
Challenges Encountered and Coping Strategies of Third Year Civil Engineering Students on Modular Distance Learning During the Covid-19 Pandemic

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Abstract

This study aimed to identify the challenges and coping strategies of third-year civil engineering students in modular distance learning during the covid-19 pandemic. This study used a quantitative descriptive research design to identify and describe the challenges faced by learners in modular distance learning. Various statistical tools such as frequency, percentage, mean and rank were used in this study. Results of the study revealed that the majority of the respondents includes individuals ages 23-25, predominantly male, single, utilizing mobile phones for virtual learning at home. Google meet stands out as the preferred online platform. The third-year civil engineering student agreed that challenges they encountered on modular distance learning during the Covid-19 pandemic include distribution and retrieval of modules, time management, self-study/independent learning, learning resources/materials, economy and communication. The coping strategies they used on modular distance learning during the covid-19 pandemic were borrowing learning resources, incorporate diverse learning methods, design a study space, set realistic goals, establish a routine, stay connected, seek help when needed, practice time management, break tasks into chunks, stay flexible and manage information intake.

Keywords: Modular Distance Learning, Covid-19 Pandemic, Civil Engineering, Coping Strategies

1. Introduction

The COVID-19 pandemic outbreak has caused substantial causes significant disturbances to daily life and around the globe (Chakraborty & Maity (2020). Everyone was unprepared to embrace its abrupt consequences for society at large. The costs for managing and even developing nations find it costly to manage the pandemic. (Haleem et al., 2020). In order to stop the spread of COVID-19, the Philippines in particular was compelled to enact laws prohibiting public gatherings and promoting social separation. Additionally, it results to the closure of colleges, universities, and schools, forcing almost 28 million Filipino students across all academic levels to stay at home and follow the quarantine regulations set forth by the Philippine government (UNESCO, 2020).

This forced Higher Education Institutions (HEIs) to transition to adaptable education and training. The Philippine Commission on Higher Education (CHED) released guidelines regarding the implementation of flexible learning and teaching while offering a definition

rooted in Southeast Asian Ministers of Education Organization (SEAMEO) (2021) as a teaching method that permits flexibility in terms of time, place, and audience, including but not limited to not only the utilization of technology. HEIs were also asked to deploy accessible flexible teaching methods and additional distribution channels instead of on school-based learning (Commission on Higher Education [CHED], 2020).

Some HEIs have proactive measures to maintain the students' education, especially the 3.5 million students participating in postsecondary education in about 2,400 Higher Education Institutions (HEIs). The remote university in the region put into practice Flexible Online Learning (FOL), which combines both a combination of techniques including synchronous and asynchronous learning modalities. According to Singh and Thurman (2019), synchronous online learning entails real-time on-screen discussions, whereas asynchronous online learning happens offline where students can manage their own time. Students, parents, and instructors faced several difficulties as a result of the abrupt introduction of FOL, particularly in light of Toquero's (2020) revelation that many HEIs in the Philippines both public and private are ill-prepared to set up an online system. They still need to take into account a number of factors, such as digital literacy, network accessibility, technical equipment, and financial stability.

According to the literature, both students and teachers face several difficulties when engaged in online learning (Andersson & Gronlund, 2017). In addition, Friedman (2020) listed a number of challenges such as a technological difficulty, interruption, organizational skills, lack of motivation, understanding learning objectives, lack of peer review and direct interaction, adjusting to different technological advancements, and fear of the future. For example, FOL removes the human connection, which reduces student participation, engagement, and the professors' ability to adjust instructional content and lectures (Shore, 2020).

Background of the Study

The coronavirus pandemic (COVID-19) has become a global health crisis (Bustillo and Aguilos, 2022). According to the DOH Philippines, as of December 8, 2022, there are almost 4 million people who have been infected, and over 64 thousand died. The COVID-19 coronavirus disease had a profound effect on people's lives all across the world. Due to the unexpected health emergency brought on by the pandemic, many colleges and universities were forced to switch from traditional face-to-face studying to digital teaching and learning. When the Philippine government ordered the lockdown of its largest island, Luzon, and other significant cities in the country in the middle of March 2020, all degrees of education were suspended. As a result, more than a billion learners were affected worldwide, with more than 28 million Filipino learners stayed home to comply with the government's quarantine measures (Bustillo and Aguilos, 2022).

Most educational institutions across the globe need to end face-to-face education and continue through online courses, affecting more than 90% or nearly 1.5 billion students worldwide. Studies have shown that teachers mainly use online video conferencing platforms such as Zoom, Google Meet, Microsoft Teams, and WhatsApp, which contribute to the flexibility of online teaching and learning.

In a global study conducted by Vincent-Lancrin et al., 2022, they reported that many countries have set up multimodal infrastructures to include a variety of technologies such as

online platforms accompanied with TV/radio education, paper learning packages handed or mailed to students, digital learning resources provided on memory sticks or CD-ROMs, TV, radio, and digital resources on online platforms working with phone and internet services, through to the direct use of mobile phones. Examples from the mentioned study include (1) in Mexico, they developed *Aprende en Casa*, which mainly drew on audiovisual content broadcast across a network of TV stations and streamed through internet platforms. They delivered 300,000 printed educational materials to students from rural, isolated, and indigenous communities; (2) In India, the state developed digital and nondigital programs under the campaign to ensure learning continuity during school closures; (3) In Spain, the Ministry of Education launched a web portal, *Aprendo en casa* (Learn at home), bringing together educational resources, online training, tools, and apps.; (4) TV materials were made available to teachers and students in Finland; and (5) The Ministry of Education in France supported learning with a variety of learning resources delivered online and by mail, as well as on TV and radio. Organizations belonging to the global “Teach for all” network developed different initiatives such as in Chile, Columbia, and Peru (Bustillo and Aguilos,2022).

Students and colleges struggled as a result of the COVID-19 pandemic. Students frequently lacked the resources required to even connect to online class due to financial struggles that put their education in danger made learning challenging. The loss of vital tuition and ancillary revenue came at the same time that colleges spent time and money to quickly move their classes, activities, and services online. The pandemic also showed how many students lacked another basic need for education: access to affordable and reliable broadband. Before the pandemic, low-income students and students of color often used campus resources such as libraries, computer labs and campus Wi-Fi to access their education, but when campuses closed, they lost those essential tools. Too many poor, rural, and native students struggled to even log into class because of unequal Internet access. Similarly, many of the same students lacked computers and cameras to support their education, thus, they used their phones. Institutions made heroic efforts to reach these students with laptops and hotspots, and some policy solutions were found, but staying in a distant school continued to prove difficult for many.

As a result of the pandemic, modular distance learning has been launched as a practical solution to ensure the continuity of education. Modular learning is the most popular type of distance education. According to a survey done by the Department of Education (DepEd), learning through printed and digital modules emerged as the most desired distance learning mode among most Filipino parents and students. This also takes into account learners in remote locations who do not have access to the internet for online learning.

As the academic year progressed, more and more challenges appeared in the daily work of basic education services. Distance education is defined as “any educational process in which all or most of the teaching is conducted by someone removed in space and/or time from the learner, with the effect that all or most of the communication between teachers and learners is through an artificial medium, either electronic or print” (UNESCO, 2002). Not all students have the opportunity to get used to the new normal learning.

Although it may appear that practically everyone has access to the internet, a staggering proportion of families do not have fast or dependable internet connections. In the Philippines,

around 60% of households do not have access to the internet. That means millions of students are being left behind (Santos, 2020).

Although it may appear that virtually everyone has access to the internet, a stunning proportion of families do not have fast or reliable internet connections. In the Philippines, around 60 of homes do not have access to the internet. That means millions of students are being left behind.

Despite the fact that QSUans distance learning is modular, students still need internet access for unimaginable classes, teacher updates/meetings for student teaching, research and other purposes. Not all students can learn independently; they require more discipline, self-motivation and time management. "Many of the children who were not able to enroll last year could end up missing even more time out of school or worse, drop out completely for one reason or another" (Angara, 2021).

Due to financial inability, lack of technical equipment, family responsibilities, lack of personal desire and high educational costs or financial concerns, many students lose hope of getting an education.

This study aimed to determine the challenges encountered and coping strategies of Third Year Civil Engineering students on modular distance learning during the COVID-19 pandemic.

Research Questions

1. What is the profile of the students in terms of:

1.1 Age

1.2 Sex

1.3 Civil Status

1.4 Gadget use

1.5 Location during the Virtual Learning Activity

1.6 Online Platform Application Use

2. What are the challenges encountered by third year Civil Engineering students on Modular Distance Learning during the Covid-19 pandemic?

3. What are the coping strategies of Civil Engineering students on Modular Distance Learning during the Covid-19 pandemic?

Significance of the Study

This study titled Challenges encountered and coping strategies of Third year Civil Engineering students on Modular Distance Learning during the COVID-19 pandemic is conducted to benefit the following:

Students. The study is beneficial to the students since they are the subjects of this research and will lead them to an advice if there is a negative implication.

Teachers. This research will benefit the teachers for the purpose of having knowledge about challenges encountered and coping strategies of students on modular distance learning modalities. They are exposed to students everyday online. They can make an advice after the study was concluded.

Parents. This study helps parents know if they need to be patient, focus and recognize their children's efforts.

Future Researchers. This study is also valuable for future researchers who will share same effort and time to continuously search for innovative solutions to the country's present problem.

The study may also serve as a future reference for them, in case they will find same subject matter.

Researchers. The present study is also advantageous to the researchers since thru the process of research alone, they are to participate in providing solutions to the country's present problems.

Conceptual Framework

The study uses the basic framework which includes the independent-dependent variable. The Independent Variable is the Profile of Students. The Dependent Variable are the Challenges encountered by students and their Coping Strategies.

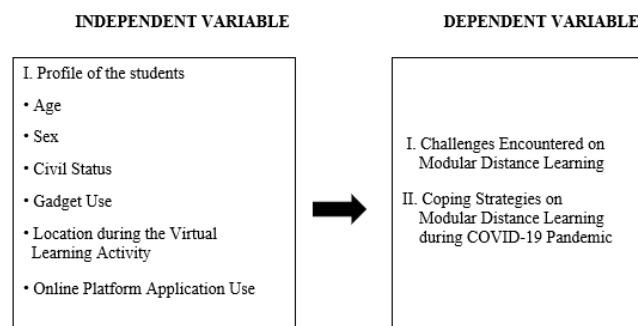


Figure 1. Paradigm Showing Relationship of Variables

Literature Review

Education during Pandemic

Education plays an important role in shaping the lives of students. In the process, teachers are one of the essential instruments in delivering quality learning. Due to the emergence of COVID-19 in the Philippines, a lot of changes happened in the educational landscape. One of these is the mode of instruction that was implemented by the Department of Education (Castroverde and Acala, 2021).

In late December 2019, a new coronavirus appeared in Wuhan, China, and spread rapidly to other parts of the world. The first cases of SARS-CoV-2 infection in Iran were reported on February 19, 2020, and the number of patients had increased to 429,193 by September 22, 2020. On March 11, 2020, the World Health Organization officially declared the outbreak to be pandemic. On September 22, 2020, the number of cases of infection worldwide exceeded 31 million, and more than 215 countries were affected by the virus. The virus affected the

daily lives of many people around the world and had negative effects on all aspects of human life—effects that were unprecedented for most people. Educational institutions were closed in 182 countries, and conventional university education was hindered. In addition, more than 90% of the world's student population was affected by the virus, and the pressure on higher education systems to change their approach to distance learning (e-learning) was maximized. In response to this threat, all educational systems and professionals are trying to act appropriately by finding effective solutions to minimize the adverse effects of the pandemic on the field of education (Hayat et al. BMC Medical Education ,2021).

Furthermore, the pandemic caused widespread concern worldwide due to factors like the ongoing increase in active cases throughout the affected countries (Cabardo et al., 2022); extensive disruptions like travel bans, restrictions on in-person contact, and school closures as a result of surveillance and border control measures (Cos et al., 2021; Chinazzi et al., 2020 as cited in Cabardo et al., 2022; Viner et al., 2020). Therefore, to reduce the number of infections brought by the virus, multimodal interventions and intense attention were given top priority (Guo et al., 2020).

This pandemic created a massive disruption of the educational systems, affecting over 1.5 billion students. It forced the government to cancel national examinations and the schools to temporarily closed, ceased face-to-face instruction, and strictly observed physical distancing. These events sparked the digital transformation of higher education and challenged its ability to respond promptly and effectively. Schools adopted relevant technologies, prepared learning and staff resources, set systems and infrastructure, established new teaching protocols, and adjusted their curricula. However, the transition was smooth for some schools but rough for others, particularly those from developing countries with limited infrastructure (Pham & Nguyen, 2020; Simbulan, 2020).

Due to the health threat of the pandemic, the DepEd decided to bring education to the comfort of their homes as they consistently developed numerous learning modalities to ensure that ensuring the continuity of education and making education accessible to all. Three learning modalities—blended, distance, and homeschooling—were provided by the DepEd for the 2020–2021 academic year in response to the abrupt shift from the traditional to the new normal in the educational system.

According to Llego (2020), Blended learning is a combined face-to face with any or a combination of online distance learning, modular distance learning (MDL), and TV/radio-based instruction. On the other hand, distance learning modality refers to a learning modality where learning takes place between the teacher and the students who are geographically distant from each other during the teaching-learning process. Modular Distance Learning (MDL), Online Distance Learning (ODL) and TV/Radio-Based Instruction were the types of distance learning modality. Lastly, homeschooling was an alternative delivery mode that sought to provide students with basic education in their homes with the aid of parents, guardians, or tutors.

Based on the Learner Enrollment and Survey Forms, it reveals that the alternative learning modalities offered by the DepEd, 7.2 million students enrollees preferred to use “modular” distance learning, TV and Radio based instruction and other modalities while 2 million enrollees preferred online learning modality, Malipot (2020).

The beginning of distance learning can be shifted back to over a century ago (Birnbaum, 2001, Hanson et al., 1997; Mehrotra et al., 2001). It is simply characterized as studying at home as opposed to the conventional classroom arrangement, in which pupils attend classes on a regular basis to interact with their teachers, who support and mentor them during their learning. Due to the time and space constraints of in-person instruction, there has been a discernible increase in the number of higher education programs created for distant learning. Students from poor and middle-class backgrounds appreciate it, and others find it to be economically advantageous. Learners may continuously earn their livelihood and apply for jobs to help their families while at the same time improving their qualifications since distance learning gives them the opportunity to earn while they learn (Brown, 2017). In colleges and universities, students have the option to enroll in a blended learning program where they can complete modules and take both synchronous and asynchronous sessions.

The rapid expansion of distant learning institutions around the world presents both benefits and challenges for students. One of the difficulties with remote learning is that the students are supposed to be more independent, self-directed, and unsupervised (Ekmekçi, 2015).

At first, the concept of virtual learning was developed not to replace conventional or face-to-face learning. Combining face-to-face learning with the virtual learning concept will enable an increase in learning quality, as well as an improvement in the effectiveness and efficiency of education. Virtual learning is developed to support face-to-face learning and can be applied as the only learning process in distance education or combined with direct or face-to-face learning in the class (Wardhono et. al, 2020).

Inevitably, schools and other learning spaces were forced to migrate to full online learning as the world continues the battle to control the vicious spread of the virus. Online learning refers to a learning environment that uses the Internet and other technological devices and tools for synchronous and asynchronous instructional delivery and management of academic programs (Usher & Barak, 2020; Huang, 2019).

Synchronous online learning involves real-time interactions between the teacher and the students, while asynchronous online learning occurs without a strict schedule for different students (Singh & Thurman, 2019).

Within the context of the COVID-19 pandemic, online learning has taken the status of interim remote teaching that serves as a response to an exigency. However, the migration to a new learning space faced several major concerns relating to policy, pedagogy, logistics, socioeconomic factors, technology, and psychosocial factors (Donitsa-Schmidt & Ramot, 2020; Khalil et al., 2020; Varea & González-Calvo, 2020).

With reference to policies, government education agencies and schools scrambled to create fool-proof policies on governance structure, teacher management, and student management. Teachers, who were used to conventional teaching delivery, were also obliged to embrace technology despite their lack of technological literacy. To address this problem, online learning webinars and peer support systems were launched. On the part of the students, dropout rates increased due to economic, psychological, and academic reasons. Academically, although it is virtually possible for students to learn anything online, learning was perhaps less than optimal, especially in courses that require face-to-face contact and direct interactions (Franchi, 2020).

One of the immediate modifications made is through online learning, e.g., synchronous, real-time lectures and time-based outcomes assessments, or asynchronous, delayed time activities, such as prerecorded video lectures and time-independent assessments. This provides a temporary feasible alternative for education practitioners to perform instruction and provide students with necessary instructional support. Online learning is faced with multiple challenges by students and lecturers. Many students struggle to adapt to the rapid advances of technology in today's digital age, especially in the low-class barangays, municipalities, and provinces. In this context, online learning reveals a digital divide among Filipino students, exacerbating existing inequalities that translate to barriers in online education (Bustillo and Aguilos, 2022).

Online Learning and Face-To-Face Learning

According to Benson (2002) and Conrad (2002), the majority of writers characterize online learning as using specific technology to access educational materials. Online learning is described as a more contemporary kind of distant learning by Benson (2002) and Conrad (2002), which improves access to educational opportunities for learners who are deemed non-traditional and ineffectual. Numerous academics address online learning's connectivity, mobility, and interaction in addition to its usability (Ally, 2004).

Much like Benson (2002), Hiltz and Turoff (2005) state unequivocally that online learning is a contemporary version of distance learning. Though they don't seem to be sure about it in their own descriptive narratives, these writers, like many others, think that online learning and distance education or learning are related (Moore et al., 2011).

In face-to-face learning, teachers and students convene simultaneously and at the same place. In the face-to-face learning process, sessions are synchronous. For a face-to-face meeting, no communication technology is needed (Caner, 2012).

Digital media has enhanced teaching and learning over the past few years, and both lecturers and university students now use it often. In just a few short years, the usage of digital media and e-learning for teaching and learning has increased significantly (Paechter and Maier, 2010).

Dabbagh and Ritland (2005) conducted a comparative study to compare traditional and online learning environments. They argued that traditional learning environments are controlled by the instructor, confined to a physical location, involve real-time interactions between the teacher and students, and employ linear teaching methods.

On the other hand, asynchronous communication, real-time information, and emerging ICTs are used in the flexible and dynamic online teaching and learning settings. A range of instructional strategies are used in online learning environments, which are frequently distinguished by student-centered, active learning strategies (Keengwe and Kidd, 2010).

Benefits of Online Learning

Numerous studies have found that, when compared to traditional face-to-face formats, online learning has statistically significant positive effects on student learning outcomes. Improved test scores, student engagement with the content, a better comprehension of learning and the

online environment, a deeper sense of community among students, and a decrease in withdrawal or failure are a few of the positive learning outcomes (Nguyen, 2015).

Many students find that online learning is appealing since it provides flexibility in terms of participation, accessibility, and convenience. Moreover, online education will remain a crucial component of higher education (Croxtton, 2014). Technology is here to stay, whether you like it or not when it comes to education. In order to meet the demands of a rising knowledge society for education, training, and retraining, technology has become a need (Berge, 2007).

1. Convenience

The main benefit of online learning is cited as being its convenience. In several cases, students prefer the ease of online learning over the face-to-face instruction offered in traditional classroom settings. Due to its ease of use, online learning allows students and teachers to communicate directly through virtual classes (Fedynich, 2013).

2. Participation

One component of virtual classrooms' attraction is their ease of participation. Students' desire to participate in a mixed learning environment, either synchronously or asynchronously, is one of the many adaptable features of cyberlearning. There are many different ways to provide education online, including blogs, email lists, and course administration platforms like Blackboard. Pupils can publish to forums or newsletters to engage in asynchronous or real-time chat rooms (Morrison et al., 2019). Students have an easier time communicating with the teacher and other students in the class when they are prepared with all those communication tools. Everyone in the class is welcome to participate, and the rules are set for communication.

Kupczynski et al. (2008) found that student participation increased in the asynchronous environment because there is time to "post messages, read and respond to messages, reflect on responses, revise interpretations, and modify original assumptions and perceptions...", but in a face-to-face class this would not be the case (Fedynich, 2013). Garnham and Kaleta (2002) state that "Introverts, who are quiet in the face-to-face class, really participate online."

3. Cost-effectiveness for the University

Given the increasing number of students enrolled, universities are beginning to see the advantages of offering online courses. Prior to the advent of online learning, universities discovered that, when combined with reduced rates of online student withdrawal, online learning is incredibly economical and productive (Steen, 2008). Due to the lower opportunity cost of an education for both the university and the student, more students are choosing to enroll in and complete their coursework online (Dziuban et al., 2005). Enrollment is increasing as more classes are offered online, which boosts the university's revenue.

As more students enroll in online courses, the distribution of the classroom can be made simpler. Since there is less need for classroom space. There is a declining demand for them, which lowers maintenance and electricity expenses. According to Cavanaugh, "online programs have little to no cost to educational facilities, transportation, and associated staff." "Considering the variety of online courses available, the significance of distance education

also increases" (Cavanaugh, 2009). Budget cuts these days, down to the public and private sectors. Declining enrollment at certain universities are excellent news

2. Methods

Research Design

This study used the descriptive method of research. It is one of the most widely used in research since this study involves determination of what actually exist. According to McCombes, 2020, descriptive research aims to accurately and systematically describe a population, situation or phenomenon. It can answer what, when, where, when and how questions, but not why questions. A descriptive research design can use a wide variety of research methods to investigate one or more variables. Unlike in experimental research, the researcher does not control or manipulate any of the variables, but only observes and measures them. Thus, this is the most congruent method in determining the challenges encountered and coping strategies of Third Year Civil Engineering students on modular distance learning during the COVID-19 pandemic.

Study Site and Participants

The study was conducted at Quirino State University – Cabarroguis Campus. The participants of the study are the Third Year Civil Engineering students.

Population, Sample Size and Sampling Method

The research populations were 101 3rd year CE students. The sample used in this research were 81 students from the CE department who were enrolled in the University. In getting the sample population, the researcher used the Slovin's Formula.

Instruments

Pilot Testing. A research instrument validation process was also performed to check the validity and reliability of the researcher's survey questionnaire before the actual date of distribution and collection. The validated questionnaire was then pilot-tested on 30 students, a subset of the intended population. Cronbach's alpha was used to estimate the reliability index.

Observations. The researcher utilized observations as an information gathering technique. Through these observations, insights into the challenges encountered by students were gathered, enabling the formulation of key solutions for specific problems.

Questionnaire. This was distributed to respondents to determine the challenges encountered by third-year Civil Engineering students and their coping strategies during modular distance learning amidst the COVID-19 pandemic

Data Gathering Procedures

By requesting permission from the Campus Administrator for the conduct of the study for third year Civil Engineering students, the researcher followed the correct procedure in carrying out the study. The same permission was then obtained thru the Program Chair to float the questionnaire. Upon approval, the researcher personally gave the questionnaire to the third year Civil Engineering students to determine the challenges they encountered and coping strategies on Modular Distance Learning during COVID-19 pandemic. After that, the

data were tallied and statistically examined. The researcher also made sure that the responses and outcomes of each individual respondent were kept in strict confidentiality.

Data Analysis

1. Weighted Mean was used in treating the perception of the respondents in the University.
2. Frequency and Percentage was used in interpreting the profile of the respondents.
3. Likert scale was used in rating the evaluation wherein respondents were asked to express their agreement or disagreement with the questions. The Likert scale used in the study, measured the extent to which a person agrees or disagrees with the questions. The researcher utilized a 4 – point Likert scale. The scale has the following descriptions: 1 = Strongly disagree, 2 = Disagree, 3= Agree and 4 = Strongly Agree. The numerical value can be calculated from all the responses.

Likert scale was used in the survey questionnaire with corresponding limit of interpretation: 4 – Strongly Agree (SA) wherein the limit is 4.00 – 3.50, 3 – Agree (A) wherein the limit is 3.49 – 2.50, 2 – Disagree (DA) wherein the limit is 2.49 – 1.50 and 1 – Strong disagree (SD) wherein the limit is 1.49 – 1.00.

Ethical Considerations

The researcher protected the participants' right to self-determination via written informed consent. The participants were given full details about the purpose of the research. Deception or exaggeration regarding the purpose of the study were avoided by the researcher. The study data as well as the privacy and identity of the research participants remained extremely confidential and safeguarded. The name of the respondents was not linked to personal responses.

3. Results

Part 1. Profile of the Students

The profile of students is classified in terms of age, sex, civil status, gadget use, location during the virtual learning activity and online platform application use.

Table 1. Profile of students in terms of age, sex, civil status, gadget use, location during the virtual learning activity and online platform application use.

Characteristics	Frequency	Percentage
Age		
20 - 22 years old	43	53
23 - 25 years old	38	47
Sex		
Male	43	53
Female	38	47
Civil Status		
Single	78	96
Married	3	4
Gadget		
Laptop	13	16
Mobile Phone	61	75
Personal Computer/Laptop	7	9
Location		
House	78	96
Friend's House	3	4
Online Application		
Zoom	7	9
Google Meet	72	89
Microsoft Teams	2	2

As shown in Table 1, students age 20 - 22 account for 43 or 53% of the total, while those age 23 - 25 comprise 38 or 47% of the total. Among the 81 respondents, 43 or 53% are males and 38 or 47% are females. As shown in the table, the majority of respondents (78 or 96%) are singles, with 3 or 4% are married."

As revealed in the table, Mobile Phone 61 or 75% is the gadget mostly used by the respondents during the modular distance learning, followed by Laptop (16%). This is due to the gadget flexibility that is easy to carry and used anywhere. Further, in terms of location, house (96%) is the most used location during the Covid-19 pandemic. This is under the Letter (SE) Number 4 of 2020 that emphasized the learning process from home through online learning. As presented in the table, despite the many online platforms for modular distance learning activities, the Google Meet platform is still the most popular in the modular learning process (89%), followed by Zoom platform (9%). It is simple and straightforward for users to start or attend meetings because of its user-friendly design. This is made more user-friendly by the fact that it integrates with Google Calendar and is generally part of the Google ecosystem.

Part 2. The Challenges Encountered by Third Year Civil Engineering Students on Modular Distance Learning during Covid-19 pandemic

The Identified Challenges encountered by Third Year Civil Engineering students in their modular distance learning are categorized into six, such as distribution and retrieval of modules, time management, self-study/independent learning, learning resources/materials, economic and communication.

Table 2. Challenges encountered on Modular Distance Learning

Indicators	WM	SD	Interpretation
Distribution and Retrieval of Modules			
Failing to adhere to the provided schedule for module distribution and collection.	2.98	0.55	Agree
Not picking and submitting modules in a timely manner	2.98	0.74	Agree
Time Management			
Not managing proper time	2.73	0.73	Agree
Not utilizing time in answering modules	2.84	0.70	Agree
Indicators			
Self-Study/Independent Learning			
Lacking motivation to comprehend and answer modules	3.04	0.68	Agree
Stagnating in dependent learning	3.02	0.71	Agree
Learning Resources/Materials			
Unorganized and difficult to understand	3.02	0.69	Agree
Difficulty in finding appropriate online resources	3.17	0.63	Agree
Economic			
Budget is not enough to pay electric and internet bills	3.20	0.73	Agree
Expensive internet/mobile data charges	3.38	0.60	Agree
Communication			
Limited communication with teachers	3.28	0.62	Agree
No interaction among students	3.25	0.66	Agree
Composite Mean	3.07	0.67	Agree

As revealed in Table 2 the students encountered challenges in the implementation of modular distance learning in terms of the following: distribution and retrieval of modules, failing to adhere to the provided schedule for module distribution and collection (WM= 2.98), not picking and submitting modules in a timely manner (WM= 2.98). In terms of time management, not managing proper time (WM= 2.73), not utilizing time in answering modules (WM= 2.84). In terms of Self-Study/Independent Learning, lacking motivation to comprehend and answer modules (WM= 3.04), stagnating in dependent learning (WM= 3.02). In terms of Learning Resources/Materials, unorganized and difficult to understand (WM= 3.02), difficulty in finding appropriate online resources (WM= 3.17). In terms of Economic, budget is not enough to pay electric and internet bills (WM= 3.20), Expensive internet/mobile data charges (WM= 3.38). And lastly, in terms of Communication, limited communication with teachers (WM= 3.28), no interaction among students (WM= 3.25).

Part 3. Coping Strategies of Civil Engineering Students on Modular Distance Learning during Covid-19 pandemic

Despite the challenges encountered by the student participants in school, home, community, students still had positivity and coping mechanism to overcome these difficulties.

Table 3. Coping strategies on Modular Distance Learning during COVID-19**Pandemic**

	Indicators	WM	SD	Interpretation
1.	Borrowing Learning Resources	2.94	0.56	Agree
2.	Incorporate diverse learning methods. (Ex. watching educational videos, reading articles, and listening to podcasts)	3.11	0.35	Agree
3.	Design a study space	2.99	0.37	Agree
4.	Set Realistic Goals	3.06	0.43	Agree
5.	Establish a Routine	3.07	0.57	Agree
6.	Stay Connected	3.04	0.43	Agree
7.	Seek Help When Needed	3.10	0.46	Agree
8.	Practice Time Management	3.11	0.45	Agree
9.	Break Tasks into Chunks	3.05	0.27	Agree
10.	Stay Flexible	3.09	0.39	Agree
11.	Manage Information Intake	3.16	0.40	Agree
	Composite Mean	3.07	0.43	Agree

As revealed in Table 3 the Coping strategies of students on modular distance learning are the following. Manage Information Intake (WM=3.16) wherein they limit their exposure to excessive news and social media about the pandemic, as it can contribute to stress and anxiety. Incorporate diverse learning methods (WM=3.11), such as watching educational videos, reading articles, and listening to podcasts, to keep your engagement and interest high. Practice Time Management (WM=3.11) wherein they use tools like calendars, to-do lists, or time management apps to keep track of assignments, deadlines, and study sessions. Effective time management reduces last-minute stress. Seek Help When Needed (WM=3.10) if you're struggling with a particular concept or task. Stay Flexible (WM=3.09) to produce more adaptive outcomes caused by stress responses, such as reduced psychological and physical dysfunction. Establish a Routine (WM=3.07) where you can create a daily schedule that includes dedicated time for studying, breaks, physical activity, meals, and rest. Having a routine provides structure and helps maintain a sense of normalcy. Set Realistic Goals (WM=3.06) that break down your tasks into smaller, manageable goals. Achieving these mini-goals can provide a sense of accomplishment and motivation to keep going. Break Tasks into Chunks (WM=3.05) where you can divide your coursework into smaller, manageable tasks. Completing each chunk can provide a sense of progress and prevent feeling overwhelmed. Stay Connected (WM=3.04), even though MDL involves a lot of independent work, it's important to stay connected with classmates and teachers. Participate in virtual discussions, group projects, and online forums to maintain a sense of community. Design a study space (WM=2.99), set up a comfortable and organized study area with all the necessary materials. This space should be quiet and free from distractions to enhance focus and productivity. Borrowing Learning Resources (WM=2.94) to stimulate learning, add impact and promote interest in your subject. Learning materials can significantly increase learners' achievement by supporting learning.

The first paragraph under each heading or subheading should be flush left, and subsequent paragraphs should have a five-space indentation. A colon is inserted before an equation is

presented, but there is no punctuation following the equation. All equations are numbered and referred to in the text solely by a number enclosed in a round bracket (i.e., (3) reads as "equation 3"). Ensure that any miscellaneous numbering system you use in your paper cannot be confused with a reference [4] or an equation (3) designation.

4. Discussion

Part 1. Profile of the Respondents

The profile of the respondents is 43 (53%) male and 38 (47%) female undergraduate students with ages from 20-25 years old. According to the Cadd Centre, more men pursue civil engineering than women because it is a traditionally male-dominated career. This is due to several factors. One of the main reasons for this is that engineering is generally seen as a field suitable for men, due to the stereotype that men are better suited for careers in science, technology, engineering, and mathematics (STEM). Additionally, civil engineering has traditionally been seen as a field that requires a lot of outdoor work and requires physical strength, which may also have led to the perception that it is a field suited to men. Another factor is that overall women have historically been underrepresented in engineering. According to the National Science Board, women made up just 12.9% of the engineering workforce in 2018. This is despite the fact that women make up nearly half of the US workforce. In recent years, efforts have been made to promote diversity and inclusion in the civil engineering field and encourage more women to pursue careers in civil engineering. However, there remains a significant gender gap in this field and more work is needed to address this issue. The profile of respondents towards the modular learning implementation during the Covid-19 pandemic states that Mobile Phones (75%) are the most widely used gadget by the respondents, followed by laptops (13%). This is due to the gadget availability in which most of them cannot afford to buy Laptops. In addition, phone is easy to carry and can be used anywhere. Further, in terms of location, the house (96%) is the most preferred location during modular learning since it is a very restricted area.

Furthermore, despite many online platforms for modular distance learning activities, Google Meet is still the most popular in the modular learning process (89%). It offers a user-friendly experience and seamless integration with all G-suite apps, followed by the Zoom platform (9%). Microsoft Teams is commonly used in business communication, thus, making this platform not recommended for modular learning activities.

Part 2. Challenges encountered on Modular Distance Learning

Different challenges occurred as the modular distance learning was implemented in the Philippines. The 3rd year Civil Engineering students encountered different challenges under six indicators such as distribution and retrieval of modules, time management, self-study/independent learning, learning resources/materials, economic and communication.

Distribution and Retrieval of Modules

According to the Department of Education (DepEd), parents and guardians perform the various roles in Modular Learning such as Module-ator, Bundy-clock, and as Home Innovator. As a Module-ator, they are the ones to get and submit the printed Self-Learning Modules (SLMs) from and to schools or barangay halls at the beginning and end of the week, depending on the agreement between the parents and the school. As a Bundy-clock, they

must check their child's schedule or workweek plan. Because of the number of subjects or activities to be done, they must see to it that it is being followed accordingly to avoid cramming or delays in submission, which may affect the child's performance. Lastly, as a Home Innovator, they must provide their child with a productive learning environment to help them focus more on Learning. It must be a well-lighted and well-ventilated space in the house, with little or no distraction (Pe Dangle and Sumaoang, 2020).

Lack of funding for teachers could be one barrier to module distribution. According to Castroverde and Acala (2021), the main challenges that arose were the lack of funding for the creation and delivery of the modules. Because maintenance and other running expenditures were not funded, teachers who have shortage of bond paper, ink, and printers were unable to print modules, which delayed the distribution of self-learning modules (Nazario, 2020).

In module distribution and collection, respondents agreed in failing to adhere to the provided schedule. They also agreed that they were not picking and submitting their modules in a timely manner because of the number of subjects and activities to be done. No one also taught them on how to work on their modules because their parents are busy working. This is also connected to the time management since they were struggling more in managing their time in answering modules. It is likely then, that students were not able to complete their modules on time. As a result, the completion of the following modules was also delayed.

Some teachers had to verify too who assisted their learners in the completion of their modules. Some parents complained that they can no longer work because they were the ones attending to the modules of their children, thus, they found it difficult to return the modules on time. Some parents failed to produce the modules on the agreed date of retrieval because their children were not yet done answering the given tasks (Matos, 2021).

Time Management

Ahmad et al., (2019) states that time management plays a significant role in improving learners' performance and accomplishments. It is a skill to manage time and every learner must be familiar with this skill for the sake of better results. A student can only survive if he/she has ability to manage his/her time properly.

Time Management, results show that respondents agreed that they cannot manage their proper time and cannot utilize their time in answering modules. This may imply that students have more tasks to do at home. Since they study from home, they are expected to do a lot of housework, which makes it difficult for them to set aside time for their studies. Conflicts between household chores and study schedule were also one of the minor problems among the respondents. According to the report of Rinzin (2020) about the study of UNICEF's U-Report South Asia poll that explained that more than one in three students could not study at home as they were engaged in household chores during pandemic.

Distractions also help people manage their time poorly. Even though social media and other technology make it simple to communicate, they also serve as the main source of distraction, aside from the noise outside the study space. Additionally, they admitted that using their phones was keeping them from studying. Michikyan, Subrahmanyam and Dennis (2015) argued that technology has positive and negative impact on students' lives and their grades. Students' study time is taken up by social media, social networks, and television. According to Hanson, Drumheller, Mallard, McKee, and Schlegel (2011), most students struggle to find

enough time for study sessions. Facebook is the most widely utilized social media platform among students, according to Michikyan et al. (2015), instead of studying, time is spent on social media and playing games with friends.

Self-Study/Independent Learning

Under the self-study/independent learning, the respondents agreed that they have lack of motivation to understand and answer their modules. This implies that students have difficulty in motivating themselves to learn independently. This is somehow logical since the traditional teaching before the pandemic was face-to-face teaching. The transition from face-to-face teaching to modular forms of learning has a significant impact on student learning, leading to difficulties such as independent learning.

Parents are the ones who facilitate and guide their children on their modules (Bonilla et al., 2022). For students, parental participation is essential. Parents play an important role not just at home but also when their children participate in school activities. According to Wang et al. (2020), parents' and students' bonding time rises when they work together on educational activities. In such circumstances, parents can act as a comfort zone for their childrens by reducing their tension and discomfort as they share their works to help them talk (Bhamani et al., 2020). Learners are well motivated when parents spend time with them (Delgado, 2019). Providing moral support to their children is the duty of parents and guardians, regardless of the presence of a pandemic. Parents' active participation is necessary for the progression to be completed, even in cases where teachers are responsible for providing appropriate education, as they are the perfect collaborators in creating the finest possible learning environment for students.

They fail to undertake self-study because they are too busy working at home or to make extra money, making it difficult for them to develop autonomous learning. They struggle with creating or acquiring independent learning because they prefer to have someone else (a teacher or facilitator) to lecture about the lessons and give directions on the tasks and/or outputs they must do.

According to Nardo, M.T.B, (2017) the use of modules encourages independent study. One of the benefits of using modules for instruction is the acquisition of better self-study or learning skills among students. Students engage themselves in learning the concepts presented in the module. They develop a sense of responsibility in accomplishing the tasks provided in the module. With little or no assistance from others, the learners progress on their own. They are learning how to learn; they are empowered.

Learning Resources/Materials

Under the category of learning resources/materials, respondents agreed that it is unorganized and difficult to understand. This implies that even though it is considered a challenge, it is also considered as external factors, where learning resources/materials are not in the hands of the students but are under the responsibility or authority of the teacher or module writer. In terms of appropriate online resources, students may be more curious and specific about lessons, activities, and outcomes, so they may find online resources challenging.

According to Lynch (2020) many students struggle with reading comprehension as it is not just the ability to read the words accurately but to understand the specific lesson, story and

articles that a person read. A lot of students encounter problems related to comprehension in fact based on the claim of Gueta and Janer (2021), comprehension is one of the challenges that students face during the implementation of Modular Distance Learning. Most of the students cannot answer the module on their own because they do not understand the new information specially if there is no one to guide them.

Constantino et.al., revealed in their study that one challenge encountered in the modular distance learning is the quality of printed modules since there are items or parts that are not readable, and some colors of the figures are not appropriate. The problems encountered by students as regards to modules are the unclear instructions and lack of detailed explanations, so students have a hard time answering them (Quinones, 2020).

Economic

The COVID-19 pandemic is altering our way of life and posing numerous difficulties for the modern world. Aside from being a health crisis, it also caused economic melt downs across the globe. Companies closed, many people were laid off and unexpectedly became unemployed.

Of the 6 indicators, the respondents agreed that economic is the highest challenge that the students encountered during pandemic. During the face-to-face learning, the students depended on the library to study and complete their activities/homework. And in their daily lesson, they depend on the teachers so that they can understand it through the teacher's explanation. But because of the pandemic, they had to connect to the internet, load every day so they could have mobile data so they could find online resources for their modules. Even though it is not involved in the family's budget, they need to put some budget on the internet bills and mobile data charges so that they could understand the module given by their teacher and complete their homework in different online resources.

Online classes have placed financial burden on poor students. Factually speaking, students were unable to bear internet expenses so in certain instances they missed online classes. The situation is that they can hardly pay tuition fees, so how can they afford expensive internet expenditures for online classes that last around 6 hours a day. Expensive internet packages are barriers towards online learning of students (Kipsoi et. al, 2012; Callinan, 2014; Marzilli, et. al, 2014; Dogan, 2015). Students cannot afford exorbitant rates of internet packages for online classes whereas; online classes require maximum internet use. Unfortunately, there are no attractive alternatives for buying economic internet packages because its expensive.

Adedoyin and Soykan (2020) described that student with a low socioeconomic status who cannot afford a broadband connection are the most likely to fall behind or face additional difficulties in interacting with others in online learning.

Communication

Effective communication between teachers and students has the potential to improve the learning experience and create a positive environment in the classroom. However, communication becomes ineffective when there are barriers. The barriers in communication can be physical, emotional, linguistic, psychological, gender and culture. Moreover, the examples of barriers to effective communication are one-way communication and teacher-centered approach which are known to reduce the motivation for learners (Dinu, 2015).

Instructors need to be mindful of how they interact because communicating effectively will help instructors have a presence in the classroom that motivates students and encourages learning; they might send unintended messages if they do not know things about their own body language; new technologies provide new opportunities to connect with students (Duta et al., 2015). Based on the literature review of Majid et al. (2010) and according to Moore (2007), the teaching and learning process shall not take place without communication. Instructors with strong communication skills can thus create a more positive learning and teaching atmosphere for the students. On the other hand, someone with excellent communication skills has the ability to influence others and positive communication strategies (Guerrero and Floyd, 2006).

In terms of Communication, the respondents agreed that it is the second highest challenge that they encountered during the modular learning. Students communicate with their teachers by means of social media and text messages wherein they use Google Meet as their online platform. They do not use Google Meet every day because they were given modules in different subjects. Unavailability of teachers and poor communication by teachers are the major factors that led students to abandon their study at a certain level (Dinu, 2015). Davis (2001) proved that the self-confidence and self-ability of students help build their relationship with their teachers by nonverbal communication. Khan, et al. (2017) stated that the success of students is directly related to the effective communication of the teacher. Sad to say their communication with their teachers is limited. Students on the other hand are more often busy facing their modules. Because COVID-19, many were afraid to go out, students had to stay at home. This, led to no interaction among their classmates.

Part 3. Coping strategies on Modular Distance Learning during COVID-19 pandemic

The three highest coping strategies of respondents are the following: manage information intake, wherein they limit their exposure to excessive news and social media about the pandemic, as it can contribute to stress and anxiety; practice time management, wherein they use different tools like calendars, to-do lists, or time management apps to keep track of assignments, deadlines, and study sessions. This effective time management reduces last-minute stress and provide more time to incorporate diverse learning methods, wherein they watch educational videos, read articles, and listen to podcasts, to keep their engagement and interest high. On the other hand, borrowing learning materials, designing a study space, and staying connected were the least effective coping strategies.

Meanwhile, it was also shown in the study that respondents all agreed with all the coping strategies stated. This implies that most students are not using negative coping mechanisms to deal with stress. This finding was consistent with the study of Heffer and Willoughby (2017), which states that negative coping was not mostly utilized because it could lead to more depressive symptoms. Sahin and Hepsogutlu (2018) also stated that negative coping strategies are mostly used by people who have low psychological resilience.

Conclusion

Based on the findings of the study, the following conclusions are drawn:

1. It is therefore concluded that students were not able to properly manage their time in studying, thus affecting their performance in answering their modules. They were not also guided and trained to use their time appropriately to complete modules on time.

2. As to the distribution and retrieval of modules, it can be concluded that it is also the concern of students. Whereas, they believe that following the given schedule seems to be difficult since they simply entrust this task to their parents/guardians, who are also busy at work.

3. It can be concluded that as with independent learning students are less motivated to study on their own or complete their modules. The importance of self-study learning was not inculcated among them.

4. In terms of learning resources/materials, one possible cause of the problems could be that the students were not using the Self-Learning Modules. However, there are certain problems with the learning resources/materials, such as disorganized and challenging to understand topics, activities, and instructions. In addition, the insufficiency of modules created an impact on students' performance.

5. As response to the economic, it is considered an issue among the students regardless of their location. One reason for not having a budget to finance or support their children in budgeting the internet/mobile data bills is that not all parents have a stable job and some of them were affected by the untimely closure of companies resorting to unemployment.

6. Furthermore, as to the communication, one of the main challenges that emerged in the implementation of Modular Distance Learning is time to communicate with their teachers on the given schedule of their Google Meet.

Recommendations

Based on the aforementioned conclusions, the following recommendations were made:

1. Parents and students should have realistic timetables to follow in the completion and submission of modules. In addition, module distribution and retrieval require careful orientation, which needs to be done thoroughly. Another option is to create and implement proper distribution and retrieval agreement for modules. Issues with the distribution and retrieval of modules as well as other parenting difficulties can be avoided by paying early attention to the child's learning. Parental support, encouragement, and additional effort put into a child's education will go a long way toward fostering their future development and goals. Hence, the method for distributing and retrieving modules will be improved by the collaborative effort of parents and instructors.

2. In order to assist students manage their time effectively and complete their modules on time, it is imperative that they follow an increasingly rigorous weekly home learning schedule.

3. Teachers and parents should collaborate to inspire students to learn independently. Assist the students in becoming self-motivated learners who can study alone. In addition to reaching out to each student personally in the event of a precipitous decline in performance, instructors should make every effort to stay in contact with their students through online office hours. At the end of the day, every student wants to get good grades, and it is difficult to achieve without motivation. This can be satisfied by awarding extra marks through quick quizzes. Instructors should encourage students to participate and study more.

4. Learning resources and materials need to be made more easily understood, contextualized, or localized in order to be used effectively. Continuous communication about the modules with the teachers through various communication channels, limiting group activities, and giving additional examples and explanations for every task assigned should also be highlighted.

5. For the students who still cannot access the internet, they will be given special consideration. Give students reading materials, workbooks, printed worksheets, and textbooks for use at home as offline learning resources. Verify that these materials offer precise directions for self-guided learning and are in line with the curriculum. Create assignments that do not primarily require internet connection. Promote tasks that can be accomplished with offline materials and resources. This guarantees that students can still fully engage in their education even if they do not have access to the internet.

6. Teachers are encouraged to be online most of the time. They must be able to respond to the emotions of some parents and students, such as being patient enough to respond to needs and answer academic questions immediately. Teachers may understand individual differences and students' abilities to help them improve their communication skills through applying and integrating appropriate teaching-learning strategies. Teachers can maintain continuous communication to help students improve their communication skills at all levels.

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