

**ONLINE EDUCATION DURING COVID-19: A STUDY
AMONG BACHELOR OF SCIENCE STUDENTS IN
THIRUVANANTHAPURAM**

*A Dissertation Submitted to the University of Kerala in the Partial Fulfillment
of the Requirements for the Masters of Arts Degree Examination in Sociology*

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DECLARATION

I, **AMRITHA.R** do hereby declare that the Dissertation Titled **ONLINE EDUCATION DURING COVID-19: A STUDY AMONG BACHELOR OF SCIENCE STUDENTS IN THIRUVANANTHAPURAM** is based on the original work carried out by me and submitted to the University of Kerala during the year 2021-2023 towards partial fulfillment of the requirements for the Master of Arts Degree Examination in Sociology. It has not been submitted for the award of any degree, diploma, fellowship or other similar title of recognition before any University or anywhere else.

Thiruvananthapuram

18/08/2023

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CERTIFICATION OF APPROVAL

This is to certify that this dissertation entitled **ONLINE EDUCATION DURING COVID-19: A STUDY AMONG BACHELOR OF SCIENCE STUDENTS IN THIRUVANANTHAPURAM** is a record of genuine work done by **Ms. AMRITHA. R** fourth semester Master of Sociology student of this college under my supervision and guidance and that it is hereby approved for submission.

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ABSTRACT

The COVID-19 pandemic has challenged the education field with unprecedented difficulties, forcing a swift transition from traditional classroom education to online learning systems. This dissertation looks into the perceptions, experiences, and difficulties that Bachelor of Science (BSc) students encountered when they switched to online learning during the pandemic. This study aims to shed light on the merits and drawbacks of online learning for BSc students by looking at the unique context of the pandemic and its effects on higher education. This study uses a quantitative approach to gather data. BSc students from a variety of disciplines were asked to complete a survey questionnaire about their experiences with online learning, technical difficulties, levels of engagement, and general satisfaction. The results accurately depict the pandemic's impact on online learning. While it's important to note that only fewer BSc students valued the convenience and flexibility of online learning based on the data collected, it is because most of them had to deal with difficulties like technological limitations, fewer opportunities for hands-on learning, and less interaction with teachers and other students. The degree of engagement varied depending on factors like discipline, resource availability, and individual learning preferences. As a result, this dissertation advances knowledge about how BSc students handled the switch to online learning during the COVID-19 pandemic. With the knowledge gained from this study, educational institutions, policymakers, and teachers can improve their approaches to online education, address student concerns, and create a welcoming and productive online learning environment. This study sheds light on the shifting environment of higher education and how it can adapt to future challenges as the world struggled with the pandemic's aftereffects and the emphasis on online learning techniques in educational institutions.

CHAPTER I
INTRODUCTION

INTRODUCTION

Education is regarded as one of the most effective tools for enabling people to comprehend and improve the functioning of our society. It teaches people about their responsibilities to their families, societies, and countries while also imparting knowledge, skill, technique, and information. According to the constitution of India, access to education is a fundamental right. Article 45 of India's constitution (Right of Children to Free and compulsory education) states that a child between the ages of six and fourteen has the right to free and compulsory education.

A nation's development depends on its educational system, and children who receive a better education grow up to be better citizens. Additionally, education aids in the development of crucial abilities like logic, decision-making, and mental flexibility. People experience difficulties in both their personal and professional lives. Their level of education and self-awareness determines their capacity to make logical and informed decisions in such circumstances. In general, education is essential for the growth and social well-being of society and the country.

There has always been change in the educational field. In a country like India, the educational system has been evolving for a long time. There has been an educational system in India since the tenth century. Even though modern universities as an official form of education didn't start to take off until the 20th century, India has long been known for its Vedic teaching techniques and Puranas. From the very beginning of education, when we were the pioneers and attracted students from all over the world to Takshashila and Nalanda Universities, to the height of the Gurukul era, to classroom instruction, and finally to the ever-evolving digital learning environment. Despite this, India has made great strides toward digitalizing its educational system (Rastogi, n.d.). the digitization of education in India – An analysis.

According to Kamble and Avishkar D. (2013), who thoroughly examined the role of digitization in education in the study "Digital Classroom: The Future of the Current Generation," a modern classroom is essentially an ICT-based classroom. Combining the best hardware with multimedia content that adheres to the curriculum, aims to turn conventional lessons into interactive ones. Computers are used by teachers and students in many institutions to improve communication and learning. According to the article, a digital classroom is an ICT-based classroom that helps turn traditional classrooms into interactive spaces. In their study, "Digitization of the Indian Education Process: A Hope or Hype,"

numerous changes have taken place in the education system over time, as well as in other economic sectors. The education sector has gone through many stages of development, unlike any other sector.

Education institutions use e-learning for a variety of objectives because of the internet's rapid growth and the e-learning applications it offers. Some reputable educational institutions in India have used blended learning to various degrees, combining both inperson and digital modalities of instruction. Some possible advantages of online education include increased convenience and accessibility, as well as increased efficacy in teaching and learning. Anjana Kannan Kara (2020).

CONTEXT OF ONLINE LEARNING

Online learning leverages digital technologies to facilitate educational experiences outside of traditional classroom settings. It encompasses a wide range of formats, from fully online courses to blended learning approaches that combine both online and faceto-face interactions. The integration of technology in education aims to enhance pedagogical practices, cater to diverse learning styles, and provide flexible access to knowledge.

People all over the world can now educate themselves on any topic they choose because of online learning. Online learning emerged in 1982 when Western behavioral science institute in La Jolla, California opened its management and strategic studies school. The school employed computer conferencing to deliver a distance education program to business executives according to Rowan, Roy (1983).

According to Bates (2019), effective online learning requires a careful alignment of pedagogy and technology, emphasizing the importance of choosing appropriate tools that align with educational goals. This approach is rooted in the idea that technology serves as an enabler rather than the sole driver of learning experiences. "The ability to use a computer connected to a network, which offers the possibility to learn from anywhere, anytime, in any rhythm, with any means" is what most of the terms (such as online learning, open learning, web-based learning, computer-mediated learning, blended learning, and m-learning, for example) have in common, according to Cojocarui et al. (2014). "Learning experiences in synchronous or asynchronous environments using various devices (such as mobile phones, laptops, etc.) with internet access" is how online learning is defined. Students can learn and

interact with teachers and other students anywhere (on their own) in these settings, as observed by Singh and Thurman (2019).

Despite its advantages, online learning also revealed existing inequalities in access to technology and the internet. The digital divide became more apparent as students from underserved communities faced challenges in accessing online resources. The report by Barr et al. (2020) emphasized the importance of addressing these disparities to ensure equitable educational opportunities for all.

Furthermore, the shift to online learning prompted educators to explore innovative teaching methodologies and digital tools. As noted by Johnson et al. (2020), educators experimented with virtual classrooms, interactive online platforms, and multimedia resources to enhance engagement and interactivity. This adaptation not only benefited students during the pandemic but also opened new avenues for incorporating technology into education in the long term.

Courses offered completely online are primarily delivered in either asynchronous learning or synchronous learning format. In contrast to asynchronous learning environments, which are poorly structured, synchronous learning environments have students participate in live lectures, real-time interactions between teachers and students, and the potential for instant feedback. Learning materials are available through various learning systems and forums rather than in the form of live lectures or classes in such a learning environment. In such a setting, instant feedback and prompt action are not possible (Littlefield, 2018). Numerous opportunities for social interaction can be offered by synchronous learning (McBrien et al., 2009).

Along with these synchronous and asynchronous online learning German marketing professor Andrea Kaplan has proposed a classification scheme that places online distance courses into four distinct groups:

- MOOCS (massive open online courses): unlimited in the number of participants, enabling them to learn asynchronously at their own pace.
- SMOCs (synchronous massive online courses): unlimited in the number of participants, in which students participate synchronously and in real-time.
- SPOCs (small private online courses) number of students is limited, and learning asynchronously takes place.

- SSOCs (synchronous small online courses) The number of students is limited, requiring participants to follow the lessons in real-time.

To make education available to every child in India, the Ministry of Education (MoE) released the New National Education Policy 2020, which places a strong emphasis on digital and online learning. NEP Policy 2020 aims to completely transform the Indian educational system and turn it into a "Global Knowledge Superpower" by 2030 by utilizing the power of contemporary technology in education. Additionally, it exhorts all universities and colleges to adopt technology and create flexible, comprehensive, and multidisciplinary educational programs. Realizing the value of utilizing technology for teaching and learning at all levels of education in light of the development of digital technologies.

ONLINE LEARNING DURING COVID-19

The rise of COVID-19 has caused numerous changes and harmed various sectors of society and people's daily lives. In-depth, it negatively impacted people's health, economy, and social lives, as well as the educational sector. The emergence of COVID19 has resulted in important modifications also in the educational system. The situation has made it mandatory for colleges and universities to offer online classes as a result of the imposed lockdowns. As a result, virtual classes were introduced globally in place of physical classrooms. The outcome was, the majority of classes were delivered online with the usage of computers, smartphones, laptops, and other digital devices. The school students in Kerala up to the ninth standard are also given access to recorded classes via television channels, following a specific schedule for each class. In colleges, classes were conducted online for different streams by providing live classes and digital works using online class applications such as Zoom, Google Classroom, Google Meet, etc.

The purpose of this study is to look into the responses of Bachelor of science students who attended online classes during COVID-19. It intends to discover students' network and device accessibility, their opinions about online classes, and finally the difficulties and issues they encountered while taking online courses during the pandemic. 60 Bachelor of Science students who took online classes during the pandemic were given a survey questionnaire with 55 questions to gather the data. Students from colleges of Thiruvananthapuram district which is affiliated with the University of Kerala have participated in the study.

The study's primary goal is to comprehend how Bachelor of Science students of various colleges in Thiruvananthapuram, affiliated with the University of Kerala experienced taking classes online during the pandemic. All of the colleges connected to Kerala University had to switch from holding physical classes to having online classes during the lockdown. There are many benefits to online learning, but there are also some drawbacks. For Bachelor of Science students, the dilemma arose when the practical sessions came up, it was also one of the issues they have to deal with. The present study explores to better understand the issues and practical applications of online learning during the lockdown in 2021, this study looks into the responses of students in the Bachelor of Science Stream.

Numerous studies have examined undergraduate students' perspectives and experiences in the context of online learning. But what's important to realize is that not all streams will offer the same kind of online classes; instead, it will depend on which stream they are a part of. Studies have been done on undergraduates studying nursing, engineering, medicine, etc. However, degree students are examined as a group rather than as Bachelor of Arts, Bachelor of Science, Bachelor of Commerce, etc. The Bachelor of Science students is the focus of this study. Undergraduates studying Botany, Zoology, Physics, Chemistry, Microbiology, etc. are among the students in these streams. According to the University of Kerala, these are the primary science undergraduate degrees that consisted of more online classes and practical sessions in their curricula during the lockdown. Therefore, the Bachelor of Science students are the ideal study subjects for examining the study's discussed aims.

Thiruvananthapuram was chosen as the study's research area. Which is a district in Kerala, a state in southern India. This district was chosen because it has the most degreegranting institutions affiliated with the University of Kerala. The information was gathered from bachelor of science students enrolled in Thiruvananthapuram's government and aided colleges that are affiliated with the University of Kerala.

As a result of the COVID-19 pandemic's sudden and unprecedented onset, the educational landscape has undergone a significant transformation, leading to the adoption of online learning platforms all over the world. This dissertation focuses on the perceptions and experiences of Bachelor of Science students in the midst of this turn of events, so exploring their perspectives should reveal a complex understanding of the difficulties, advantages, and overall effectiveness of online learning in these unusual circumstances. By shedding light on these elements, this study not only adds to the academic conversation about online

education but also provides insightful information that can guide policy choices, better instructional design, and future research projects in the dynamic field of contemporary education.

STATEMENT OF THE PROBLEM

In March 2020, COVID-19 had been designated as a global pandemic (WHO, 2020). It affected every aspect of life, including education. Schools and colleges were forced to close as a result. The academic institution had a difficult time adjusting to the unprecedented switch from traditional to online learning as a result of this closure. Students in India have received a completely different form of education that is provided online as a result of the COVID-19 pandemic. The majority of colleges and schools have switched to entirely online learning as a result of the pandemic that has affected schools across the nation. This transition into online learning in regular schools and colleges was a new experience for me, even though many institutions and universities offer online courses. The transition to online learning in regular schools and colleges was something new for both teachers and students because many institutions and universities offer online courses.

Direct classroom instruction was challenging due to the rapid rise in cases; however, even if the government permitted the opening of schools, studies show that online education is essential in the twenty-first century. To put it simply, online learning is education delivered electronically. Today, education has undergone a significant transformation, and on a digital platform, teaching is now possible anytime, anywhere. The development and adaptation of educational technology had already accelerated before COVID-19.

The goal of the current study is to comprehend how Bachelor of Science students experience online education. Because they must deal with practical exercises, students in the Bachelor of Science stream find the online learning method particularly difficult. Additionally, it evaluates how effectively their network was available. The current study investigates whether there is a connection between network reliability and the location of the student where he or she pursuing online classes. The researcher wants to know specifically whether students who take online classes suffer any financial losses. This study also focuses on the difficulties and issues that bachelor's students encountered when taking online classes throughout the pandemic. Through this study, the researcher hopes to learn more about Bachelor of Science students and determine whether or not the method of online learning creates a digital divide in terms of students' ability to access online education.

SIGNIFICANCE OF THE STUDY

Within the last few years, the idea of traditional education had undergone a significant change. With the development of the internet and new technologies, being physically present in a classroom isn't the only way to learn any longer. As long as you have access to the Internet, you can attend online classes wherever you are and whenever you want. A new era has begun with the revolution in online learning. The rise of COVID-19 also contributed to and accelerated the implementation and execution of online learning methods in schools and also in the higher education system.

This study of online learning can be used to find out what Bachelor of science students think about online learning and how they react to it. Additionally, this will assist students in evaluating online learning effectively and expressing how they feel about it. As a result, the researcher also hopes that the study's findings will help others implement online education programs for bachelor of science students by lowering the probabilities of challenges through innovative online learning strategies. The country is motivated to concentrate on more online learning methods, and it should be widely adopted in higher education systems, according to the new education policy for 2020.

By examining how bachelor of science students can access distance learning classes and if any factors may be contributing to a digital divide among students. Additionally, this study aims to pinpoint those points in which they had the most difficulty, such as practical sessions, exam anxiety, etc. Numerous studies have examined how undergraduate students, such as engineering and nursing students perceive online learning, how teachers feel about it, and how effective it is. By distinguishing this study from others that are focused on undergraduate students as a whole, the researcher here specifically focuses on bachelor of Science students. As a result, this study will assist the students in making more well-informed assessments about online learning.

CHAPTER II
REVIEW OF LITERATURE

REVIEW OF LITERATURE

The main aim of this chapter is to review prior studies on online learning among college students during COVID-19. This chapter will review the most recent studies on online learning involving college students.

“Most of the terms (online learning, open learning, web-based learning, computer mediated learning, blended learning, m-learning, for ex.) have in common the ability to use a computer connected to a network, that offers the possibility to learn from anywhere, anytime, in any rhythm, with any means” (Cojocariu et al., 2014, p.116).

Khan (2005) defines online learning as “An innovative approach for delivering a well-designed, learner-centered, interactive, and facilitated learning environment to anyone, anyplace, anytime by utilizing the attributes and resources of various digital technologies along with other forms of learning materials suited for open, flexible, and distributed learning environments” (p. 3).

Online Education Practice and Evolution

Information technology's pervasiveness has impacted nearly every area of our lives, including how we work, engage with people, process data into information, analyze and exchange information, entertain ourselves, and enjoy travel. E-mails, e-commerce, e-government, and now e-education have all been part of e-evolution or e-revolution (Palvia,2013). According to Palvia et al. (2018), online education in its different forms has been gradually developing worldwide due to the convergence of new technologies, global Internet penetration, and increasing demand for a workforce trained regularly for the ever-changing digital economy. Online education is on track to become widely available by 2025. This research was primarily concerned with national concerns that influence the amount and quality of online education.

According to Allen, & Seaman, (2018), online enrollments in the United States have climbed for the 14th consecutive year, regardless of whether the economy is expanding or contracting, and whether overall college enrollments are increasing or decreasing. At the same time, the number of students taking face-to-face classes on a traditional campus has been declining We may conclude from this perspective that the tendency of students to accept online education is increasing in particular study fields.

The Internet and traditional classroom teaching methods are not mutually incompatible; rather, they should be viewed as an additional dimension in education that can aid the lecturer's role while also helping the students. More crucially, in online delivery, the level of contact between students and lecturers appears to be prevalent. This necessitates a transition in the academic role from intellect-on-stage to learning catalyst. It is thus critical to be able to accelerate kids so that they can uncover their learning. The Internet aids in this process by meeting lecturers' information needs (Thierry Volery & Deborah Lord, 2000).

Rise of COVID-19 And The Shift to Online Learning

The COVID-19 epidemic has surely had an impact on every part of the globe. Scholars and researchers from all over the world attempted to investigate the pandemic's impact on educational institutions. So the pandemic became a topic to examine various changes that occurred in the world and their impact on every normal activity that was going on in people's lives without any hindrance. The COVID-19 pandemic induced a state of lockdown and social distancing in every country on the planet. So many control measures have been implemented around the world, and they have had a wide-ranging impact on the social system.

The global outbreak of the COVID-19 pandemic has affected nearly all countries and territories. The epidemic was initially discovered in Wuhan, China, in December 2019. Countries throughout the world warned the public to be cautious. Handwashing, using face masks, physical distance, and avoiding mass gatherings and assemblies have been among the public care tactics. Lockdown and stay-at-home techniques have been implemented as the necessary measure to flatten the curve and control disease spread. (Sintema,2020). In light of the following study about the effect of the COVID-19 pandemic, it is very clear to identify the different control measures brought by each country and how they affected the social system mainly including the institution of education.

According to Dhawan (2020), the unexpected outbreak of Covid-19, a devastating disease caused by the Corona Virus (SARS-CoV-2) startled the entire world. It was labeled a pandemic by the World Health Organization. This event posed a challenge to the global education system, forcing instructors to convert to an online form of instruction overnight. Many academic institutions that were previously hesitant to abandon their traditional pedagogical method were forced to transition totally to online teaching-learning. The study

discusses the significance of online learning as well as the SWOC (Strengths, Weaknesses, Opportunities, and Challenges) study of e-learning modes in periods of crisis. This article also provides information on the emergence of EdTech startups during pandemics and natural catastrophes, as well as guidelines for academic institutions on how to address issues involved with online learning.

The sudden Plague of a lethal sickness known as COVID-19 caused by (SARS-Cov-2) shook the entire world. The WHO declared it a disease outbreak. This situation tested the entire global education system and immediately prompted instructors to switch to an online method. Many educational organizations that were previously unwilling to shift their old didactic practice were forced to switch entirely to online teaching learning. Mathivanan S.K, Jayagopal P, Ahmed S. et al. (2021). In this article, the scholars attempt to provide an in-depth discussion of the education sector's role during a disease outbreak in India. It provides a detailed overview of how India is using e-learning in this critical situation. It also shows how to deal with the difficulties associated with eLearning.

Covid-19 has been declared a pandemic by the World Health Organization, posing a contemporary threat to humanity. This epidemic has successfully forced the global shutdown of numerous activities, including educational activities, resulting in massive crisis reaction relocation of universities using online learning as the educational platform. (2020, Olasile Babatunde Adedoyin and Emrah Soykan) This study investigates university crisis-response migration approaches and faculty and student problems and opportunities. Based on the present study's findings, online learning is distinct from emergency remote teaching. And it also put forward the idea that even after the sudden migration of instructional delivery to online platforms by universities and other forms of learning during this pandemic, it is clear that online learning will be sustained and education will become more hybrid if the challenges faced by faculty and students are well explored and transformed into opportunities.

As part of all the hustles due to COVID-19, India was forced to implement numerous control measures, resulting in the country's lockdown. As a result, all educational institutions were forced to close. It also resulted in the discontinuation of physical or online learning in institutions. And education gradually moved online, with no direct contact with the teacher. In addition, the government provides online classes for children up to the 12th grade through recorded classes that are broadcast on television. It also included live online classes. And

the majority of students across the country began to attend classes online. The situation was different for students from many rural and remote areas. These include tribal and other people living in underdeveloped areas of the country. The reasons for these situations included a lack of technical devices, a lack of network connectivity, a lack of television, and so on.

With the outbreak of COVID-19, education learners, practitioners, and other stakeholders have been put at a disadvantage, as it has resulted in the suspension of physical classes and physical interaction between learners. Electronic learning (E-Learning), online learning, and the use of Information and Communications Technology (ICT) tools proved useful in these circumstances. It aided students in the dissemination of ideas, the delivery of online classes, the creation of online discussion forums, and the administration of online exams. The Indian government, like the governments of each country, was caught off guard, but the existing E-learning infrastructure was able to leverage while devising plans to tailor them to new situations and launch new ones (Madanjit Singh. et al. 2021).

In this study, the scholars evaluated each of the federal and state government initiatives and provided a detailed analysis of the majority of the relevant initiatives. A survey is also carried out to ascertain learners' concerns about online learning. Despite the issues raised in this learning, the outcomes are favorable to online learning. The research is divided into two phases, the first of which provides detailed information about the Indian government's (both central and state) initiatives. Furthermore, while researching these initiatives, it was discovered that the Indian government has launched several new platforms, as well as improved Open Education Resources, to make online learning accessible to all learners. A questionnaire-based survey was conducted in the second phase of the paper. Furthermore, while researching these initiatives, it was discovered that the Indian government has launched several new platforms, as well as improved Open Education Resources, to make online learning accessible to all learners. A questionnaire-based survey was conducted in the second phase of the paper to confirm the success of the online learning system. Though the results indicated that online learning is the future of education, it still faces some challenges. Furthermore, the study provides insights into the learners' perspectives on government initiatives and online learning.

E-learning is associated with several arguments. Some of the arguments for online pedagogy include accessibility, affordability, flexibility, learning pedagogy, life-long learning, and

policy. According to reports, online learning is easily accessible and can even reach rural and remote areas. It is regarded as a more affordable mode of education due to lower costs for transportation, lodging, and the overall cost of institution-based learning. Another intriguing aspect of online learning is flexibility; learners can schedule or plan their time to complete online courses. Blended learning and flipped classrooms are created by combining face-to-face lectures with technology; this type of learning environment can increase students' learning potential. Students can learn whenever and wherever they want. Students can learn at any time and from any location, developing new skills and paving the way for life-long learning. The government also recognizes the growing importance of online learning in today's fast paced world. (Dhawan, S. 2020).

Impact of Online Education Among Students

Higher education institutions should adapt relevant advances in science, technology, and education to update their educational policies or teaching methods to fulfill the learning needs of new-generation students. Particularly, they should renew education delivery which has been significantly transformed by the ongoing advances in online technology Aldholay. H Adnan. et al. (2018).

Online courses and programs are becoming more popular in higher education settings. Students are increasingly requesting online access, and universities and colleges are attempting to accommodate these expectations (Liyan Song, 2004). The purpose of this study was to get insight into learners' perceptions of online learning. The researchers assessed 76 students to identify helpful elements and observed difficulties in their online learning experiences. As per the study's findings, most learners believed that course design, learner motivation, time management, and comfort with online technology all influence the effectiveness of an online learning experience. Respondents showed technical difficulties, a supposed loss of community, time constraints, and trouble comprehending the aims of online courses as challenges.

Changes in both the levels of funding and the profiles of students have led to an increasing emphasis on the use of flexible methods of course delivery in higher education and as part of that trend, there is increasing interest in the use of communication and information technologies (CIT). The availability of flexible learning resources has in turn led to the increased use of flexible delivery methods based on CIT for on-campus students (David D. Curtis and Michael J. Lawson, 2001).

According to the study, collaborative learning literature has identified a variety of behaviors that characterize successful collaborative learning in face-to-face situations. The messages posted by students as they interacted in online work groups were searched for evidence of these behaviors. And the scholars analyzed the student's contributions, which revealed that there is significant evidence of collaboration, but that there are differences between traditional face-to-face instances of collaborative learning and what occurs in an asynchronous, networked environment. The study also attempted to ascertain students' perceptions of the implemented collaborative learning process. They were asked to comment on the amount of work involved in the collaboration, identify perceived benefits and drawbacks, and indicate whether the experience was valuable to them. And the researchers concluded that there is evidence that successful collaboration in online learning environments, as described in face-to-face situations, is possible. The medium does influence the types of interactions that can occur, and student familiarity with the medium as well as the ease of use of the interface are important factors. Students will likely benefit from software training and better preparation for the challenges of collaborative learning, particularly negotiation and other group skills.

According to T.I. Krasnova and I.S. Vanushin (2016), blended learning, with its learnercentered approach, has the potential to increase the quality of teaching and learning. Russian universities are adopting this technology to engage and excite students, hence improving the learning process. This study looks at students' involvement and happiness with online courses, as well as their general perception as learners. The findings have the potential to be used to promote online courses and produce major educational improvements.

Hassan et al. (2021) studied university students' academic self-perceptions and course satisfaction, as well as the factors that influence them in virtual classrooms. The study's findings emphasize the significance of balancing workload and providing enough technological support throughout online higher education courses to avoid bad academic self-perceptions related to lower course satisfaction. Students' academic selfperceptions and course satisfaction throughout virtual studies are critical variables in maintaining students' motivation to learn and academic advancement.

As per McInnerney, J. M., and Roberts, T. S. (2004), it is widely expected that students who study online will feel lonely. This sense of isolation, however, can be mitigated if the learners in question arrange ahead of time for the construction of the online setting. This study

focuses on the sense of isolation that online study can cause among students, a feature that many educators ignore but that can imply the difference between a good and a bad online learning environment for many students. The study goes on to argue that by building an online sense of self, participants in an online course can lessen feelings of loneliness and build an online community that enhances the learning process. Based on the findings of these studies, we can safely say that online education can cause students to experience negative elements of their mental health. As a result, it is an important subject that should be properly explored while studying the various faces of online education in the present era.

The COVID-19 pandemic has put people not just at risk of physical illness, but also of emotional discomfort. This pandemic sickness has had an impact on nearly every sector of the economy, including the Indian education sector, which comprises schools, colleges, and institutes. Because everything is virtual and there is no actual movement. Most mental health disorders, such as depression, anxiety, and stress, appear quickly Mridul et al. (2021). The researchers conducted a cross-sectional examination of students enrolled in bachelor's programs at universities who took online classes during the epidemic. They investigated 159 students and discovered that the majority of them suffered from moderate depression, anxiety, and stress as an outcome of their online classes. According to the findings of this study, we can gain insight into the impact of online education on students and how it presents itself in less beneficial ways. In today's world, these types of studies present deeper insight into how technology is generally accepted and incorporated into education, and how it affects students in the form of stress, anxiety, sadness, and so on.

Because of the COVID-19 pandemic, universities around the world were forced to close their campuses indefinitely and relocate their educational activities to online platforms. Universities were unprepared for such a change, and their online teaching-learning learning process developed gradually.

A study conducted by Pinaki Chakraborty et al. (2020) collected data from 358 undergraduate students in an Indian university about opinions on different aspects of online education during the ongoing pandemic. During their investigation, the scholars discovered that students believed they could learn better in physical classrooms. Even though they responded that professors' online teaching skills had improved since the beginning of the pandemic and that it was beneficial. The software and online study materials used to support online education were well received by the students. However, students reported that online

education is stressful and has an impact on their health and social lives. This pandemic has also resulted in the widespread use of online education, and they believe the lessons they are learning are going to be useful in the future. This study reflects both the good and bad aspects of online education regarding undergraduate students' responses.

The study enhances the depth of online education and how it brings out changes in the teaching-learning process in universities and other educational institutions such as schools and many other sectors which provide online education courses.

The growth and development of online learning by colleges, universities, private companies, and groups have gone hand in hand with the growth and popularity of the Internet and the World Wide Web among students and faculty at institutions of higher education across the nation. It's important to identify methods that promote student involvement in online courses and programs as higher education institutions introduce or increase their online course offerings. A study conducted by Steven F. Tello (2007) investigated the connection between instructional interaction and adult learners' persistence in online courses. A survey research methodology was used to look into the frequency and type of instructional interaction in online courses, student attitudes toward instructional interaction, and the reasons given by online students to continue or drop out of courses.

The study suggests that strategies to promote student persistence in online courses should center on developing faculty, technology, programs, and online teaching methods. Thus, we can conclude that student persistence in online classes is not the only factor that contributes to their success. It will depend on a variety of additional factors, and these can be enhanced by improving the program's development as well as the technology and faculty nature contexts. This research also tries to portray students' behaviors and types of responses toward instructional interaction.

Many studies are also conducted based on the expansion of online learning techniques. In the context of higher education, online education course has attracted so many students to it. The advancement of information technology in the twenty-first century has profoundly changed our educational system. Conducting a quantitative study on student perceptions of online and face-to-face learning, Meera Mather and Sarkans Alena (2018) conducted a survey of 313 community college students in Ontario. This study investigated students' perceptions of their learning experiences with one course delivered online and in person. The findings revealed that students' perceptions of their performance, challenges,

satisfaction, and achievement varied depending on the mode of delivery. Furthermore, this study identified the advantages and disadvantages of online and face-to-face learning.

As online learning continues to grow in community colleges, the findings of this study can help institutions and college personnel reflect on and implement changes to their current practices. This study discovered a difference in students' attitudes. This study discovered a difference between online and face-to-face students' perceptions of their performance, challenges, satisfaction, and achievement. Students who take online courses cite flexibility, accessibility, the ease of balancing personal, professional, and academic life, and the desire to try a new way of learning as key factors in their decision. Furthermore, as community colleges expand their online offerings, higher education institutions must continue to provide professional development opportunities for faculty to advance their knowledge of online learning. Such opportunities should include increasing faculty capacity to manage a virtual classroom effectively to provide a holistic student learning experience.

The current study examines community college students' perceptions of online education and concludes that there are numerous benefits to online learning, such as access and availability, adaptability, behavioral and skilled influences, and so on. Through this research, the scholars offer some advice that as community colleges expand their online offerings, higher education institutions should also take some initiatives to improve career opportunities and student knowledge of online learning.

According to Mehmet Durnali (2020), an increasing number of people around the world are pursuing a university education. To meet this demand, universities offer full or partial-distance undergraduate and postgraduate degrees. With advancements in Internet and computer technologies, as well as online learning and teaching software, distance education has become more common (e.g., Learning Management Systems). The spread of COVID-19, which appeared in early 2020, has also contributed to the increased popularity of distance education. As a result, it is both timely and critical to investigate and report on university students' self-leadership behaviors, self-directed learning skills, and online learning attitudes in such learning environments. The study used a rational survey to investigate self-leadership behaviors, self-directed learning skills, and online learning attitudes among university students.

The study's findings provided evidence and confirmed the model for the study. According to the structural models, self-directed learning plays a critical role in the relationship between

self-leadership and online learning among university students. Accessing educational and instructional knowledge and data is becoming easier and less expensive for learners of all socio-cultural levels every day, thanks to the advancement of educational technologies and new educational entrepreneurship models. Because of this, more and more people are interested in online learning and teaching. In this study, we demonstrate that for university students to reap the full benefits of a self-learning and self-directed learning style, they must have strong selflearning and self-directed learning skills. The findings of the study showed that not only does online education improve self-learning and self-directed learning skills, but it also has a positive impact on them. In the case of university students, they are the world's emerging professionals. Therefore, it is essential that they not only improve their selflearning abilities but that they also learn how to take charge in any situation they may come across. Based on these findings, we can see the impact of online education and how it contributes to the formation of future generations. According to these findings, we can see how online education has an impact on the formation of future generations by providing experience and self-learning skills.

During the COVID-19 pandemic, social education has shifted from face-to-face to online to avoid large gatherings and crowds for blocking the transmission of the virus.

To analyze the impact of viruses on user experience and deeply retrieve users' requirements Tinggui Chen and others 2020 conducted a study and construct a reasonable evaluation index system by obtaining user reviews about seven major online education platforms before and after the outbreak of COVID-19.

This paper also adopts the comprehensive evaluation method to analyze user experience before and after the outbreak of COVID-19 and finally finds out the change in users' concerns regarding the online education platform. This paper investigates the supporting abilities and response levels of online education platforms during COVID19 and proposes corresponding measures to improve how these platforms function in terms of access speed, reliability, timely transmission technology of video information, course management, communication and interaction, and learning and technical support. The study discovered that during COVID-19, the platforms' users have different concerns and requirements, and there are some common issues between each platform, such as kart and flashback. The results show that before the outbreak of the pandemic, users were concerned about the platform's access speed, reliability, and timeliness of video information transmission, and the Zoom Cloud platform provided the best user experience. Following the pandemic's outbreak, users

primarily focused on the platform's course management, communication, interaction, learning, and technical support services, with the platform's user experience being the most important. In this study, it is visible that there are so many factors that online education is concerned with. As noted earlier, access to online learning will depend on the devices used for it, availability of the network, network speed, time interval, etc. It also varies from student to student. The present study also focuses on which online learning platform is most commonly and widely used among students also.

In a study, students were found to be not sufficiently prepared for balancing their work, family, and social lives with their study life in an online learning environment. Students were also found to be poorly prepared for several e-learning competencies and academic-type competencies. Also, there is a low-level preparedness among the students concerning the usage of Learning Management Systems (Parkes et al., 2014). Online learning generally has a lot of opportunities available but this time of crisis will allow online learning to boom as most academic institutions have switched to this model. Online Learning, Remote Working, and e-collaborations exploded during the outbreak of Corona Virus crisis (Favale et al., 2020).

There is a lack of standards for quality, quality control, development of e-resources, and e-content delivery. This problem must be tackled immediately so everyone can enjoy the benefits of quality education via e-learning (Cojocariu et al., 2014). One should not merely focus on the pros attached to the adoption of online learning during the crises but should also take into account developing and enhancing the quality of virtual courses delivered in such emergencies (Affouneh et al., 2020).

The primary goal of this review is to represent the most relevant studies concerning online education. After reviewing all of these studies, it became clear that there is widespread use of online education and extensive implementation across all sectors of the education system. Several studies also show the outcomes of students who take online classes. These findings demonstrate the positive and negative effects of online education on the academic careers of students from various courses, as well as studies on student perception. How online education was received by bachelor of science students should be identified concerning college students. As a result, the majority of the literature became relevant to this study.

The majority of current research focuses on students in various streams as a whole. The studies primarily focus on the effects of online learning during the COVID pandemic, how

students perceive online learning, their own experiences and perceptions of it, etc. In the context of online learning, studies have been conducted on undergraduates studying nursing, engineering, medicine, etc. Instead of classifying degree students as Bachelor of Arts, Bachelor of Science, Bachelor of Commerce, etc., degree students are looked at as a whole. Therefore, it needs to be specifically investigated in online education among various undergraduate students. After conducting this literature review, I identified this gap. And this study's particular focus will be on how effective online education was. This gap was identified as a result of my literature review. Additionally, this study will give particular focus to how Bachelor of Science students were doing in their online classes.

CHAPTER III
METHODOLOGY

METHODOLOGY

INTRODUCTION

The systematic approach to solving a research problem through the collection of data using various techniques, the presentation of an interpretation of the data collected, and the drawing of inferences from the research data are known as the methodology in research. This chapter describes data collection and analysis methodologies that were used and are significant to the study. The methodology part includes, the area of the study and research strategy, types of data, techniques for collecting data, and management are all covered.

TITLE OF THE STUDY

ONLINE EDUCATION DURING COVID-19: A STUDY AMONG BACHELOR OF SCIENCE STUDENTS IN THIRUVANANTHAPURAM

RESEARCH APPROACH

In the field of research, there are primarily two types of research approaches: a qualitative approach uses non-numerical data or data that have not been quantified, and a quantitative approach uses numerical data or data that have been quantified. In this instance, the researcher uses a quantitative research approach. Quantitative methods are frequently used by researchers to examine phenomena that have an impact on people. Rather accurate data from quantitative research can be fully explained with statistics and graphs. It can perform our duties in a precise and scientific manner, enabling others to repeat the findings.

RESEARCH DESIGN

To conduct the study, a cross-sectional descriptive study design was selected. An observational study design known as a cross-sectional study measures both the exposures and the outcome in study participants at the same time. To gather the data from the students, Google Forms was used. The consent form and structured questionnaire are both included in Google Form.

THEORETICAL FRAMEWORK

The conflict perspective highlights the ways in which education may legitimize social injustices. The situation of online learning can be compared to a conflict perspective where the only person who loses out is someone with a lower status. The more advanced students have access to every piece of technology needed for online education. However, students from lower social classes are more likely to grow up in an unfavorable environment with

poor amenities and inadequate family support. The conflict perspective contends that as a result, the education system increases subservience among those from lower social classes while giving power to those from higher social classes.

Social stratification, the division of society's citizens into different strata or hierarchies based on their socioeconomic circumstances-plays a significant role in the digital divide because it places people in hierarchical order, cultivates feelings of superiority and inferiority, and upholds "social inequality" in the process. The digital divide is a result of technological stratification. For students from privileged or higher-class backgrounds, online learning is hassle-free, but it is very difficult for those from less privileged backgrounds, creating social inequalities.

The social stratification theory put forth by Weber can be used to explain the digital divide. According to Max Weber (1947), social stratification has three dimensions: class, status, and power. A person's economic standing in society determines his class; his social standing determines his status; and his capacity to overcome obstacles to obtain his goals determines his power. Weber can help with studies of the digital divide in two ways. First, he argues that various economic factors have an impact on class relations. Advantages over those without control accrue to those who have access and control over things. Second, according to Weber (Weber 1947), social stratification can also take the form of status and party. In order to understand how class, status, and power contribute to creating the digital divide, policy-making should take into account the economic structure as well as the social conditions of stratified relations. Investigating the role of status in postmodern society in relation to social and technological inequality, class and political affiliation, and how prestige affects inclusion and exclusion in the digital world would be worthwhile in this context. (Ragnedda, Muschert2022).

GENERAL OBJECTIVE

To understand the responses of Bachelor of Science students about online learning and the challenges and problems they faced while attending online classes during the COVID-19 pandemic.

SPECIFIC OBJECTIVES

1. To investigate the students, access to online learning.

2. To investigate the response of students toward online learning and the challenges and problems they faced.
3. To find out which method of learning whether online or offline learning is more preferred by Bachelor of Science students.

AREA OF THE STUDY

The Thiruvananthapuram district of Kerala state is selected as the area of the study. The rationale behind this decision is that, Kerala University is situated in the district of Thiruvananthapuram. Thiruvananthapuram is the location where majority of Bachelor of Science colleges that are affiliated with Kerala University is located. As a result, this district is a residence of the relevant colleges with Bachelor of Science students.

Therefore, it is possible to obtain all the required and relevant information from this district.

POPULATION OF THE STUDY

The term “population of the study” refers to all instances of people, things, or elements meeting particular criteria, that is, all the factors taken into account in any area of research. The study’s sample size was 60 respondents, which includes Bachelor’ of Science stream students from Thiruvananthapuram districts’ government and aided colleges. Students who took online classes during the COVID-19 pandemic lockdown (during the academic year of 2020-2021) are the focus of this research. Because there were a huge number of students in the study’s population, it was impossible to recruit every single one of them, so sampling become necessary. Sampling/sample refers to a portion of the study population, and sample design refers to a specific strategy for selecting a sample from a particular population.

UNIT OF THE STUDY

A Bachelor of Science stream student is the unit of the study.

SAMPLE SIZE

A total of 60 respondents formed the sample of the study.

SAMPLING TECHNIQUE

Here the researcher uses a purposive sampling method. Using a purposive sampling technique (Kothari, 2009), the researcher approached a large heterogeneous group of

Bachelor of Science students who attended online classes during the academic year of 2020-2021, from different colleges in Thiruvananthapuram.

TOOLS FOR DATA COLLECTION

For data collection, a Google Forms-based Structured online questionnaire is made available.

SOURCES OF DATA

A Bachelor of Science stream student in Thiruvananthapuram from the academic year 2020–2021 provided primary data, and secondary data was gathered from related articles and journals.

VARIABLES

Dependent variable: Perceptions of Students on online learning

Preference for online learning

Challenges of online learning

Independent Variable: Online learning

PRETEST

Prior to distributing the data collection tool to the respondents, a pre-test is done among five Bachelor of Science students from various colleges of Thiruvananthapuram, who attended online classes in the academic year 2020–2021.

DATA ANALYSIS

The data analysis is carried out quantitatively. A descriptive statistical analysis describing the features and sample attributes was also done.

DEFINITION OF CONCEPTS

THEORETICAL DEFINITION

- Lockdown- a state of isolation or restricted access imposed as a security measure through strict restrictions on travel and social interaction in public spaces.
- Online Education - Online education, or simply E-learning, is defined as the selfpaced or real-time delivery of training and education over the Internet to an end user device (Lee & Lee, 2006).

- Coronavirus disease (COVID-19) - is an infectious disease caused by a newly discovered SARS-CoV-2 virus, a new virulent disease rising in its transmission and fatality with each passing day in the worldwide population (WHO,2020)
- Bachelor of Science - "Bachelor of Science" (B.Sc.) is an undergraduate academic degree awarded to students who have completed a program of study typically focused on scientific, mathematical, or technical disciplines. This degree is generally associated with fields such as natural sciences, engineering, mathematics, computer science, and other related areas. (American Council on Education,2013).

OPERATIONAL DEFINITION

- Coronavirus disease (COVID-19) – The Coronavirus is a broad family of viruses that are frequently the cause of respiratory diseases, including the common cold. However, animal-based coronaviruses can evolve and infect humans, causing coronavirus disease. When it is transmitted by droplets, it becomes a sickness, people's interactions, contacts, and so on.
- Lockdown- A particular period in which people are restricted to their houses and students are no longer allowed to go to educational institutions.
- Online education - Is the delivery of learning, training, or education programs by electronic means.

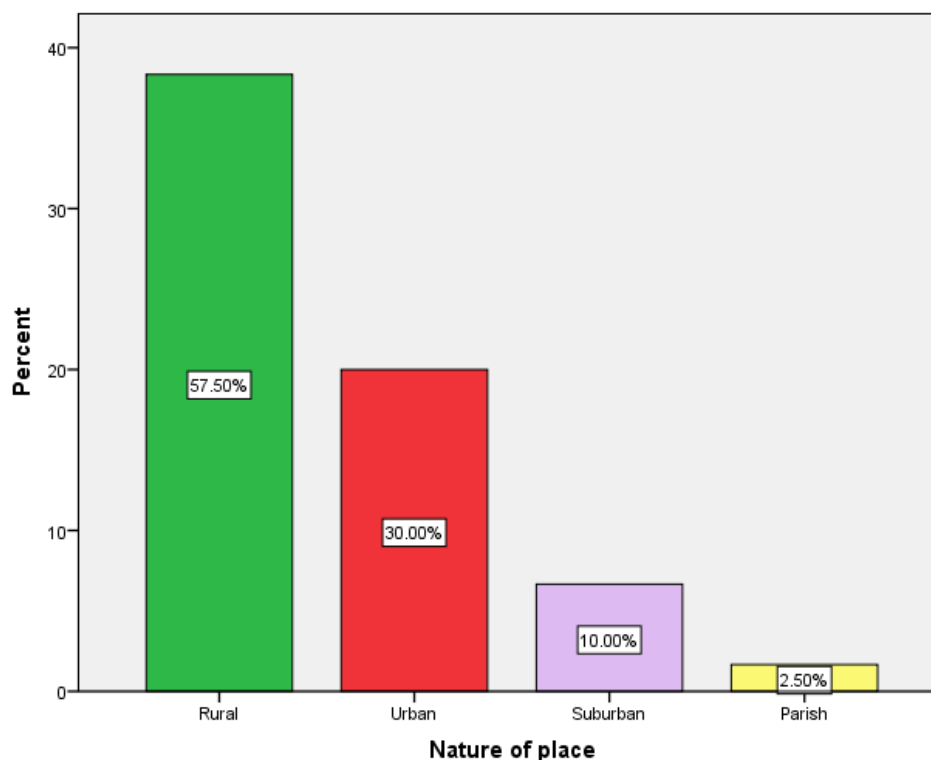
CHAPTER IV
ANALYSIS AND INTERPRETATION

ANALYSIS AND INTERPRETATION

The analysis and interpretation of the data that was gathered are the topics of this chapter. It is one of the most significant tasks involved in the research process. The research tool of a structured questionnaire was used to gather the data, and it was distributed as a Google form. Results were obtained in the form of tables, charts, and figures after all the data had been fed. Thus, using the raw data from 60 respondents, the investigator was able to produce an accurate analysis. The task of extracting interpretations from the data was completed by the investigator after it had been collected and analyzed. The analysis is completed in accordance with the specified objectives. The researcher took note of every goal and query connected to the corresponding variable. The statistical information was produced using pie charts and bar diagrams. Each graphical representation was analyzed and looked at in the context of particular goals.

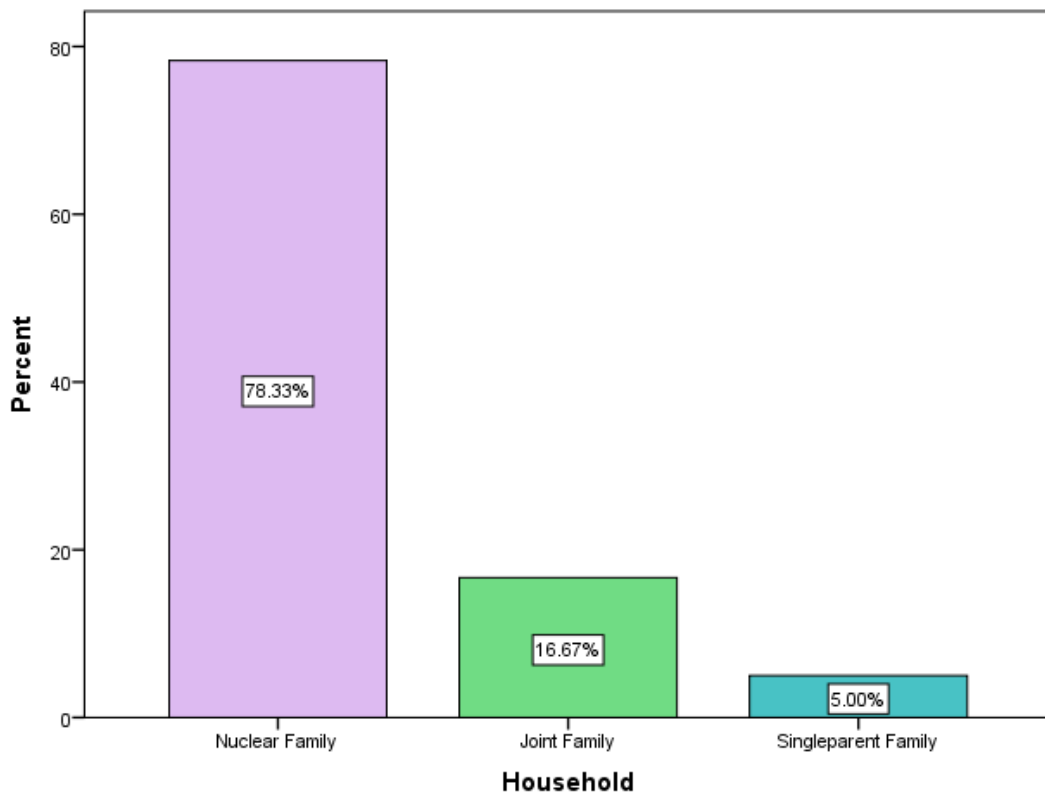
DEMOGRAPHIC DETAILS

FIGURE 4.1: NATURE OF PLACE WHERE STUDENTS ATTEND ONLINE CLASS



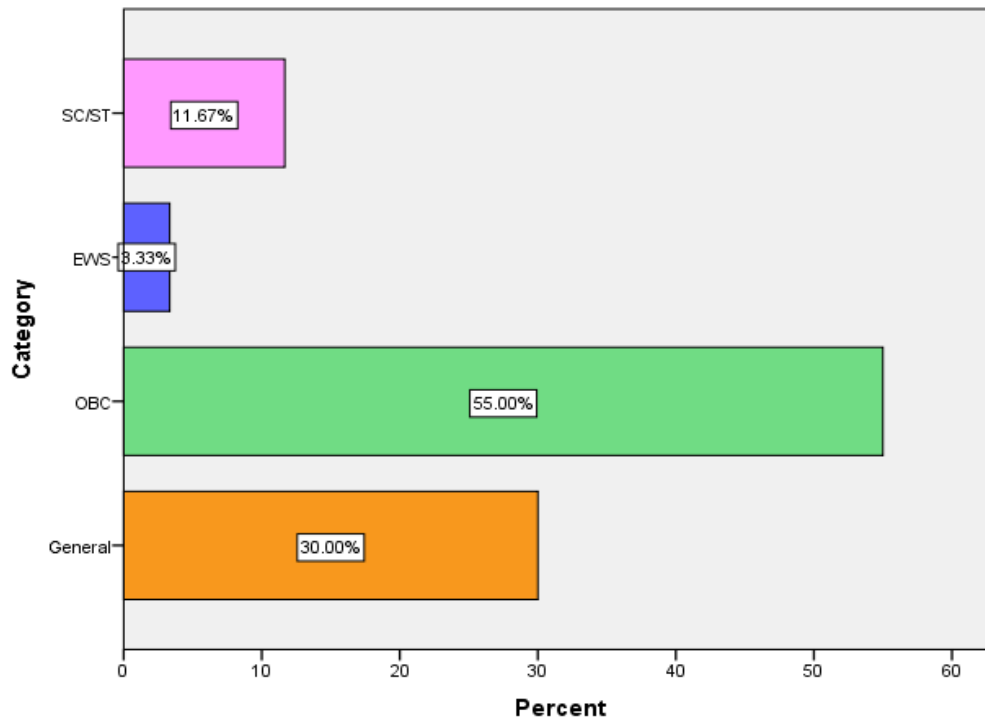
This figure shows that 57.50% of the respondents attend online classes from rural areas. 30% of them attend online classes from urban areas. And the remaining others belongs from suburban regions and parish. The pandemic has nudged students to pick up the online learning mode. Even news channels reported that as the country takes to online education, the pandemic impacted rural students more than those who live in cities. People in rural areas also have to deal with intermittent power supply and older electronic devices, which are often hindrance to seamless access. And also very lower percentage of students possess desktop or laptop in rural areas. There are also students who depend on their family members for mobile phones for attending online classes. And facing small mobile screens for hours to attend online classes would also affect students' health.

FIGURE 4.2: SIZE OF THE FAMILY OF THE RESPONDENTS



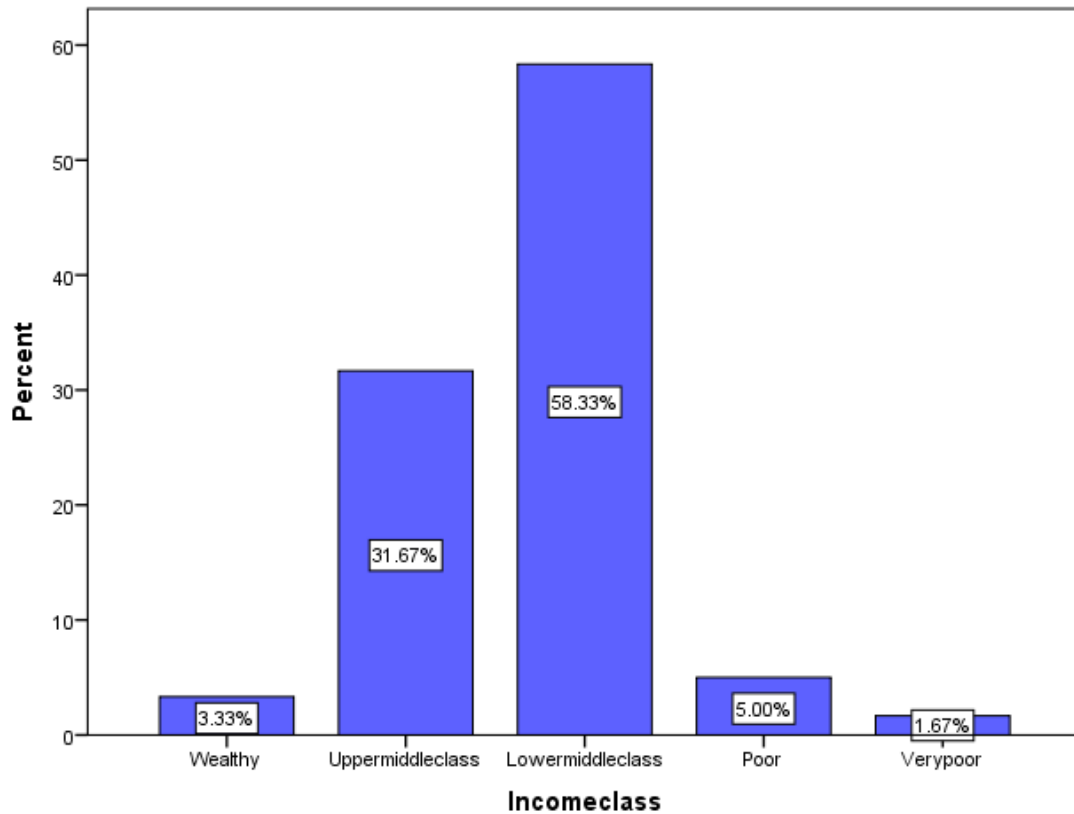
According to the family size data, 5% of respondents are from single-parent families, 16.67% are from joint families, and 78.33% are from nuclear families. This illustrates how a student's ability to learn online is impacted by the size and type of their family. If the respondents had been part of a joint or single parent family instead of nuclear family, their problems might have gotten worse. For the latter that is among single parent family there can be the rise of issues related with affording online learning, even when it comes in the increase in family members who attend online classes from the same house. Families have also had difficulty understanding how online learning affects their children's education, growth, and all areas of relationships.

FIGURE 4.3: CATEGORY OF STUDENTS



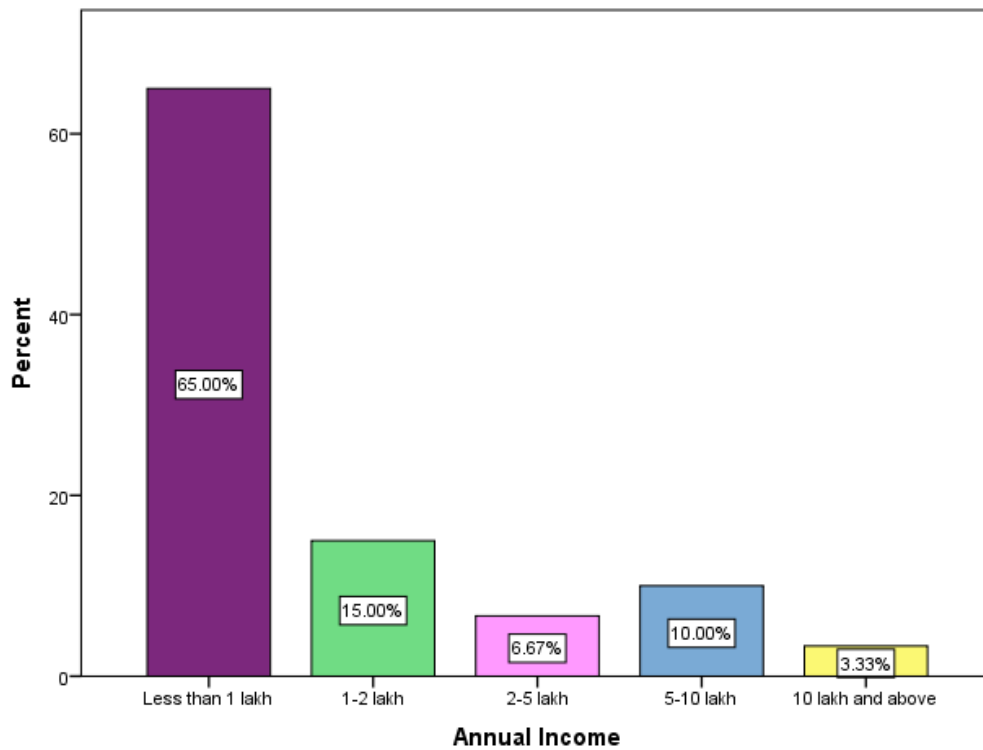
Students from the lower caste particularly from the SC/ST categories, frequently have difficulty getting access to higher education. College students had to go through a period of lockdown when the pandemic broke out. These percentage distributions also indicate that fewer SC/ST students attend higher education institutions, which suggests that fewer SC/ST students enroll in these institutions. In this graph, the percentage of students who fall into the SC/ST category is also only 11.67%. Additionally, the lack of access to technology for these kinds of online learning methods and the development of new forms of the divide, like the digital divide, contributed to already-existing social exclusions.

FIGURE 4.4: INCOME CLASS OF FAMILY



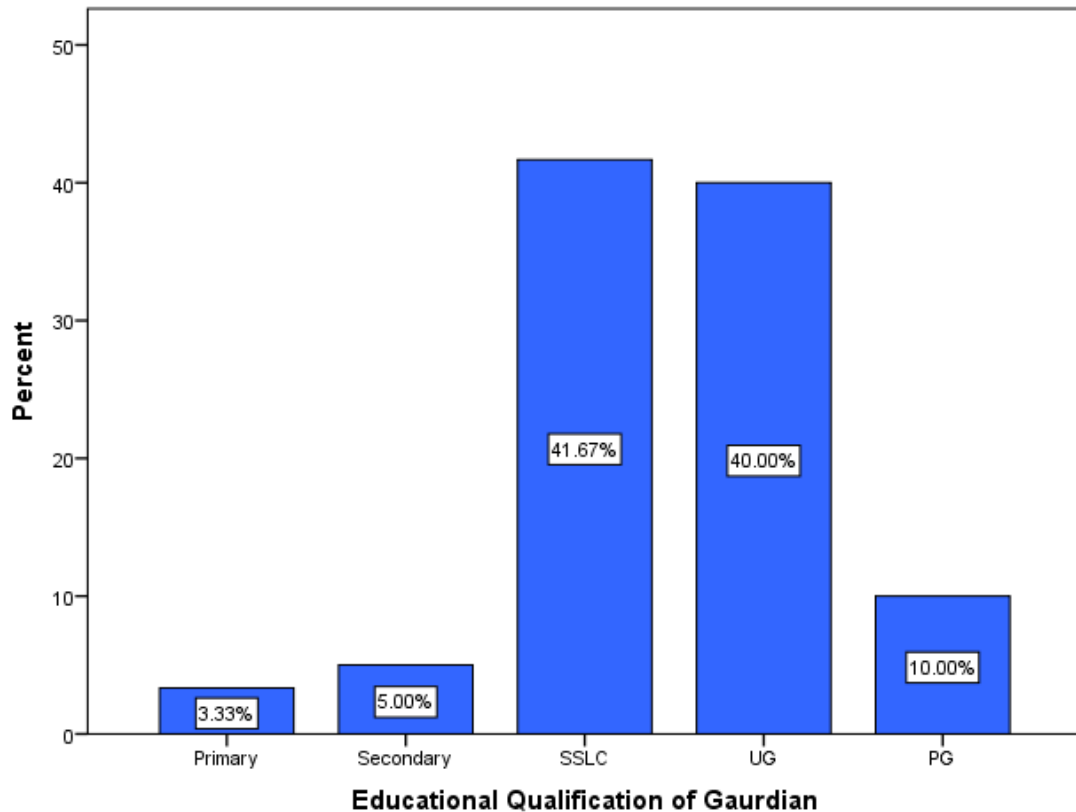
The student's family's income class is displayed in Figure 4.4. Many sectors across the world had to close their doors due to the pandemic, and many people had to deal with financial hardships as a result of the lockdown. This percent distribution based on the responses of students makes it evident that 58.33% of students are from lower middleclass backgrounds. As well as 31.67% from the upper middle class and fewer students from the wealthy, poor, and very poor classes. COVID-19 revealed that during the pandemic, low-income and lower-middle-class families dealt with a variety of thriving issues. In addition, compared to those from higher income classes, parents from the lower middle class suffered from the pandemic's effects more severely both practically and financially. Parents of students in both school and college have faced additional difficulties as a result of the COVID-19 outbreak-related closures. Students from lower income households experience a digital gap due to a lack of reliable access to the internet and digital resources, even though many schools have abruptly adopted remote learning to continue students' education in response to the outbreak.

FIGURE 4.5: ANNUAL INCOME OF THE FAMILY



As shown in Fig. 4.5, 65.0% of the students' families have an annual income of less than one lakh rupees. These individuals' access to resources for online learning, such as dependable internet connections, computers or other devices, and other educational materials, may be hindered by the likelihood that they will experience financial difficulties. As a result, it's possible that families in this income range will find it difficult to fully utilize online learning platforms. The data shows a smaller representation of families with higher annual incomes (1 lakh and above). It's important to note that quite a few of these families (10.0% and 3.3%) continue to engage in online learning.

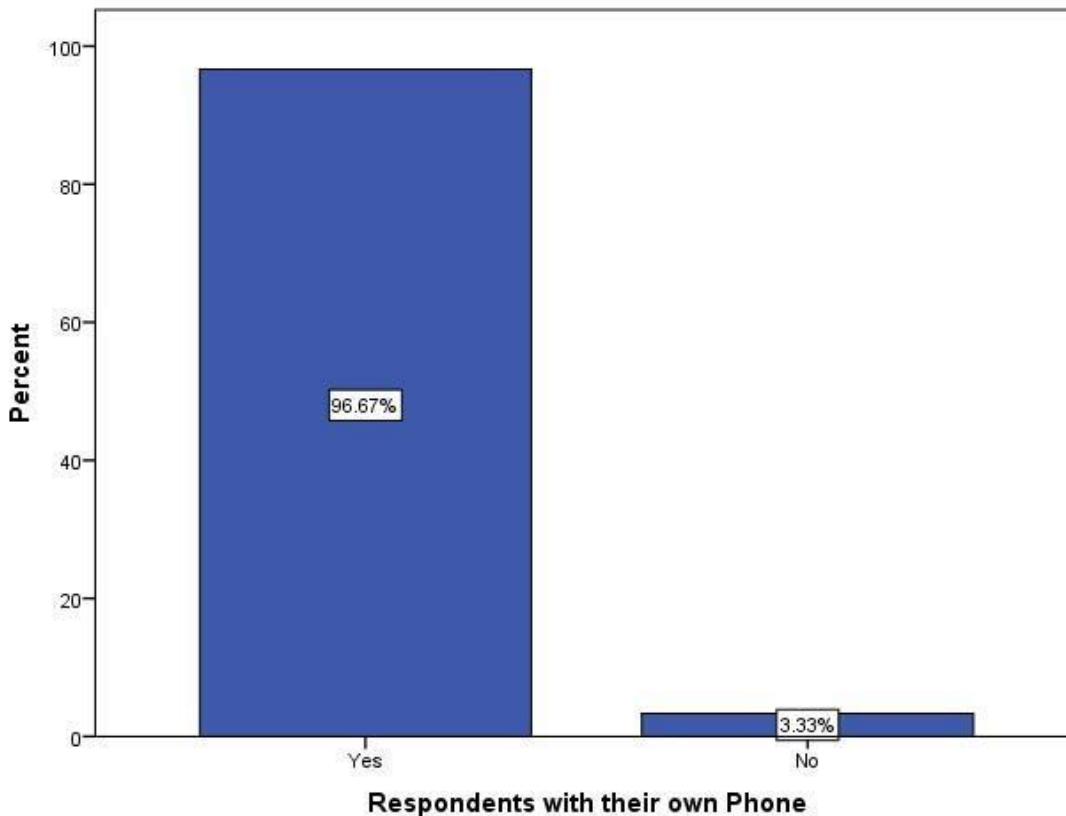
FIGURE 4.6: EDUCATIONAL QUALIFICATION OF GUARDIAN



The data suggests that the majority of parents have completed their SSLC (Secondary School Leaving Certificate) and UG (Undergraduate) qualifications, with 41.67% and 40.0% respectively. This indicates that a significant portion of parents have completed their high school education and have a bachelor's degree. Additionally, 10.0% of parents have completed postgraduate (PG) qualifications. Parents' education can have an impact on their attitudes towards education and their involvement in their children's learning. Parents with higher educational qualifications may have a better understanding of the importance of education and may be more supportive of their children's learning, including online learning. parents' education levels may also influence the academic aspirations they have for their children. Parents with higher educational qualifications may have higher expectations and encourage their children to pursue higher levels of education, which could be reflected in their children's motivation and engagement in online learning.

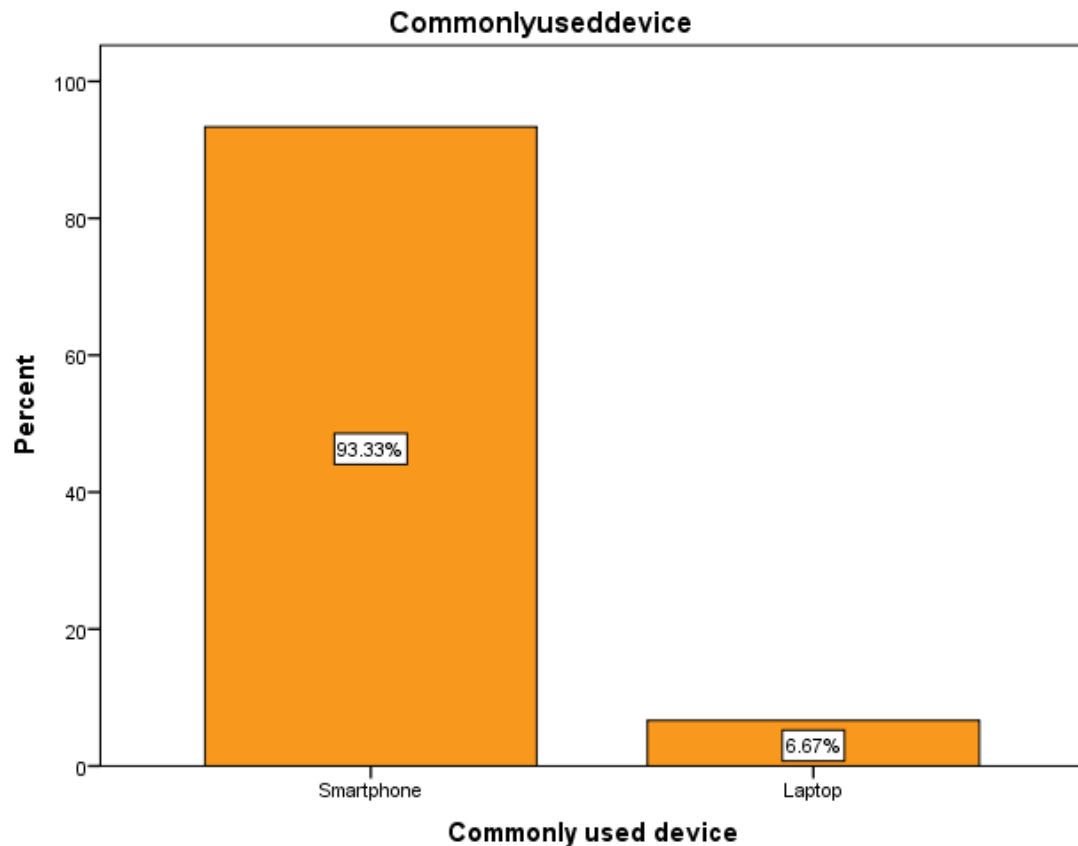
NETWORK ACCESSIBILITY AND DEVICE AVAILABILITY

FIGURE 4.7: RESPONDENTS WITH THEIR OWN DEVICE



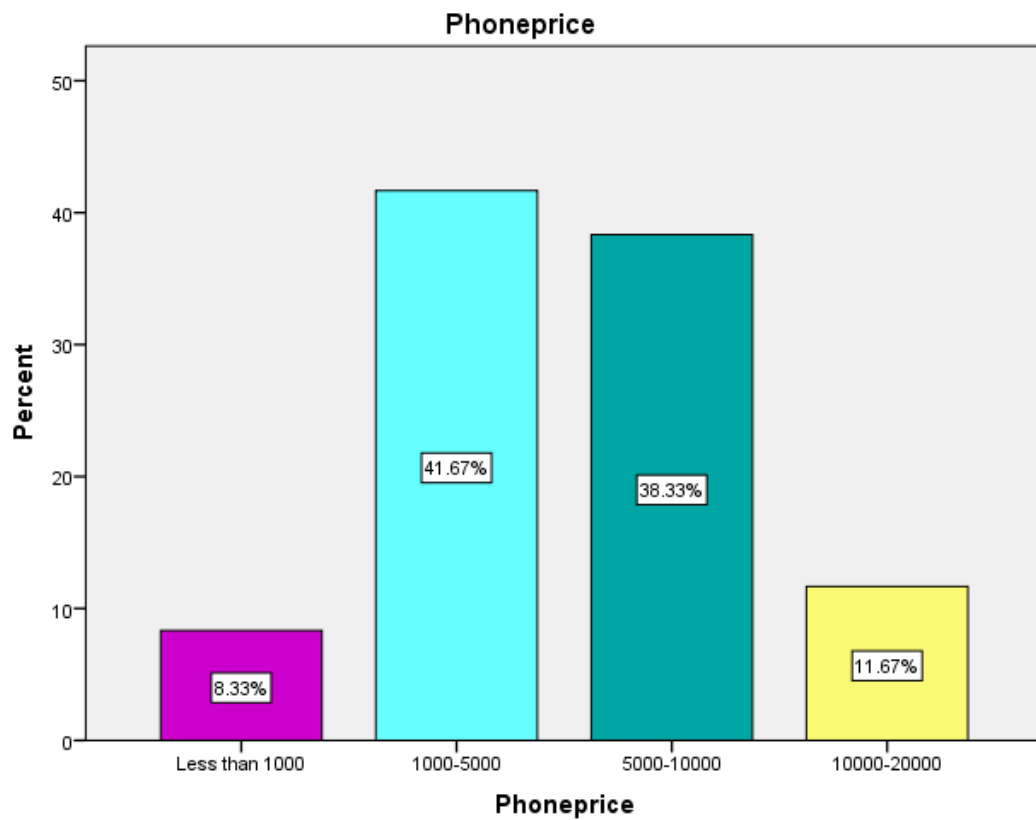
96.7% of the students possess their own mobile phone and a small percentage of students who don't have their own mobile phone. Thus they have to rely on parents or relatives to attend online classes on time. Which might also restrict their ability to fully engage in online learning activities. Although having a mobile phone can be helpful for online learning, it is important to take into account variables like internet accessibility, data affordability, etc.

FIGURE 4.8: COMMONLY USED DEVICE FOR ATTENDING ONLINE CLASS



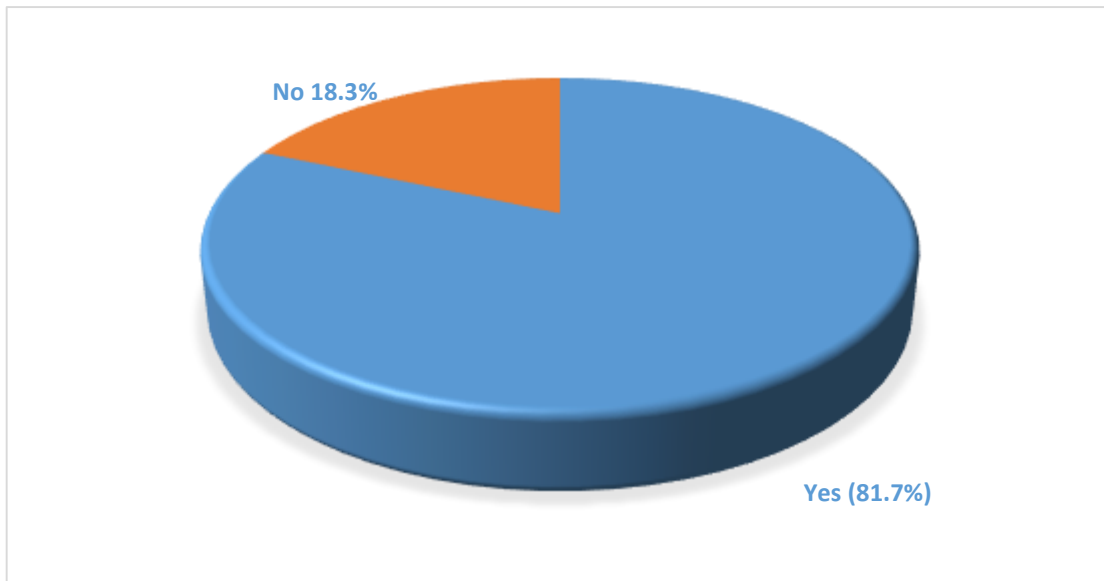
Around 94% of students use mobile smartphones to attend online classes usually. It is because mobile phones are highly accessible compared to other devices like laptops or desktop computers. Most students already own or have access to a mobile phone, making it a convenient and readily available tool for online learning. Attending online classes by facing the small screen of a mobile can often cause health issues among students.

FIGURE 4.9: PRICE RANGE OF PHONES OF THE RESPONDENTS



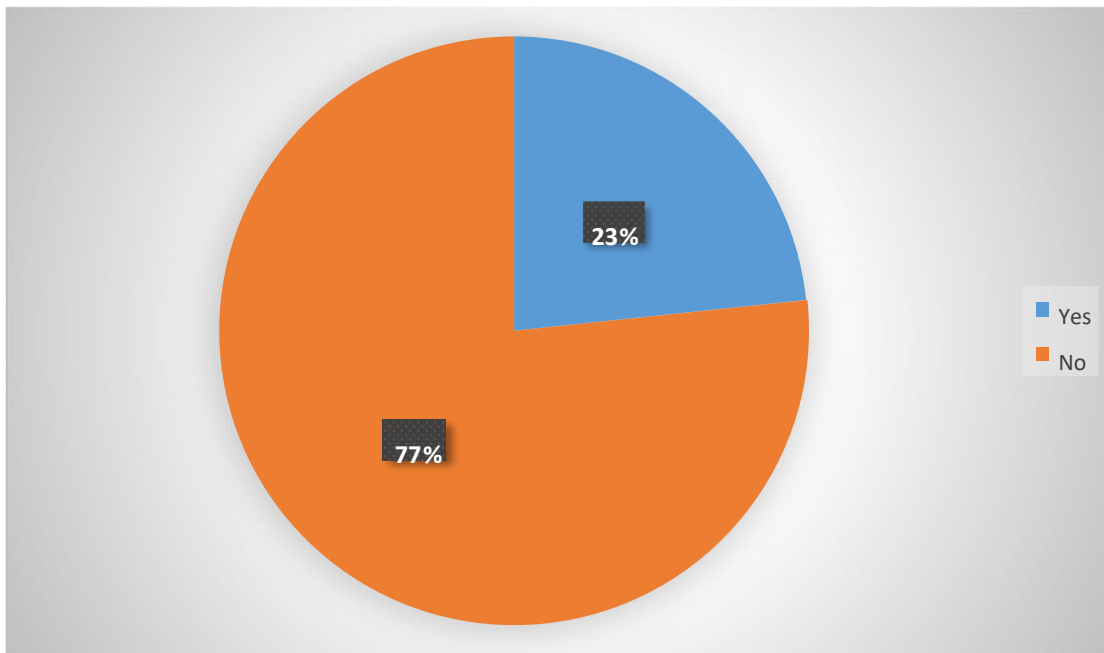
As per the distribution of phone price ranges among students who take online classes, more than 80% of the student's likely use mobile phones that cost less than 10,000 rupees. This suggests that choosing a mobile phone for online learning is influenced by affordability and cost considerations. These price points demonstrate that many students can access online courses and educational materials using low-cost or midrange mobile phones. It suggests that online education can be facilitated without requiring expensive equipment, making it more available to a larger population of learners.

FIGURE 4.10: INTERNET ACCESSIBILITY AT HOME



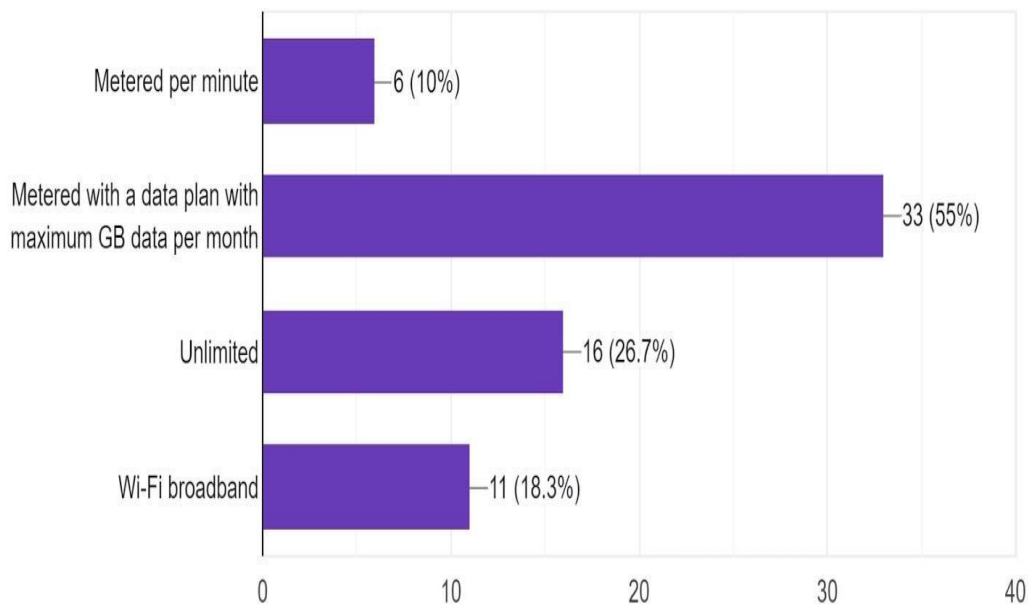
At home, 81.7% of the students have access to the internet. This suggests that the majority of the sample's students have access to an internet connection at home, which is necessary for taking part in online learning activities. 18.3% of the students don't have internet access at home. This suggests that a significant number of the sample's students lack the facilities required to access the Internet for online learning. The gap among students without home internet access must be addressed. These students may experience difficulties due to poor internet connectivity, which makes it challenging for them to take full advantage of online learning opportunities.

FIGURE 4.11: Wi-Fi ACCESS AT HOME



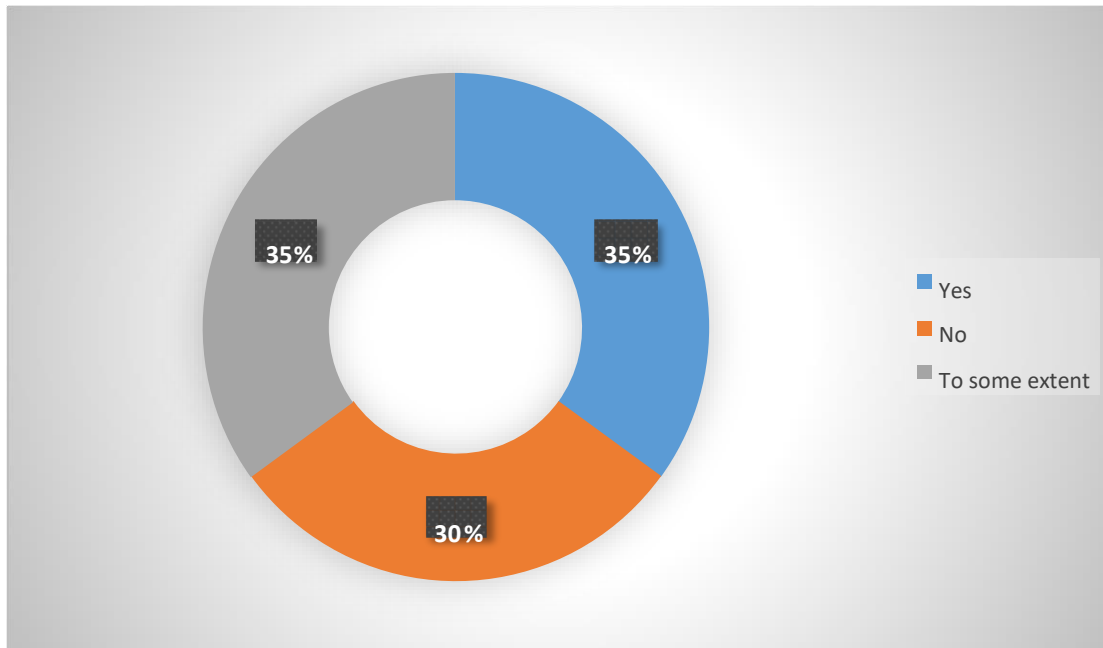
23.3% of the students have Wi-Fi access at home. This indicates that a relatively small portion of the students in the sample have access to a Wi-Fi network, which can provide a stable and reliable internet connection for online learning. 77% of the students do not have Wi-Fi access at home. This suggests that the majority of the students in the sample rely on alternative means of internet access, such as mobile data. While these methods can provide connectivity, they may have limitations in terms of data caps, speed, or stability compared to Wi-Fi networks.

FIGURE 4.12: HOW IS INTERNET CONNECTION METERED?



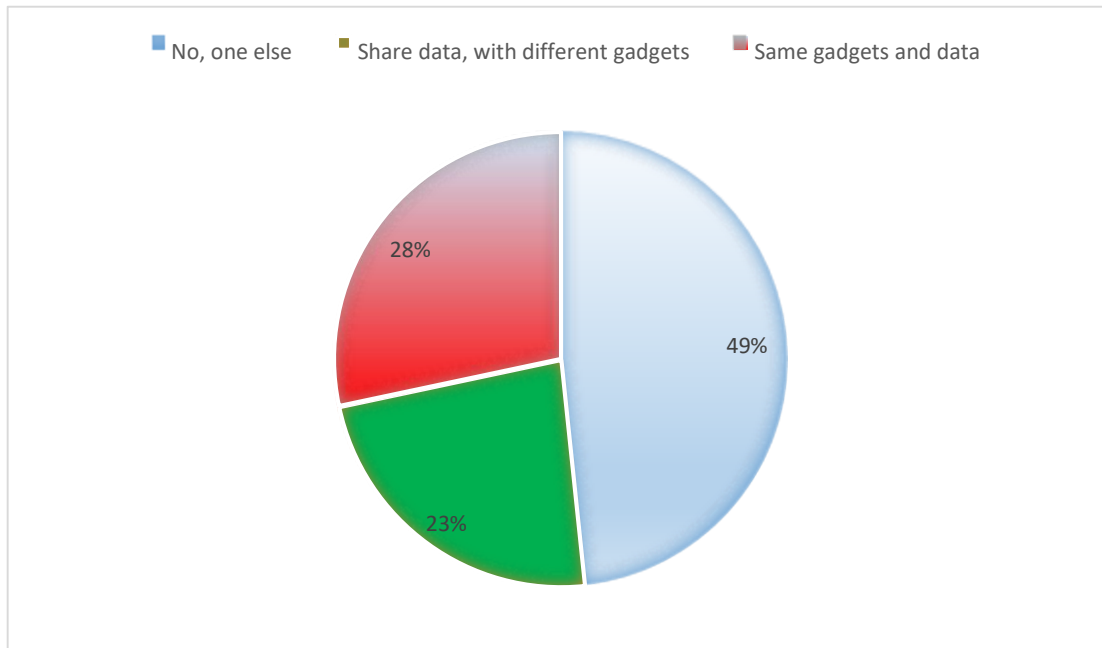
10.0% of the students have an internet connection with a data plan. This means they have a specific amount of data allocated to them for internet usage, and they may have limitations on the amount of data they can consume within a given time period. 55% of the students have an internet connection with a maximum data limit of 1GB. This suggests that a significant portion of the students have a restricted data allowance for their internet usage. Once they reach the limit, they may face additional charges or experience reduced speed until the next billing cycle. 18.3% of the students rely on Wi-Fi as their primary internet connection. This indicates that they have access to a Wi-Fi network, which is often more stable and provides a higher-speed connection compared to mobile data. Students with limited data plans, such as those with a maximum of 1GB data or metered data plans, may need to be mindful of their data usage while participating in online classes, accessing learning materials, or streaming educational videos. They may have to manage their data allocation to ensure it lasts throughout the required online activities. Students relying on Wi-Fi connections can benefit from the stability, higher speeds, and potentially unlimited data provided by Wi-Fi networks. This allows them to engage in various online learning activities without worrying about data restrictions or additional charges.

FIGURE 4.13: FINANCIAL LOSS BECAUSE OF RECHARGING FOR THE DATA PLAN



Understanding the financial concerns related to data plans is essential for educational institutions and policymakers to address the affordability and accessibility challenges associated with online learning. In this figure, about 35% agree that they face financial issues because of recharging for the data plan. And 30% of them encounter financial loss to some extent. Efforts to provide subsidized or free data plans, promote community Wi-Fi initiatives, or allocate resources for internet access support can help mitigate the financial burden and ensure equitable access to online education for all students.

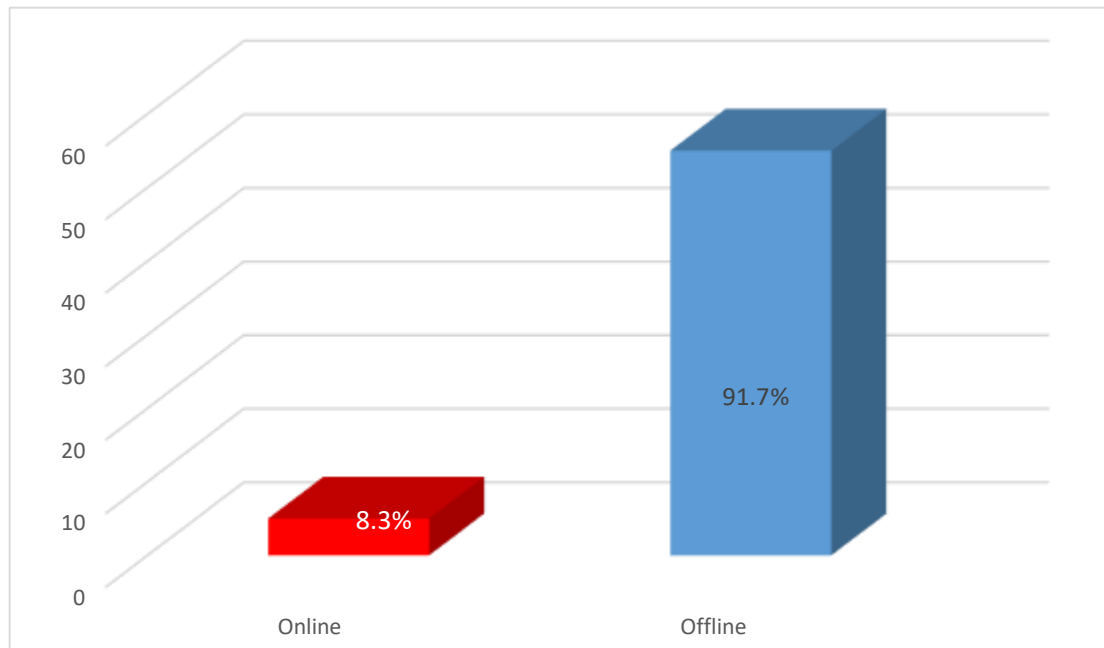
FIGURE 4.14: PEOPLE IN YOUR HOUSEHOLD WHO UNDERGO ONLINE CLASSES MADE YOU HAVE TO SHARE THE SAME DEVICES AND INTERNET CONNECTION WITH THEM.



In figure 4.14, 49% of the students are the only ones in their households who undergo online classes. They don't have to share devices or internet connections with anyone else. 28% of students have to share devices and internet connections for online classes. It suggests that there are other people in their household, but they have to use different devices but have to share the internet connection for online learning. The balance 23% of responses indicate that multiple people in the students' households, including the students themselves, have to share the same devices for online classes. This suggests that there might be a limited number of devices available, and everyone has to take turns using them. Additionally, they also share the same internet connection.

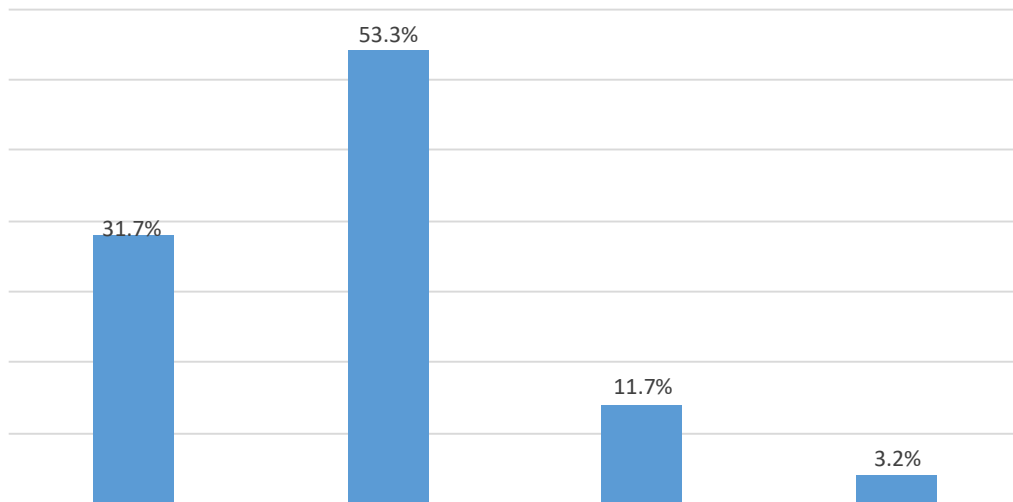
PERCEPTIONS OF STUDENTS TOWARDS ONLINE LEARNING

FIGURE 4.15: METHOD OF LEARNING SEEMS TO BE MORE PRODUCTIVE AND FRUITFUL FOR STUDENTS



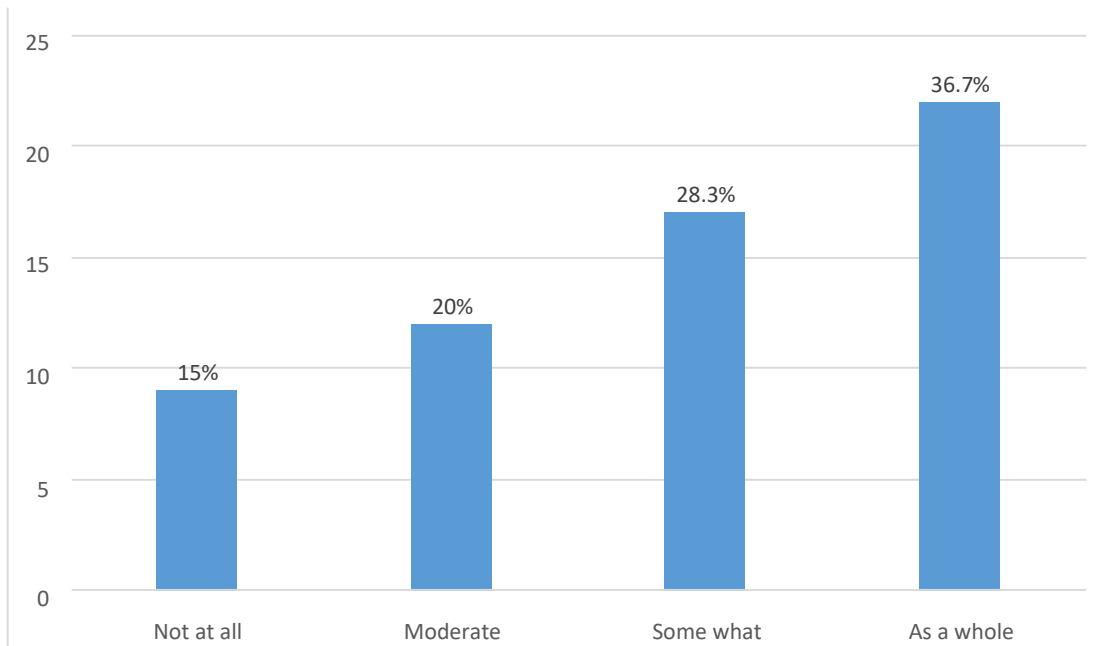
In the figure 4.15 8.3%, view online learning as productive and fruitful. On the other hand, the majority, 91.7%, do not share this perspective. Various factors such as personal preferences, learning styles, technological limitations, or previous experiences with online learning could contribute to these differing opinions. Factors such as the quality of online learning platforms, availability of resources, level of interaction and engagement, and individual adaptability to online learning environments also play significant roles in shaping these perceptions.

FIGURE 4.16: ONLINE LEARNING PROMOTED INTERACTION WITH THE TEACHER RATHER THAN OFFLINE LEARNING



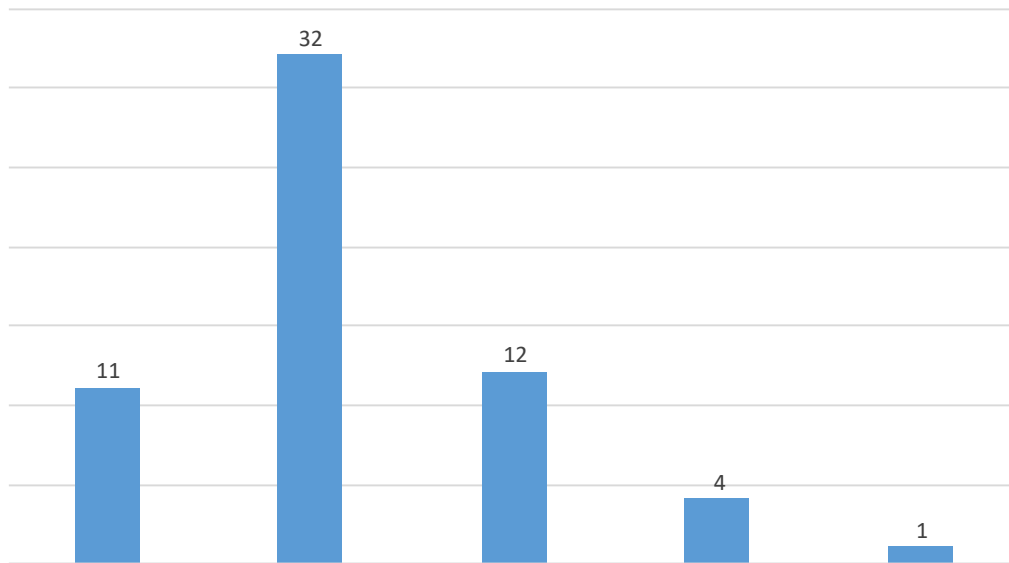
From these percentages, it appears that a relatively small proportion, 31.7%, believe that online learning provides a higher level of interaction with teachers compared to offline learning. On the other hand, the majority, 53.3%, do not share this perspective and don't perceive online learning to promote more interaction with teachers. Additionally, 11.7% feel that online learning somewhat promotes interaction with the teacher, suggesting a mixed or moderate perception. Only 3.3% see online learning as a whole promoting more interaction with the teacher compared to offline learning. The reasons behind these perceptions could vary and include factors such as the effectiveness of online communication tools, the level of teacher-student engagement in online classes, the availability of individualized attention, or the nature of the subject being taught.

FIGURE 4.17: THERE IS A LACK OF COMMUNICATION AMONG YOUR PEERS COMPARED TO THE OFFLINE METHOD OF LEARNING



In Figure 4.17, 15% of the students feel that there is no communication among peers in online learning. 20% of the students perceive moderate communication among peers in online learning. 28.33% of the students feel that there is some level of communication among peers in online learning. 36.67% of the students perceive a good overall level of communication among peers in online learning. Overall, the responses indicate that a significant proportion of students feel that there is a lack of communication among peers in online learning. This highlights the need for educational institutions and online learning platforms to explore ways to enhance peer-to-peer interactions, foster collaboration, and provide opportunities for students to connect with their classmates effectively.

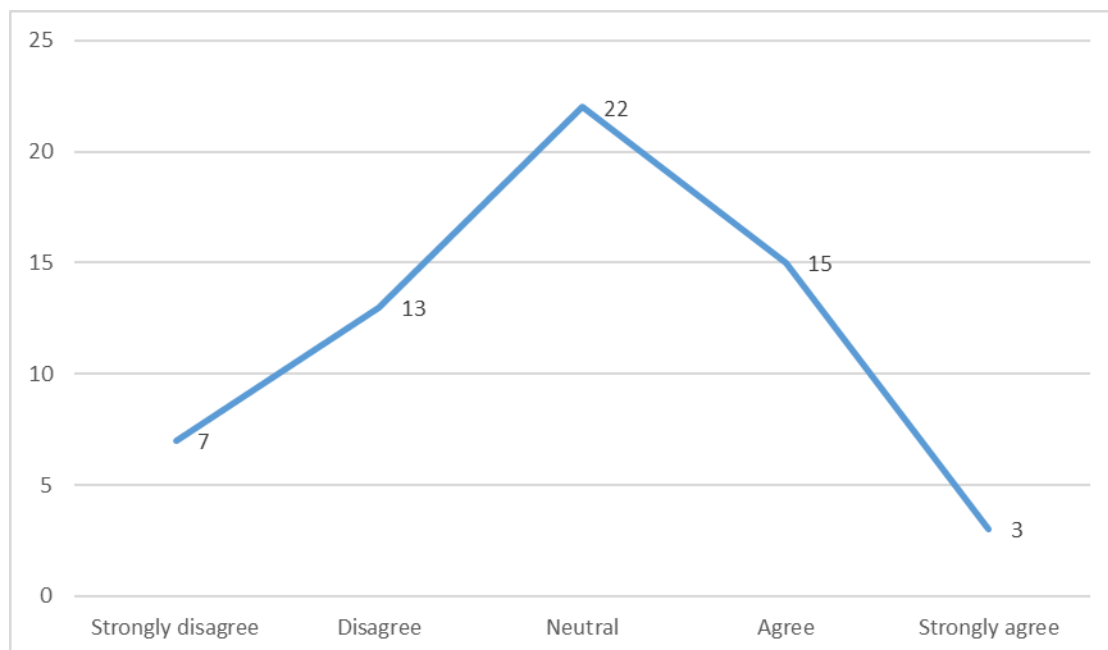
FIGURE 4.18: ONLINE LEARNING IS MORE EFFECTIVE THAN OFFLINE LEARNING



The majority of students (50.3%) disagree that online learning is more effective than offline learning. They hold the view that traditional offline learning methods provide a better learning experience and yield better results. One-fifth of the students responded neutrally, indicating that they neither agree nor disagree about the effectiveness of online learning compared to offline learning. These students may have mixed opinions or experiences and are undecided about which method is more effective. This indicates that 18.3% of the students strongly disagree that online learning is more effective than offline learning. They firmly believe that offline learning methods are superior in terms of effectiveness and educational outcomes. A small percentage of students (6.7%) agree that online learning is more effective than offline learning. They believe that the advantages of online learning, but only 1.7% of the students strongly agree that online learning is more effective than offline learning. These students are convinced that online learning surpasses traditional offline methods in terms of effectiveness and learning outcomes, such as flexibility, accessibility, or personalized learning, make it a more effective approach. The results indicate that a significant majority of students (68.6%) either disagree or strongly disagree that online learning is more effective than offline learning. This highlights the importance of considering student preferences and needs when designing educational programs, as well as finding a balance between online and offline learning approaches to provide the most effective learning experiences. There are many studies that represent online learning that

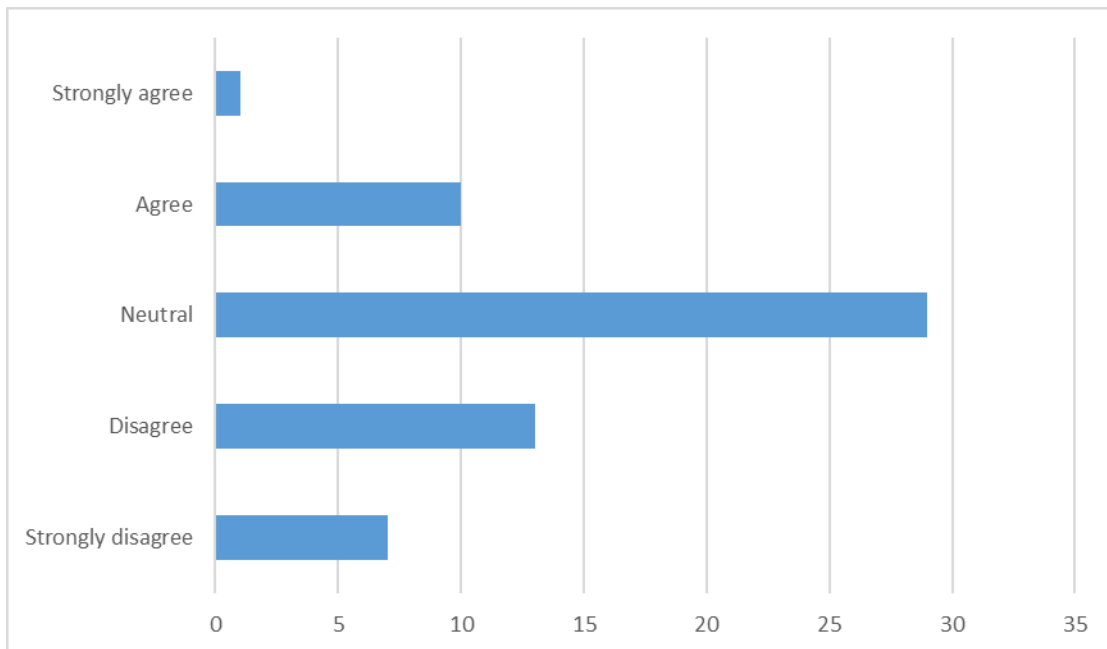
shows more effectiveness rather than offline learning. But this study shows the opposite result about online learning.

FIGURE 4.19: ONLINE LEARNING ENABLES THE EFFECTIVE EXPLORATION OF EDUCATIONAL MATERIALS



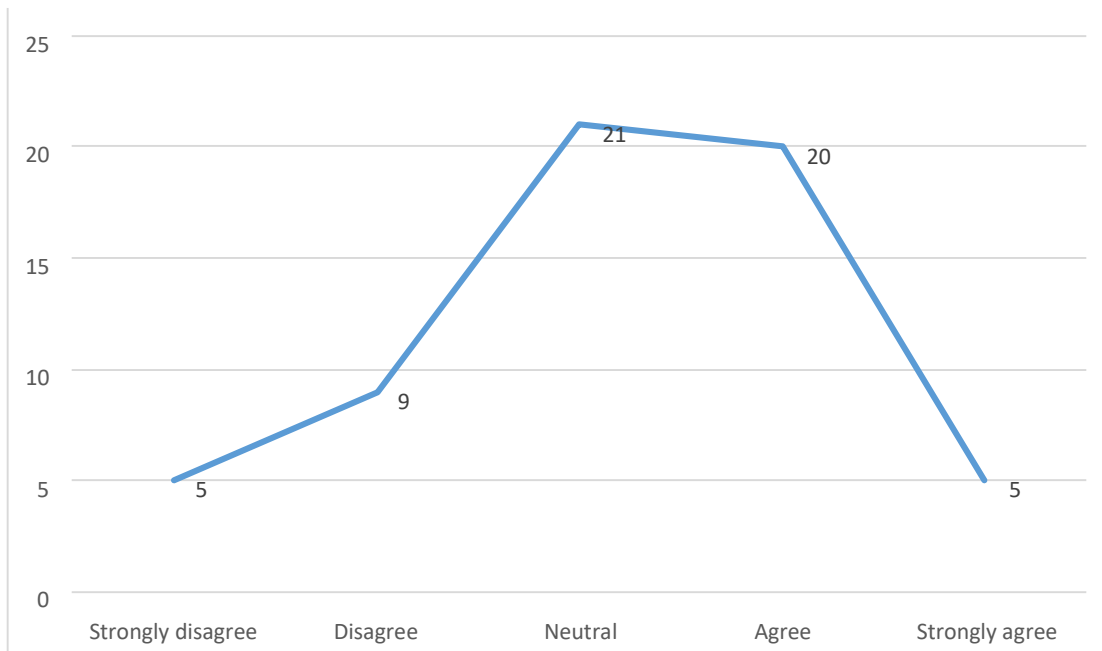
The results indicate that a significant number of students either disagree (33.4%) or are neutral (36.7%) about the effectiveness of online learning in material exploration. However, a notable proportion of students (30.0%) agree or strongly agree that online learning provides effective opportunities for exploring materials. This suggests that while online learning may have its limitations, it also offers benefits and resources that facilitate effective exploration of learning materials. Educators and institutions can focus on optimizing online platforms, providing comprehensive resources, and integrating interactive elements to enhance the material exploration experience for students in online learning environments.

FIGURE 4.20: ONLINE MAKES IT EASIER TO COMPLETE GROUP PROJECTS AND ASSIGNMENTS



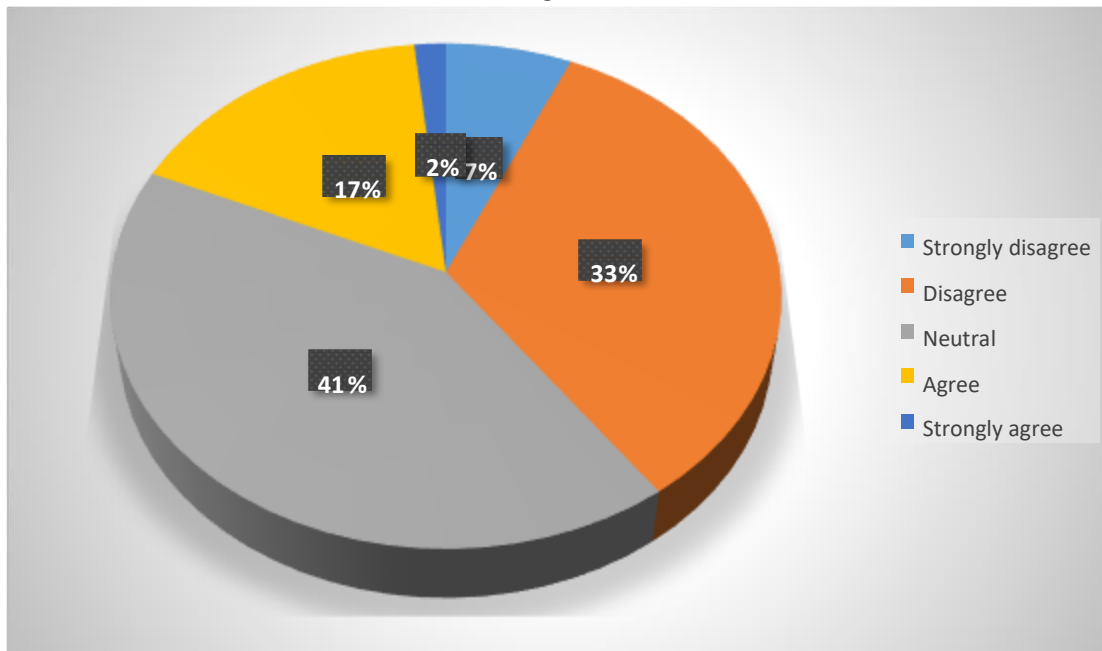
The results suggest that a majority of students either disagree (33.4%) or are neutral (48.3%) about the ease of completing group projects and assignments in online learning. However, a minority of students (18.4%) agree or strongly agree that online learning facilitates the completion of group projects and assignments. It highlights the need for educators to provide effective strategies, tools, and support to foster collaboration and teamwork in online learning environments, ensuring that students can work together successfully on group projects and assignments.

FIGURE 4.21: ONLINE LEARNING SAVES TIME FOR STUDENT



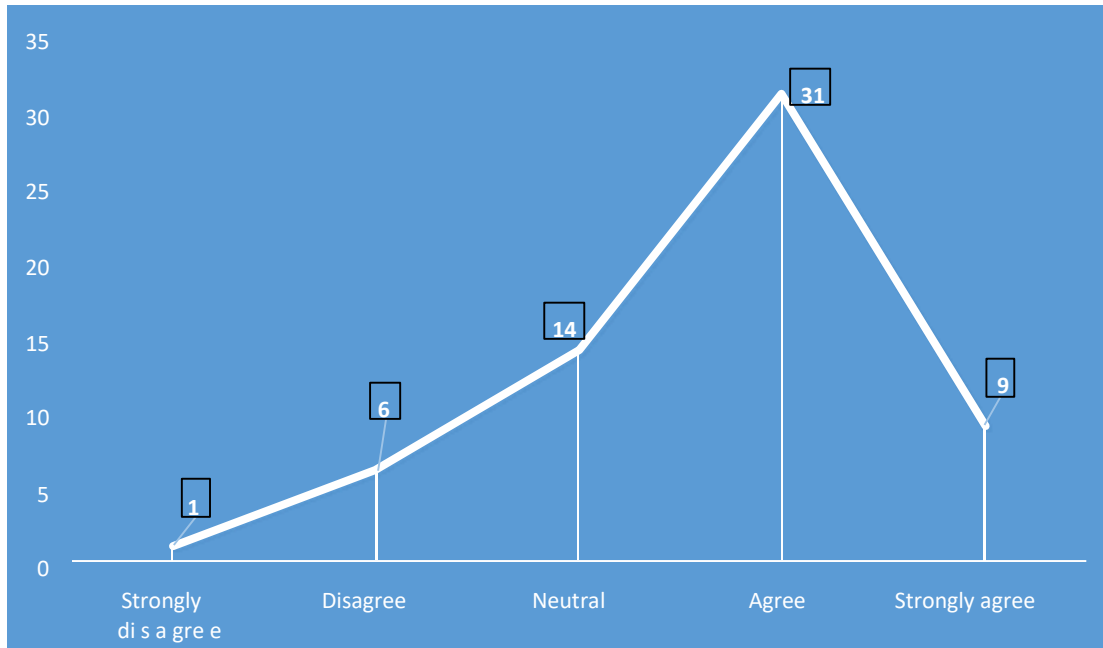
The results show that a substantial portion of students either disagrees (23.3%) or is neutral (35.0%) about online learning saving time for students. However, a considerable number of students (41.6%) agree or strongly agree that online learning does save time. This suggests that many students perceive online learning as a time-saving option due to its flexibility and convenience. This suggests that online learning has the potential to offer time-saving benefits, but individual experiences and preferences may vary. Factors such as personal discipline, effective time management, and technological proficiency can influence the extent to which students can take advantage of the timesaving benefits of online learning.

FIGURE 4.22: ONLINE LEARNING ENHANCES EFFECTIVE KNOWLEDGE ACQUISITION



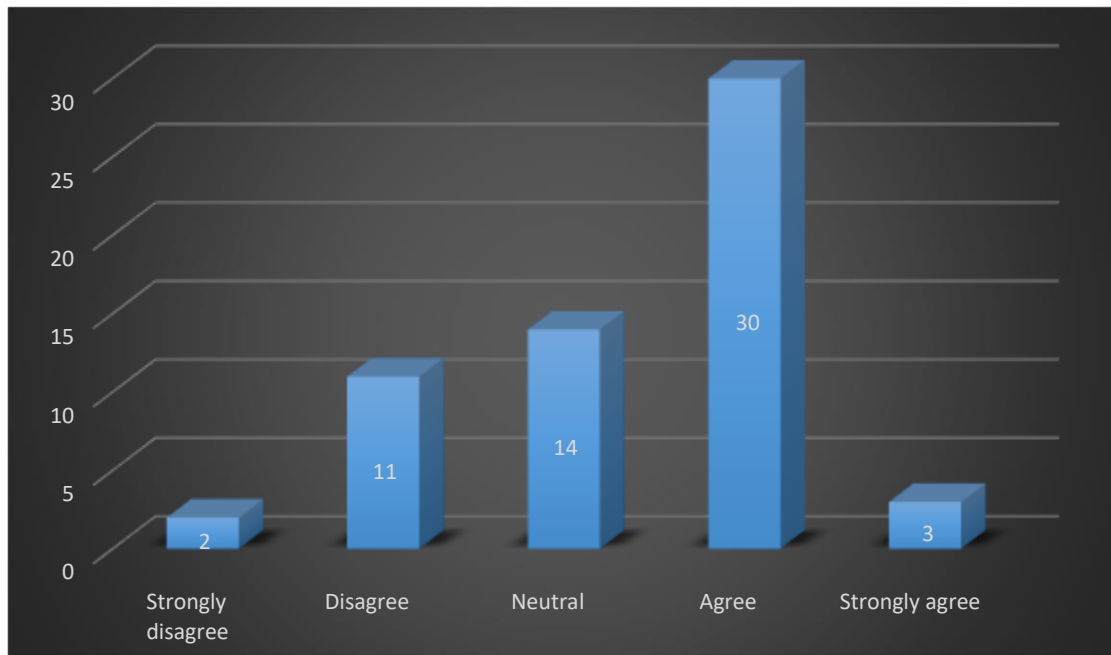
Online learning can enhance effective knowledge acquisition by providing access to diverse resources, offering self-paced and interactive learning opportunities, facilitating collaborative learning experiences, personalizing instruction, and providing immediate feedback. By leveraging the benefits of online learning, students can acquire knowledge more effectively and engage in a dynamic and interactive learning process. But in this study from the figure, it is clear that a small percentage of students (6.7%) strongly disagree that online learning enhances effective knowledge acquisition. These students believe that online learning methods are not as effective as offline methods in acquiring knowledge. A significant portion of students (33.3%) disagrees that online learning enhances effective knowledge acquisition. They may feel that online learning platforms have limitations in providing a comprehensive and immersive learning experience, which hinders their ability to acquire knowledge effectively. The largest percentage of students (41.7%) responded neutrally, indicating that they neither agree nor disagree about the effectiveness of online learning in knowledge acquisition. These students may have mixed experiences or may not have formed a strong opinion on the topic. A notable number of students (16.7%) agree that online learning enhances effective knowledge acquisition. These students find that online learning methods provide them with the necessary tools, resources, and flexibility to acquire knowledge effectively.

FIGURE 4.23: I GET MORE DISTRACTED DURING ONLINE LEARNING RATHER THAN DURING REGULAR CLASSROOM LEARNING



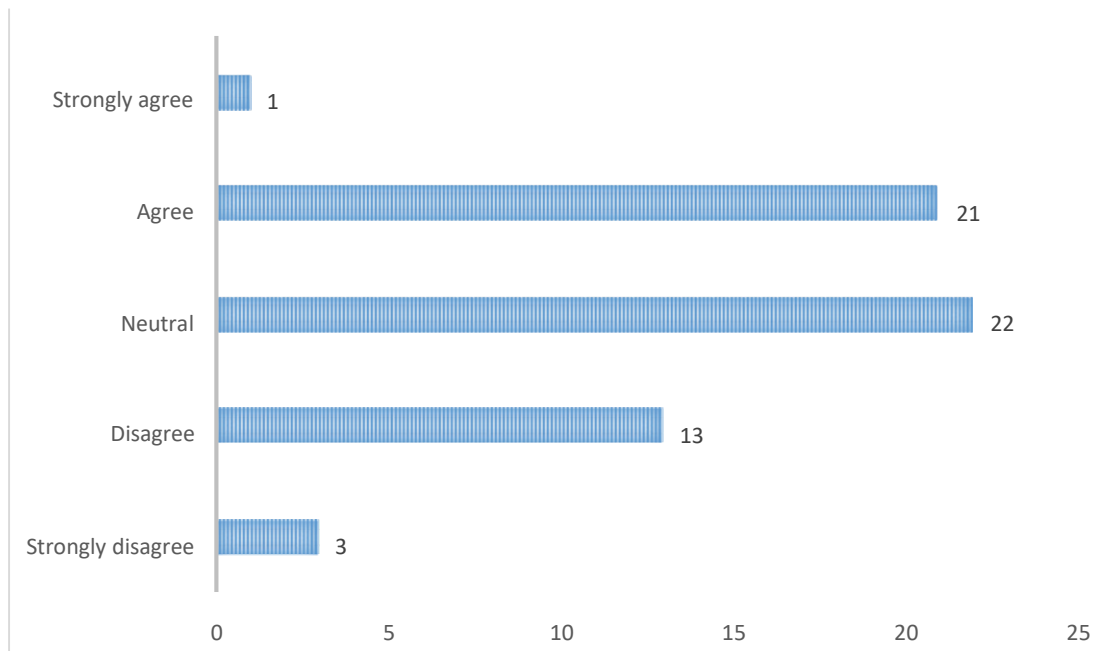
A small percentage of students (10.0%) disagree that they get more distracted during online learning compared to regular classroom learning. These students assert that they are able to maintain focus and concentration while engaging in online learning activities. The results highlight that a significant majority of students (66.7%) agree or strongly agree that they get more distracted during online learning. This suggests that online learning environments may present unique challenges in maintaining focus and concentration compared to regular classroom learning.

FIGURE 4.24 I CONSIDER INTERACTING WITH MY CLASSMATES AND TEACHERS THROUGH ONLINE CLASSES DURING COVID-19 HELP ME EMOTIONALLY AS AN ESCAPE FROM LONELINESS



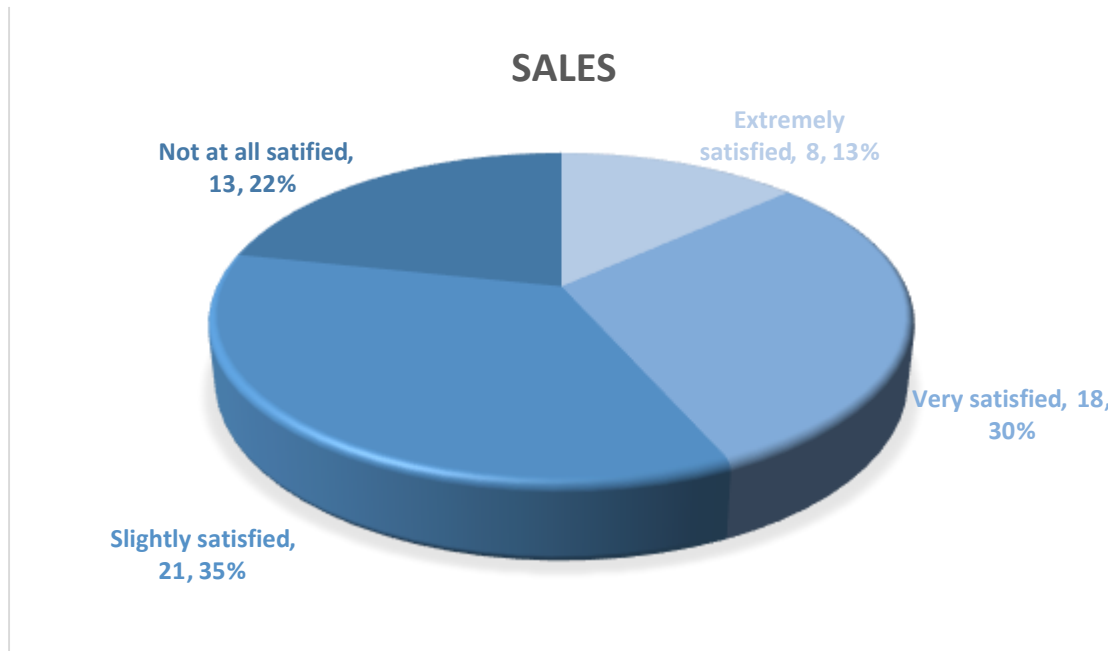
As many of the studies indicate, during the lockdown period the students have to undergo quarantine and didn't allow to go to school and socialize with others which was one of the major problems they had to encounter. And the majority of students become isolated during the pandemic. Isolation refers to the feeling of being separated or cut off from others, leading to reduced social interactions and a sense of loneliness. This isolation can have various impacts on students' well-being and academic experiences. Figure 4.24 reflects that a significant number of students (55.0%) agree or strongly agree that online learning emotionally helps as an escape from loneliness. This suggests that online learning can provide a sense of connection, community, and support that can help mitigate feelings of loneliness, especially in circumstances where students may feel isolated. Online learning platforms can leverage these findings to further enhance social interactions, foster a sense of belonging, and provide emotional support to students in virtual learning environments.

FIGURE 4.25 I CONSIDER LEARNING FROM THE COMFORT OF HOME AS AN ADVANTAGE OF ONLINE LEARNING



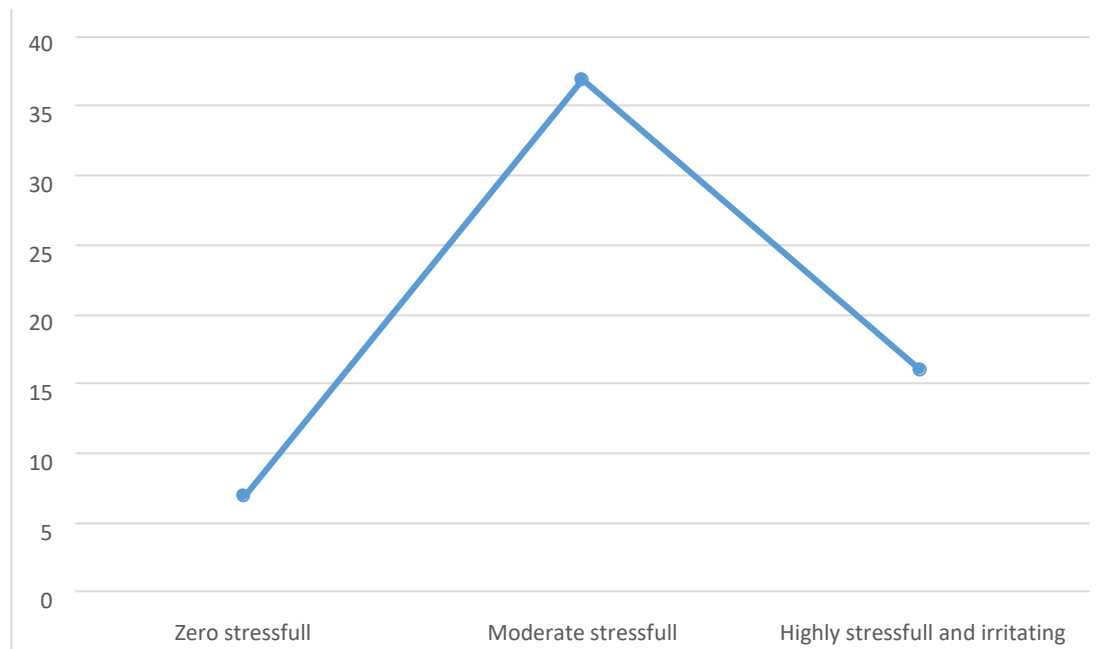
The results show that a significant portion of students (36.7%) either agrees or strongly agree that learning from the comfort of home is an advantage of online learning. This highlights the convenience and flexibility that online learning offers, allowing students to tailor their learning environment to their preferences. However, it is worth noting that a notable proportion of students (26.7%) disagree or strongly disagree with this notion, these students do not perceive the convenience and comfort of home as beneficial for their learning experience and prefer a different environment for learning. These students may find that the home environment is distracting or less conducive to focused learning, and they prefer the structure and discipline of a traditional classroom setting. Emphasizing the diversity of student preferences and the importance of providing options for different learning environments in online education.

FIGURE 4.26 ARE YOU SATISFIED WITH THIS METHOD OF LEARNING



Overall, the majority of students (65.0%) reported being either slightly satisfied or very satisfied with online learning. This suggests that a significant portion of students found value and benefits in their online learning experiences slightly or completely. However, it is important to address the concerns and dissatisfaction of the remaining students (20.0%) to improve the overall satisfaction rate and enhance the effectiveness and quality of online learning programs.

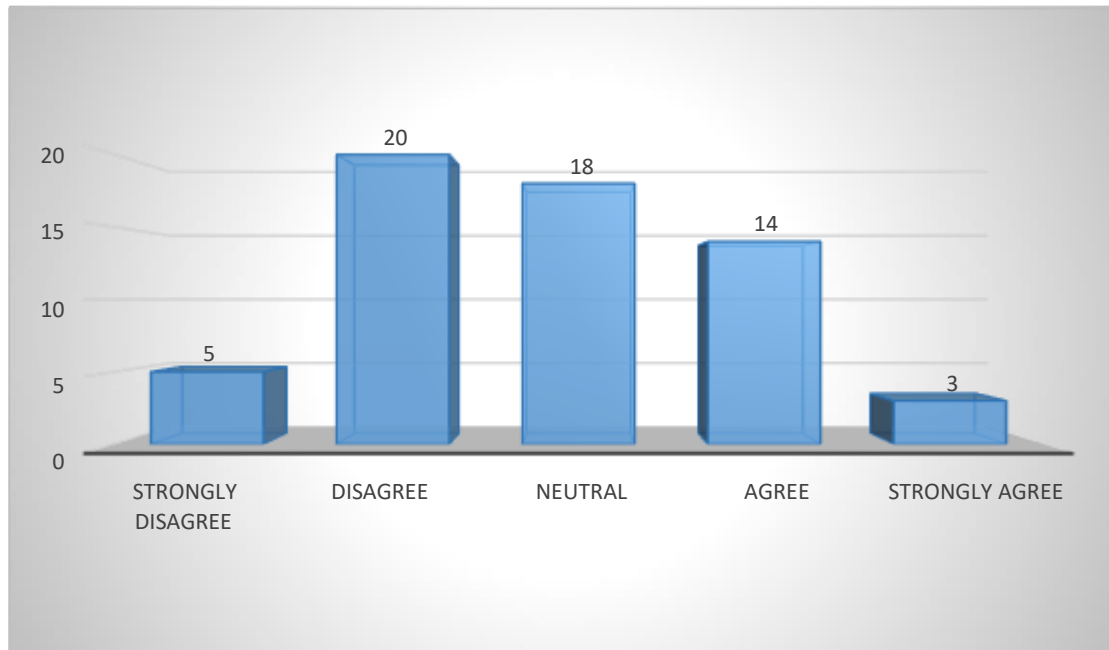
FIGURE 4.27: HOW STRESSFUL HAS ONLINE LEARNING BEEN FOR YOU DURING THE COVID-19 PANDEMIC



Approximately 11.7% of the students reported experiencing zero stress or minimal stress while engaging in online learning. These students likely found online learning to be manageable, convenient and did not perceive it as a significant source of stress. The majority of students, accounting for about 61.7%, reported moderate levels of stress when it comes to online learning. These students may have faced challenges such as adapting to the virtual learning environment, managing time effectively, dealing with technical issues, or feeling isolated from peers and instructors. While they experienced some stress, it was not overwhelming for them. Around 26.7% of students reported high levels of stress and irritation associated with online learning. These students likely encountered significant difficulties and frustrations with online learning, leading to heightened stress levels. Challenges such as poor internet connectivity, difficulties in understanding course materials without direct interaction, increased screen time, and lack of social engagement might have contributed to their high levels of stress and irritation. Overall, the analysis suggests that a considerable number of students find online learning moderately stressful, while a significant portion experiences higher stress levels and finds it irritating.

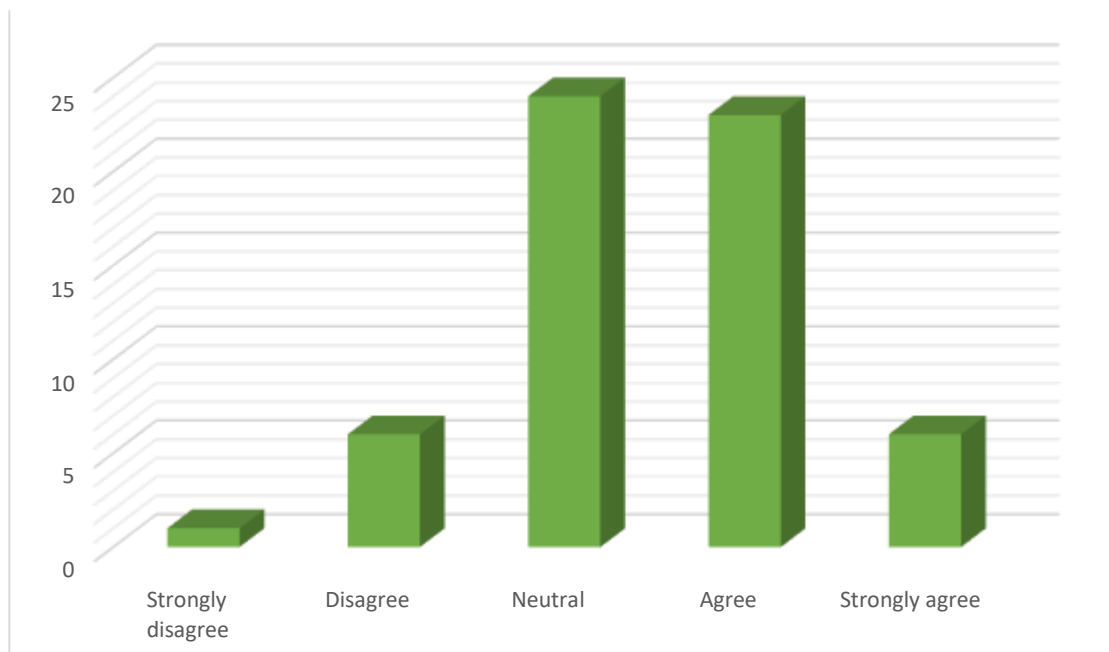
CHALLENGES FACED DURING ONLINE CLASSES

FIGURE 4.28: ONLINE LEARNING IS MORE EXPENSIVE THAN OFFLINE LEARNING



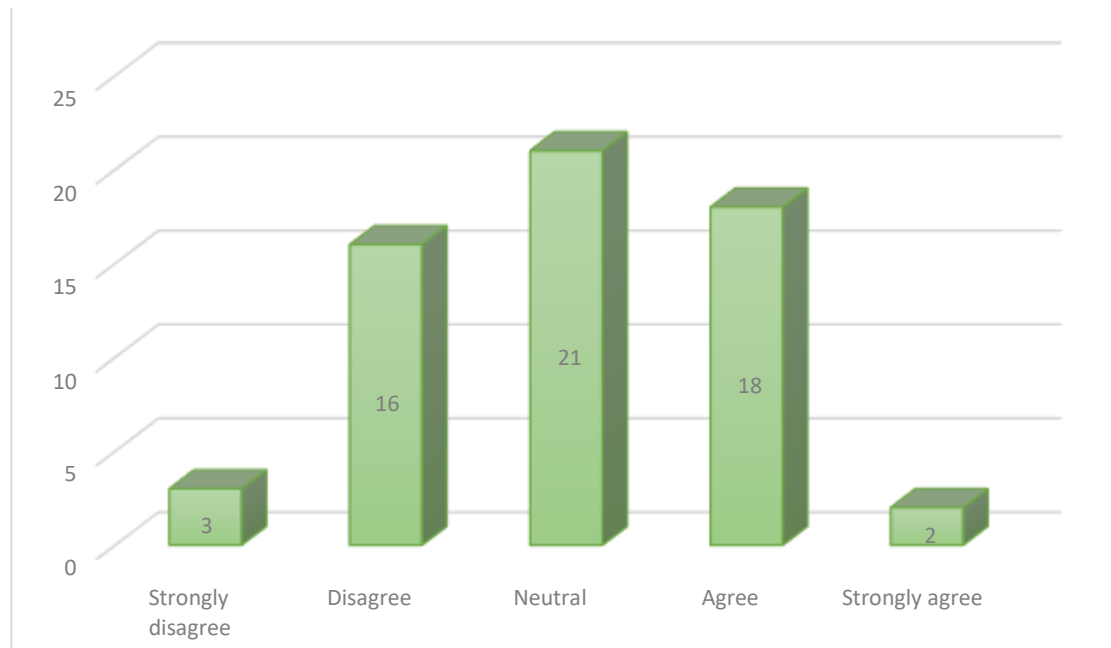
The results show that the majority of students either disagree (41.6%) or are neutral (30.0%) about online learning being more expensive than offline learning. This suggests that many students perceive online learning as a more cost-effective option or do not have a clear opinion on the matter. However, a significant portion of students (28.3%) agree or strongly agree that online learning can be more expensive due to technology-related expenses. It's worth noting that the cost comparison between online and offline learning can vary based on individual circumstances, such as the availability of resources, geographical location, and specific program requirements. Additionally, online learning may offer cost-saving benefits in terms of travel expenses and the flexibility to study from home.

FIGURE 4.29: THE INTERNET CONNECTION IS UNRELIABLE



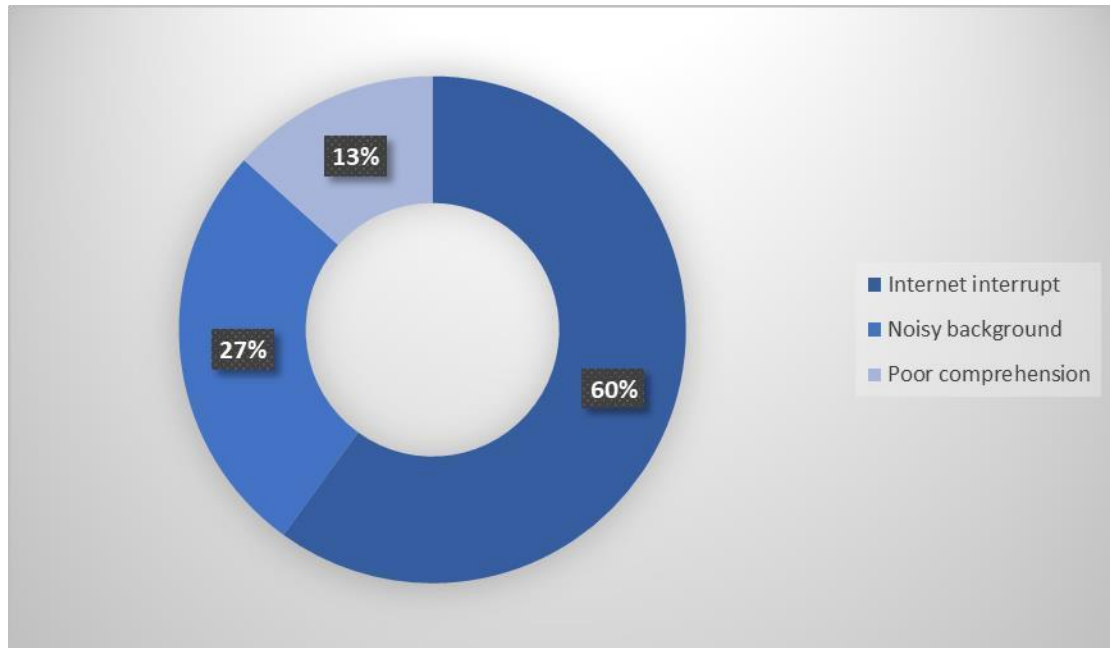
The results show that a notable portion of students (48.3%) agree or strongly agree that the internet connection was unreliable during online learning. This suggests that the reliability of internet connectivity is a significant challenge that can hinder the smooth progress of online learning. Unreliable internet connections can disrupt communication, access to resources, and overall engagement, leading to a suboptimal learning experience for students. A small percentage of students (1.7%) strongly disagree that the internet connection was unreliable during online learning. These students did not experience significant issues with their internet connectivity, indicating a reliable connection throughout their online learning sessions. The largest percentage of students (40.0%) responded neutrally, indicating that they neither agree nor disagree about the unreliability of the internet connection. These students may have had mixed experiences, with some encountering occasional issues while others did not face significant problems.

FIGURE 4.30: ADEQUATE HARDWARE AND SOFTWARE FOR ONLINE LEARNING ARE NOT AVAILABLE IN MY HOUSE



A small percentage of students (5.0%) strongly disagree that adequate hardware and software for online learning are not available in their houses. These students assert that they have the necessary tools and technology to support their online learning needs. A significant portion of students (26.7%) disagrees that adequate hardware and software for online learning are available in their houses. These students feel that they do not have the required equipment or software to effectively participate in online learning activities. The results indicate that a significant proportion of students either disagree (31.7%) or agree (33.3%) that adequate hardware and software for online learning are not available in their houses. This highlights the issue of unequal access to technology and resources among students, which can hinder their ability to fully participate in online learning. The neutral responses (35.0%) also suggest that many students may be unsure about the sufficiency of their available technology. Ensuring equitable access to technology and providing support to students who lack the necessary hardware and software is crucial for promoting inclusive and effective online learning experiences.

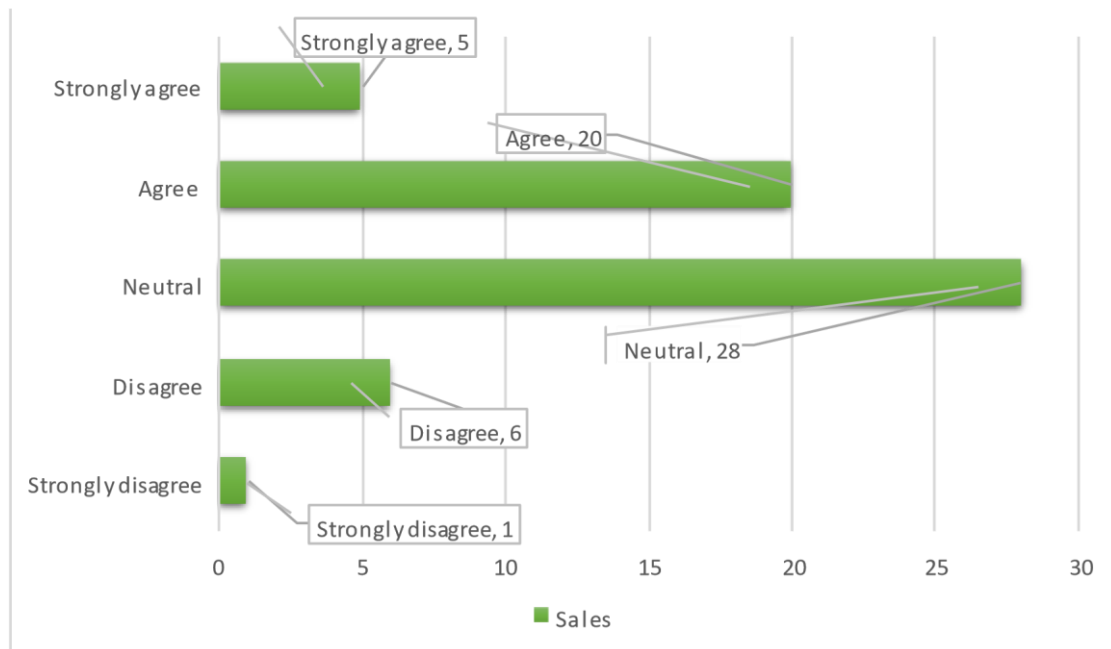
FIGURE 4.31: WHAT ARE THE COMMON PROBLEMS THAT YOU ENCOUNTER WHILE ATTENDING ONLINE LEARNING



The majority of students (36%) experience internet interruptions as a common problem during online classes. This can include issues with connectivity, slow internet speeds, or intermittent disruptions, which can disrupt the flow of the online learning experience and hinder participation. A significant percentage of students (16%) face the challenge of noisy backgrounds during online classes. This could be due to various factors such as living in a noisy environment, sharing space with others, or inadequate sound insulation. The background noise can make it difficult for students to concentrate, hear the instructor clearly, or actively engage in online class discussions. A smaller percentage of students (8%) encounter the problem of poor comprehension during online classes. This could be attributed to various factors, including difficulty in understanding complex concepts without direct in-person guidance, challenges in following the online teaching format, or distractions that hinder focused learning. The high percentage of internet interruptions underscores the critical role of stable internet connectivity for successful online learning. Noisy backgrounds can significantly impact students' ability to concentrate and actively participate in online classes, emphasizing the importance of creating a quiet and conducive learning environment. The issue of poor comprehension highlights the need for effective instructional

strategies, clear communication, and additional support to ensure students' understanding and learning outcomes in the online learning setting.

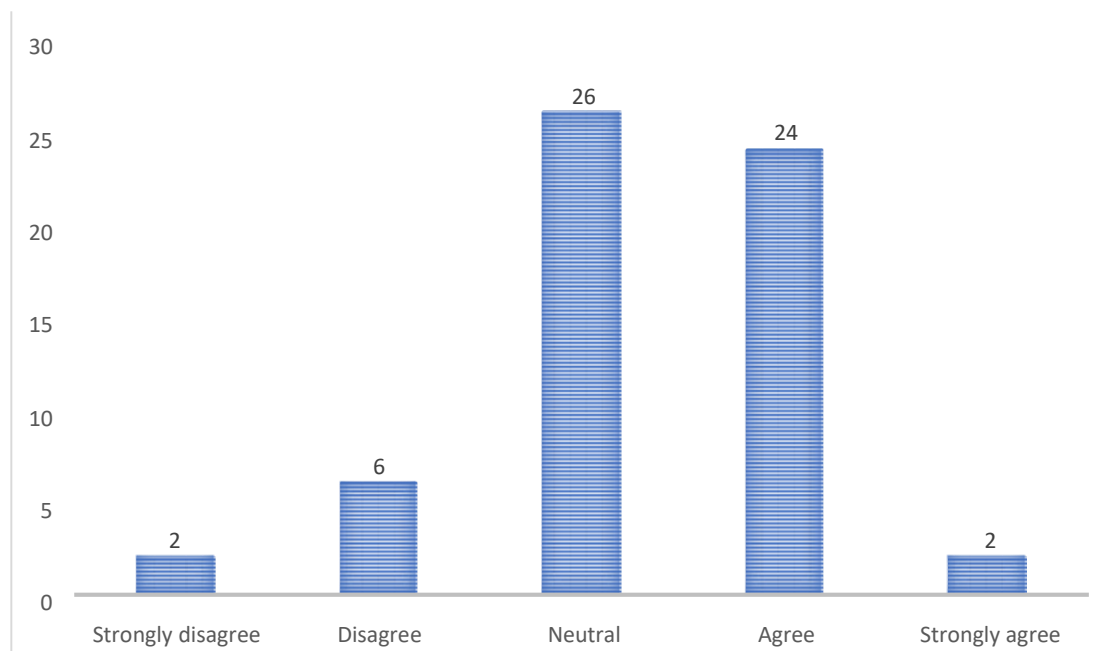
FIGURE 4.32: I HAVE POOR MANAGEMENT SKILLS THAT AFFECT MY ONLINE LEARNING CAPABILITIES



Based on the responses of students regarding their management skills affecting online classes, small percentage of students (1.7%) strongly disagree that they have poor management skills that affect online classes. These students believe that their management skills are sufficient and do not hinder their performance in online learning. A small but notable portion of students (10.0%) disagrees that they have poor management skills affecting online classes. These students may feel that they possess adequate management skills and are able to effectively navigate and organize their online learning experience. The largest percentage of students (46.7%) responded neutrally, indicating that they neither agree nor disagree about having poor management skills that affect online classes. A significant number of students (33.3%) agree that they have poor management skills that affect online classes. These students recognize that their management skills, such as time management, organization, or self-discipline, may pose challenges in effectively participating in and completing online coursework. A small percentage of students (8.3%) strongly agree that they have poor management skills that significantly affect online classes. These students

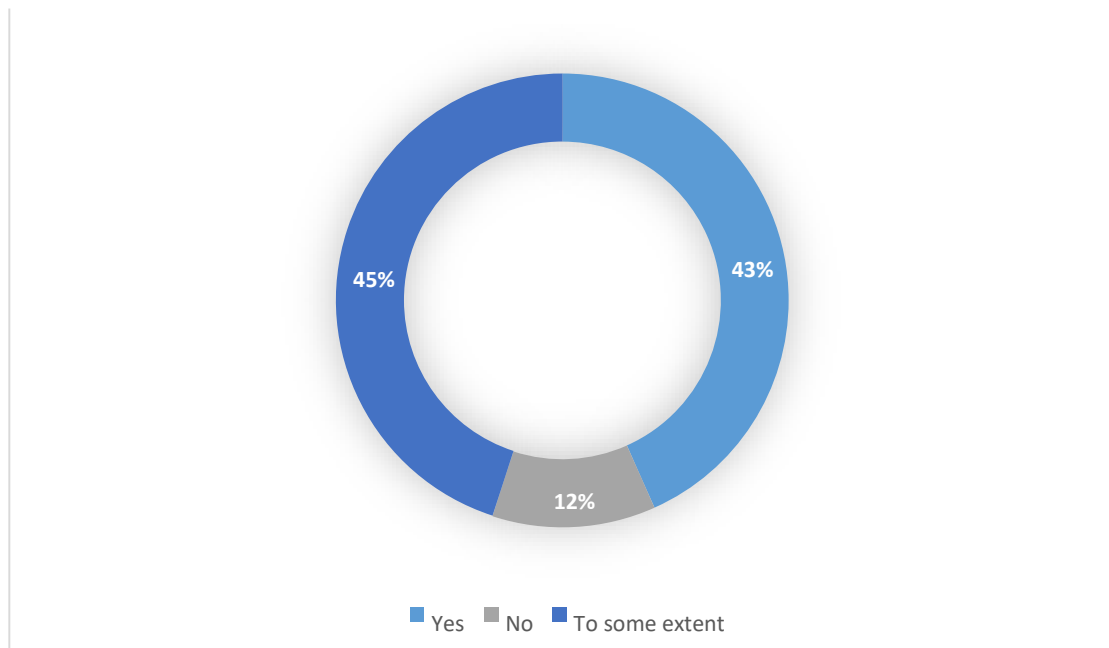
firmly believe that their lack of effective management skills hampers their ability to succeed and fully engage in online learning. This indicates that many students acknowledge the importance of strong management skills in online learning and may require additional support or resources to improve their organizational abilities.

FIGURE 4.33: THE FACULTY'S INTERACTION AND FEEDBACK ARE INADEQUATE IN ONLINE LEARNING



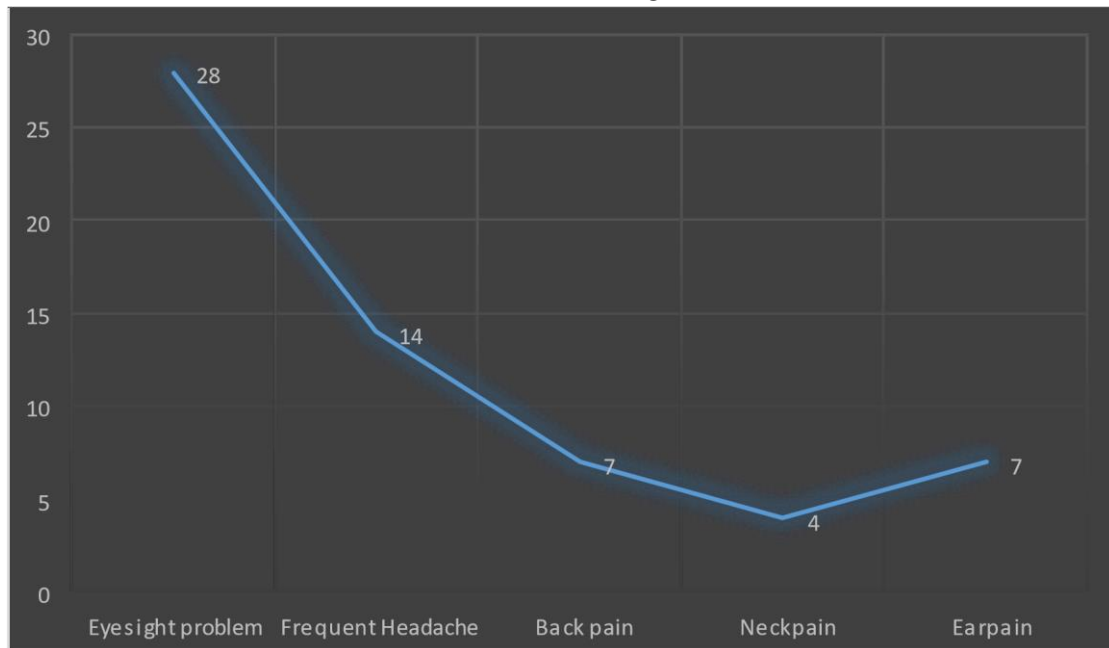
The results indicate that a substantial proportion of students (43.3% agree + 3.3% strongly agree) perceive the faculty's interaction and feedback as inadequate in online learning. This highlights the importance of addressing and improving the faculty-student interaction and feedback mechanisms in online learning environments. Educational institutions should consider providing professional development opportunities for faculty members to enhance their online teaching skills, promote regular and meaningful interactions with students, and implement effective feedback strategies. Furthermore, incorporating student feedback and actively involving them in the learning process can contribute to a more engaging and supportive online learning experience.

FIGURE 4.34: DO THE ONLINE LEARNING METHOD CAUSED YOU TO EXPERIENCE ANY HEALTH PROBLEMS?



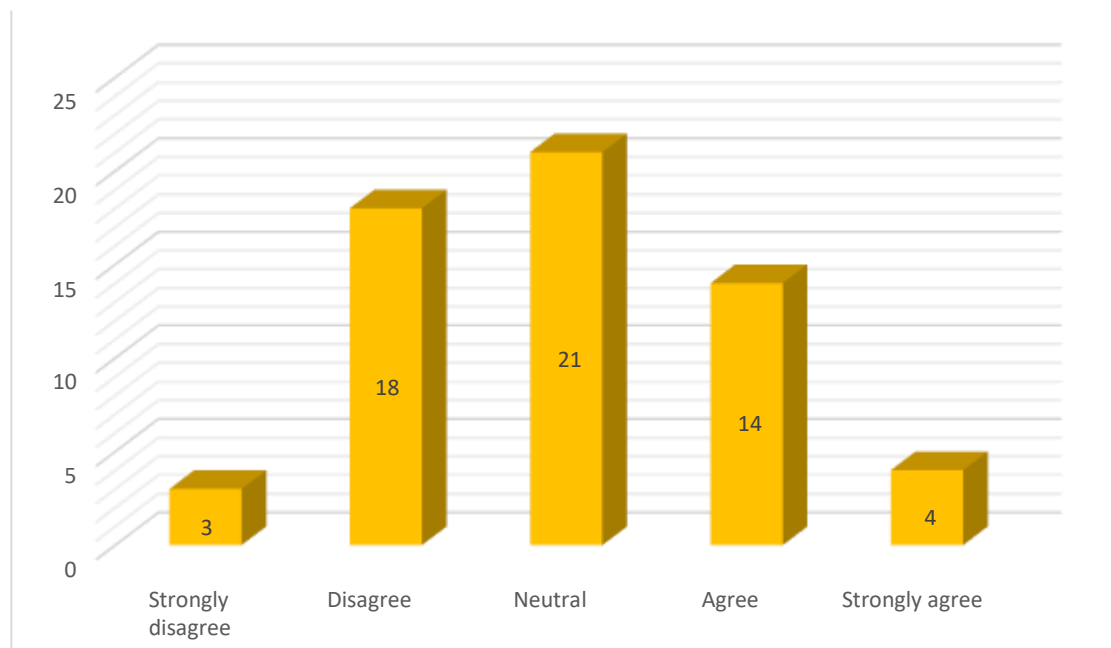
The results suggest that a considerable proportion of students (88.3%) either experienced health problems directly or to some extent due to online learning. A significant percentage of students (43.3%) responded affirmatively, indicating that they experienced health problems as a result of online learning. This suggests that the online learning environment may have had adverse effects on their physical or mental wellbeing. Health problems could include issues such as eye strain, a sedentary lifestyle, increased stress, or difficulties in managing screen time. The largest percentage of students (45.0%) responded that they experienced health problems to some extent as a result of online learning. This indicates that a substantial number of students faced certain health issues, but the impact may vary in terms of severity or frequency among individuals. A small portion of students (11.7%) reported that they did not experience any health problems due to online learning. These students may have found ways to adapt to the online learning environment without significant negative impacts on their health.

FIGURE 4.35: WHAT KIND OF HEALTH ISSUES THAT YOU ENCOUNTERED FREQUENTLY



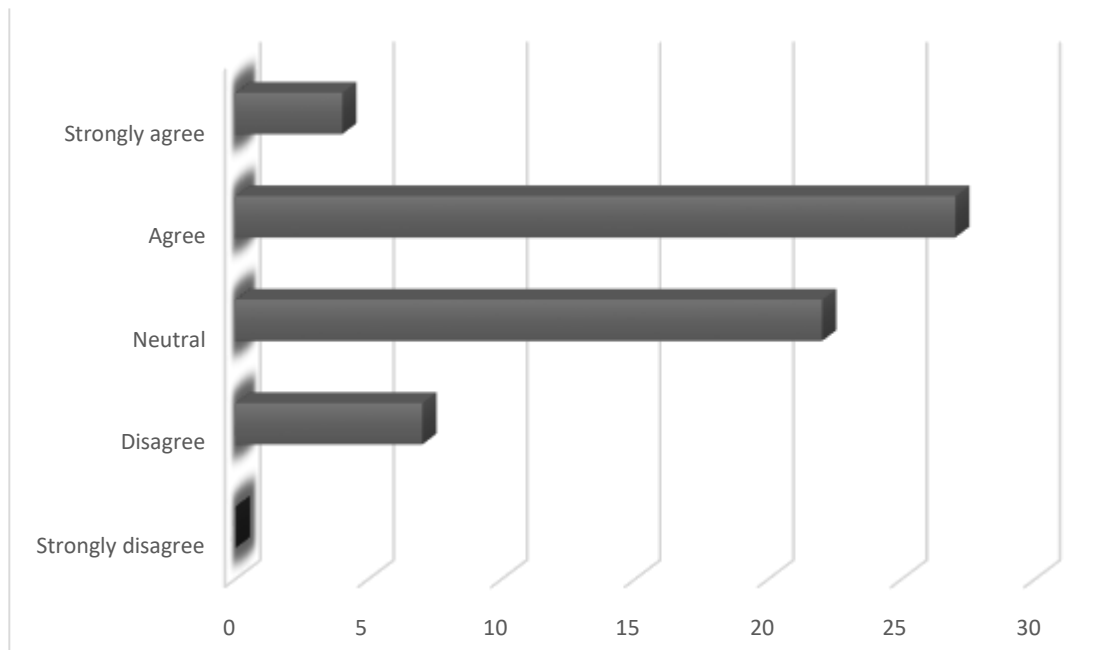
It is important to note that these percentages represent the frequency of health issues reported by the surveyed students. The specific health issues experienced during online classes may vary among individuals. However, the high prevalence of ear pain, frequent headaches, and a significant percentage of eyesight and neck pain highlight the potential health challenges associated with online learning. Addressing these issues requires implementing measures such as taking regular breaks, practicing proper ergonomics (comfort in the working or learning environment), promoting eye care practices, and encouraging students to use headphones or earphones appropriately to minimize discomfort.

FIGURE 4.36: MY HOME ENVIRONMENT DOES NOT SUPPORT ME IN SPARE TIME FOR ONLINE CLASSES



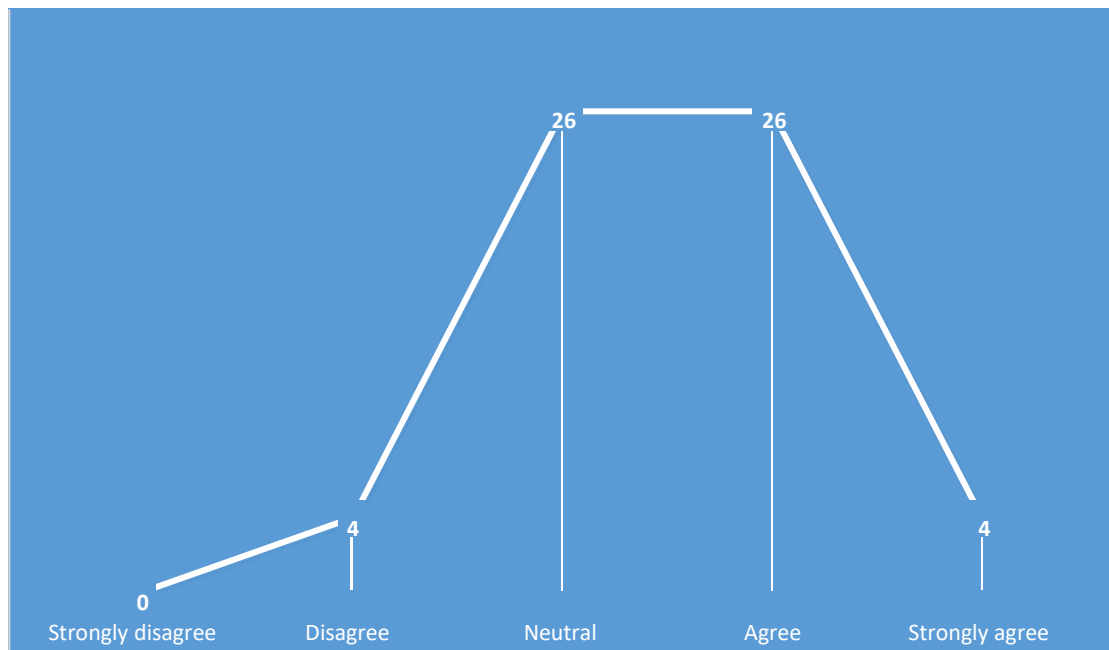
Overall, the responses indicate that a majority of students either agree or have a neutral stance regarding their home environment's support for spare time during online classes. This suggests that a significant number of students feel that their home environment is conducive to dedicating time and focus to online learning. However, it's important to consider that a notable percentage also disagrees or remains neutral, indicating that some students may face challenges in managing their spare time for online classes due to their home environment.

FIGURE 4.37: I THINK IT IS HARD TO SPEAK OR LISTEN IN ONLINE CLASSES



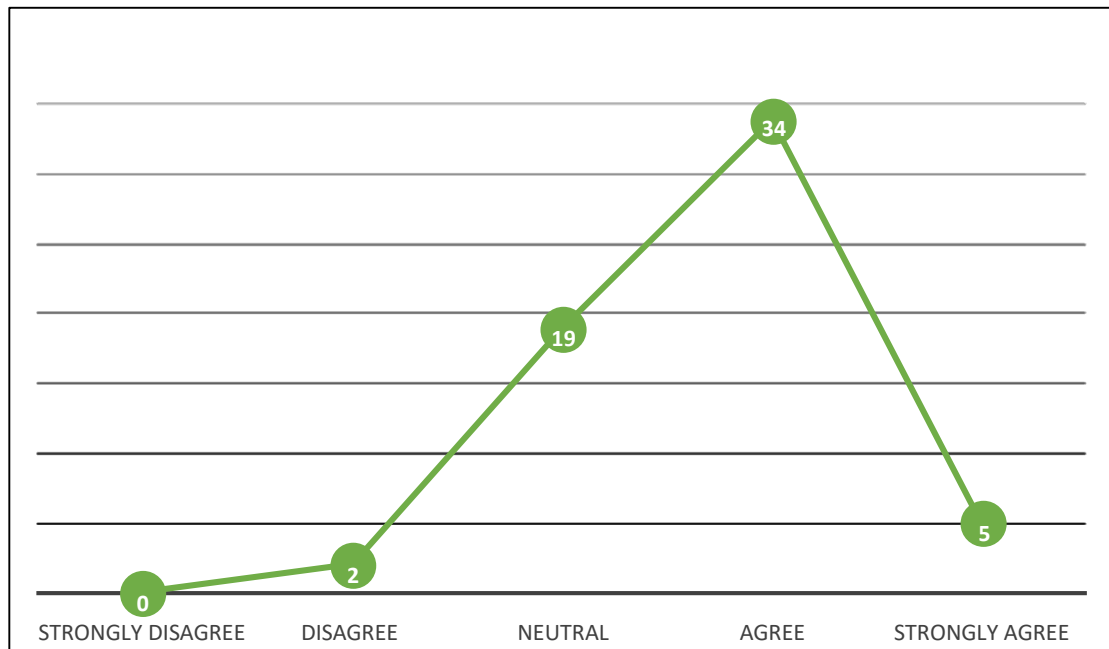
Based on the responses, it is clear that the majority of students have a neutral opinion (43.3%) regarding the difficulty of speaking or listening in online classes. An equal percentage of students (43.3%) agree that it is hard to speak or listen in online classes. A smaller percentage of students disagree (6.7%) or strongly disagree (0.1%) with this statement, while another 6.7% strongly agree. Overall, the responses indicate a mixed sentiment among the students. While a significant portion finds it difficult to speak or listen in online classes, an equal percentage does not share this sentiment. Technical glitches such as poor connectivity, audio/video delays, or equipment malfunctions can hinder effective communication and listening. Background noise, interruptions from family members, or the temptation to engage in non-academic activities can make it harder to concentrate and actively participate in discussions.

FIGURE 4.38: THERE IS A LACK OF CONCISE EXPLANATIONS OF TOPICS FROM THE TEACHERS DURING ONLINE CLASSES



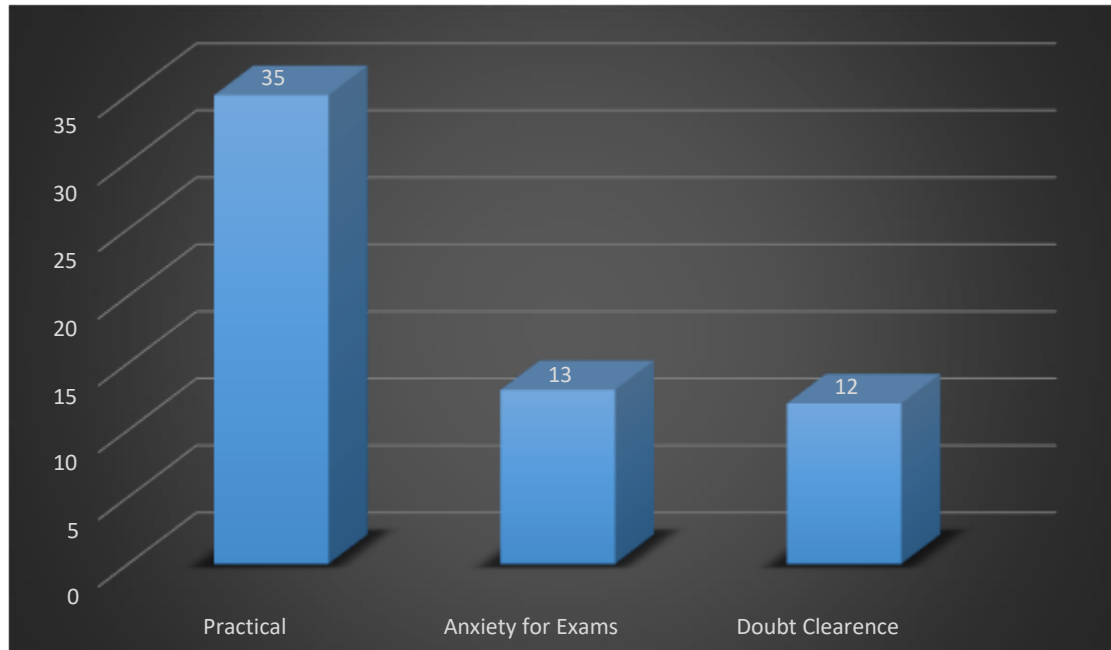
6.7% of the students disagree that there is a lack of concise explanations. They might believe that the teachers generally provide sufficient clarity in explaining the topics during online classes. 43.3% of the students have a neutral stance. These students likely neither agree nor disagree with the statement, indicating that they might not have a strong opinion or might perceive the explanations as neither concise nor lacking conciseness. 43.3% of the students agree that there is a lack of concise explanations. These students may feel that the teachers could improve their explanations to be more succinct and to the point during online classes. 6.7% of the students strongly agree that there is a lack of concise explanations. These students may strongly believe that the teachers consistently fail to provide clear and concise explanations during online classes. Overall, the majority of students (86.6%) either agree or have a neutral stance, indicating that a significant portion of the students perceive a lack of concise explanations from their teachers during online classes.

FIGURE 4.39: ONLINE LEARNING HAS CREATED A LACK OF MOTIVATION BECAUSE OF THE LIMITED INTER-PERSONAL CONTACT



A majority of the students either agree (56.7%) or strongly agree (8.3%) that online learning has created a lack of motivation due to limited interpersonal contact. This suggests that a significant portion of students feel that the absence of face-to-face interaction and direct engagement with peers and instructors in online learning environments has had a negative impact on their motivation. Furthermore, a considerable number of students have a neutral stance (31.7%) on the issue. This indicates that while they may not strongly agree or disagree, they likely recognize both the advantages and disadvantages of online learning when it comes to motivation and interpersonal contact. On the other hand, a small proportion of students (3.3%) disagree with the statement. These students may feel that online learning has not adversely affected their motivation and that they are able to find alternative sources of motivation or maintain their motivation despite the limited interpersonal contact. Overall, the responses suggest that the lack of interpersonal contact in online learning has had a significant impact on students' motivation, as the majority either agree or strongly agree with this statement.

FIGURE 4.40: AS A BACHELOR OF SCIENCE STUDENT WHAT IS THE MAJOR DIFFICULTY YOU FACED AS A CHALLENGE DURING THE METHOD OF ONLINE LEARNING?



The majority of students (58.3%) expressed that practical aspects of their coursework posed a significant challenge during online learning. This could imply that certain hands-on activities, experiments, or laboratory work that are typically a part of their curriculum were difficult to replicate or engage with effectively in an online setting. The absence of physical resources, equipment, and direct guidance may have hindered their learning experience. A notable percentage of students (21.7%) reported experiencing anxiety related to exams as a major challenge during online learning. This suggests that the shift to online exams may have increased stress levels and created a sense of uncertainty among students. Factors such as adapting to new exam formats, technical difficulties, or concerns about the integrity of online assessments may have contributed to heightened anxiety. Approximately 20.0% of students mentioned that they faced challenges with doubt clearance during online learning. This indicates that they struggled to seek clarifications or get their queries addressed in a timely manner. The lack of immediate access to instructors or difficulty in effectively communicating doubts and receiving prompt responses may have hindered their understanding of course material. These responses highlight the difficulties that Bachelor of Science students encountered during online learning, emphasizing practical limitations, exam related anxiety, and the need for effective doubt-clearance

mechanisms. It underscores the importance of addressing these challenges to ensure a more successful and supportive online learning experience for students in the future.

DISCUSSION

The immediate adaptation to online education has been accelerated by the COVID-19 pandemic. The perceptions and difficulties that students encounter, however, are poorly understood. This study will examine how students perceive online learning, the networks they have access to, the resources they can use, and the challenges and barriers it creates for Bachelor of Science students. This study distributed survey questions to 60 Bachelor of Science students from the Trivandrum district of Kerala. The study's primary goals are to determine whether online learning is just as effective as in-person instruction and to look at the difficulties faced by students in the bachelor of science stream when they had to switch to a new learning style.

Except for a small minority of students, the findings generally showed that most students have access to the internet, smartphones, and laptops for taking online classes. And the majority of them go to online classes using their own devices. Additionally, it was found that about 96 percent of students own a smartphone. However, only 1.7% of the students strongly agree that online learning is more effective than offline learning. And the vast majority of students favour traditional classroom instruction over learning online.

The purpose of this study is to evaluate the availability of resources, student perceptions, and the obstacles and challenges encountered by Bachelor of Science Stream students during the COVID-19 pandemic. Data were collected from a number of aided and government colleges in Thiruvananthapuram that are connected to the University of Kerala. During the period of May 3, 2023, to May 10, 2023, an online survey was conducted to gather the data. The Google Forms-based structured questionnaire was distributed via email and WhatsApp. A total of 60 students completed the entire survey.

Numerous health issues have been plaguing students, including eyestrain, frequent headaches, neck pain, ear pain, and more. This study makes suggestions for improvements to better understand the problems and experiences of Bachelor of Science Stream students taking classes online during the lockdown in 2021.

CHAPTER V
MAJOR FINDINGS, CONCLUSION, AND SUGGESTIONS

FINDINGS AND CONCLUSION

The study aims to investigate generally the online learning experience of a Bachelor of Science during the COVID-19 pandemic. It mainly aims to understand the perceptions of students toward online learning and to identify if they have access to resources for attending online classes. It also entails the study of challenges faced by the Bachelor of Science students. The current study collected sufficient data from Bachelor of Science students who attended online classes during the period of the pandemic. This study also focuses on does the online learning method cause any digital divide among students in term of access to resources based on their socio-economic status.

Online learning enabled students to interact and communicate with their professors and fellow students during the pandemic, but it had some limitations in terms of their ability to access the internet and new technologically advanced devices. According to the respondent's demographic information, the majority of students come from rural and urban areas, with a smaller number coming from suburban or parish areas. According to the majority of studies, students in rural areas were more severely affected than those in urban areas by the pandemic as the nation embraced online learning. Rural residents must also contend with erratic power supplies and outdated electronics, which frequently obstruct seamless access. Additionally, fewer students in rural areas have desktop or laptop computers.

Since the majority of the respondents are from nuclear families, there will likely be less noise in the house than in families with many members. Students will be able to take online classes in a serene environment thanks to this. The disadvantage of a nuclear family is that there will only be three or four people living there, which may limit their opportunities for social interaction. Therefore, there is a significant chance that the students may become somewhat isolated. A small percentage of the students who took part in the study were OBC, and the majority of them are from the lower middle class. Parents from the lower middle class experienced the pandemic's effects more severely than those from higher-income classes, both practically and financially. The closures brought on by the COVID-19 outbreak have made things more difficult for parents of students in both high school and college. Even though many schools have abruptly adopted remote learning to continue students' education in response to

the outbreak, students from lower-income households experience a digital gap due to a lack of reliable access to the internet and digital resources.

In the case of accessibility to network and device availability around 96% of students have their own devices to attend online classes. But the balance 4% do not have this accessibility. The thing that we need to understand is that the percentage of SC/ST students is almost less. There could have a chance that they are unable to access adequate resources. The respondents commonly use mobile phones as convenient devices to attend online classes. Around 81% of the students have access to an internet connection at home, which is necessary for taking part in online learning activities, they are usually referring to the limited mobile data. And from the data, around 70% of the students face financial loss because of recharging their mobile for a particular data plan which is essential to attend online classes. In this 70% half of them completely agree with financial loss and the other half responded that they encounter financial to some extent.

The results presented above thus imply that access to technologically advanced devices for online class participation may be influenced by the socioeconomic status of the student and the environment in which they reside. This could increase the digital divide's severity and cause student inequality. The results thus confirm the features of Weber's social stratification theory, which advanced the notion that a person's class or economic circumstances have an effect on class relations. This might limit people's access to and control over certain things.

91% of the students, according to the data gathered, believe that offline learning is more beneficial and effective for them than online learning. In contrast to offline learning, they generally felt that the online learning method did not encourage interaction with the faculty. A lot of students frequently miss class because they can't get a stable internet connection. There may be issues with the lecture, the notes displayed on the screen during the class, hearing it clearly, leaving class, etc. for the students. these are impacted by a variety of factors, including internet outages, background noise, and fewer opportunities for one-on-one interaction. In the offline approach, which is used in the context of traditional learning, the faculty can focus and directly engage with each student. Due to the increased time required to check on each student, online learning is not widely promoted. Therefore, more screen time could result in additional health problems. Additionally, because they are primarily

taking their classes at home, where distractions are more likely to occur, students are more easily distracted when taking classes online. We can therefore conclude from students' perceptions of online learning that they favor offline learning more than online learning. Despite their responses indicating some degree of satisfaction, the majority of them are not entirely happy with the online learning method.

The majority of students favor traditional classrooms over electronic learning. Some students agree that an education system should combine online and offline learning methods because both have advantages. By lowering stress, health problems, internet interruptions, and the apathetic attitudes of science stream students towards their subjects as they struggled, the offline method can be helpful in subjects where the online method fails.

CONCLUSION

It is debatable how much of an impact information technology has on various aspects of modern life, as well as how much of an impact it is having on education. The ongoing COVID-19 pandemic, which has forced all educational institutions around the world to close, has increased its significance in the academic sphere. This has created a number of challenges for educators at all levels of education, but especially for students.

In conclusion, the study on online learning during COVID-19 among Bachelor of Science students provides valuable insights into the challenges and experiences faced by them during the pandemic. The findings highlight the significant difficulties encountered during the transition to remote learning. The lack of practical components in coursework emerged as a prominent challenge, making it challenging for students to engage in hands-on activities and experiments online. Furthermore, students experienced heightened anxiety related to online exams, including concerns about technical issues and exam integrity. The limited access to doubt clearance and timely feedback from instructors also hindered students' understanding of course material.

In order to improve the online learning experience for Bachelor of Science students, the study emphasizes the significance of addressing these issues and putting in place focused interventions. Finding creative ways to incorporate practical elements into online coursework, offering support and resources to lessen exam-related anxiety, and improving communication channels for efficient doubt-clearing should be the focus

of strategies. By addressing these problems, educators and decision-makers can give Bachelor of Science students access to a more comfortable and encouraging online learning environment. It is crucial to keep in mind that this study concentrated on a particular group of students during a particular time period. Overall, this study adds to the collection of knowledge on online education during COVID-19 and offers insightful advice for enhancing the educational opportunities for Bachelor of Science students. The results show the importance of ongoing efforts to improve online learning strategies, support systems, and pedagogical methods to meet the changing needs of students in comparable contexts.

SUGGESTIONS

Due to the pandemic's exposure to the digital divide, educational institutions should place a priority on investing in a strong technological foundation to guarantee that all students have a seamless online learning experience. This entails offering the necessary hardware, dependable internet access, and user-friendly platforms that can accommodate various learning requirements. Additional research is necessary in order to fully comprehend the long-term effects of online learning and the effectiveness of strategies. To fully understand the long-term effects of online learning and the effectiveness of corresponding strategies, more research is required. Teachers with knowledge of different aspects of online education should be on hand to help students with any technical issues. For students to receive the assistance and guidance they may need in navigating the world of online learning, institutions should increase the availability of online counseling, academic guidance, and tutoring services. E-learning strengthens the foundation for assessing student performance.

REFERENCE

1. Adedoyin, O. B., & Soykan, E. (2023). Covid-19 pandemic and online learning: The challenges and opportunities. *Interactive Learning Environments*, 31(2), 863–875. <https://doi.org/10.1080/10494820.2020.1813180>
2. Affouneh, S., Salha, S. N., & Khlaif, Z. (2020). Designing quality e-learning environments for emergency remote teaching in the coronavirus crisis. *Interdisciplinary Journal of Virtual Learning in Medical Sciences*, 11(2), 1–3.
3. Aldholay, A. H., Isaac, O., Abdullah, Z., & Ramayah, T. (2018). The role of transformational leadership as a mediating variable in DeLone and McLean Information System Success Model: The context of online learning usage in Yemen. *Telematics and Informatics*, 35(5), 1432. <https://doi.org/10.1016/j.tele.2018.03.012>
4. Allam, S. N. S., Hassan, M. S., Mohideen, R. S., Ramlan, A. F., & Kamal, R. M. (2020). Online distance learning readiness during COVID-19 outbreak among undergraduate students. *International Journal of Academic Research in Business and Social Sciences*, 10(5), 642–657. <https://doi.org/10.6007/IJARBS/v10i5/7236>
5. Barr, N., Pennycook, M., & Barreira, S. (2020). Covid-19 and student learning in the United States: The hurt could last a lifetime. McKinsey and Company.
6. Bates, A. W. (2019). *Teaching in a digital age: Guidelines for designing teaching and learning*. Tony Bates Associates Ltd.
7. Chakraborty, P., Mittal, P., Gupta, M. S., Yadav, S., & Arora, A. (2021). Opinion of students on online education during the COVID-19 pandemic. *Human Behavior and Emerging Technologies*, 3(3), 357–365. <https://doi.org/10.1002/hbe2.240>
8. Chen, T., Peng, L., Jing, B., Wu, C., Yang, J., & Cong, G. (2020). The impact of the COVID-19 pandemic on user experience with online education platforms in China. *Sustainability*, 12(18), 7329. <https://doi.org/10.3390/su12187329>
9. Cojocariu, V.-M., Lazar, I., Nedeff, V., & Lazar, G. (2014). SWOT analysis of elearning educational services from the perspective of their beneficiaries. *Procedia–Social and Behavioral Sciences*, 116, 1999–2003. <https://doi.org/10.1016/j.sbspro.2014.01.510>
10. Curtis, D. D., & Lawson, J. M. (2001). Exploring online collaborative learning.

- Journal of Asynchronous Learning Networks*, 5(1), 21–34.
11. Dhawan, S. (2020). Online Learning: A Panacea in the Time of COVID-19 Crisis. *Journal of Educational Technology Systems*, 49(1), 5–22.
<https://doi.org/10.1177/0047239520934018>
 12. Durnali, M. (2020). The effect of self-directed learning on the relationship between self-leadership and online learning among university students in Turkey. *Tuning Journal for Higher Education*, 8(1), 129–165.
[https://doi.org/10.18543/tjhe8\(1\)2020pp129-165](https://doi.org/10.18543/tjhe8(1)2020pp129-165)
 13. Favale, T., Soro, F., Trevisan, M., Drago, I., & Mellia, M. (2020). Campus traffic and e-Learning during COVID-19 pandemic. *Computer Networks*, 176, 107290.
<https://doi.org/10.1016/j.comnet.2020.107290>
 14. Hassan, S. U. N., Algahtani, F. D., Zrieq, R., Aldhmadi, B. K., Atta, A., Obeidat, R. M., & Kadri, A. (2021). Academic Self-Perception and Course Satisfaction among University Students Taking Virtual Classes during the COVID-19 Pandemic in the Kingdom of Saudi-Arabia (KSA). *Education Sciences*, 11(3), 134. <https://doi.org/10.3390/educsci11030134>
 15. Himanshu, R. (2019). Digitalization of education in India – An analysis, 6(1), 160–167.
 16. Johnson, N. F., Velásquez, N., Restrepo, N. J., Leahy, R., Gabriel, N., El Oud, S., Zheng, M., Manrique, P., Wuchty, S., & Lupu, Y. (2020). The online competition between pro- and anti-vaccination views. *Nature*, 582(7811), 230–233.
<https://doi.org/10.1038/s41586-020-2281-1>
 17. Kaplan, A. (2017). Academia goes social media, MOOC, SPOC, SMOC, and SSOC: The digital transformation of higher education institutions and universities. In B. Rishi & S. Bandyopadhyay (Eds.), *Contemporary issues in social media marketing* (pp. 23–34). Routledge. <https://doi.org/10.4324/9781315563312-2>
 18. Khan, B. H. (2005). *Managing e-learning strategies: Design, delivery, implementation, and evaluation*. IGI Global.
 19. Krasnova, T., & Vanushin, I. (2016). Blended learning perception among undergraduate engineering students. *International Journal of Emerging Technologies in Learning*, 11(1), 54–56. <https://doi.org/10.3991/ijet.v11i01.4901>

20. Littlefield, J. (2018). The difference between synchronous and asynchronous distance learning. <https://www.thoughtco.com/synchronous-distance-learning-asynchronous-distance-learning-1097959>
21. Mathera, M., & Sarkans, A. (2018). Student perceptions of online and face-to-face learning. *International Journal of Curriculum and Instruction*, 10(2), 61–76.
22. Mathivanan, S. K., Jayagopal, P., Ahmed, S., Manivannan, S. S., Kumar, P. J., Raja, K. T., Dharinya, S. S., & Prasad, R. G. (2023). RETRACTED ARTICLE: Adoption of E-Learning during Lockdown in India. *International Journal of System Assurance Engineering and Management*, 14(S1), 575–575. <https://doi.org/10.1007/s13198-021-01072-4>
23. McBrien, J. L., Cheng, R., & Jones, P. (2009). Virtual spaces: Employing a synchronous online classroom to facilitate student engagement in online learning. *International Review of Research in Open and Distributed Learning*, 10(3), 1–17.
24. McBrien, J. L., Cheng, R., & Jones, P. (2009). Virtual spaces: Employing a synchronous online classroom to facilitate student engagement in online learning. *International Review of Research in Open and Distributed Learning*, 10(3), 1–17.
25. Mridul, B. B., Dhariti, S., & Navdeep, K. (2021). Online classes during COVID-19 pandemic: Anxiety, stress, and depression among university students. *Indian Journal of Forensic Medicine and Toxicology*, 15(1), 186–189.
26. Palvia, S. C. (2013). E-evolution or E-revolution: E-mail, E-commerce, E-government, E-education. *Journal of It Case and Application Research*, 15(4), 4–12.
27. Palvia, S., Aeron, P., Gupta, P., Mahapatra, D., Parida, R., Rosner, R., & Sindhi, S. (2018). Online education: Worldwide status, challenges, trends, and implications. *Journal of Global Information Technology Management*, 21(4), 233–241. <https://doi.org/10.1080/1097198X.2018.1542262>
28. Parkes, M., Stein, S., & Reading, C. (2015). Student preparedness for university e-learning environments. *Internet and Higher Education*, 25, 1–10. <https://doi.org/10.1016/j.iheduc.2014.10.002>
29. Seaman, J. E., Allen, I. E., & Seaman, J. (2018). *Grade increase: Tracking distance education in the United States*. Babson Survey Group.

30. See Rowan, R. (1983). Executive Ed. at Computer U. *Fortune*, March 7, 1983; Feenberg, A. (1993). Building a global network: The WBSI experience. In L. Harasim (Ed.), *Global networks: Computerizing the international community* (pp. 185–197). MIT Press.
31. Sharma, R. (2020). Review of national education Policy 2020, with specific reference to teacher education [Working papers]. *Voice of research* p. 2020-35-04.
32. Singh, M., Adebayo, S. O., Saini, M., & Singh, J. (2021). Indian government eLearning initiatives in response to COVID-19 crisis: A case study on online learning in the Indian higher education system. *Education and Information Technologies*, 26(6), 7569–7607. <https://doi.org/10.1007/s10639-021-10585-1>
33. Singh, V., & Thurman, A. (2019). How many ways can we define online learning? A systematic literature review of definitions of online learning (1988–2018) (1988– 2018). *American Journal of Distance Education*, 33(4), 289–306. <https://doi.org/10.1080/08923647.2019.1663082>
34. Sintema, E. J. (2020, April 7). Effect of COVID-19 on the performance of grade 12 students: Implications for STEM education. *Eurasia Journal of Mathematics, Science and Technology Education*, 16(7). <https://doi.org/10.29333/ejmste/7893>
35. Song, L., Singleton, E. S., Hill, J. R., & Koh, M. H. (2004). Improving online learning: Student perceptions of useful and challenging characteristics. *Internet and Higher Education*, 7(1), 59–70. <https://doi.org/10.1016/j.iheduc.2003.11.003>
36. Sreehari, P. (2020). Online learning during the Covid-19 lockdown: Learners ‘perceptions. *Online Learning*, 7(19).
37. Tello, S. F. (2002). *An analysis of the relationship between instructional interaction and student persistence in online education* [Doctoral Dissertation]. University of Massachusetts.
38. Van Dijk, J. (2020, January 21). *The Digital Divide*. *Polity*.
39. Volery, T., & Lord, D. (2000). Critical success factors in online education. *International Journal of Educational Management*, 14(5), 216–223. <https://doi.org/10.1108/09513540010344731>

APPENDIX 1

TOOL FOR DATA COLLECTION QUESTIONNAIRE

ONLINE LEARNING DURING COVID-19: A STUDY AMONG BACHELOR OF SCIENCE STUDENTS IN THIRUVANANTHAPURAM

Hello,

I am a student securing post-graduation in sociology. I want to study the difficulties and experiences Trivandrum Bachelor of Science students had with online learning throughout COVID-19 in order to finish my dissertation. You can fill out this questionnaire anonymously; only the researcher will see it. We'll keep your responses confidential. You are entirely free to decide whether or not to answer the questionnaire, but I would appreciate it if you did. Identify the questions that apply to you by checking the boxes next to them, then type your answer in the space provided.

DEMOGRAPHIC DETAILS OF RESPONDENTS

1. Gender
 - Male
 - Female
 - Transgender female
 - Transgender male
 - Non-binary
 - Gender Queer
 - Prefer not to say

2. Nature of place you live
 - Urban
 - Parish
 - Rural

- Suburban
 - Village
 - Other:
3. Type of household you live
- Nuclear family
 - Joint family
 - Extended family
 - Single-parent family
 - Other:
4. Religion
- Muslim
 - Christian
 - Hindu Nair
 - Other:
5. Category
- General
 - OBC
 - SC/ST
 - EWS
 - Other:
6. Income class
- Very poor
 - Poor
 - Lower middle class
 - Upper middle class
 - Wealthy
7. Ration card Color.
- Yellow card
 - Pink Card

- Blue Card
 - White Card
8. Head of the family.
- Father
 - Mother
 - Grandmother
 - Other:
9. Annual income of the family
- Less than 1 lakh
 - 1-2 lakh
 - 2-5 lakh
 - 5-10 lakh
 - 10 lakhs and above
10. Educational qualification of guardian.
- Illiterate
 - Primary
 - Secondary
 - SSLC
 - Undergraduate
 - Postgraduate
 - Ph.D.
11. Occupation of the head of the family
- Government
 - Private
 - Elementary
 - Agriculture
 - Unemployed
 - Electrician
 - Coolie
 - Fisherman
 - Auto driver
 - Business
 - Other:

12. Type of house
 - Concrete roof
 - Tiled roof
 - Shed or Hut
 - Sheet roof
 - Other:
13. Ownership of the house
 - Owned
 - Rent

NETWORK AND DEVICE AVAILABILITY

14. Do you have your own device to attend online classes?
 - Yes
 - No
15. Do you use your parents' devices to attend online classes?
 - Yes
 - To some extent
 - No
16. Which of this online learning device you use commonly?
 - Desktop
 - Laptop
 - Smart Phone
 - Other:
17. If you use your phone, what's your phone's price range?
 - Less than 1000
 - 1000-5000
 - 5000-10000
 - 10000-20000
 - 20000-30000
 - Above 30000
18. Do you have internet accessibility at home?
 - Yes
 - No
19. Do you have Wi-Fi access at home?

- Yes
- No

20.If you have internet access at your home or in the phone, how is your connection metered? (If you have both select multiple options)

- Metered per minute
- Metered with a data plan with maximum GB data per month
- Unlimited Wi-Fi broadband
- Other:

21.Which operator do you use?

- Airtel
- Vi
- Jio
- BSNL
- Kerala vision
- Other:

22. Do you face any financial loss because of the recharging of the data plan?

- Yes
- To some extent
- No

23. Are there any other people in your household who undergo online classes that made you have to share the same devices and internet connection with them?

- No one else
- Just me, share the internet connection with but with different gadgets
- Share same gadgets and internet connection.
- Other:

24. Do you think the nature of place (Rural, Urban, suburban, etc.) you live in has poor network connection?

- Yes
- To some extent
- No

PERCEPTIONS TOWARDS ONLINE LEARNING.

25. Which method of learning seems to be more productive and fruitful for you?

- Online learning
- Offline learning

26. Do you feel online learning promoted interaction with the teacher rather than offline learning?

- As a whole
- Some what
- Moderate
- Not at all

27. Did you felt that there is lack of communication among with your peers compared to offline method of learning?

- As whole
- Some what
- Moderate
- Not at all

28. Online learning is more effective than offline learning.

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

29. Online learning enables the effective exploration of educational materials.

- Strongly agree
- Agree
- Neutral

- Disagree
- Strongly disagree

30. Online makes it easier to complete group projects and assignments.

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

31. Online learning saves time for students.

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

32. Online learning enhances effective knowledge acquisition.

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

33. I get more distracted during online learning rather than during regular classroom learning.

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

34. I consider interacting with my classmates and teachers through online classes during COVID-19 helped me emotionally as an escape from loneliness.

- Strongly agree
- Agree
- Neutral

- Disagree
- Strongly disagree

35. I consider learning from the comfort of home as an advantage of online learning.

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

36. Are you satisfied with this method of learning?

- Extremely satisfied
- Very satisfied
- Neutral
- Slightly satisfied
- Not at all satisfied
- Other

37. How stressful has online learning been for you during the COVID-19 Pandemic?

- Zero stressful / not stressful at all
- Moderate stressful
- Highly stressful and irritating

CHALLENGES FACED DURING ONLINE CLASSES

38. Online learning is more expensive than offline learning.

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

39. The internet connection is unreliable.

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

40. Adequate hardware and software for online learning are not available in my house.

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

41. What are the common problems that you encounter while attending online learning?

- Internet Interrupt
- Noisy Background
- Poor Comprehension
- Nothing

42. You suffered with technical issues during online learning.

- Yes
- To some extent
- No

43. I cannot focus in an online learning environment and cannot avoid distractions.

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

44. I have poor management skills that affect my online learning capabilities.

- Strongly agree
- Agree

- Neutral
- Disagree
- Strongly disagree

45. The faculty's interaction and feedback are inadequate in online learning.

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

46. Does the online learning method caused you to experience any health problems?

- Yes
- To some extent
- No

47. If yes, what kind of health issues that you encountered frequently?

- Eyesight problem
- Back pain
- Neck pain
- Frequent headaches
- Ear pain
- Vertigo
- Other:

48. Attending online classes is a problem due to fewer separate places in my home for study.

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

49. My home environment does not support me into spare time for online classes.

- Strongly agree
- Agree

- Neutral
- Disagree
- Strongly disagree

50. My parents dislike me using the internet for an extended period.

- Yes
- To an extent
- No

51. I think it is hard to speak or listen in online classes.

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

52. There is a lack of concise explanations of topics from the teachers during online classes.

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

53. The method of online learning is inducing lots of distractions to your studies.

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

54. Online learning has created a lack of motivation because of the limited inter– personal contact.

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

55. As a Bachelor of science student what is the major difficulty you faced as a challenge during the method of online learning?

- Practical Sessions
- Doubt Clearance
- Anxiety for exams
- Attending exams
- Other