conclusion, some recommendation is offered:

i. A physical activity class such as Yoga, sports etc may be kept every day as part of online class time table.

ii. A happiness class for children up to class 8 may be made mandatory for every school.

iii. Schools may be opened for offline classes observing all COVID protocols.

iv. The schools may promote students to send their physical activity video to their class teachers such as cycling, outdoor games etc. Some internal marks may be assigned compulsory to this task so that they can motivate for physical activities.

v. Parents may be educates to interact with their children, keep some watch and restrict on their routine activity on mobiles/computers.

vi. The class assignments may be given in parts so that student should not feel overloaded and get time for physical activities.

vii. The examination may be conducted on offline mode observing the situation of COVID 19 pandemic.

D. Behavior related

The education is a mean for developments of child as good human being. It is found that students are not interacting with their friend, relatives and teachers during period. The following recommendation may be considers to developments of a good behavior in students.

i. A story of imminent personality may teach to students in every month.

ii. A moral period may kept in time table for students and same may implement in true spirit.

iii. Success stories of selected personality of schools passed out may be tells to boost morale of students. A guest lecture may be arranged in a month.

iv.   Group activities may be given as assignments to students.

v.   Parents may be educate during parents teachers meeting to share the behavior changes if any found in child during due to online class.

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