

Independent Final Report

Impact of COVID-19 in Higher Education System: Disruptive Challenges and Transformative Opportunities for Students

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Certification Page

Monika Rani (52120610) hereby declare that the contents of this Master's Thesis / Research Report are original and true and have not been submitted at any other university or educational institution for the award of degree or diploma. All the information derived from other published or unpublished sources has been cited and acknowledged appropriately.

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Being a teacher before pursuing this MBA program in Ritsumeikan Asia Pacific University, I was well familiar with the difficulties and challenges faced by the students during online classes due to COVID-19 pandemic. This directed me towards choosing this topic for my research work and my future career in teaching. I have given my best and anticipate that the research findings would benefit educational institutions in imparting and improving online learning education system.

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SUMMARY

With the outbreak of COVID-19, all schools, colleges, and universities around the world were forced to shut down and asked students to attend online classes from home without proper preparation. During this digital transformation period, students faced many challenges in online learning and it may result in poor performance on their learning. Thus, it is important for the education sector to gain a deep understanding of students' online learning experiences, especially in the unprecedented times of the pandemic. Even though many researchers have studied in this area, only limited research exists about the challenges as well as tactics that students employ to overcome them. Therefore, this study aims to examine the impact of COVID-19 on higher education, determine the challenges and hurdles faced by students during online classes, and propose a recommendation on how students can transform the challenges into opportunities during online classes. There are three research questions that are explored in this study: 1) how student learning behaviour has changed since Covid-19; 2) what the challenges are faced by students during online classes due to the Covid-19 outbreak; and 3) how these challenges transform and become opportunities for the students. This study applies both quantitative and qualitative research method and the knowledge in business management in order to understand and analyse the students' needs, wants as well as their expectations in this online learning transition. The data from 149 respondents was collected online via a Google survey that contains both open-ended and closed-ended questions with the snowball sampling method. This survey is used for both qualitative and quantitative studies. The descriptive data analysis method is applied to analyse and answer the research questions. The major findings of this study highlight that the online platform helps the students to attend their classes regularly during this difficult time. Online learning gave both positive and negative outcomes for the students. The positive aspects mentioned by the students are flexibility, cost-effectiveness, time management, and interaction with various virtual groups. On the contrary, the greatest challenge is related to their learning environment at home and technological literacy. Further, the findings of this research revealed that online education during COVID-19 has significantly affected the quality of education due to a lack of readiness and forced transformation to online learning. It also affected students' mental health and learning experiences. Students employed various strategies like time management and learning environment control to cope with the challenges. Overall, the results provide new insights about the challenges faced by students

during Covid-19 in online learning and how these challenges can be converted into opportunities. This study is not only beneficial for students who are going to attend online classes in the future but also for the university to mitigate the problems and capture opportunities that emerge due to online education during the transition period.

KEYWORDS: Education, COVID-19, challenges, opportunities, students, online learning.

CHAPTER 1

INTRODUCTION

Education is a basic human ideal, a basic need of society and life, and a symbol of freedom (Bhardwaj, 2016). Education is a culture that is wise, optimistic, and alternation in the thinking that everyone has a chance to share in life (byinfed.org, 2021). A person in his life gets respect in society, learns values and leads a quality life. All these opportunities come his/her way only due to education. It can be assumed that education reshapes human life (Eckersley, 1999).

The impact of education can be beneficial at an individual as well as societal level. In addition to this, education helps to increase knowledge and skills in the workplace (Wobbekind, 2012). Education also plays a vital role in entrepreneurship and product invention. Many educational programs for entrepreneurship help in boosting skills like creative thinking, teamwork and risk management (Arthur et al., 2012). Moreover, these educational programs are provided in both formal and informal manner, in groups or individually, and at national and local level (Arthur et al., 2012). With education, the chances of crime are also minimized (Dee, 2004).

In December 2019, Corona virus disease (COVID-19) origin was reported in Wuhan, China, causing a worldwide health crisis. Within three months, the spread of COVID-19 infected almost 118,000 people, with 4,291 deaths reported in 114 countries (Bavel et al., 2020). By far, this disease has been one of the biggest challenges for the education sector. COVID-19 hugely disrupted the lives of the students. Some students delayed their education or shifted to remote learning, while others were forced to opt for jobs without proper education. Almost a billion students have faced specific challenges during COVID-19 (Daniel, 2020). According to UNESCO, the education system has been badly affected by this pandemic, affecting 87% of the students all over the world negatively influenced by this uncertain time. Also, a huge number of international students suffered through national and international flight closures and immigration restrictions (Tadesse & Muluye, 2020). In order to lessen the impact of this pandemic, the whole world was brought to a standstill via the closure of educational institutes, schools, colleges, universities, businesses, and other organizations. For instance, in March 2020, the government of India declare the lockdown nationwide as a preventive method to overcome this infection and ordered all educational institutes to close down (Tarkar, 2020).

This pandemic has shocked everyone across the globe. Undeniably, all sectors were impacted by COVID-19, especially the education sector and the students. The students' lives and academic tasks were shifted from offline classes to online classes. Social media platform like Facebook and communication software such as Zoom App, Google Meet, etc. were the alternatives used for online classes (Aristovnik et al., 2020). After China, Italy was the first country where COVID-19 spread rapidly in some of its cities. All the educational institutions, like schools and universities, were closed in its Lombardy city. After one week of the country's lockdown, some universities started online classes by using different platforms (Agasisti et al., 2020). During the current corona crisis in Germany, the online education system entered unexpectedly into the higher education sector. The physical teaching system transformed into online education without any preparation beforehand (Zawacki-Richter, 2020). Similarly, in Indonesia, to control the spread of the coronavirus, all schools and universities were closed down. There were no activities taking place in the educational institutes in order to diminish the impact of this deadly virus (Abidah et al., 2020). At the end of the spring semester in Japan in 2020, a few meetings were organized in various schools and universities regarding the imparting of new teaching methods to equip the educators with the same. The teachers were asked to motivate the students to continue with their studies via distance learning (Bakker & Wagner, 2020). Bakker and Wagner (2020) further reported that the first-year students of one of the colleges asked their professor to provide a hard copy of the handwritten notes because it made them feel as if the professor had written on the blackboard. On normal days, Japan started its academic year in April, but due to the COVID-19, all the educational institutes decided to begin it a month later so as to prepare and shift to online mode (Kang, 2021). According to Basilia and Kvavadze (2019), online teaching is not a new mode of educating and learning in developed and growing nations. Indeed, it was a challenge for the teachers, students, and the government as a whole to adapt to this transition due to scarcity of money, IT skills, communication infrastructure, and internet access.

Since the pandemic, many students across the globe have been learning through online classes. Hence, they encounter many challenges and wish to gain the same knowledge as in the traditional learning mode (face-to-face learning). Issues like course content design, class assessment, teaching quality, and immediate feedback still remained unaddressed to match up to students' expectations (Lee, 2014).

Quality teaching has been found to be the major source of satisfaction for students via online classes (Young, 2006). Clear communication, attentiveness, and encouragement by the educator, along with timely feedback, were the key components for ensuring quality teaching (Young, 2006). The other expectations of online learning were interface competence with the teachers to foster data processing and rational thinking (Duffy et al., 1998; Hay et al., 2004).

Due to the COVID-19 outbreak, the way of living, working, and studying has been forced to change. Social distancing and online remote working and learning have become the new normal. E-learning platforms have played a significant role during this pandemic. The education institutions, teachers, parents, and students have been trying their best to adapt to these new changes whilst some difficulties and challenges are still remained. Therefore, the goal of this research is to find out how the COVID-19 pandemic affects the higher education sector, especially from the student's perspective. In addition, this study also explores the changes in students' learning behaviours since COVID-19, as well as the challenges and hurdles that students ran into when they were taking online classes held during the pandemic. Furthermore, the transformation of these challenges into opportunities for the students is also examined. This study focuses on studying the students' point of view as, in the education sector, they have been considered the customers of schools or universities as education service providers. When universities provide quality education, it leads to an enhancement of students' career prospects. This study has applied management concepts throughout the analysis to get a better understanding of the students' perspectives, expectations, and challenges during online learning.

Following were the research questions under the current study:

1. How did students learning behaviour change since COVID-19?
2. What were the challenges faced by the students during online classes due to COVID-19 outbreak?
3. How have these challenges transformed and became opportunities for the students?

CHAPTER 2

LITERATURE REVIEW

2.1 Studies related to evolution of education:

Education has drastically evolved since the 17th century. Education is the process of giving out or receiving systematic information and instruction. This chapter presents the history of education and how the education system has evolved during the past years. This provides the link between the past education system and the recent development in the education system. Due to COVID-19, the education system has adopted an online teaching and learning method. So, this study provides the basis to conduct a literature review.

2.1.1 History of education

Education, a process of imparting learning, has become a necessity in some form or another. The Greek word *schole*, which means leisure, is the root of the English word school (Fastiggi, 2014). An understanding of how schools began dates back to the 4th century B.C. in ancient Greece. During those eras, education was initially available only to the aristocracy. Formal education was evident in countries like India and China, wherein speech was the main medium of learning and disseminating information (Fastiggi, 2014). From an early age, education emphasized physical education, which was regarded as crucial for enhancing individual appearance, preparing for war, and ensuring a healthy old age (Fastiggi, 2014). In the 1st century A.D., schools were religion-oriented, wherein people were taught to think deeply about truth, justice, and life. However, other institutions focused on imparting formal education. As the government demanded patriotic nationals, religious organizations needed ethically strong people, and firms demanded compliant employees (Buhungiro, 2018). At the beginning of the 5th century began the monastic schools (these schools were operated by monks and nuns to provide a high level of education and religious education), followed by madrasas in the 9th century, initiated by Islam culture. Madrasas were Islamic schools, the leading non-state educational institutions in South Asia, particularly for accessing unapproachable children of the Muslim community (Bano, 2011). It was during this period that madrasas started imparting learning with independence from the mosques (Divya, 2017).

2.1.2 Revolution and recent developments in education

The growth of schools, the rise in attendance, and the literacy rate were the main features of the pre-modern world. In the 17th and 18th eras, a group of church/state extended access to education to children apart from the privileged ones. By the end of the 18th century and the start of the 19th century, elementary schooling was accessible to a large number of boys, though not all of them, and was particularly prevalent in urban areas of the United States and the British Isles. The education that was provided to the boys was helpful in preparing them for their studies at the university level (O'Day, 1982). Many of them were pursuing their studies to build specialized occupations as office workers or traders. School education has been extended from grammar schools to basic literacy and simple arithmetic. Even though the institutions were highly adaptable and performed a wide range of functions, a growing number of young people were opting to receive their education outside the home (O'Day, 1982).

In the 19th century, students occasionally left school when they attained the age of 12. However, in 1918, the minimum age for leaving school was increased to 14. During this time, the children of the working class were allowed to attend elementary schools, while the children of the middle class went to grammar schools. Grammar schools were established to meet the educational demands of the middle-class. Initially, it provided free education to the poor. In the first part of the 19th century, grammar schools started to modify their syllabi and included commercial subjects alongside the classes. The revised guidelines for the curriculum allowed the institutions to implement fee structures. It seemed that fee-paying middle-class children were being accepted into these schools while the less well-off students were being turned away (Tompson, 1971). The children who belonged to the upper class went to public schools. In the year 1973, the school-leaving age was raised to 16 years. In the late 1960s, the maximum number of schools became all-inclusive (Lambert, 2021). Since then, the ideas of free, universal, and required education have grown strong, and the 20th century was a time of tremendous advancement in educational opportunities (Lynch, 2016).

The education system has witnessed major changes now and then. In many developed countries, teaching methodologies have reached new heights with technology playing its inevitable role. New approaches like inverted classrooms, mobile learning, and Massive Open Online Courses (MOOCS) are the tools which are used by teachers for educating students effectively. An education revolution is underway wherein radical makeovers in schools, colleges, and universities are being experienced by the people concerned (Witte, 2014). The

digital revolution in the form of technological advancements is taking place. Wider access to advanced education acts as a prime mechanism for experiencing sustainable growth, empowerment, and overcoming inequalities. The transformation from factual learning to practical learning poses both challenges as well as opportunities, which need to be managed to take the best possible advantage (Doughlas, 2021).

With the entire world being hit by COVID-19, the lives of millions of people have been affected in one way or the other. With special reference to the education sector, the institutions found it to be the most challenging situation to impart education to their students. As an alternative to a physical learning environment, online learning modes have proven to be beneficial to the education sector by allowing students to continue learning (Jain, 2020).

2.1.3 Difference in the education system:

Shukla (2019) reported that the quality of human capital is the benchmark of the education system in any country. Well-educated people with skills are prepared to understand economic and social issues at the national and international levels. Education is the most effective tool for the growth of the individual as well as of a country in the present-day world. For the past few decades, education has reconditioned the lives of individuals as never before in world history. In developed countries, education has seen considerable transformation by changing its orientation from theoretical to practical. These countries focused on making it simpler and burden-free. For example, India's education policies, which are changed from time to time, have tried to make big changes in the way they teach and learn to give their students a good education. But there is an urgent necessity for India to introduce fundamental changes in its education structure to make it more realistic and research-oriented. The education system of any country should not only focus on generating money but also create future leaders with human values (Shukla, 2019).

On the other hand, the education system in Western countries is more student-centred. Western education emphasizes developing curiosity among students to take on challenges. The prime focus of imparting education in these countries is to teach students how to think critically and solve problems (Panda, 2021). Their role is defined as a contributor who can realize the industry's requirements and apply their specialized knowledge to its growth. The examination patterns in these countries are also simplified (Panda, 2021).

On the contrary, in the Asian education system, beginners depend on their instructors to issue study materials, in contrast to western countries (Loh et al., 2017). For example, the foundations that promote systematic theoretical knowledge have been used to build the Indian education system; as a result, there is a lack of originality in the system. This system has not been transformed much after independence; therefore, students are unable to cope with the latest technologies, methods, processes, and trends (Hayat, 2020). The lack of linkage between industry and academia diminishes the employability of students. Due to the absence of a clear and updated education policy, India is still at the budding stage of creating a strong university-industry linkage (UIL) (Joseph & Abraham, 2009). Proper collaboration between industry and universities could create a win-win situation for students and industrialists. Students can learn to solve real-time problems in the industry and require less training (Ghosh, 2019).

Based on the above literature, education has undergone substantial development. This study shows the method of imparting knowledge in ancient times. After that, how does the education system change with the advancement of technology. In western countries, the education system has adopted technology to make effective learning, but in Asian countries like India, the education system is unable to cope with this latest technology.

2.2 STUDIES RELATED TO VARIOUS TEACHING AND LEARNING MODES

Teaching and learning are a process of imparting and gaining knowledge. Before COVID-19, the face-to-face teaching and learning mode was the most common approach that the majority of education institutes adopted, but during COVID-19, online and hybrid teaching modes were adopted by using e-learning platforms. This section explains different learning modes that commonly used in education institutes, along with their pros and cons.

2.2.1 Face-to-face mode

The traditional method of teaching means face-to-face learning, which is a method of teaching-learning that is carried out in a physical learning environment. This method of learning is usually less flexible than theme learning, as it is generally organised at a set place and fixed time (Cooke, 2021). In this theme of learning, the emphasis is given on selecting a particular subject for teaching one or numerous concepts (Glavin, 2014). This method of teaching concentrates on various components such as lectures, project work in teams, and laboratory experimentation (SUNY Broome Community College, 2020).

The pros and the cons of face-to-face mode:

Face-to-face learning and teaching methods have many positive outlooks. Tratnik et al. (2019), reported that with the face-to-face teaching learning method, students were mostly more satisfied in comparison to the online method. Atchley et al. (2013), found that the traditional method of teaching is the preferred mode, as learners on online platforms quit more quickly. Moreover, e-learning platforms are lacking the critical evaluation of teachers and students (Atchley et al., 2013). Conole et al. (2008), describe how students perceive the traditional method of learning as crucial for the construction of a sense of community.

On the contrary, many studies point out the drawbacks of a face-to-face mode of teaching and learning. This traditional mode is an instructor-centered method of teaching wherein the knowledge is transmitted to the students with little participation of the students (Harden & Crosby, 2000).

2.2.3 Hybrid mode:

The education environment is undergoing several revolutions, and one of the major changes is instructing students with technology. Blended learning, often known as hybrid mode, refers to the practice of combining traditional classroom instruction with online education (Kintu & Kagambe, 2017). The education sector faces extraordinary changes due to the advancement and use of information technology (Khan et al., 2012).

The Pros and The Cons of Hybrid or Blended Mode:

Jayanthi (2019) highlighted that the hybrid learning mode offers dynamic ways of countless students who are unable to access education through the traditional mode. This mode helps to build critical and creative thinking, which is highly useful for students to achieve success in their workplaces. Smart and Cappel (2006) mentioned that the blended learning mode allows the teachers to instruct the students to complete their work activities online before the face-to-face engagement, which ensures the common knowledge base for every student. Hence, this method enriches the physical classes with application and problem-solving activities. Gedik et al. (2012), reported that flexibility is one of the major benefits of blended learning.

Along with major benefits, cognitive load, lack of adequate supervision, and learning issues for traditional teachers are some of the challenges faced by the hybrid mode of learning. Technological infrastructure, being unable to use technology due to advancement, heavy

workload for teachers and students, and the issue of plagiarism are some of the key challenges faced by the hybrid mode of learning (Winstead, 2016).

2.2.2 Online mode:

Currently, online learning has transformed into a vital option for renovating the traditional education system. Learning that takes place online can be characterized as a tool that has the potential to make the process of education student-centered, advanced, and adaptable. Learning that occurs in synchronous or asynchronous situations using a variety of technologies (such as mobile phones, computers, and laptops) that have access to the internet is referred to as online learning (Singh & Thurman, 2019). In online classes, students have the opportunity to learn and communicate with the teacher's classmates on their own (Singh & Thurman, 2019).

The Pros and The Cons of Online Mode

The sudden reform due to COVID-19 has many benefits, along with challenges to the beneficiaries. Paul and Jafferson (2019) reported that online education has improved students' access to quality education. As found by Zalalt et al. (2021), inadequate and unstable connectivity to the internet, shortage of labs and computers/laptops, and technical hitches are some of the major challenges of online learning.

2.3 Education before covid-19:

Face-to-face learning is considered the most common teaching and learning approach and is commonly applied worldwide. However, face-to-face learning limits students' involvement because it takes place in a schoolroom with a teacher teaching to students by applying conventional approaches (teacher-centered) and conventional tools such as workbooks, charts, and blackboards (Jansen, 2004). However, conventional classroom education that offers face-to-face education can stimulate inventive questions, because it also permits instant teacher reaction and is more adaptable to delivering the content (Salcedo, 2010).

Prior to COVID-19, MOOC (Massive Open Online Course) was introduced in Japan in 2013, in addition to traditional face-to-face classes, but most universities and students used the live and online classes on a voluntary basis. A few universities adopted this technique before COVID-19.

2.4 Education during covid-19:

In the United States, the biggest change in the medical education system was the transference of in-person classes to online. Initially, medical students were not aware of the severity of the pandemic and continued to take care of their patients in-person, but infection cases surged around the world, so they shifted to online classes (Ferrel & Ryan, 2020). Ferrel and Ryan (2020) further mentioned that the government of the United States also cancelled the clinical clerkships to follow the social distance.

The Ministry of Education and Culture (MOEC) in Indonesia decided to use digital learning for education to prevent COVID-19 and MOEC also developed an application "Rumah Belazar" and made the application available for free to use online for smart classes (Abidah et al., 2020). In addition, different tools and technologies like Zenius (helpful in learning at home), Quipper (free access of materials), Google Indonesia (Google classroom to attend classes from home), and Microsoft (Office 365 for Education) were used by the Indonesian education system (Abidah et al., 2020).

In China, due to the spread of COVID-19, the country closed all educational institutes and asked students to attend online classes instead of coming to campus. Besides shifting to virtual classes in which students and teachers use various technologies in addition to distance learning (Zinchenko et al., 2021), the disrupted classrooms with undisrupted learning systems were launched by China's Ministry of Education to support online learning for 270 million Chinese students (Zhu & Liu, 2020).

On the other hand, in Germany, the university set up a psychological counselling hotline on top of providing the Bigbluebutton software that is used for video chat and conference calls in Germany. (Skulmowski & Rey, 2020).

Overall, the lives of students and education systems around the world are affected due to unpredicted viruses (COVID-19). Until now, many students are still taking classes at home or online and completing their academic tasks in different situations. International students can still not travel overseas. Universities, teachers, and students are trying their best to achieve their educational goals (Neuwirth et al., 2020).

2.5 Student Learning and Satisfaction:

Many studies have examined student learning and satisfaction in traditional and online contexts. Student satisfaction is defined by Oliver and DeSarbo (1989) as the desirability of a student's subjective evaluation of the various results and experiences linked to education.

Marsh and Roche (1997) developed a detailed and rigorous model of student complex for the purpose of defining students' feelings of satisfaction in a number of ways, including learning value, course-structure, participation, coverage, and evaluation.

According to the findings of another recent study by Trantik et al. (2019), the factors that have the greatest influence on student satisfaction in face-to-face learning include the quality of the course and the expectations of students, as well as student-student interaction and the perceived degree of learning. On the other hand, according to Bangert (2006), there are four factors that are related to student satisfaction in online courses. These factors include student-faculty contact and communication, the amount of time spent on tasks, engaging learning activities, and involvement among classmates.

2.6 Challenges:

According to Neuwirth et al. (2020), in online classes when students try to connect, they face many difficulties. These include difficulty in focusing on reading material; memorizing the lessons taught in virtual classes; and not actively participating in class discussion due to the online environment. Moreover, some students do not feel comfortable turning on their cameras, because they attend classes from their room and do not want anyone to judge them by their living conditions (privacy) (Neuwirth et al., 2020). In Bhutan, students face numerous challenges due to a lack of resources and are unable to access the internet. Sometimes they have to take care of their families instead of attending classes, and it becomes difficult to connect with the online classes (Pokhrel & Chhetri, 2021). Online learning is not easily adopted in developing countries like Iraq because online classes require self-discipline and self-direction in the course. The online education situation has become very challenging for the following reasons: most of the students and teachers in Iraq have no email accounts; weak internet and often electricity power outages; and not much knowledge about using the online platform (Abdulkareem & Eidan, 2021). As digitalization is not a simple way that is accessible to all to provide education, many parents of young children and teachers face difficulties operating new tools and systems used for online teaching and learning (Kang, 2021). Moreover, universities have yet to overcome the challenges of distance learning and educational technologies because they were introduced in a short time that many have not prepared for. Kang's (2021) study also found some unknown person joins the meeting and creates a harassing situation during online classes.

2.7 Opportunities:

Although students face a lot of challenges during COVID-19, it also provides opportunities. The pandemic has forced students, teachers, and universities to adopt and integrate technologies into the teaching and learning and education system. Many students utilize their free time (when all educational institutes are left with no option but to close) to learn new skills and develop new hobbies. All these new skills in innovation, creative thinking, and problem-solving will help in the post-pandemic for positive outcomes (O'Connor et al., 2020). Studying from home also helps to establish a good relationship between parents and teachers, which is not possible during in-person classes (Pokhrel & Chhetri, 2021). Moreover, the use of different applications like Zoom, Google Classroom, We Chat, WhatsApp, and Messenger enhances the students' IT knowledge, and they can utilize it in further studies and online courses in post-pandemic (Pokhrel & Chhetri, 2021). Although online teaching and learning are not entirely new, it was COVID-19 that made online classes become the new normal in providing education. Online education may be accepted as an alternative to traditional teaching methods. Moreover, the structure of classes may be changed after COVID-19 as students are more flexible to adapt to new technology in this era (Abdulkareem & Eidan, 2021).

Based on the literature review, the education sector has evolved throughout the years. There are various teaching and learning methods, and each has both advantages and disadvantages. Students learning and satisfaction are also affected by multiple factors. It is undeniable that the higher education system was badly affected by the COVID-19 pandemic as the premises of the universities were closed due to lockdown. Though these institutions swiftly switched from classroom learning to online learning, the most concerning matter was the quality of teaching content. Hence, there was an emergent need to precisely recognize the challenges experienced by the students due to the new methods of imparting education. This would enable educational institutes to design effective strategies for online teaching to benefit the students in every manner. Therefore, in this study, considering the effect of COVID-19 on the education sector, the students attending online classes in colleges and universities were approached to participate in the survey. The following are the three main research questions that are investigated in this study:

1. How did students learning behaviour change since COVID-19?

2. What were the challenges faced by the students during online classes due to COVID-19 outbreak?

3. How have these challenges transformed and become opportunities for the students?

CHAPTER 3

METHODOLOGY

This study has focused on investigating and evaluating the effects of the COVID-19 epidemic on students' learning via online mode. The perspective of the students in terms of challenges faced and opportunities availed during this time has been explored. This chapter offers the link between the research problem and the methods selected to analyse the problem. A systematic way of surveying questions has been put into practice to answer the pre-set research questions. This chapter also talked about the type of research design, sample framework, method of collecting data, and tools for analysing data.

3.1 Research Design

Both quantitative and qualitative research were carried out as a part of the current study to accomplish pre-determined objectives. The quantitative research method has been defined as the collection of quantifiable data and the analysis of variables in order to present the study's findings. This method of research applies statistical and mathematical techniques to answer the research questions (Leedy & Ormrod, 2001; Williams, 2011; Aliaga & Gunderson, 1999). On the other hand, qualitative research includes gathering and studying through interviews, case studies, expert opinion, focus groups, open-ended survey questions, and observational research (Ahmed et al., 2019). A qualitative research design has been used to obtain the pre-determined objectives of the study. Qualitative research is a type of research design that concentrates on exploring practices, actions, and associations without using numerical, scientific, or statistical analysis (Basias et al., 2018). The term qualitative research refers to a procedure of answering the questions: what, when, where, and how. Instead of numerical values, this study approach is frequently explored using words and views (Basias et al., 2018). According to Basias et al. (2018), qualitative research methodologies proved to be more acceptable. This is because the scholar must evaluate the data and draw conclusions based on his observations.

Hence, in some research questions particularly in this research, opinions and feelings cannot be answered accurately by using quantitative procedures; hence, the qualitative research method is applied to find replies to the research questions (Busetto et al., 2020). In addition, qualitative data concerns individuals' states of mind or judgements, or how they feel, and their feelings as well as sensations are noted in non-quantifiable variables. This research method

supports the author in the interpretation of the language spoken by the respondents (students) and helps clarify the rationale and resolve problems rapidly and efficiently. The quantitative research method with closed-ended questions was used in this study to record the viewpoints of the students about the COVID-19's effects on their learning outcomes in terms of challenges and opportunities. The views of the students have been recorded through a well-designed questionnaire. Additionally, qualitative research has also been used in this research. The viewpoints and opinions of the students on additional challenges, measures undertaken to overcome the challenges, and suggestions to make online education effective have been collected through open-ended questions on the survey.

3.2 Sampling Framework

In the current study, primary research samples included students who switched to online education due to the COVID-19 outbreak. The students from Japanese universities constituted the sampling unit. The sample size for this study was comprised of 149 respondents, including both undergraduate, graduate and postgraduate students. Each unit of sample has been selected using the snowball sampling technique, a method used by researchers to build a pool of respondents by soliciting recommendation from people who share the target communities' research interest (Frey, 2018). In this study, snowball sampling technique was applied to connect the students using an online platform for taking classes.

3.3 Data Collection

The study applies concurrent designs (CND) of mixed methods research in which one method (qualitative or quantitative) dominates while the other is embedded or "nested" within the study at all times. Creswell et al. (2003), identified various concurrent mixed designs such as triangulation, nested and transformative designs. Both quantitative and qualitative methods have been used to collect data during the same time via the online survey. Thus, the collected data is combined and the analyses can also result in data integration for depth in understanding.

The information gathered through a well-structured survey was carried out to provide a better understanding of what students thought about changes to the education system during and after the COVID-19 pandemic. It also identified various challenges and opportunities when exposed to such a situation. The students were invited to respond to an online Google form questionnaire whose link was shared via social media. Various social media platforms like Facebook, Line, and WhatsApp were used to generate the maximum response. The students

were asked to answer the questions for the purpose of research. Further, the respondents were asked to share the questionnaire link among their friends to reach out to other students as well. The final questionnaire for this study was divided into seven sections, each consisting of 24 questions (21 close-ended and 3 open-ended). Open-ended inquiries let you discover respondents' genuine feelings and attitudes. They offer endless options. They help to grasp the respondent's data and logic. They deepen your understanding of the topic. Closed-ended questions ask respondents to choose from pre-defined responses, such as "yes/no" or multiple choices. Closed-ended inquiries are used to help collect data from respondents. There are several advantages to using open-ended questions over closed-ended ones, the most significant of which being the opportunity for uncovering people's spontaneous reactions, which is impossible with closed-ended questions (Reja et al., 2003). The detailed overview of the questionnaire has been explained as under:

Section 1: This section constituted the personal profile of the respondents. In this part, nine questions related to demographic profile like gender, age, educational qualification, place of attending classes, current course of student, place of residence, and electronic device used for attending online classes were enquired about. The demographic information has been recorded to analyse the impact of these factors on the perception of the students towards the online education mode.

Section 2: This section focused on collecting the responses related to the evaluation of the situation before COVID-19. This section was comprised of three questions; two questions were multiple choice based while one question was recorded on a 5-point Likert scale (1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, and 5-Strongly Agree).

Section 3: This section evaluated the learning experience of the students during COVID-19. It consisted of three questions; two multiple-choice questions and one based on the 5-point Likert-scale. Students were asked questions related to the time spent per day on online learning and to the impact of the online learning mode on them.

Section 4: This section gathered the data related to various challenges faced by the students during online classes. It also consisted of three questions wherein the common problems encountered in online learning were recorded with the help of multiple choice and 5-point Likert-scale based questions.

Section:5 The responses of the students about their perception of online education as an opportunity were recorded with the help of a 5-point Likert scale question.

Section 6: The methods/measures taken by the students to overcome the challenges of online education modes were recorded through 5-point Likert scale questions as well as open-ended or free-text answer-based questions.

Section 7: The satisfaction level of the students with respect to different kinds of learning modes for imparting education was recorded. Various multiple-choice-based questions and free text answer-based questions were asked in this section.

Before launching the survey, it was pilot tested with target respondents to clarify the vague part. With the feedback received from the pilot test, the survey questions were revised and launched on social media to collect the responses.

3.4 Sample Profiles

Table 1 depicts the frequency and proportion of each respondent's demographic profile. The total number of respondents in the survey was 149, out of which 23% were in the age group of 18-22 years, 16% were in the age group between 22-26 years, 28% were between 26-30 years, and 26% were in 30-34 years. Only 7% belonged to the age group of 34 years and above. In terms of gender, 46% were males, 52% were females, and the rest were from LGBTQIA2S+. 44% of the responses were from undergraduates and 56% were from graduate students. In addition to this, 67% of the respondents lived in Japan and 33% took classes from their home country. 99% of respondents studied at APU and 1% studied at other universities. Within APU respondents, 99% were international students and 1% were domestic students. 62% studied via online learning mode, while 38% used hybrid mode.

Table 1: Demographic profile of sample respondents

	Variables	Criteria	No. of Respondents	Percentage
1.	Age	18-22	34	23%
		22-26	24	16%
		26-30	41	28%
		30-34	39	26%
		34 years old and above	11	7%

2.	Gender	Male	69	46%
		Female	78	52%
		LGBTQIA2S+	2	1%
3.	Level of education	Undergraduate	65	44%
		Graduate	84	56%
4.	Location	Japan	100	67%
		Outside Japan	49	33%
5.	APU student	Yes	148	99%
		No	1	1%
6.	Program	APM	45	30%
		APS	19	13%
		GSM	52	35%
		GSA	29	19%
		GSAD	4	3%
7.	International/ Domestic	International	148	99%
		Domestic	1	1%
8.	Learning Mode	Online	92	62%
		Hybrid	57	38%

3.5 Data Analysis Techniques

Primary data collected for this study was tabulated and analysed using MS-excel. Descriptive statistics were applied to calculate the results and compute frequencies, percentages, etc. The data has also been presented with the help of bar graphs and pie charts. A descriptive analysis has been done to present the summary of the measured sample and compute the difference between the sample data. Frequency and percentage were computed to analyse the students' profiles and their perspectives towards various situations. It further facilitated understanding of the responses of the research participants (Kaur et al., 2018).

Descriptive statistics can give basic information about dataset variables and indicate potential links. Descriptive analysis is important, especially in science and education research, as it identifies data patterns to answer who, what, where, when, and how. The primary audience comprises researchers, which in this study is the author, who performs descriptive and causal

studies, but policymakers and practitioners that employ research findings may also find it valuable (Loeb et al., 2017).

To ensure the internal consistency, validity, and reliability of survey questions, all measurement items that included in this study were developed from the existing literature. The surveys were also pilot test with 3 students who studied in Japanese university. With the feedbacks received from the pilot tests, the unclear survey questions had been revised, before launching the survey online. In addition, the study also conducted Cronbach alpha test to ensure the reliability of the survey.

Cronbach's Alpha is commonly used for checking the reliability (internal consistency) of survey questions (Cronbach et al., 1951). In this study, response for the 5-point Likert scale questions is in the form of (5) strongly agree, (4) agree, (3) neutral, (2) disagree and (1) strongly disagree. The results of Cronbach's Alpha show higher value of 0.98, 0.87 and 0.89 in students learning attitude, challenges, and overcoming the challenges during the COVID-19, which implies strong internal consistency and could be deemed sufficient for an investigating study (Singh, 2017). Whereas the Cronbach's Alpha of pre-covid attitude and behaviour is 0.57 which shows moderate internal consistency (Barbosa, 2021), and 0.35 for satisfaction level of students with online learning is poor (Singh, 2017).

CHAPTER 4

DATA ANALYSIS AND FINDINGS

The current chapter presents the statistical analysis of data collected from the survey done on 149 students studying in Japanese universities. The current study has been conducted to analyse the challenges encountered by the students throughout online classes. The opportunities availed by the students to cope with the unimaginable changes have been highlighted in this chapter. The suggestions made by the students to make the online learning more interactive and effective have also been discussed.

4.1 Tools used for Attending Online Classes

Table 2 depicts the gadgets/tools used by the students for attending their online classes. It has been indicated that most of the students (69%) used personal laptops during their online classes, followed by smartphones (48%). Tablets were used by 32% of the students, and only 18% of the student's used desktops for attending their online classes.

Based on this data, one of the major reasons for choosing laptops and smartphones over other gadgets and tools could be ease of carrying and convenience. University students preferred laptops more in comparison to smartphones and tablets because of the bigger screen size. The content and apps could be easily installed, accessed, and properly visible on the laptop screen, unlike other gadgets.

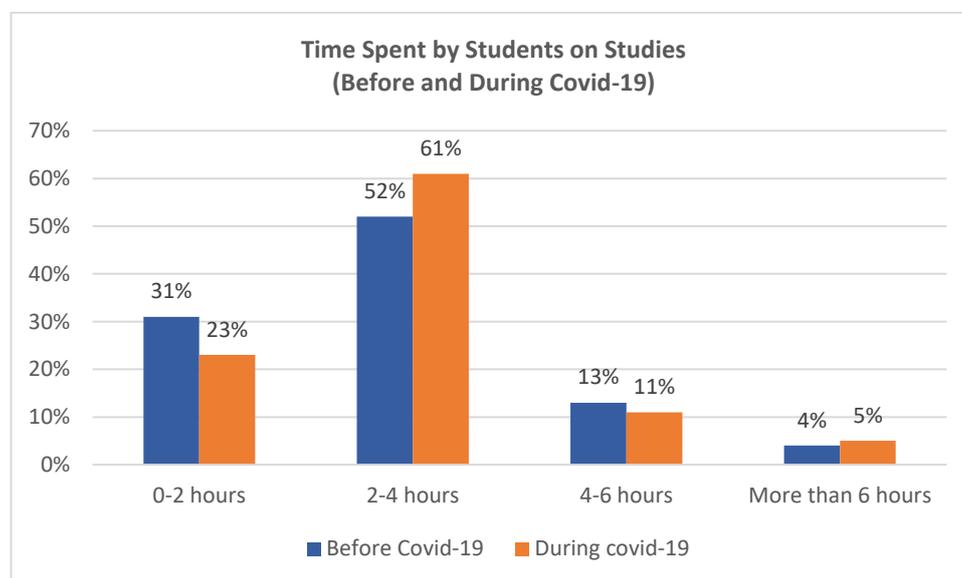
Table 2: Various kind of tools used by the students for attending Online Classes

Sr.	Type of Tool	No. of Respondents	Percentage of respondents
1.	Laptop	103	69%
2.	Desktop	28	18%
3.	Smartphone	48	48%
4.	Tablet	32	32%

4.2 Time spent on studies per day: Before and during COVID-19

Figure 1: Time spend on study per day: Before COVID-19 and during COVID-19

As per Figure 1, the time spent by the students on their studies before and during COVID-19 has been compared. The results of the study clearly indicated that the majority of the students spent 2-4 hours on studies before and during the COVID-19 period (52% and 61% respectively), followed by 0-2 hours (31% and 23% respectively). The figure also showed the time spent per day varied significantly before and during the COVID-19 period. The percentage of the students spending 0–2 hours per day on studies was higher before COVID-19 (31%), in comparison to during the COVID-19 period (23%). This implied that many of the students were spending less time on studies before COVID-19. The responses for 4-6 hours and more than 6 hours showed a mixed response. Overall, the results indicated a positive picture of the COVID-19 pandemic's impact on the studies as the majority of the students (61%) stated that they started spending more time on their studies during the COVID-19 period.

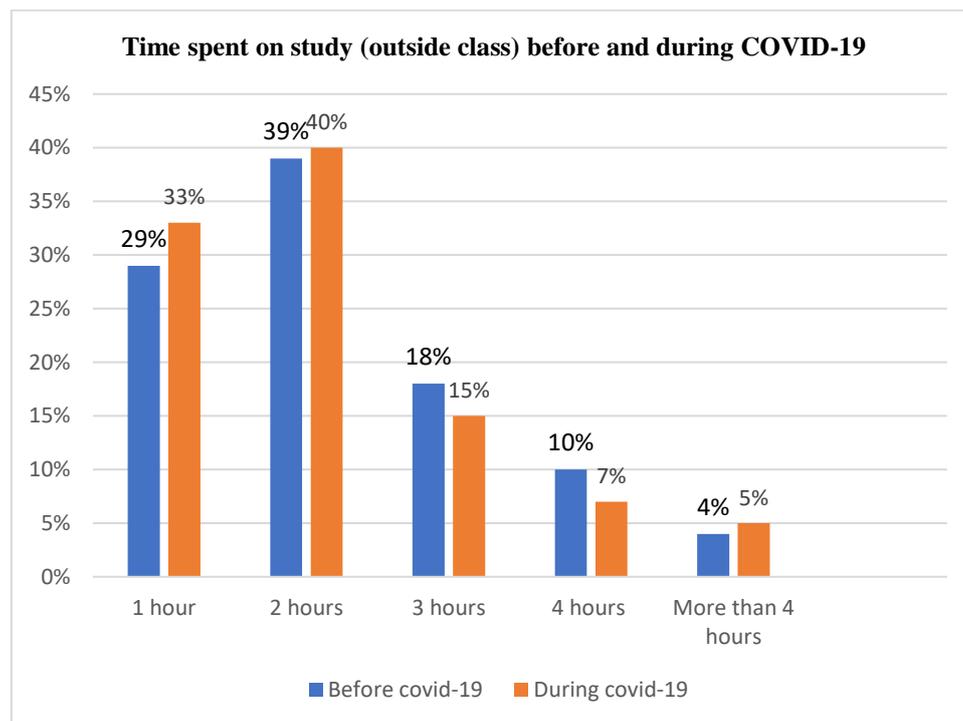


4.3 Time spent on self-study per day (outside of class): Before and during COVID-19

Figure 2: Time spent on study (outside class) Before and during COVID-19

Further, the respondents were asked about the time spent on self-study other than class time. According to the results indicated in Figure 2, it was found that the majority of the students were spending 2 hours daily on their self-study both before and during the COVID-19 period. A very small percentage of the students spent 4 or more than 4 hours daily on self-study. 29% of the students reported that they spent 1 hour daily on their self-study before COVID-19. To the contrary, 33% of the students responded that they spent 1 hour daily on their self-study during the COVID-19 period, which was higher than before this pandemic period. The same results were recorded for the 2 hours duration as most of the students started spending 2 hours daily on self-study other than classroom study during the pandemic period. The results showed

that spending 3 hours and 4 hours per day on studies were different before and during the pandemic. There was a declining trend for the students who spent 3 and 4 hours per day on self-study in comparison to the period prior to this pandemic. It can be concluded that the students might have been exhausted or felt tired after day long classes or even have experienced satisfaction with the learning during classes. Therefore, they considered spending only 1-2 hours as sufficient for self-study.



4.4 Perception/ Opinion of the Students Regarding Offline/ Face to Face Learning Mode: Before COVID-19

Table 3: Perception of students regarding face-to-face mode

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am satisfied with the learning material provided by the institute.	49%	35%	8%	3%	5%
I am always active and participate during the classes.	40%	46%	7%	4%	3%
I actively interact with classmates and teachers.	33%	48%	11%	3%	5%

I understand most of the class contents/learning materials taught by teachers.	29%	55%	11%	1%	4%
Offline classes environment is helpful in learning.	43%	42%	13%	1%	1%
In offline classes, the pace of courses is good for me.	39%	48%	9%	3%	1%
Instructors are more interacted with students during offline classes.	37%	48%	11%	2%	2%
I always take notes and complete assignments when attending offline classes	32%	51%	11%	3%	3%
When I attend offline classes, I can participate in co-curricular and extra-curricular activities	35%	50%	11%	3%	1%

Before COVID-19, most of the students (84%) were satisfied with the learning materials provided to them. A very few of them were dissatisfied with the learning material provided by the institute. Further, 86% of the students showed agreement with the statement that they were always active and participated during the classes. Similar results were found for the statement indicating the active interaction of the students with their classmates and teachers, as 81% of them positively reported the same.

The students were further enquired about the understanding of class contents/learning materials taught by the teachers. 29% of the students strongly agreed that they understood the content properly, while 55% of the students simply agreed. However, only a small portion of the total students (11%) were neutral about the statement. Similarly, 85% of the students reported that the offline learning environment was helpful in learning, wherein 43% of the students showed strong agreement while 42% showed agreement. This meant that the students were more satisfied with the offline learning environment. Only 2% of the students disagreed with the offline learning environment.

Furthermore, the findings showed that 87% of the students reported agreement towards the good pace of the course during offline classes. In addition to this, 85% of the students

agreed that instructors interacted more with them during offline classes. 11% of them were neutral towards this statement, while only 4% disagreed with it. Similarly, 83% of the students showed agreement that they always took notes and completed assignments while taking offline classes. Only 6% of students disagreed with the given statement. The majority (85%) of the students reported that they could participate in co-curricular and extra-curricular activities while attending offline classes. 11% were neutral and only 4% disagreed with this statement.

The study's results showed that most of the students were satisfied with the offline mode of imparting education before COVID-19. It has been found that students had a positive mindset towards offline classes as they got an opportunity to interact with their teachers and participate in various co-curricular activities. The students felt that on-campus classes were more appropriate for their growth, development, and social networking. It was also found that most of the students were satisfied with offline interactions, which meant the offline method of teaching was perceived to be more interactive than online classes.

4.5 Perception/ Opinion of the Students Regarding Online Learning Mode: During COVID-19

Table 4: Perception of the students regarding online classes: During COVID-19

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am satisfied with "learning material" that provided by institute.	36%	48%	7%	4%	5%
I always actively participate in online classes in comparison to offline classes.	27%	52%	12%	3%	6%
I actively interact with classmates and teachers on online platform.	28%	49%	13%	3%	7%
I understand most of the classes' contents/learning materials that taught in online class	30%	50%	15%	2%	3%
I feel that I can concentrate more in online classes.	30%	44%	13%	7%	6%
I get more self-motivation in online learning	20%	50%	16%	7%	7%
I feel that I perform better in online classes.	28%	48%	11%	9%	4%

With online classes, it provides the opportunities to choose diverse courses.	26%	56%	7%	6%	5%
Online classes make it easier to access teachers.	26%	51%	11%	7%	5%
Taking online classes help to improve myself discipline.	23%	52%	13%	7%	5%
I always take notes and complete assignments when attending online classes.	32%	47%	10%	6%	5%
When I attend online classes, I can participate in co-curricular and extracurricular activities	25%	53%	7%	8%	7%

Further, the students were questioned about their opinion towards the use of online platforms for imparting education. 84% of students expressed their satisfaction with the learning materials made available by the institute during their online classes (36% strongly agreed and 48% agreed), while 7% were neutral. Only 9% disagreed with the statement. Furthermore, 79% of the total students reported that they always actively participated in online classes in comparison to offline. However, 12% were neutral and 9% disagreed with the given statement. The results also revealed that only 77% of the students felt that they always actively interacted with their classmates and teachers on the online platform. On the contrary, as discussed before the pandemic, students were more satisfied with their interaction during offline classes. In addition to this, 80% of the students responded that they were satisfied with the class content and learning materials taught in the online classes. 15% were neutral and very few (5%) disagreed with the statement. The majority (74%) of students also stated that they could concentrate better in online classes. However, 13% were neutral and 13% disagreed with the statement. 70% of students also reported that they got more motivation by attending online classes, while 14% of students disagreed with the same. 76% of the students agreed that they could perform better in online classes, while 11% were neutral. In addition, 13% of students disagreed with it. 82% of the students were happy with their classes because they could choose from many different subjects.

Further, 77% of students reported that the accessibility of the instructors was greater during online classes. In addition to this, 12% of students disagreed with this statement. 75% of students also reported that online classes helped them develop more self-discipline. However,

12% disagreed with this statement. Similarly, 79% of the students responded that they could take notes and complete assignments when attending online classes. 10% of students were neutral and 11% disagreed with this statement. 78% of students reported that they could participate in extracurricular and co-curricular activities during online classes. This percentage was less than offline participation as discussed in the offline mode before the COVID-19 pandemic. In addition, 15% of students disagreed with the given statement, which was also significantly higher and showed that online platforms do not provide enough opportunities for the students to participate in various activities required for their overall practical learning and relevant skills development.

The results in Table 4 clearly showed that although the majority of the students were satisfied with the online method of education as it promoted self-motivation and self-discipline, clear differences were found between the satisfaction of students who studied via the offline and online mode of education. As discussed before, in the COVID-19 situation, the students were having a more positive response to interaction, social networking, notes and assignments, and involvement in co-curricular activities, which showed that students were more engaged with the offline mode than the online.

4.6 Concerns of the Students During Online Classes

Further, the students were asked about their concerns while attending online classes. As shown in Table 5, 51% of students reported good internet connection and speed as the major areas of their concern while attending online classes, followed by a quiet place and space (47%). The third major concern was less time availability for consultation and discussion with the teachers, as 36% of students were worried about the same. Security and privacy, availability of electronic gadgets, and knowledge of how to use online platforms were also the prominent issues as reported by 34% of the students. The concern of a lack of instructions and training for students and instructors in online learning and teaching was also conveyed by 32% of them. However, 26% of students were also worried about the time span provided for reading class material beforehand.

It was found that most of the students faced multiple issues in learning via online classes. It was quite contradictory to earlier findings that students in general were satisfied with online class interactions. However, they may have had difficulties with online learning due to a lack of funds or resources to purchase electronic gadgets, a lack of a good internet connection and better online apps, a lack of computer literacy, or an unsuitable home environment. Another

big problem that needed to be fixed was that online classes can make people feel bored and alone.

Table 5: Students' concerns during online classes

Concerns	No. of Students	Percentage of the students
Security and privacy	51	34%
Good internet connection and speed	77	51%
Availability of electronic gadgets	52	34%
Knowledge to use online platform	51	34%
Calm place and space	71	47%
Not enough time for consultation and discussion with teachers	54	36%
Timeliness in providing the reading or class material before the class	40	26%
Lack of instructions and training for students and instructors in online learning and teaching	48	32%

4.7 Challenges faced by the students while attending online classes

Table 6: Challenges faced by the students during online classes

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am still facing some issues of learning with online classes.	24%	52%	8%	15%	1%
I am still facing technical issues such as internet connectivity and speed, fragile of online learning apps and etc.	21%	51%	11%	13%	4%
I am still unable to purchase laptop/tablet/computer and internet	17%	42%	7%	23%	11%

(currently using school's computer and internet).					
I encounter the problem of miscommunication with classmates and teachers several times during online classes.	26%	44%	15%	11%	4%
My home environment is not suitable for attending online classes.	23%	40%	11%	19%	7%
I find online learning is difficult to follow.	25%	41%	12%	19%	3%
Facing the issue of boredom.	31%	47%	8%	13%	1%
Facing the issue of computer literacy.	23%	38%	9%	25%	5%
I have a difficult time, especially on concentration, to continue sitting in front of the screen during continue classes.	28%	44%	5%	6%	17%
My current device and software do not operate well with online classes.	20%	37%	7%	23%	13%
Feeling of isolation during online classes.	32%	43%	7%	12%	6%

Regarding the current stage of students, the results showed that 76% of students agreed that they were facing the issue of learning via online classes, while 8% were neutral. However, 16% disagreed with the given statement, which means gradually students have started adopting new means of getting education. Internet connectivity, speed, and fragile online learning apps were also reported by 72% of students. 17% of students showed no problem with internet connectivity and apps, which means that the concerned authorities were trying to provide the best infrastructure to cope with this unimaginable situation. The companies were also putting in their best efforts to develop user-friendly apps for students to be used anywhere. Many students (59%) still reported being unable to purchase electronic devices for their studies. 34% of students disagreed with the statement, which showed that they could afford or buy the gadgets as per requirement. A majority of the students (70%) reported that they faced the problem of miscommunication with classmates and instructors several times during online classes.

Moreover, many students did not find a suitable home environment for online classes, as 63% of students agreed with the given statement. 26% disagreed, which gradually started adapting to the change created by the COVID-19 pandemic. The students still found that online learning was difficult to follow, as 66% of the students agreed while 12% were neutral. Moreover, 22% disagreed with the statement, which means they were satisfied with the online learning medium. The students felt isolated due to the closure of educational institutes, as 78% reported boredom during online classes. Limited time availability and no face-to-face interaction with classmates and teachers created loneliness and boredom. Another issue reported by 61% of the students was a lack of computer literacy, while 30% of students were comfortable receiving online education.

72% of students agreed that it was difficult for them to sit continuously in front of the system. However, 23% of students disagreed with it, which showed that they were getting habitual of using gadgets for e-learning. 57% of students strongly explained that their laptops were not updated, while 7% of students were neutral on this. However, 36% of students disagreed with the statement. 75% of students reported feeling isolated during online classes.

It was found that most of the students faced multiple issues in learning via online classes. It was quite contradictory to earlier findings that students in general were satisfied with online class interactions. However, may be due to lack of funds/resources to buy electronic gadgets, lack of good internet connection and better online apps, lack of computer literacy, unsuitable home environment, they experienced issues in online learning. Boredom and a sense of loneliness during online classes were another major concern that needed to be addressed.

4.8 Reasons for Preferring/ Liking Online Classes

Students now consider online learning to be a way of life and are likely to continue in the post COVID-19 pandemic period. Despite facing many challenges and issues while attending online classes, students still preferred online classes for getting an education. The major reasons for their preference have been shown in Table 7. The major reasons for preferring online platforms for getting education were time saving, as reported by 62% of students. 53% of students also said that online classes enhanced their knowledge in the IT field, and flexibility in learning was reported by 40% of students as the third common reason. Likewise, saving money (37%) followed by fostering personal growth and developing new skills (36%) were mentioned as their reasons for preferring online classes.

From the students' perspective, they felt there were many benefits of online learning as they thought that online classes helped them to save time, foster personal growth, gain knowledge in the IT field, network, grow opportunities and save money, especially on transportation fees.

Table 7: Reasons for preferring online classes

Reasons for liking online classes	No. of Students	Percentage of the students
Online classes are time saving, I can also do other things within one day	93	62%
Online classes are helpful in fostering personal growth and developing new skills (e.g., time management skills, communication skills, leadership skill, ICT skill, self-discipline and self-motivation etc).	55	36%
Use of online platform has enhanced the knowledge in IT field	79	53%
I become more socialize during online class.	47	31%
Online classes help me save some money, especially for transportation and accommodation.	56	37%
Online classes provide the flexibility in learning.	60	40%
Online classes provide more comfortable learning environment.	42	28%
I found online classes are more interactive and I can concentrate more.	21	14%
Online classes are helpful in developing new hobbies and interest.	30	20%
Online classes grow career horizons	20	13%
Online classes help me to get individual attention	24	16%

4.9 Measures taken by the students to overcome the challenges of online learning mode

Although students were facing many challenges while attending online classes, further in the survey they were asked about the ways to overcome those challenges. As shown in Table 8, 74% of students reported that they always avoided distraction during online classes. 15% of

students were neutral and 11% of students disagreed with the statement. 70% of the students fulfilled their requirements for the IT gadgets by availing students' discount while purchasing these gadgets. Most of the students (82%) said that they clarified their doubts and had good communication with instructors during online classes. When students were not able to understand during their class, they joined virtual study groups for better understanding, as responded to by 73% of students. 12% of students were neutral and 15% disagreed with this statement. As a lack of face-to-face interaction was found to create isolation and boredom, many students (77%) participated in creativity activities to switch their moods and motivate themselves. Most of the students (81%) agreed that they could manage their time wisely while attending online classes. 80% of the students reported that they balanced their personal and social lives with online classes; 13% were neutral; and 7% of the students disagreed with this statement.

In addition, a total of 83% of students strongly agreed or agreed that they took breaks during online classes to avoid long sitting in front of the screens. 76% of students made their learning environment pleasant to avoid boredom. They reported a lack of computer skills, which hindered their learning while attending online classes, as one of the challenges. Therefore, they (67%) attended extra computer/information literacy classes/workshops to overcome this concern. 73% of students reported that they actively engaged and participated in online class activities to tackle the issue of learning.

Due to COVID-19, students were left with no option but to attend online classes. Therefore, online platforms were the only way to engage the students with their studies. These platforms were used for the first time at a mass level. Many countries and schools didn't have the right infrastructure to deal with the new change. Therefore, this change has created many challenges for not only the students but also the instructors and universities. The students tried their best to adapt to the change and overcome the challenges by taking various measures to keep themselves engaged in learning.

Table 8: Measures taken by the students to overcome the challenges of online learning mode

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I always avoid the distraction during online classes.	21%	53%	15%	8%	3%

I purchase IT gadgets on the basis of student's discounts to assist me in attending online classes.	14%	56%	13%	12%	5%
I make sure to clarify unclear point and have good communication with teachers during online classes.	24%	58%	12%	3%	3%
I join virtual study group for better understanding of online class and to socialize.	19%	54%	12%	11%	4%
I participate in creative activities to switch the mood and motivate myself.	26%	51%	14%	6%	3%
I manage my time wisely while taking classes online.	29%	52%	9%	7%	3%
I try my best to maintain and balance my study and personal social life.	23%	57%	13%	4%	3%
I make sure to take a short break to stretch and avoid continue sitting in front of screen for too long time.	25%	58%	9%	4%	4%
To avoid boredom, I make my learning environment pleasant	23%	53%	15%	5%	4%
I take the extra classes of basic computer learning to overcome the issue of computer illiteracy	23%	44%	15%	13%	5%
I always actively engage and participate in online class activity to tackle the issue of learning	23%	50%	17%	9%	1%

4.10 Satisfaction of the students towards online classes

Overall, when asked about satisfaction with the online classes, only 21% of students said they were very satisfied with online classes, 57% were satisfied, and 6% were (very) dissatisfied as showed in Table 9. Majority of them were very satisfied and simply satisfied with the online method of imparting education. This meant that the students were now open to have virtual interaction and they started feeling comfortable while raising their queries during

online classes. The virtual educational groups have given them opportunities to develop relationship with many experts across the globe. They can utilise their time in best possible manner.

Table 9: Satisfaction of the students towards online classes

Satisfaction with the online classes	No. of Students	Percentage of the students
Very satisfied	32	21%
Satisfied	85	57%
Neutral	24	16%
Dissatisfied	4	3%
Very dissatisfied	4	3%

4.11 Opinion of the Students Regarding the Effectiveness of Various Mode of Imparting Education

In terms of the most effective mode of learning, most of the students mentioned hybrid mode (44%) followed by online learning (35%) as the most effective mode of their learning. Surprisingly, only 21% cited an in-person/face-to-face learning mode.

The students were more satisfied with online classes as these were helpful in saving their time and money and helped them maintain work-life balance. They also preferred to go for hybrid classes as they wanted to enjoy on-campus classes sometimes and opt for online when they felt sick or had other commitments, such as part-time jobs or other extra-curricular activities while studying online simultaneously.

Table 10: Opinion of the students regarding the effectiveness of various modes of imparting education

Effective mode of teaching and learning	No. of Students	Percentage of the students
Online	52	35%
Hybrid	65	44%
In person	32	21%

4.12 Suggestions of the students to university and/or instructor for improving the effectiveness of online learning mode

Due to the COVID-19 pandemic, the students were the real sufferers as they were bound to stay at their homes due to the closure of institutes. They were coping with the change and trying to adapt to it. But in reality, they were suddenly cut-off from their classmates, group-mates, and instructors. Since students were habituated to face-to-face learning, therefore, online learning was perceived to have a great impact. The teachers and educational institutions tried their best to provide effective education to the students but still there were some areas to improve on. In this study, the students, suggested universities improve the online learning experience

The results of the research showed students' recommendations to use more interactive tools other than PowerPoint presentations to make the learning experience more practical in online nature. Similarly, the students reported that they got less time to raise queries and clarify their doubts in the online learning method. Therefore, it was recommended that teachers cover each aspect in detail.

The second major area of concern which was reported by the students was mental health. The long stay at home had an unfavourable impression on many students' mental health. Due to lesser interaction, the students experienced depression and anxiety. Therefore, they suggested that teachers and universities need to be attentive and must notice that someone has been struggling. The educational institutes must adopt new approaches to care the social and emotional health of the students during online/distance learning. Various academic and co-curricular activities must be planned and offered to students as the means to improve their interaction and communication, thus, minimizing the feeling of isolation.

The students who got admission in international institutes but stayed in home country reported that institutes must plan some activities so that they could interact and get an international exposure.

4.13 Measures to be adopted by the students in future for better learning through online mode

Last but not the least, if the online learning mode has to continue, the students revealed in the open-ended question that they would focus on improving their computer/technical skills and experience the best with proper knowledge while attending online classes. They will also use diverse platforms for their learning in the near future.

The students also proposed that to improve an online learning environment, the classes should be more interactive. The online learning platforms must promote socialization. More Q&A sessions should be organized so that students can have more clarity and discuss it with the instructors. Besides power point presentations, other digital learning tools and methods must be adopted by the teachers to enhance the engagement with the students during online learning. The students also suggested that group discussion or group learning must be promoted by educational institutes for better learning. If the class is large, it can be divided into small groups for group activities or discussions, as the smaller number of students in these groups will have more opportunities for interaction.

The responses of the students also revealed that a proper class schedule must be carefully planned by them for effective learning and to ensure good health. Students should play a proactive role in this online mode of learning. They suggested that reviewing and studying in advance would help them better understand the concepts. They also planned to continue to install the latest application on the gadgets for better and more advanced learning.

The students also understood that the responsibility of educational institutions has also increased. They expected the institutions and instructors to provide learning materials in advance. Multiple quiz sessions rather than final exams must be organized by the instructors to improve students' learning and prevent misconduct. Many students were of the view that they needed to improve their skills, such as problem-solving, technological, communication, and socialization skills, for better learning in the future.

CHAPTER 5

DISCUSSION & SUGGESTIONS

5.1 Discussion:

Due to the internet revolution, online education platforms have already been used as a viable substitute to traditional face-to-face methods. The COVID-19 pandemic has given these online learning modes a boost. The students' perspectives towards online education based on the challenges faced by them during this period have been analysed in this study. The measures adopted by the students to overcome those challenges have been investigated along with the opportunities availed to them. Based on the analysis and interpretation of data collected from 149 students in higher education, the findings have been summarized as follows. Various suggestions to refine online learning experiences to raise students' level of education have been highlighted in this chapter.

1. Tools / Gadgets used by the students

The finding of the study further indicated that the majority of the students were using laptops for online classes, followed by smartphones. Laptops were the most preferred gadgets due to their large screen size, accessibility to multiple apps, convenience of carrying anywhere, etc. Smart-phones were also used by the students, as currently the maximum number of students own smart-phones. The findings of this study are in line with those of Montrieux et al. (2015), who discovered that technology tools have a great deal of potential to help with the development of online learning classes. The majority of the students used their computers, smartphones, or personal digital assistants to study, express their ideas, browse the web, and get ready for exams or online classes.

2. Learning behaviour of the students before/ during COVID -19

The finding of the study further indicated that most of the students were spending a maximum of 2-4 hours/per day on their classroom studies before or during COVID-19. Similarly, the maximum number of students were spending 1 hour or 2 hours daily on their studies outside their classroom, but the percentage of the students who spent 1 hour or 2 hours daily on their studies has increased during online mode. The students got more time for self-study as their travelling time was saved during online classes. It has been found that before COVID-19, especially in face-to-face learning mode, the students were satisfied with the pace

of the course and learning material provided by the institute. During face-to-face learning, students were more likely to talk to their classmates and teachers and take part in activities outside of school.

These findings are similar to those that were discovered by Vonderwell and Turner (2005). They discovered that students were more satisfied with face-to-face learning as well as course quality, students' expectations, motivation, peer and teacher-student interaction, teacher support, timely feedback, and clear instructions for students' assignments.

During COVID-19, the online mode was used by each and every institute to engage the students in their studies. Students were enthusiastic about taking online classes, but they reported comparatively less interaction with their friends, classmates, and instructors. The participation of the students in co-curricular and extra-curricular activities has also been a little low during the online mode of classes. The students also found themselves more active and self-motivated during online classes. The outcomes of this study are also supported by the results of previous studies wherein it was found students' primary concerns centred on the fact that they did not engage in sufficient conversation with their classmates and teachers, and that their living environments were not suitable for studying from home (for instance, they did not have quite enough data and internet connection), and that they did not prepare to participate in online learning (Almendingen et al., 2021).

3. Challenges faced by the students during online classes

The results of this study found that students faced technical problems as they were unable to buy gadgets or access the internet. Poor internet connectivity and the fragility of various online apps also brought negative experiences for the students.

The required learning environment at home for attending online classes was also reported as unsuitable by the students. The students were unable to communicate effectively during online classes. This caused boredom and a sense of isolation for online students in the current study. In accordance with these findings, the majority of students viewed online learning as boring and highlighted a lack of motivation as the reason they were unable to complete their coursework. These findings are similar to previous findings found by Chandra (2020) that various issues, such as anxiety and sadness, as well as inadequate internet access and an unpleasant environment for home learning, were exacerbated when students were taking classes at home.

4. Positive experience during online classes

The flexibility of online classes has been broadly documented as one of the advantages. The most significant aspect that added to students' positive experiences was the flexible class participation time. Most of the students reported saving time due to online classes. The respondents also approved of the cost-effectiveness of online teaching. The findings of this study are supported by the research that found some of the main advantages of online learning include the ability to save time and money; the availability of simple and flexible learning time options according to one's own schedule, and access to high-quality education and opportunities (Alkharang & Ghinea, 2013).

During online classes, the students were also able to improve their IT skill sets. The development of new hobbies and interests were also positive aspects experienced by the students. Other motivating factors found in this study were individual attention, more interaction, improved concentration, and a comfortable learning environment.

Even though online classes are time saving and cost-effectiveness, but many students realise that during online classes they face some technical issues.

5. Measures taken by the students to overcome challenges faced during online classes

To overcome the technical difficulties and challenges, students in this study tried to concentrate on their studies during online classes through self-discipline and self-motivation. The students also attended extra computer and ICT classes so that they could use computers effectively. The students also developed good communication skills with the instructor, which helped them to clear their doubts clearly. Moreover, the students explored and joined other virtual groups for more learning. According to Tiwari et al. (2001), online learning is helpful for students because they can connect with each other, share knowledge, and work toward the same goals. The relationship between the students and teachers interaction as well as between the students themselves contributed to improvement in both the students' overall performance and their level of comfort with the course. In addition to this, the students participated in many creative activities to keep themselves motivated. This helped them to reduce their monotony and boredom during online classes. The students also concentrated on their physical and emotional well-being during the period of isolation. Exercise and participation in creative

activities were the measures taken by the students to keep themselves fit during this transition and challenging period.

5.2 Suggestions and Recommendations

Every educational institute was forced to employ online learning during COVID-19. With a sudden shift to online learning, it is found in this study that student engagement levels with friends, classmates, and professors have decreased. Similarly, student involvement in co-curricular and extra-curricular activities is also low when compared to the pre-covid period. Many students experience a difficult time with online learning. They were inactive and felt frustrated and less motivated. However, some students reported that online classes are more time saving, cost-effective, and help them to improve IT skills.

Thus, online learning has given both positive and negative experiences to students in terms of challenges and opportunities. Many students mentioned that their home environment is not suitable for attending online classes, and some students are unable to purchase electronic gadgets to attend online classes. These were the most common challenges mentioned by the students. Flexibility, time-saving, cost-effectiveness, improvement in IT skills, exploration of new career opportunities, and building of new hobbies were the major positive factors outlined in this study by the students. It has been rightly said that every new development always comes up with certain flaws. Therefore, online learning is no exception. The students are the customers and products of the educational institutions and face a number of challenges while attending their online classes. Hence, various suggestions for schools or universities as education service providers to refine online learning experiences and improve their education level have been discussed as follows:

1. The institutes must support their students technically. The students can be helped to buy gadgets at a subsidized rate through their institutes. Computer and ICT classes can be arranged by the institutes to make the students feel comfortable in using various apps.

2. As students in this study felt frustrated and isolated because there was a lack of interaction with their classmates and the instructors, various virtual groups must be developed and doubt-handing (Q&A) sessions must be arranged so that students can have more discussions with their teachers.

3. Lack of self-discipline and regulation was one of the important factors which affected online learning; therefore, proper instructions must be given to the students for attending classes and submitting their assignments timely.

4. To overcome the boredom of the students from regular classes, some co-curricular and extra-curricular activities must be planned during the semesters, either in online or hybrid mode. These activities would help students develop their relationships outside of their classroom, and feel more engaged, and be able to interact with other students.

5. The instructors must use various interactive tools while delivering lectures to increase the level of engagement and improve the way that students learn during online classes.

6. The learning environment was also one of the major issues raised by the students in this study. The parents and instructors must cooperate with the students in this changing situation. There should be less disturbance in the home environment, and teachers must also handle the queries of the students in a timely manner, regularly and patiently.

Overall, there are pains and gains that students experienced during the online learning. Schools and universities should take these into consideration and take actions to assure that they deliver high-quality education and meet students' expectations.

5.3 Limitations and Future Study

There are several limitations to this study which need to be taken into consideration. Firstly, most of the students who participated in the survey were from one international university in Japan. The findings could therefore be tailored towards that specific university and might not well represent the general population at other universities. A comparative analysis between various institutes can be done in the future to get a better understanding of the online education learning experience. Furthermore, the survey was conducted only based on students' points of view. There was no participation from the instructors or universities in the survey. The viewpoint and participation of the instructors and staff could provide a better insight and holistic picture of the situation. Finally, since the online learning mode was fully used for the first time and at the mass level, with this one-time survey, it could only give a quick snapshot during this transition and initial stage. Thus, a follow-up survey needs to be conducted to further understand the student's attitude and behaviour change in online and hybrid learning modes.

CONCLUSION

The current study has been undertaken to study the students' viewpoint and experience of the online education mode. In this study, the perspectives of the students were recorded with the help of a structured questionnaire and further analysed by using quantitative and qualitative techniques. While attending online classes, the students added both positive and negative experiences, though their experiences were inclined to be more encouraging. The major factors that attracted the students towards online education were flexibility, cost effectiveness, time-saving, self-motivation, and improved concentration, but there were also factors that were required to be considered for a better learning experience through the online learning mode. The instructors must engage the students by using various apps wherein students can discuss the concept openly. One-way communication always leads to low participation and engagement of the students in the classes. Therefore, it has been concluded that the instructors and institutions must ensure the participation and engagement of the students in the classes. The concerns of the students must be taken into consideration. They must be provided with the opportunities to explore their hobbies and interests, which would help them to socialize and eventually reduce boredom and isolation. The institutions must also provide technical support to their students so that they feel comfortable and supported during this learning transition period.

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APPENDIX

Section 1: Background Questions:

1. What is your age?
2. What is your gender?
3. What is your level of education?
4. Where are you currently taking classes?
5. Are you APU students?
6. What program do you currently studying?
7. Are you Domestic or international students?
8. What is your currently learning mode?
9. Which tools you use for attending the online classes? (Please select all that apply)

Section 2: Before Covid 19 (Students learning behaviour before Covid-19)

10. How much time do you spend in study per day?
11. How much time do you spend in self-study (outside of class) per day?
12. To what extent, do you agree or disagree with the following statements?

Section 3: During Covid 19 (How has students learning behaviour change since Covid-19?)

13. How much time do you spend in online/hybrid classes per day?
14. How much time do you spend in self-study (outside of class) per day?
15. To what extent, do you agree or disagree with the following statements?

Section 4: Challenges

16. What are the challenges that you experience during online classes due to Covid-19 outbreak? (Please select all that apply)
17. What are the concerns that you have when taking classes online? (Please select all that apply)
18. To what extent, do you agree or disagree with the following statements?

Section 5: Opportunities (How these challenges become opportunities for students?)

19. Beside the challenges in online learning, what do you like in online learning? (Please select all that apply).

Section 6: Overcoming the challenges

20. To what extent do you agree or disagree with the following statements?
21. Besides what mentioned in Q20, how do you overcome the challenges in online learning, please clarify? (text)

Section 7:

22. Overall, do you satisfy with online learning?
23. If you can choose, which teaching and learning mode is the most effective for you?
24. If online learning mode has to continue, as a learner what do you plan to improve on?