A Comparative Analysis of Perceptions of Satisfaction in E-learning and Traditional Face-to-face Instruction of Engineering Undergraduates in Pampanga

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Abstract: - Since the pandemic started, e-learning has been the primary medium for education in the Philippines and most countries. It comes into light the concern of whether the students are satisfied with the quality of knowledge they are acquiring from online learning. This study utilized quantitative and qualitative approach to measure the level of satisfaction of the fourth-year engineering undergraduate students in Pampanga regarding their level of satisfaction with E-learning and the traditional face-to-face using the College Student Satisfaction Questionnaire and were tested with t-test using Statistical Package for the Social Sciences Statistical Package for the Social Sciences Statistics software. Students' levels of satisfaction were identified, as well as the factors that contribute to their satisfaction. The findings of this research revealed that students were much more satisfied with traditional education than e-learning. The researchers also found factors that affects the level of satisfaction in both modalities. For the traditional face-to-face set up, there are six factors that affects the satisfaction of students and three factors affecting the level of dissatisfaction. Whilst for the E-learning set up, the researchers found out seven factors that contributes to the dissatisfaction of the students had and three factors that contributes to their satisfaction.

Key Words: — ***E-learning, Students, Engineering, Pandemic.***

I. INTRODUCTION

The transition from face-to-face to e-learning sessions may be considered a new phenomenon in higher education, particularly for the colleges in Pampanga. The emergence of the COVID-19 virus has prompted some schools and colleges all around the world to permanently cease their operation, resulting in the perception of e-learning. E-learning is another approach in education wherein topic discussion is being done remotely and via digital platforms.

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Most schools in Pampanga executed this new mode of learning in August 2020, five months after the onset of the COVID-19 pandemic. Several instructors and students continued to support this initiative with great energy and commitment. Initially, there were difficulties encountered by the instructors and students such as lack of internet connection, scarcity of laptops and computers, and trouble in the use of websites and online platforms. Nevertheless, some of these concerns were immediately resolved as time went on. For example, the use of Canvas at Holy Angel University has improved by providing course material, announcement of synchronous, asynchronous classes, quizzes and even assignment, which students can access anytime.

Traditional setting enhances the teaching or learning process through interpersonal contact. Students and instructors might form a support system as a result of these interactions. In a familiar, traditional classroom atmosphere, students may feel

more at ease and so learn more easily. Through these interactions, they may also have access to more information and gain a deeper grasp of course subject material; (Quereshi, 2019) and (Miles, 2018). That said, e-learning is education that takes place over the Internet is alternatively called online learning, and it is an umbrella term for any learning that takes place across distance and not in a face-to-face platform (Anderson, 2016); (Mpungose', 2017). One criterion associated with e-learning is the delivery of study materials to students over a learning management system (Pozzi, 2019), which in most instances, is designed by an external source e g. Google Classroom. In online learning, students are physically separated from instructors and the institution; they are also chiefly responsible for their own learning (Bagriarcik, 2019). (Dookwah & Julien, 2020). One of the most commonly recognized benefits is the flexibility gained through the online format (Simonson, 2014). In online courses, students are able to more effectively manage their study hours by accessing course content at a time and place that is most convenient to them. This is a sharp contrast to classical face-to-face teaching which requires student presence at specific points in time for class attendance.

Emerging evidence on students' online learning experience during the COVID-19 pandemic has identified several major concerns, including issues with internet connection, problems with IT equipment, limited collaborative learning opportunities, reduced learning motivation, and increased learning burdens. Although these findings provided valuable insights about the issues students experienced during online learning, information about their learning conditions and future expectations were less mentioned.

The study aims to compare the level of satisfaction of the engineering undergraduates regarding traditional face-to-face classroom and e-learning instruction. The researchers also aim to recognize the factors that contributed to their satisfaction or dissatisfaction.

The participants were selected from the engineering undergraduates who are currently in their fourth year at Holy Angel University. This specific sample was deemed fit for the study for they have equally experienced the transition from e-learning to face-to-face instruction. Holy Angel University was chosen as the locale of the study since it's one of the largest universities in Pampanga or even Central Luzon in terms of number of enrollees. Limited number of resources and time framework only allowed a small sample size consisting of 50 students.

The first part of the study aims to identify if there is a significant difference between the students' level of satisfaction in e-learning and traditional face-to-face instruction. To measure satisfaction five criteria were explored namely compensation, social life, working conditions, recognition, and quality of education. The main hypotheses are:

Hypothesis I:

Ho = There is no observable significant difference between the level of student satisfaction in e-learning and traditional face-to-face instruction.

Ha = There is an observable significant difference between the level of student satisfaction in e-learning and traditional face-to-face instruction.

The dependent variable in the study is the level of satisfaction of the students and the two different conditions are e-learning and traditional face-to-face instruction.

II. Method And Procedures

2.1 Research Design

The research design involves determining the level of satisfaction of the selected students with reference to the identified two learning modalities – e-learning and face-to-face. The researchers employed a quantitative method in order to address this research problem, specifically the use of the College Student Satisfaction Questionnaire (CSSQ).

Moreover, one of the goals of this research is to explore the factors that contributed to the satisfaction or dissatisfaction of the students regarding with their experiences in e-learning and face-to-face instruction. For this particular research problem, the researchers utilized a qualitative method, mainly the use of structured interview through Google forms.

The researchers examined the quantitative and qualitative data obtained from the selected students by employing hypothesis testing and keyword analysis, respectively.

2.2 Locale of the Study

The participants were selected from the engineering undergraduates who are currently in their fourth year at Holy Angel University. This specific sample was deemed fit for the study for they have equally experienced the transition from e-learning to face-to-face instruction.

Holy Angel University was chosen as the locale of the study

since it's one of the largest universities in Pampanga or even Central Luzon in terms of number of enrollees.

2.3 Population And Sampling

Currently, there are 1083 fourth year engineering students enrolled in Holy Angel University. Fourth year engineering students have experienced both traditional and online set-up, two academic years for each modality. The study sample consists of 50 engineering students who are currently enrolled for the school year 2021-2022.

2.4 Research Instrument

The researchers will utilize a survey questionnaire for gathering data in determining the level of students' satisfaction of engineering students of Holy Angel University in e-learning and traditional face-to-face education. A total of 70 individual questions and two summary question are used to measure student satisfaction.

The researchers will collect data and information using both quantitative and qualitative methods. For the quantitative method, the researchers will conduct a survey using the 5-Point Likert scale, 5 being "Very Satisfied" and 1 being "Very Dissatisfied". An ordinal scale will be obtained from this method. After collecting all the results, the researchers will conduct a test of difference (T-Test Within Group) analysis to determine if there is a difference in the level of satisfaction of undergraduate engineering students of Holy Angel University between traditional face-to-face classes and e-learning.

On the qualitative side of the study, the researchers will conduct a follow up question using Google forms in order to explore the perceptions of the students in the two learning modalities. From the collected responses, the researchers will use a keyword analysis to identify the factors that contributed to the level of satisfaction or dissatisfaction of undergraduate engineering students of Holy Angel University both in the traditional face-to-face classes and e-learning.

2.5 Data Gathering Procedure

The main objective of this study is to measure the level of satisfaction of the current fourth-year engineering students of Holy Angel University in e-learning and face-to-face classroom instruction. This research will also delve into the factors that influence student satisfaction or dissatisfaction.

Fig.1. Data Gathering Procedure

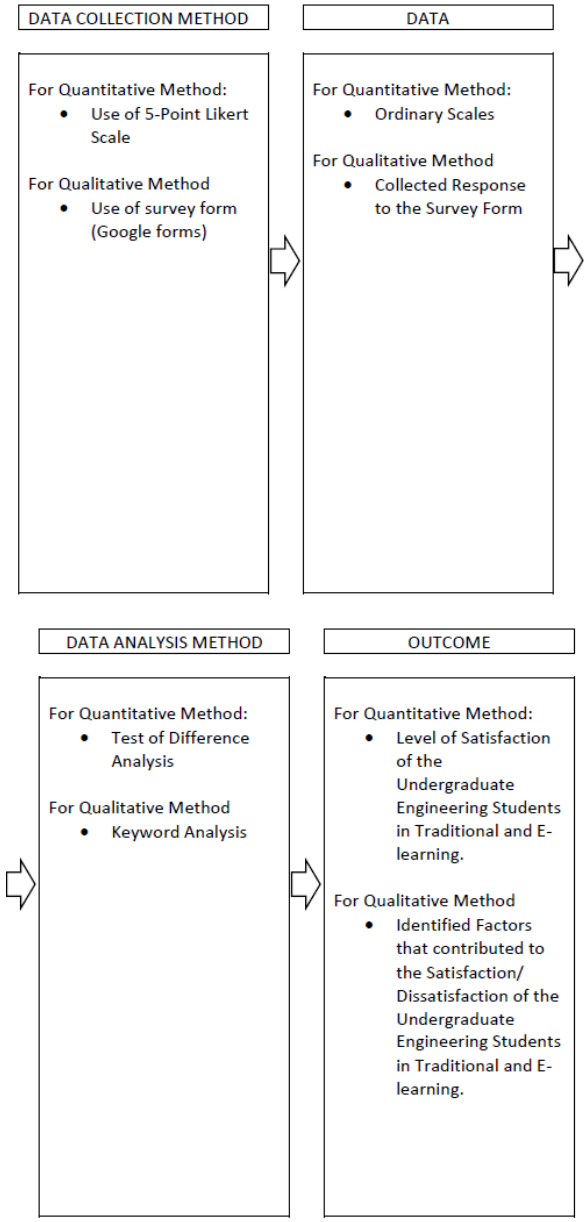

Figure 1 shows how the researchers will conduct the study. Using a variety of techniques such as scales and follow-up questions, the researchers will be able to obtain the needed data that will help them further explore the research problems.

2.6 Statistical Treatment of Data

In Likert Scale questionnaire items, respondents specify their level of agreement or disagreement on a symmetric agree-disagree scale for a series of statements. Thus, the range

captures the intensity of their feelings for a given item, while the results of analysis of multiple items reveals a pattern that has scaled properties of the kind of Likert identities.

To provide a statistical presentation, the completed questionnaires are tabulated individually. It will be evaluated using the quantitative method's Test of Difference Analysis and the qualitative method's Keyword Analysis.

Calculating a t-test requires three key data values. They include the difference between the mean values from each data set (called the mean difference), the standard deviation of each group, and the number of data values of each group.

$$t = \frac{\left(\underline{X_1} - \underline{X_2}\right) - (\mu_1 - \mu_2)}{\sqrt{\frac{{S_1}^2}{n_1} + \frac{{S_2}^2}{n_2}}}$$

Where:

$$\underline{X} = mean\ of\ the\ sample$$
$$\mu = assumed\ mean$$
$$S = standard\ deviation$$
$$n = number\ of\ observations$$

The outcome of the t-test produces the t-value. This calculated t-value is then compared against a value obtained from a critical value table (called the T-Distribution Table). This comparison helps to determine the effect of chance alone on the difference, and whether the difference is outside that chance range. The t-test questions whether the difference between the groups represents a true difference in the study or if it is possibly a meaningless random difference.

On the other hand, in keyword analysis, the researchers will do four steps to compromise the gathered data. First, the researchers will analyze the terms that they use when describing the factors on their satisfaction or dissatisfaction. Second, the researchers will discuss the terms which will help them to answer their research questions. Third, the researchers will create a list of the terms which are often used. Fourth, the researchers will finally define the intent or reason behind why students answered the terms.

III. Results And Discussion

This chapter presents the conducted survey among the participants included in the sample. The discussion begins with the demographic profile of the participants, followed by the analysis of the results obtained from the survey.

3.1 Demographic Profile

The following discussion includes the demographic profile of the undergraduate engineering students in the study. The profile comprises a description student's age, sex, where they lived during the face-to-face education and where they lived during the online education. The respondents are composed of 26 males and 24 females whose age ranges from 20-22 years old. All of the participants are currently on their fourth year of Holy Angel
University.

Table.1. *Demographic Profile*

Characteristic	**N**	**%**
Age		
20-22	50	100%
Total	50	100%
Sex		
Male	26	52%
Female	24	48%
Total	50	100%
Where you live while at college (F2F)		
Dormitory	17	34%
Private Residence/Apartment	8	16%
At Home	25	50%
Total	50	100%
Where you live while at college (Online)		
Dormitory	1	2%
Private Residence/Apartment	1	2%
At Home	48	96%
Total	50	100%

Table.2. Mean of the sample of each scale and total satisfaction

		Mean	N	Std. Deviation	Std. Error Mean
Scale 1: Compensation	F2F	52.84	50	8.93139	1.26309
	ONLINE	47.16	50	11.13619	1.57489
Scale 2: Social Life	F2F	54.6	50	9.632	1.36217
	ONLINE	45.8	50	12.81262	1.81198
Scale 3: Working Conditions	F2F	53.24	50	9.38205	1.32682
	ONLINE	48.22	50	11.38257	1.60974
Scale 4: Recognition	F2F	52.16	50	10.64139	1.50492
	ONLINE	46.76	50	12.15975	1.71965
Scale 5: Quality of Education	F2F	53.6	50	10.43933	1.47634
	ONLINE	46.1	50	12.75715	1.80413
Total Satisfaction	F2F	266.44	50	46.30915	6.5491
	ONLINE	234.04	50	56.82733	8.0366

Table.3. Correlations of the sample on each scale and the total satisfaction

		N	Correlation	Sig.
Scale 1: Compensation	F2F & Online	50	0.269	0.059
Scale 2: Social Life	F2F & Online	50	0.342	0.015
Scale 3: Working Conditions	F2F & Online	50	0.355	0.011
Scale 4: Recognition	F2F & Online	50	0.433	0.002
Scale 5: Quality of Education	F2F & Online	50	0.396	0.004
Total Satisfaction	F2F & Online	50	0.381	0.006

Table.4. Significant Difference of each scale and the total satisfaction

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Scale 1	F2F - ONLINE	5.68	12.2615	1.73404	2.19532	9.16468	3.276	49	0.002
Scale 2	F2F - ONLINE	8.8	13.13509	1.85758	5.06705	12.53295	4.737	49	0
Scale 3	F2F - ONLINE	5.02	11.90522	1.68365	1.63657	8.40343	2.982	49	0.004
Scale 4	F2F - ONLINE	5.4	12.20572	1.72615	1.93117	8.86883	3.128	49	0.003
Scale 5	F2F - ONLINE	7.5	12.89716	1.82393	3.83467	11.16533	4.112	49	0
TOTAL	F2F - ONLINE	32.4	58.02357	8.20577	15.90988	48.89012	3.948	49	0

3.2 Tests of Hypotheses

The null hypothesis states that there is no observable significant difference in the levels of student satisfaction between e-learning and traditional face-to-face education. This hypothesis was tested by paired samples *t* - test using SPSS Statistics software. The paired samples *t* test findings are presented in Table 4.

The result of the paired samples *t* test revealed that there is a significant difference in the levels of student satisfaction between e-learning and traditional face-to-face education in terms of compensation, social life, working conditions, recognition, quality of education and total satisfaction. Undergraduate engineering students of Holy Angel University are more satisfied in traditional face-to-face education (m = 52.84, s = 8.93139) than e-learning (m = 47.16, s = 11.13619) with regards to compensation, $t(49)$ = 3.276, $p \leq 0.05$. For social life, students are more satisfied in traditional face-to-face education (m = 54.60, s = 9.63200) than e-learning (m = 45.80, s = 12.81262), $t(49)$ = 4.737, $p \leq 0.05$. For working conditions, students are more satisfied in traditional face-to-face education (m = 53.24, s = 9.38205) than e-learning (m = 48.22, s = 11.38257), $t(49)$ = 2.982, $p \leq 0.05$. For recognition, students are more satisfied in traditional face-to-face education (m = 52.16, s = 10.64139) than e-learning (m = 46.76, s = 12.15975), $t(49)$ = 3.128, $p \leq 0.05$. For the quality of education, students are more satisfied in traditional face-to-face education (m = 53.60, s = 10.43933) than e-learning (m = 46.10, s = 12.75715), $t(49)$ = 4.112, $p \leq 0.05$. Lastly, for the total satisfaction, students are more satisfied in traditional face-to-face education (m = 266.44, s = 46.30915) than e-learning (m = 234.04, s = 56.82733), $t(49)$ = 3.948, $p \leq 0.05$.

These findings indicated that with regards to compensation, social life, working conditions, recognition, quality of education and total satisfaction, undergraduate engineering students of Holy Angel University are more satisfied in traditional face-to-face education than e-learning.

Based on the results of the study, the following emerging themes were extracted to determine the level of satisfaction and dissatisfaction of undergraduate engineering students of Holy Angel University.

Allows personal interaction and collaboration: Some of the participants feel satisfied with face-to-face education when

they can see their classmates and being able to combine their efforts and ideas in certain group activities in a distinctive manner. Moreover, some of the participants consider the environment as their satisfaction during a face-to-face education.

Being able to experience personally: Some of the participants also feel satisfied when they can engage themselves personally.

Lesser class disruption: Some of the participants also feel satisfaction when they tend to focus only on the instructor and the course lesson itself. "Satisfactory, because you can learn by understanding your teacher very well, and *don't have disturbance in your area while learning"* Gadgets are being limited to use during face-to-face education on purpose that all of your attention is required to your instructor only.

Promotes class engagement: Some of the participants also feel satisfied when they can hold their grip during activities or discussions. "Less tendencies to *drift away* from lectures and *more focus* to direct hands-on activities." Focus is immensely practice throughout face-to-face education.

Permits use of facilities in the learning process: Some of the participants also feel satisfied when they can go around the campus and use different facilities provided by the school, Holy Angel University.

Appropriate amount of school work: Some of the participants feel satisfied when they are given the right number of schools works within a week. "The *appropriate amount of schoolwork* assigned to us resulted in a satisfying learning experience. We were able to *manage our time effectively* during the face-to-face setup because our *workloads were reasonable* for our schedules."
Uncertainty in the application of course material: A student feels unsatisfied when he is studying problems that might not occur when he will work in the field or he will be able to use them in the future. "The unsatisfactory part is learning all these *complex "things"* but *not knowing how to actually apply it in the real world.* I have solved so many problems in exams but *never really understood how I can use them."*

Struggle in Transportation: Some of the students feel unsatisfied about their transportation to school. "Unsatisfied with *transportation* and environment."

Conflicting demands of school work: Some of the students feel unsatisfied when their life and school work are clashing. School activities still occupy a lot of time and energy that sometimes it feels draining to yourself.

Flexibility in learning: Some of the participants also feel satisfied in terms of time and place. "I am satisfied with online classes in terms of *flexibility.* I am able to join conferences or discussions wherever I want."

Accessible online learning resources: Some of the participants also feel satisfied when they can access learning materials within the comfort of their home. "I liked the idea that all the learning materials are *readily available on canvas and that we can access it anytime* of the day." Students have their own schedule when and where to study.

Provides comfort and convenience learning: Some of the participants also feel satisfied when studying at home in their comfort zone. "Satisfactory because you can learn *wherever you are and you can catch up on some lessons because it has a record* for those who didn't attend or were excused for that session." Some students prefer to study at home because it makes them more productive, creative, comfortable, and convenient.

Lack of personal devices: Some of the participants also feel unsatisfactory when it comes to the absence of personal smart devices like cellphones and laptops.

Excessive workload: Some of the participants also feel unsatisfied when professors give assignments, activities, and projects at the same time with limited time only. "The online learning experience is unsatisfactory for me because the *allotted time to do requirements is double during the online class than face-to-face.*" "In addition, *the workloads we have right now double the amount of workload* compared to the traditional face to face classes."

Distraction at home: Some of the participants also feel unsatisfied when studying at home because of the distractions that they may encounter like family members, household chores, personal errands, noisy environment, and most especially the cellphone.

Poor internet connection: Some of the participants also feel

unsatisfied when they can't attend online class and take a quiz on time. Internet connection is not stable every time it may have a good connection now but later it may lose the connection because of the signals and maintenance that they're doing.

Difficulty in understanding lessons: Some of the participants also feel unsatisfied when they can't understand the lesson easily. "Unsatisfactory because of the *hardships and adjustments* we need to make in order to earn." Not everyone can understand easily or understand the lesson in one teaching. In fact, most students need to repeat the recorded video in order to fully understand and help them to absorb the lesson.

Negatively impacts school-life balance: Some of the participants feel unsatisfied when they cannot handle the workload from the school that causes mental health problems. "As a result, they tend to provide *more activities that significantly occupy our daily schedule,* including weekends, negatively impacting our mental health."

Learning as compliance: Some of the participants also feel unsatisfied when they are doing their activities, assignments, projects, and the like as compliance rather than learning. "Online learning for me is like *doing things without learning it,* you just *submit in order to pass* the subject."

3.3 Discussion

The researchers utilized the College Student Satisfaction Questionnaire (CSSQ) in gathering data from the respondents. The CSSQ is categorized into five scales: Compensation, Social Life, Working Conditions, Recognition, and Quality of Education respectively. The Compensation scale is about the amount of input required in relation to academic achievements, as well as the impact of input demands based on the student's fulfillment of his other needs and goals. Social Life scale is about the opportunities to meet socially relevant goals, such as dating, meeting compatible or interesting people, making friends, participating in campus events and informal social activities. The Working Conditions scale covers the physical conditions of the student's college life, such as the cleanliness and comfort of his place of residence, adequacy of study areas on campus, quality of meals, facilities for lounging between classes. The Recognition scale is about the attitudes and behaviors of faculty and students indicating acceptance of the student as a worthwhile individual. The Quality of Education scale covers the various academic conditions related to the student and vocational development, such as the competence and helpfulness of faculty and staff, including the advisors and counselors, and the adequacy of curriculum requirements, teaching methods, and assignments.

In this section, the null hypothesis that was tested is that there is no observable significant difference in the levels of student satisfaction between e-learning and traditional face-to-face education. This hypothesis was tested by paired samples *t* - test using SPSS Statistics software.

For the five scales, namely compensation, social life, working conditions, recognition, and quality of education, the findings suggest that undergraduate engineering students of Holy Angel University are more satisfied in the traditional face-to-face education rather than the e-learning.

Based on the responses provided by the fourth-year engineering students, six major themes emerged for the face-to-face education satisfaction and three major themes emerged for the dissatisfaction. On the other hand, three major themes emerged for the online learning satisfaction and seven major themes emerged for the online learning dissatisfaction.

The engineering students identify six factors that contribute to their satisfaction in face-to-face education. 1. Allows personal interaction and collaboration. It helps the teaching and learning process run smoothly and it can increase learners' communication. It tells how the students interacts among them and the professor even with the whole class. The ability to work well with others in school is often emphasized by professors as a vital skill (Cavanagh et al., 2015). 2. Being able to experience things personally. Effortful learning combined with real life on the job experience is a winning formula for success. 3. Lesser class disruption. While cell phones can be used as learning tools, it is a challenge to make sure students are using them for school-related tasks. Thus, banning phones face-to-face is practiced to lessen the disruption of students. 4. Promotes class engagement. One of the most significant factors that determine the successful demonstration of learning outcomes in a course is engagement. (Buelow, Barry, and Leigh E. Rich. 2018). 5. Permits use of facilities in the learning process. Facilities play

a vital role in the students' learning. 6. Appropriate amount of school work. During face-to-face education, students have less paper work but more actual work.

For the dissatisfaction of undergraduate engineering students, three factors were identified. 1. Uncertainty in the application of course material. 2. Struggle in transportation. Most engineering students do not live near the vicinity of school, thus challenging them when it comes to transportation. 3. Conflicting demands of school work. School-life balance is important for optimal academic functioning. Students often prioritize academics at the expense of personal factors, including relationships and exercise. (Hopkins, 2019). This can lead to a decline in academic performance, as general health and well-being are critical to optimal academic functioning.

For e-learning, engineering students identified three factors that contribute to their satisfaction. 1. Flexibility in learning. The most often claimed benefit of e-learning is the flexibility that e-learning allows in terms of the pace of learning and time of participation to courses, which is not firmly set, just like in traditional courses. It also allows students to stop and pause their lessons if they are weary or if they have other responsibilities or activities, and to resume when they are ready and willing (Rakic, et.al., 2019). 2. Accessible online learning resources. E-learning allows students to study at their own pace and convenience because the lecture materials are readily available and the lecturer's content delivery is easily accessible to them (Adeoye, et. al., 2020). 3. Provides comfort and convenience in learning. E-learning allows students and lecturers to engage in class from the comfort of their own homes (Wright, 2017).

With regards to the dissatisfaction of engineering students in e-learning, they identified seven factors. 1. Lack of personal learning devices. The internet and technological devices are required for online learning in its entirety. The reliance of online learning on technological equipment, as well as the availability of such equipment, was a significant problem for institutions, professors, and students (Adedoyin & Soykan, 2020). 2. Excessive workload. Most students claimed that the shift to online classes increased their academic workload (Armstrong-Mensah, et. al., 2020). 3. Distractions at home. During online sessions, students noted a variety of distractions, one of which being the disturbance at home. 4. Poor internet connection. Students who have poor access to the internet have the most harmful effects on their studies. It also puts students in a position where they can no longer pursue any type of education if they do not have easy access to the internet (Souvik, 2021). 5. Difficulty in understanding lessons. The majority of the students have received their education in a traditional classroom setting. Because of the pandemic, online learning requires you to adapt to various learning methods. Some students are able to swiftly adjust to various approaches, while others are unable to. 6. Negatively impacts school-life balance. As overall health and well-being are crucial to effective academic functioning, this can contribute to a drop in academic performance (Karambelas, 2019). 7. Learning as compliance. Online classes are just a way to complete course and unit requirements.

IV. Results And Conclusion

4.1 Summary of Results

The study utilized both quantitative and qualitative method to measure the level of satisfaction of fourth year engineering students at Holy Angel University regarding their level of satisfaction with E-learning and the traditional face-to-face using the CSSQ questionnaire and were tested with *t-test* using SPSS Statistics software. Students' levels of satisfaction are identified, as well as the factors that contribute to their satisfaction.

With regards to analyzing the data, the thematic analysis was used to generate codes and themes from the participants' responses objectively. The researchers coded the themes independently to keep the validity of the data.
Based from the results of the study, regards to compensation, social life, working conditions, recognition, quality of education and total satisfaction, undergraduate engineering students of Holy Angel University are more satisfied in traditional face-to-face education than e-learning. The following emerging themes were extracted to determine the level of satisfaction and dissatisfaction of the engineering students of Holy Angel University. Three major themes emerged for online learning satisfaction and seven major themes emerged for online learning dissatisfaction. Undergraduate engineering students identify six factors that contribute to their satisfaction in face-to-face education. 1. Allows personal interaction and collaboration. 2. Being able to experience personally. 3. Lesser class disruption. 4. Promotes class engagement. 5. Permits use of facilities in the learning

process. 6. Appropriate amount of school work. On the other hand, undergraduate engineering students identify three factors that contribute to their dissatisfaction in face-to-face education. 1. Uncertainty in the application of course material. 2. Struggle in Transportation. 3. Conflicting demands of school work.

On the contrary, for e-learning, engineering students identified three factors that contribute to their satisfaction. 1. Flexibility in learning. 2. Accessible online learning resources. 3. Provides comfort and convenience learning. On the other hand, engineering students identified seven factors that contribute to their dissatisfaction in terms of e-learning. 1. Lack of personal learning device. 2. Excessive workload. 3. Distraction at home. 4. Poor internet connection. 5. Difficulty in understanding lesson. 6. Negatively impacts school-life balance. 7. Learning as compliance.

4.2 Conclusion

The purpose of this study was to gain a better understanding of students' satisfaction between E-learning and traditional face-to-face classes and the factors that contribute to their satisfaction and dissatisfaction. Qualitative and quantitative research methods were used to achieve this goal. Data was gathered through the distribution of forms with questions from the CSSQ questionnaire and two follow-up questions.

Using the quantitative approach, the researchers have concluded that the traditional setup is much better than e-learning in terms of working conditions, compensation, quality of education, social life, and recognition rather than e-learning. Notwithstanding their age, sex, type of residence, and length of stay in the university.

Using the qualitative approach, the researchers have found out that there are underlying factors that affect the level of satisfaction of the students in terms of traditional and online education. Both modalities of education have brought satisfaction and dissatisfaction experiences to the participants. Concerning the traditional setup, the participants tend to be more satisfied. Allows personal interaction and collaboration, being able to experience things personally, lesser class disruption promotes class engagement, permits the use of facilities in the learning process, and an appropriate amount of schoolwork contributes to participants' satisfaction. Factors that made the students dissatisfied were uncertainty in the application of course material, struggle in transportation, and conflicting demands of schoolwork. As to online class setup, the participants tend to be dissatisfied. Lack of personal learning devices, excessive workload, distractions at home, poor internet connection, difficulty in understanding lessons, negatively impacts school-life balance and learning as compliance are the experiences that made them unsatisfied with e-learning. Nevertheless, flexibility in learning, accessible online learning resources, and provides comfort and convenience in learning made students satisfied with e-learning.

When participants were asked if they are satisfied or dissatisfied with traditional or e-learning, the majority answers that they are more satisfied with traditional rather than online learning. It implies that the quality of online education received by the students in e-learning is not of high quality. The participants' personalities may have some bearing on how responsible they felt for their learning. It is evident when their unsatisfied experiences were examined, all the factors except technological concerns are related to their personality. It also implies that students tend to appreciate learning when with peers. It is evident when their satisfying experiences were examined, all the factors are related to them being physically present in a traditional class setup.

The researchers have concluded that in the process of learning, students tend to be more satisfied with the traditional setup because of being there physically which motivates them to study harder. However, this study does not intend to demolish the integrity of e-learning.

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