

# Perception of E-Learning During COVID - 19 Pandemic: A Case Study among Pre-University Students

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**Abstract**-Process of acquiring information via electronic technology and media is also known as online learning or electronic learning. In general, e-learning takes place online, allowing students to access their course materials at any time and from any location they at their convenience. Nowadays, books are gradually being replaced with electronic teaching materials such as optical discs or pen drives. Rapid technological breakthroughs and improvements in learning methodologies. This shift began with the introduction of computers, and as our reliance on smartphones, tablets, and other mobile devices grow which these devices are increasingly being utilized in classrooms for learning. Knowledge may also be shared over the internet, which is accessible 24 hours a day, seven days a week, from any location and at any time. This research will investigate on how the students in Foundation of Management Programme felt about e-learning during the COVID-19 pandemic. The aim is to conclude the advantages and disadvantages of e-learning from students' perceptions. It can be concluded that, while a face-to-face learning is more effective than e-learning, e-learning still gets the job done.

**Keywords:** E-Learning, Face-To-Face, Mathematical Skills, Pre-University, Social Competencies

## I. INTRODUCTION

E-learning, also known as online learning or electronic learning, is the process of acquiring information via electronic technology and media (Laurillard, 2006; Gupta & Gupta, 2020). The term "electronic facilitation of learning" is commonly used to characterize e-learning. Typically, e-learning takes place online, allowing students to access their course materials at any time and from any location they choose. A course management system, such as Blackboard or Vista, is used by many colleges that provide e-learning courses. Uploading assignments, interacting with classmates, and downloading course materials are all done through the course administration system. Other colleges develop a course webpage with a syllabus and all additional required information, such as a student portal that surely help the student to do their course work efficiently.

It is now generally acknowledged thanks to rapid technological breakthroughs and improvements in learning methodologies. This shift began with the introduction of

computers, and as our reliance on smartphones, tablets, and other mobile devices grow, these devices are increasingly being utilized in classrooms for learning. Books are gradually being replaced with electronic teaching materials such as optical discs or pen drives (Sivankalai, 2021; Singh & Asif, 2019). Knowledge may also be shared over the Internet, which is accessible 24 hours a day, seven days a week, from any location and at any time. E-learning is also related to Fourth Industry Revolution 4.0 or IR 4.0. Due to increased interconnection and intelligent automation, the Fourth Industrial Revolution envisions a significant change in technology, industries, and social patterns and processes in the twenty-first century. So, e-learning was seen as one of the coincident methods with IR 4.0. However, because everyone has a different viewpoint on the issue. We must consider the opinions of the pupils.

This research will investigate on how the students in Foundation of Management Programme felt about e-learning during the COVID-19 pandemic. The aim is to conclude the advantages and disadvantages of e-learning from students' perceptions. In addition, the rate of effectiveness of e-learning during pandemic from a few perspectives, such as in increasing mathematical skills, social competencies, and knowledge will be finalised. The efficiency of e-learning in comparison to traditional face-to-face learning will also be evaluated from the perspective of students.

## II. METHODOLOGY

### Data Collection

Descriptive data analysis was used to collect all of the information from the respondents in this study. When investigating a population, circumstance, or event, descriptive research focuses on the "how," "what," "when," and "where" questions rather than the "why" ones. This research is especially useful for establishing the characteristics, frequencies, trends, correlations, and categories of respondents that are related to the study's topic, statistics. Because none of the components are adjusted in capacity, descriptive research allows us to only observe and measure the data, which should be appropriately prepared to guarantee that the results are legitimate and trustworthy.

A sample survey was conducted using the questionnaire technique to complete this project. Using a series of Google Form questionnaires, our team obtained all of the data for this study. We used primary data gathered through questionnaires completed by students at the Foundation of Management programme. 179 out of 181 students participated in the survey, about their perception of e-learning during the COVID-19 pandemic. They were required to give their perception about e-learning during COVID-19 pandemic. The rating for each item ranged from 1 to 6, with 1 representing that it is extremely ineffective and 6 representing it is extremely effective. The list of statements related to the statistics topic was as below:

**Part 1: Learning effectiveness based on ability to master learning objectives between face to face learning and e-learning**

1. Rate the effectiveness of e-learning in terms of increasing knowledge.
2. Rate the effectiveness of e-learning in terms of increasing mathematical skills.
3. Rate the effectiveness of e-learning in terms of increasing social competences.
4. Rate the effectiveness of traditional face-to-face learning in terms of increasing knowledge.
5. Rate the effectiveness of traditional face-to-face learning in terms of increasing mathematical skills.
6. Rate the effectiveness of traditional face-to-face learning in terms of increasing social competences.

**Part 2: Measuring student's activity during face-to-face learning and e-learning**

7. Describe your activity during e-learning.
8. Describe your activity during face-to-face learning.

**Part 3: Students Acceptance of e-learning**

9. Rate how much did you enjoy e-learning classes during the pandemic.

**Method of Data Analysis**

All respondents must include their demographic information such as gender, race, state of origin, hometown, family income, IT skills, type of e-learning that respondent participated before pandemic, and opinion about advantages and disadvantages of e-learning. This information is then compared to see respondent's average level of effectiveness on e-learning during COVID-19 pandemic. Microsoft Word and Symbolab website were utilised to tabulate the data and run the analysis.

**III. DATA ANALYSIS AND RESULT**

**Respondent Profile Analysis**

A survey was conducted using google form platform for Foundation of Management students on February 7<sup>th</sup>,2022. The survey is about students' perception of e-learning during

COVID-19 pandemic. Respondent profile analysis will be focused on section 1 and 2 of the survey which is biographical information and student's ability related to computer and ICT skills.

The pie chart in Figure 1 shows the gender of the students participated in this research. From the pie chart, female students have the highest frequency which make up 149 of the students. Only 30 male students make up the rest of the group. This finding indicates that most of foundation's students are female, making up 83%. Only 17% of the foundation's students are male.

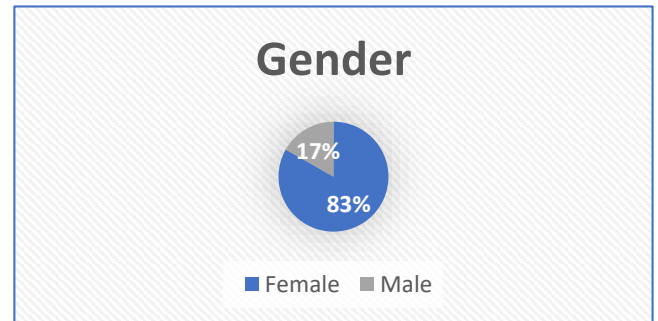


Figure 1: Students' Gender

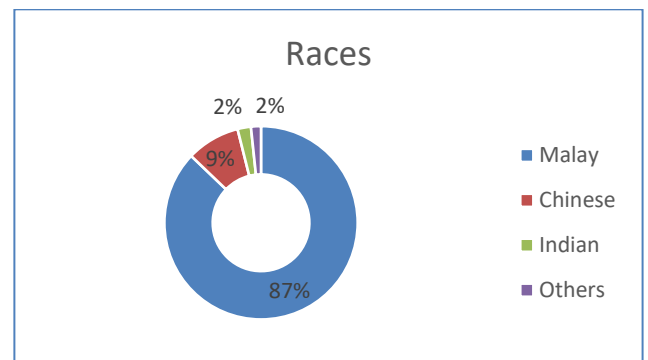


Figure 2: Students' Races

Figure 2 displays that Malay is the most common race among the sample students, who account for 156 out of 179 students, or 87% of the total. There are 16 Chinese students, 9% Indian students, and 2% students (4 students from India and 3 students from other) from other races. The minority race among foundation students fall in others category, which has only three students.

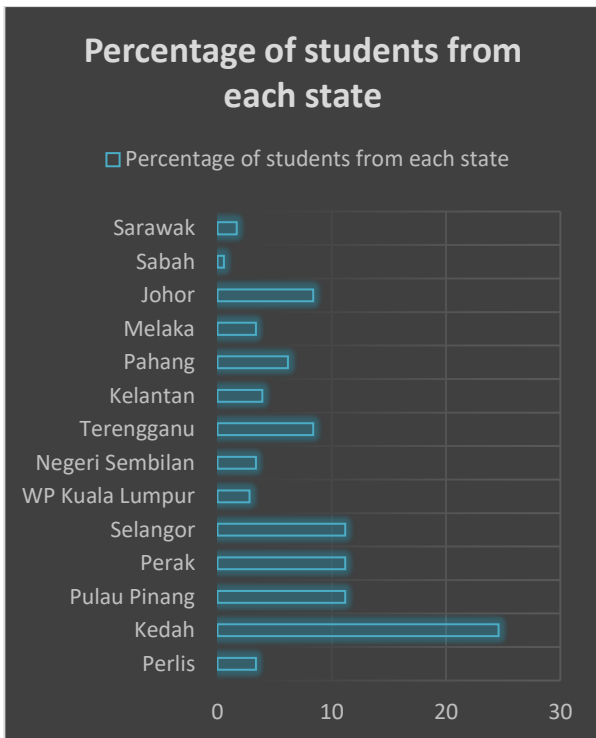


Figure 3: Percentage of Students from Each State

The state of origin of the students is depicted in the horizontal bar graph in Figure 3. The graph clearly shows that Kedah is the state that has highest frequency, implying that most students come from Kedah, which accounts for 24.58 percent of the student sample (44 students out of 179 total). Penang, Perak, and Selangor have the second highest number of students, with 20 students representing 11.17 percent of the total. Terengganu and Johor each have 15 students, accounting for 8.38 percent of the total. While for Negeri Sembilan, Melaka, and Perlis, these states have the same number of students which is six, accounting for 3.35 percent of the total. Sabah has the smallest number of students, with only one student which representing 0.56 percent of all foundation students.

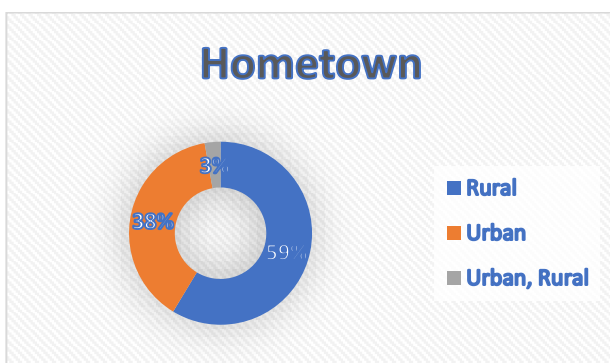


Figure 4: Hometown of students

Based on Figure 4, majority of Foundation of Management students come from urban areas. As per the data, 105 of the 179 students are from urban area, accounting for 59% of the

total. 38% of the students come from rural areas, which is about 69 students. While the balance, which is 5 students coming from both urban and rural areas, accounts for 3% of the pie chart.

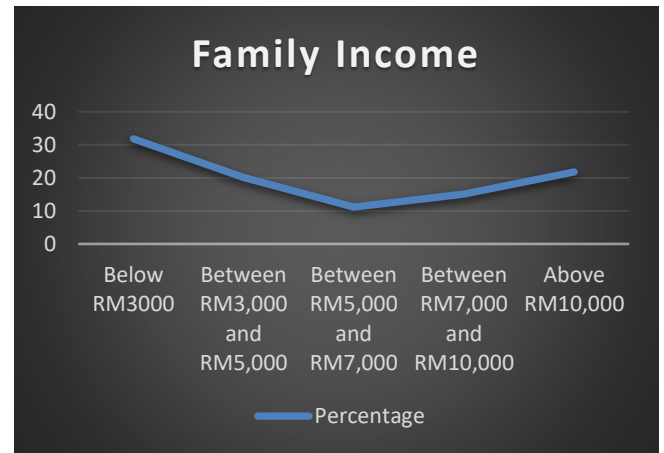


Figure 5: Students' Family Income

Line chart in Figure 5 presents the family's income of the students into five types. From the chart, we can see that most of the student's family income is less than RM 3000 which is 57 students equivalent to 31.84%. 36 students' family income is between RM 3000 – RM 5000 and 20 students come from rural area with family income between RM 5000 – RM 7000. In addition, there are 27 students with family income of RM 7000 – RM 10000, while, another 39 students have the highest family income that is above RM 10 000.

#### Analysis on Perception of Students towards E-learning During COVID-19 Pandemic

Students all over the world have been struggling to keep up with their studies, whether they are in primary school, secondary school, university, or even kindergarten sweethearts. The unexpected pandemic that has engulfed the world has caught many parties off guard, which is why educational institutions have come up with the idea of utilising a plethora of online platforms to ensure that teachings and learnings can be continued. However, students of all levels demonstrated that they all need to work hard to adapt to the new learning norm. Data on students' perceptions of learning on online platforms or e-learnings were considered in this research.

#### Evaluation on students' agreement towards learning effectiveness between face to face learning and e-learning

This survey also includes a question about Foundation students' IT skills. The pie chart in Figure 6 shows that majority of students' IT skills are moderate. It shows that 91% of the students is made up of 163 people out of 179. There are 7% of students, or 12 students, who have inadequate IT skills. There are also a few students who have a high level of IT skill, which accounts for 2% of the total number of students.

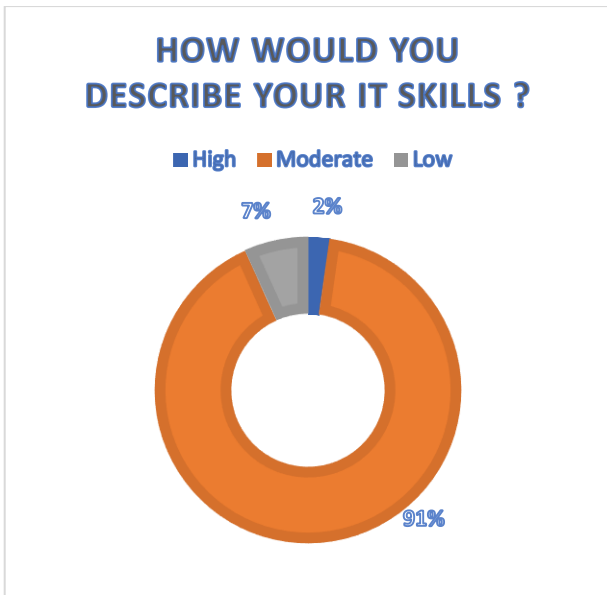


Figure 6: IT skills of student

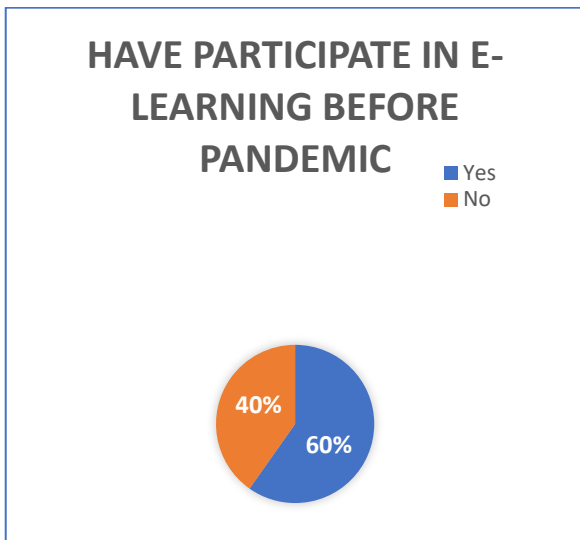


Figure 7: Foundation students that ever participated in e-learning before pandemic

Figure 7 shows that 60 percent of foundation students which means 107 out of 179 students has participated in e-learning before the pandemic. More than half of students participated in e-learning prior to the pandemic, indicating that it is not a new experience for them. However, 40% of students, consists of 72 of foundation students, had never participated in e-learning prior to the pandemic.

Figure 8 displays students' responses about the advantages of e-learning. For this question, student can make more than one choice. 161 students agreeing that access to online materials is the most significant benefit of e-learning. This is due to the wide range of online resources available and easy access. The second most important advantage is the ability to record a meeting with 151 students. The teacher/lecturer may occasionally provide recorded classes to their students, or the students may record the class themselves. 151 students chose

the ability to stay at home because it is as simple as opening your laptop or smartphone. Furthermore, for 98 students, a comfortable environment is an advantage. Finally, classes with the least preferred by the student with only 35 students vote for this option.

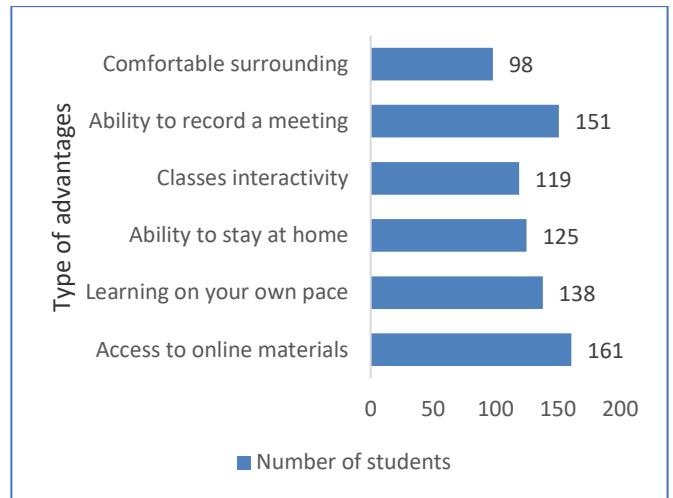


Figure 8: Advantage of e-learning

**Evaluation on students' agreement on learning effectiveness between face to face learning and e-learning**

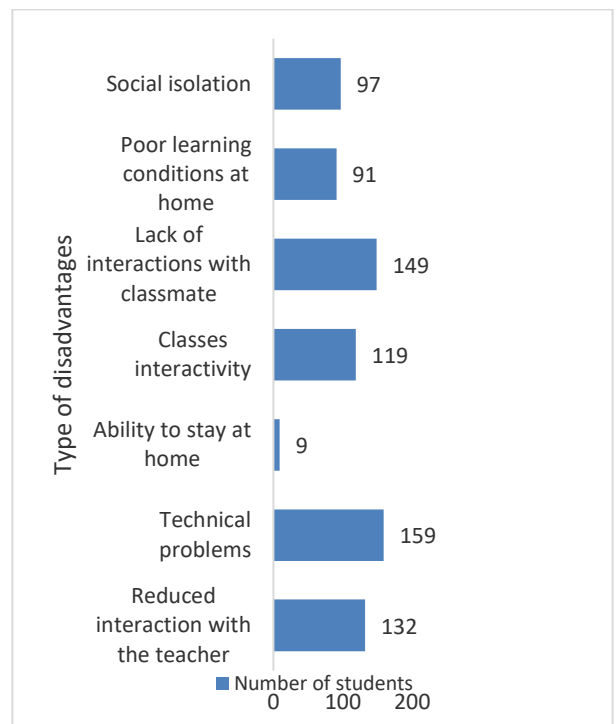


Figure 9: Disadvantage of e-learning

Finding from the survey regarding disadvantages of e-learning shows that technical issues is the most common e-learning disadvantage as displays in Figure 9. There are 159 students who have chosen this option due to technical difficulties with the internet or a device. One of the disadvantages of e-learning, according to 149 students, is the lack of interaction with

classmates, while 132 students mentioned that they have less interaction with their classmates. Another disadvantage is social isolation, which 97 students chose this option while 91 students chose poor learning conditions at home as one of disadvantage. The main reason for this is that not every student has access to the internet to catch up on what they've learned. Furthermore, 84 students stated that interactivity in classes as a disadvantage. Finally, a disadvantage of e-learning is the ability to work from home, which is unbeneficial as mentioned by 9 students.

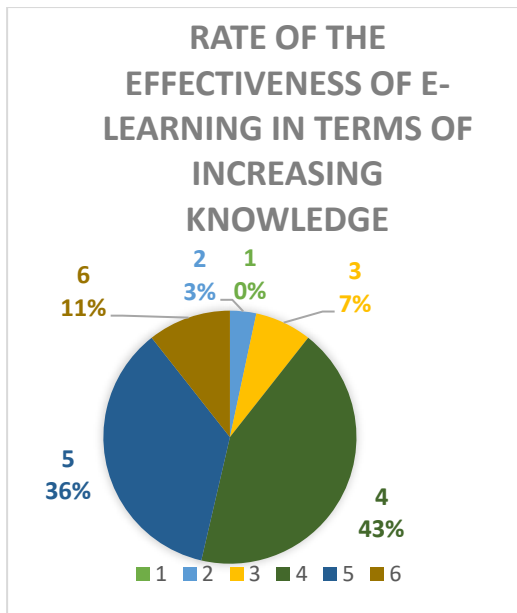


Figure 10: Rate of the effectiveness of e-learning in terms of increasing knowledge

On a scale of 1 to 6, with 1 being extremely ineffective and 6 being extremely effective, Foundation of Management students' perceptions of the effectiveness of online learning in terms of increasing knowledge were depicted in pie chart in Figure 10. None of the 179 students cast a vote for scale 1, 6 voted for scale 2, and 13 voted for scale 3. Meanwhile, 77 students voted for scale 4. The most popular voted is for scale 5 (64 students) and the rest voted for scale 6. This data demonstrated that e-learning is effective at increasing knowledge, though some people are still having difficulty adapting to it because it will never be as effective as face-to-face learning. After all, the atmosphere on campus and in schools is clearly more conducive to studying than at home where they are distracted with other obligations.

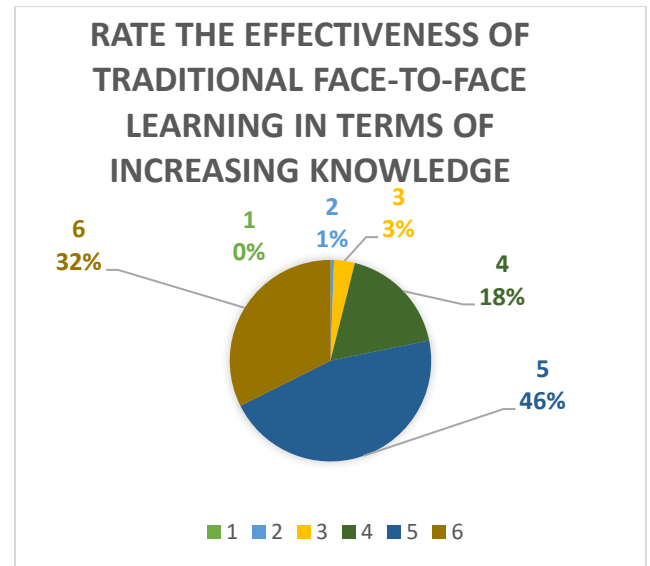


Figure 11: Rate on the effectiveness of traditional face-to-face learning in terms of increasing knowledge

On a scale of 1 to 6, with 1 being extremely ineffective and 6 being extremely effective, Foundation of Management students' perceptions of the effectiveness of traditional face-to-face learning in terms of increasing knowledge were depicted in figure 3.2.6. None of the 179 students chose option 1, only one chose option 2, and six chose option 3. Meanwhile, 32 students chose 4 as the highest value, 82 students chose 5, the most popular rate, and the remaining 58 students chose 6. Even after nearly three years of pandemic, this data clearly demonstrated that traditional learning works better on students, and that online learning can never match the effectiveness of face-to-face learning.

Table 1: Comparison on learning effectiveness in terms of increasing knowledge between traditional face to face and e-learning

	E-learning	Traditional face to face learning
Mode	4	5
Mean	4.43	5.06
Variance	0.81	0.69
Standard deviation	0.9	0.83

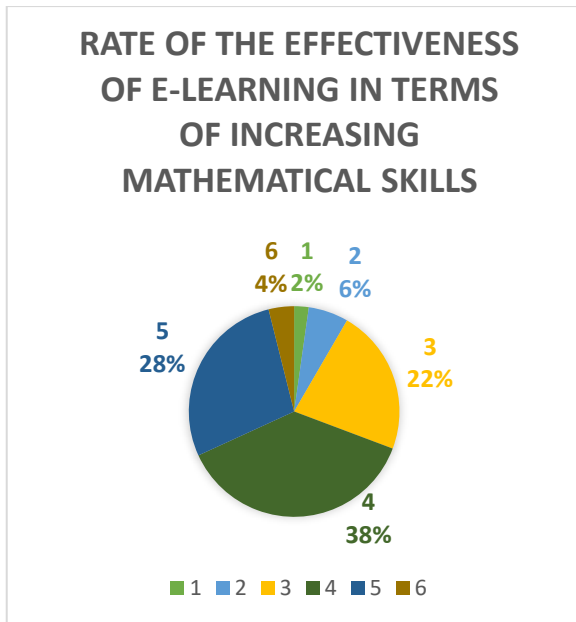


Figure 12: Rate on the effectiveness of e-learning's in terms of increasing mathematical skills

Figure 12 displays students' perceptions of the effectiveness of online learning in terms of increasing mathematical skills. The rate is based on a scale of 1 to 6, with 1 being extremely ineffective and 6 being extremely effective. Out of a total of 179 students, only four voted for scale 1, 11 voted for scale 2, and 40 voted for scale 3. Meanwhile, 67 students voted for scale 4 and the most popular rate is scale 5 been voted by 50. The rest voted for scale 6. This data clearly demonstrated that e-learning works well with the students and it is capable to help them for improving their mathematical skills. Even though this is a good movement but some of them are still struggling to adapt to technology. It can't be denied that the e-learning approach will never drastically compete with the effectiveness of face-to-face learning. This is because when attending the face-to-face classes, students are more focused and free to ask more questions, thus the confusion will not last long.

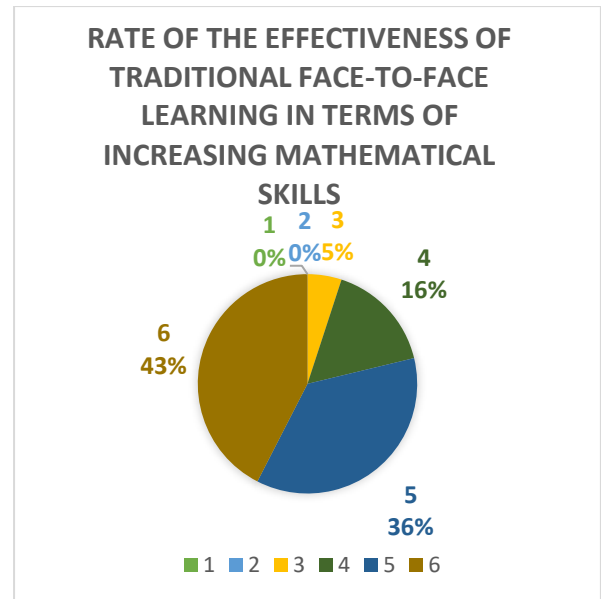


Figure 13: Rate on traditional learning's effectiveness in terms of increasing mathematical skills

On a scale of 1 to 6, with 1 being extremely ineffective and 6 being extremely effective, Foundation of Management students' perceptions of the effectiveness of traditional face-to-face learning in terms of increasing mathematical skills were displayed in Figure 13. None of the 179 students cast a vote for scale one or two, while nine cast a vote for scale three. On the other hand, 29 students chose scale 4 and 65 students chose scale 5, while the remaining 76 students chose scale 6, making it the most popular scale. Based on the finding, it can be seen that traditional learning works better on students to learn mathematics because they are more focused and have more freedom to ask questions.

Table 1: Comparison based on scale about learning effectiveness in terms of increasing mathematical skills between traditional face to face and e-learning

	E-learning	Traditional face to face learning
Mode	4	6
Mean	3.94	5.16
Variance	1.11	0.77
Standard deviation	1.05	0.88

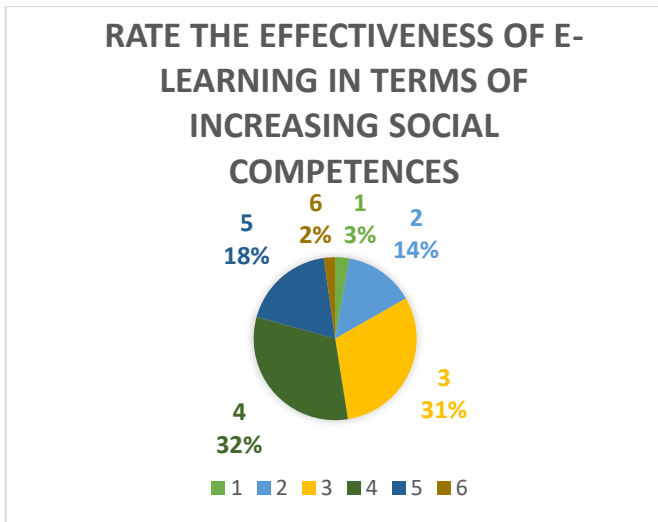


Figure 14: Students' rate on e-learning's effectiveness in terms of increasing social competences

On a scale of 1 to 6, with 1 being extremely ineffective and 6 being extremely effective, students' perceptions of the effectiveness of online learning in terms of increasing social competences were depicted in Figure 14. Only 5 students (out of 179 total) voted for scale one, 25 for scale two, and 55 for scale three. Meanwhile, 57 students voted for scale four, making it the most popular vote rate, 33 students voted for scale 5, and four students voted for scale 6. This data clearly showed that e-learning is effective in increasing social competences. Being able to form bonds with others despite not meeting in person is like being in earth-heaven for introverts. Extroverts, on the other hand, would feel hemmed in and unable to freely socialize.

Figure 15 displays students' perceptions of the effectiveness of traditional face-to-face learning in terms of increasing social competences. The survey was done using a scale of 1 to 6, with 1 being extremely ineffective and 6 being extremely effective. None of the students voted scale 1, only four voted for scale 2 and eight voted for scale 3. Meanwhile, 24 students selected scale 4, 70 students selected scale 5, and 73 students selected scale 6, making it the most popular rate. This evidence showed that traditional learning benefits students by maintaining their confidence and having more interaction between them. Students can form stronger bonds with one another through face-to-face interaction.

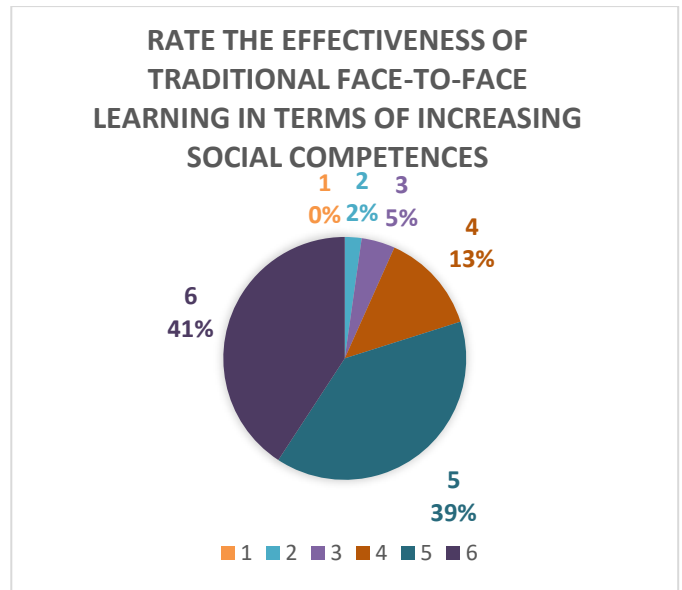


Figure 15: Students' rate on traditional learning's effectiveness in terms of increasing social competences

Table 2: Comparison on learning effectiveness in terms of increasing social competences between traditional face to face and e-learning

	E-learning	Traditional face to face learning
Mode	4	6
Mean	3.56	5.12
Variance	1.2	0.91
Standard deviation	1.1	0.96

**Comparison on students' activity during e-learning and face to face learning**

On a scale of 1 to 6, with 1 being extremely ineffective and 6 being extremely effective, Figure 16 depicted the rates of Foundation of Management students' activities while doing e-learning. Only one out of 179 students voted for scale one, three students for scale two, and thirty students for scale three. Meanwhile, 70 students voted for scale 4, 60 students voted for scale 5, and 15 students voted for scale 6. Finding indicates that e-learning is enjoyable because it allows for more creative teaching and learning. It enables lecturers and teachers to mix their classes and students to learn in new ways.

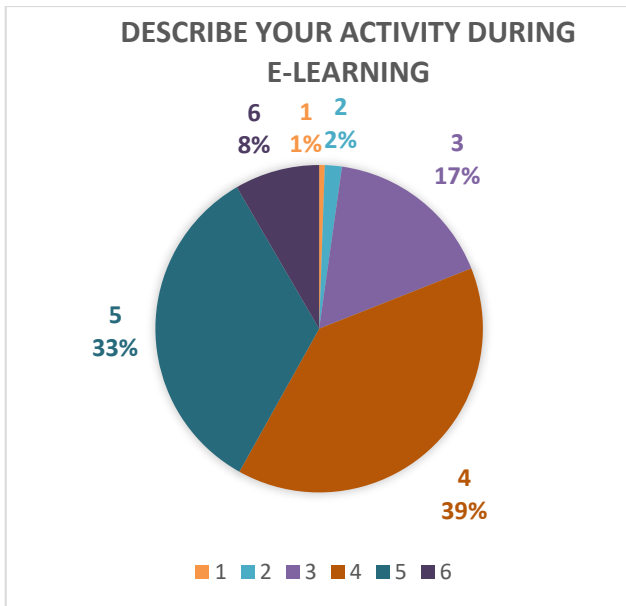


Figure 16: Students' rate on the activities completed throughout e-learning's effectiveness

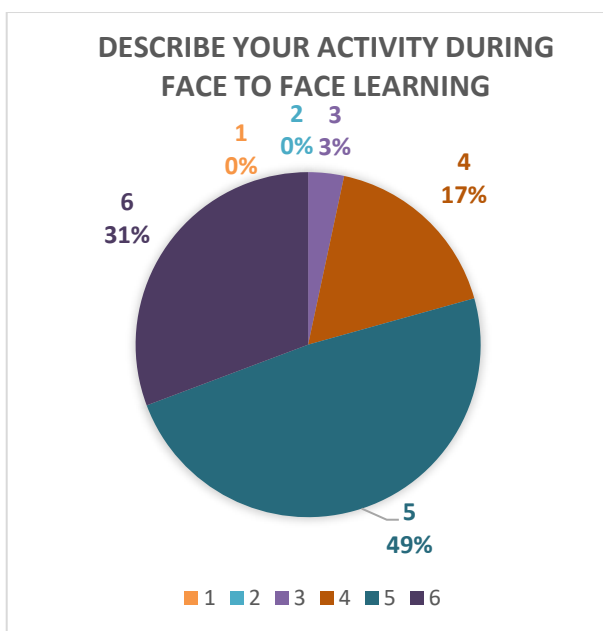


Figure 17: Students' rate on the activities completed during face to face learning's effectiveness

The attitudes of Foundation of Management students toward traditional learning methods were depicted in Figure 17, which ranged from 1 to 6, with 1 indicating extreme ineffectiveness and 6 indicating extreme effectiveness. None of the students vote for scale 1 and two while there are 6 students chose scale 3. Meanwhile, 31 students chose scale 4, 87 students chose scale 5 and the remaining 55 students chose scale 6. This data clearly demonstrated that traditional learning is more enjoyable and exciting for them. This is because during traditional learning students can interact with one another and participate in activities together.

Table 3: Comparison on students' agreement on activity done during e-learning and face to face learning

	E-learning	Traditional Face to face learning
Mode	4	5
Mean	4.29	5.07
Variance	0.89	0.61
Standard deviation	0.94	0.78

#### Identifying students enjoyment with e-learning classes during pandemic

On a scale of 1 to 6, with 1 being extremely ineffective and 6 being extremely effective, Figure 18 represents the percentages of students who enjoyed e-learning. Only one student out of 179 voted for scale one, nine students for scale two, and 26 students for scale three. Meanwhile, 70 students voted for scale 4, 51 students voted for scale 5, and the remaining 22 students voted for scale 6. This findings show that while foundation students enjoyed learning online, they would prefer to learn in a traditional setting if given the opportunity. This is because they are more comfortable with that approach.

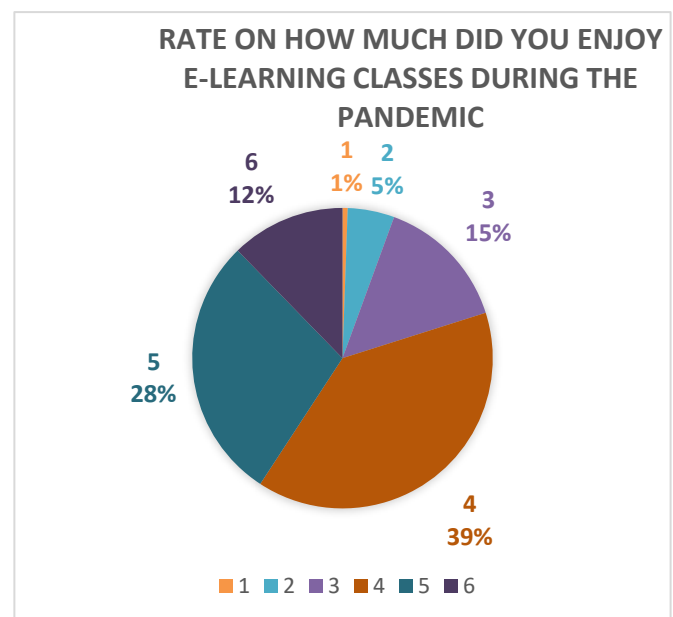


Figure 18: Students' rate on e-learning enjoyment during pandemic

#### IV. CONCLUSION

Due to the COVID-19 pandemic, which prevents people from physically meeting each other, communicating with each other face to face, and with many other SOPs, e-Learning is a new education system that has been developed since 2020. As can be seen, students face plenty of disadvantages as a result of the



educational system's shift to Online Distance Learning (ODL). Due to a lack of funds to purchase mobile phones, laptops, or even tablets, some students are unable to access their online lessons. Not every household will be able to spend their earnings on their desires because they need money to spend on their basic needs. Online learning reduces interactions between students and teachers because it requires them to learn from the comfort of their own homes.

Students and teachers are unable to interact as they normally would for a variety of reasons. Some of them may have poor internet connection, as some locations lack adequate and stable line coverage, making it difficult to conduct online learning. Aside from that, the environment can sometimes prevent students and teachers from communicating as they normally do.

For some students, learning at their own pace will be difficult, especially for those who are slow learners (Agbele & Oyelade, 2020). According to the statistics, students' understanding of the subject has decreased as a result of online learning (Amir, Tanti, Maharani, et al., 2020). This could be due to a technical issue with the internet or an unpleasant home environment caused by outside distractions (Joshi, Vinay & Bhaskar (2020). There's no denying that online education has its advantages. Authorities should take proactive measures to prevent COVID-19 from wreaking havoc on the education system, particularly in our country. The pandemic has had a significant impact on students from Foundation of Management programme. Despite the fact, some students are stressed with the online education, but it is also undeniable that some of them achieved excellent results in their exams. In the future, another survey should be conducted to determine the condition of students who have adapted to online learning on a regular basis. Finally, based on the results of this survey, it can be concluded that, while a face-to-face learning is more effective than e-learning, e-learning still gets the job done.

## REFERENCES

- [1] Amir, L.R., Tanti, I., Maharani, D.A. et al. (2020). Student perspective of classroom and distance learning during COVID-19 pandemic in the undergraduate dental study program Universitas Indonesia. *BMC Med Education*, 20, 392.
- [2] Agbele, A. T., & Oyelade, E. A. (2020). Impact of COVID-19 on the Nigerian educational system: Strengths and challenges of online/virtual education. *Asian Journal of Education and Social Studies*, 13(1), 26-35.
- [3] Gupta, S. B., & Gupta, M. (2020). Technology and E-learning in higher education. *Technology*, 29(4), 1320-1325.
- [4] Joshi, A., Vinay, M., & Bhaskar, P. (2020). Impact of coronavirus pandemic on the Indian education sector: perspectives of teachers on online teaching and assessments. *Interactive Technology and Smart Education*.
- [5] Laurillard, D. (2006). E-learning in higher education. *Changing higher education: The development of learning and teaching*, 3, 71-84.
- [6] Singh, K. K., & Asif, M. (2019). Emerging trends and technologies for digital transformation of libraries. *IP Indian Journal of Library Science and Information Technology*, 4(2), 41-43.
- [7] Sivankalai, S. (2021). Academic Libraries support E-Learning and Lifelong Learning: a case study. *Library Philosophy and Practice (e-journal)*, 8(18), 1-18.
- [8] What is e-learning? definition of e-learning, e-learning meaning. *The Economic Times*. (n.d.). Retrieved March 14, 2022, from <https://economictimes.indiatimes.com/definition/e-learning>
- [9] Wikipedia contributors. (2022, March 11). Fourth Industrial Revolution. *Wikipedia*. [https://en.wikipedia.org/wiki/Fourth\\_Industrial\\_Revolution](https://en.wikipedia.org/wiki/Fourth_Industrial_Revolution)