

# The Analysis of Learning Behaviour of University X Industrial Engineering Students in Covid-19 Pandemic Era

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*Abstract— Learning and Teaching in the Covid-19 Pandemic were not easy at all. Since it hit the world, so many academic activities should be stopped. In the first months so many teaching activities had not achieved the teaching standard and still looked for better teaching method. It used the qualitative methods which were interview to the Class of 2020 and Class of 2021 students, lecturers and the university administrators. and observation to the classes and learning process. From the observation and interview with the Class of 2020 and 2021 students, it was found that hybrid learning was still a bit difficult to understand although it gave better impact for the students that experienced in the class than experienced it online. The selection for the subjects that had to be opened was not determined of the classification whether it was calculating subject or social subjects. Some recommendations were also given, such as blended learning method for all classes, hybrid classes for only some classes, if needed, comfortable schedule, facilities should be concerned, developing teaching method such games and gamification and creative thinking.*

*Keywords - Hybrid Classes, Interview, Offline Teaching, Online Teaching .*

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## I. INTRODUCTION

Covid-19 Pandemic that started in early 2020 made some universities stopped their academic activities, including the teaching activities. The Covid-19 Pandemic led to the necessity for higher education and continuing education venues to transition their courses from in-person to online[1]

Some universities were already ready if they converted their education system from in-person to online, but most of them were not ready yet. In the first months so many teaching activities had not achieved the teaching standard and still looked for better teaching method.

Both the students and the lecturers found it was difficult to learn and teach online, since they were not used to use the high technology teaching tools. Another obstacles in online learning were getting students to participate in difficult conversations was already a challenge under ordinary circumstances [2]. Olapiriyakul and Scher (2006) described blended or hybrid learning as the use of “mixed mode of instruction, formally combining traditional face-to-face instruction and pure online learning” [3]. The learning process was a social and interactive process where students were given opportunities to practice what they learned [4].

New technologies were being created, new teaching methods were also being developed, non-standard forms of lessons, variable programs and textbook appear [5]. Online learning means digital learning. To participate actively, the students must have the basics of ICT (Information and Computer Technology). ICT includes communication technologies, WI-FI, and mobile phones [6]. Comfort with technology was important in effectively delivering content

[7].

The choice of selecting which subjects to be opened if there were limitation was also interesting. A thought would be students would give focus more on calculating subjects than social subjects, or there were any other reasons that should be concerned.

This research aim was to analyze and give recommendation of learning behaviour in the hybrid classes that provided for a half semester.

## II. METHODOLOGY

The methodology of this research used qualitative method, such interview and observation. The interview held to 2-3 students for each active same class year of the Class of 2020 and Class of 2021 students. The students were asked some questions:

- The ability to absorb the study while they learned.
- The obstacles while they did the online classes during the Covid-19 Pandemic.

The university had a policy to offer the offline classes to the students from the class of 2020 and 2021 that had never done any activities at campus since they were university students because of Covid-19 Pandemic.

Surveys to the students were distributed three times. First survey had a purpose to gather information about the subjects that they wanted to open. The second survey had a purpose to confirm which the students that would participate in the hybrid classes and online classes.

The variables that were asked for the first survey were:

1. Which classes do you prefer, hybrid or offline classes?
2. The reason why you choose the class at no 1

3. Choose maximum 3 subjects that you want to open.
4. Choose practicum class that you want to open.

The variables that were asked for the second survey were:

1. Which classes do you prefer, hybrid or offline classes?
2. The reason why you choose the class at no 1

The second survey's goal was to confirm the students for their choice in the first survey.

The third survey was held to know which students would enter which of 3 chosen subjects of the hybrid classes, because it was found that not all of the students that chose hybrid classes wanted to enter all of the 3 subjects that were offered.

### III. RESULTS AND DISCUSSION

Since March 2020, the academic activities were done online, including teaching activities. University X would like to change the policy to be adaptive to the situation by trying to do hybrid classes that would be arranged by departments themselves. The changing policy referred to the government policy and the feedback from the students. At first, University X would like to implement the hybrid classes in February 2022, since it was the first month of the new semester. The classes that would be opened depended on the departments, maximum 3 classes and they were for the class of 2020 and 2021 students only.

The reason was because those students never experience study at campus since they entered the university, because of the Covid-19 Pandemic. The implementation of the hybrid classes was delayed to mid March 2022.

First survey was held, as the preparation of the implementation of hybrid classes.

From the total of 30 numbers of the class of 2020 students, 3 students preferred full offline classes, 12 students preferred hybrid classes, while 15 students preferred online classes.

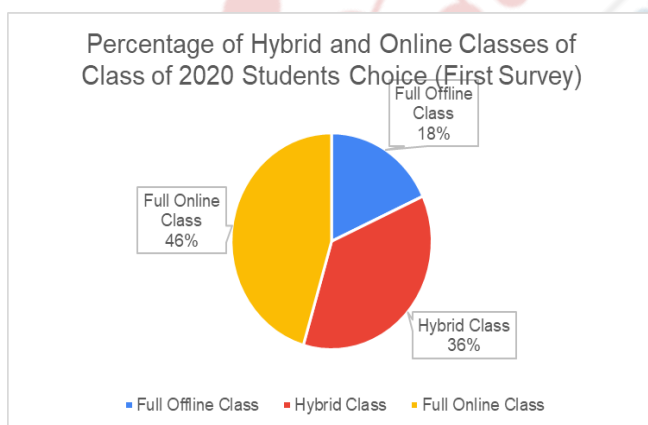


Fig. 1 Percentage of Hybrid and Online Classes of Class of 2020 Students Choice (First Survey)

The highest number of the reasons that the students chose the online classes when the department offered the hybrid classes was that they were not allowed by their parents to go to classes. Another reason was they were still afraid and not sure about the safety if they went to classes, and there were

some students that felt comfortable already with the online classes.

The reasons the students preferred offline and hybrid classes were the material could be learned easily, they wanted to experience offline classes from the campus, they wanted to meet their friends physically, they felt bored to do online classes, they wanted to implement adaptive behaviour through this hybrid learning from the classes before they implemented full offline classes in the next semesters.

For the 27 numbers of the class of 2021 students, 1 student preferred full offline classes, 10 students preferred hybrid classes, while 16 students preferred online classes.

The main reason they preferred online class was because they were not allowed by their parents that worried of the new variance of Covid-19.

The reasons the students preferred offline class, the material could be learned easily, they wanted to experience offline classes from the campus, they wanted to meet their friends physically.

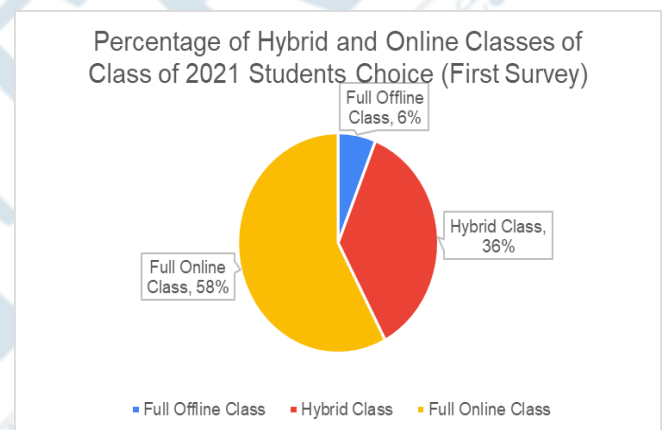


Fig. 2 Percentage of Hybrid and Online Classes of Class of 2021 Students Choice (First Survey)

Second survey was held around one month after the first survey. The aim of this second survey was to confirm the students about their choice, if they wanted to take hybrid class or full online class.

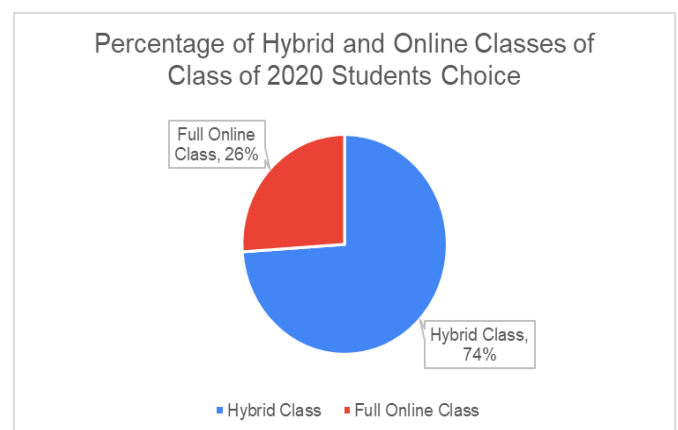


Fig. 3 Percentage of Hybrid and Online Classes of Class of 2020 Students Choice

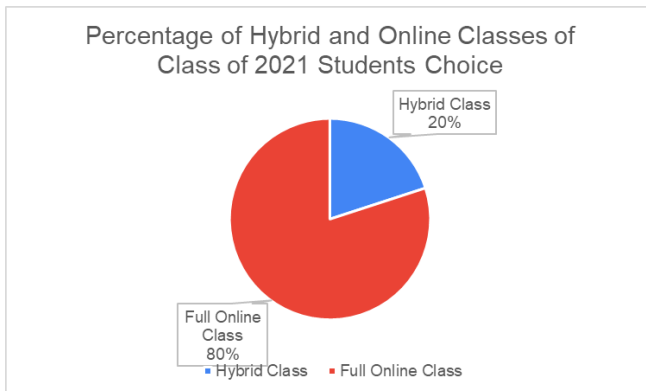


Fig. 4 Percentage of Hybrid and Online Classes of Class of 2020 Students Choice

Surprisingly, not all the subjects that they chose were calculating subjects, but there were also social subjects such as leadership and teamwork, work design analysis and ergonomics, and system modelling.

Through the interview with some students, it was found that some calculating subjects were able to understand easily through the lecturer’s presentation material that was equipped with detail and sequentially animation and sound recording, that made the students did not choose those subjects to be opened as one of the hybrid classes.

The reasons for choosing hybrid classes subjects are various too. Some students also wanted to experience the classes that they felt interesting if it would be offline classes than online classes. Some students also gave opinion that some subjects were difficult to gain high score, so it would be easier for them to focus on the offline class.

Despite of unpredictable situation in this Covid-19 Pandemic Era, the third survey was held to confirm again which students that really wanted to be in those offline classes, due to the decreasing number of the Covid-19 positive cases in Indonesia. There were increasing number of students for some subjects and also decreasing number of students.

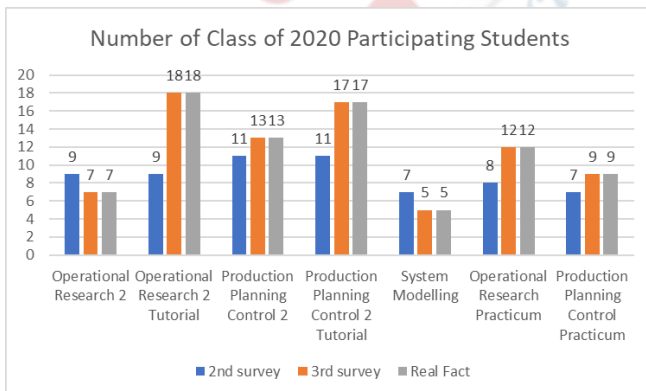


Fig. 5 Number of Class of 2020 Participating Students

In Figure 5 above, there was consistency in students’ participating number of Class 2020 students between the third survey and the real fact when the students joined the

class. The feedback from the lecturers, there was decreasing number of the students in the class meetings and they moved to online classes. Through the interview with the students, it happened because they could not maintain the time between the previous subject which was held online and the current subject that was held offline that had only 30 minutes difference. The students that lived near campus could reach the campus easily and did the previous subject online through the classes that were provided by the department. For the students that lived far from the campus, they preferred to do online for both subjects.

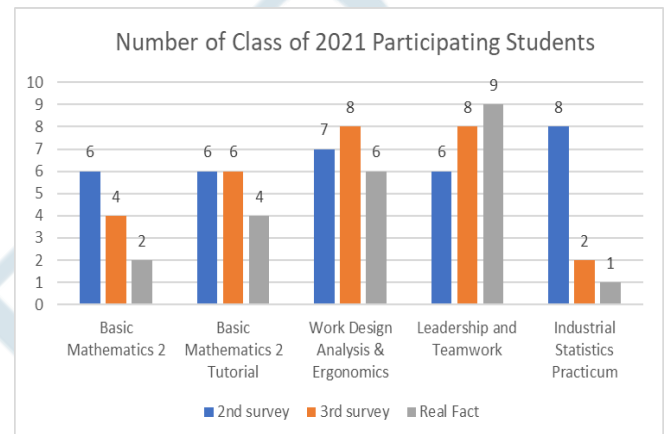


Fig. 6 Number of Class of 2020 Participating Students

In Figure 6 above, there was inconsistency between the third survey and the real fact of Class of 2021 students. It tent to be decreasing number of participants in all of the subjects. If it was compared among the second, third survey and the real fact, it described that there was demotivation of the Class of 2021 students in approximately three months. Through the interview, it was found that some students were not allowed to participate in too many classes by their parents. Another reason was because two of the students were not allowed to participate in the classes because they did not meet the requirement of the university that had to get vaccinated for the second dose. There was also increasing number of the students in one subject, because they were interested to try the subject and on the day of the subject was held, the students had no any other classes.

From the observation and interview with the Class of 2020 and 2021 students, it was found that hybrid learning was still a bit difficult to understand although it gave better impact for the students that experienced in the class than experienced it online. Overall, the students that experienced offline classes felt happier if they compared with the online classes, because they could understand the materials better. They could also meet their friends physically and they felt it was more fun than meeting them virtually.

The facilities that were provided in the hybrid classes were comfortable enough and followed the health protocol. There were only 10 pairs of desks and chairs provided in the hybrid classes, with a certain distance among them. Smart

interactive whiteboard was also provided in each class to facilitate the students in the classes, the same time with the online students. But, the students at the back row seats in the classes could not see the smart interactive whiteboard because the size of the whiteboard was not to big to see from that distance, so that the students still had to open their laptops to see the screen. The feedback from the online students from home was sometimes the audio could not be heard clearly, and it was needed time to be set up.

The lecturers also complained about some students that did not came to class, but not reporting to them, so that it happened once no students at the class.

The recommendations for learning in the Covid-19 Pandemic Era:

- Blended learning method, defined as a few numbers online classes meetings and the rest were offline classes meetings, should be tried, and would be more helpful for the students since they would be forced to learn from classes offline.
- If one of the constraints are the capacity of the classes, it could be tried to do hybrid learning, defined as some students do offline classes together with the rest do online classes, for some classes only.
- The department should create a comfortable schedule for those students that experienced both the online and offline classes, especially on the same day.
- It should be considered to the size of the smart interactive whiteboard to the classes and the distance for the farthest row of the students.
- It has to be a frequent check for all of the facilities in each class to prevent the broken tools that needed long time set up that waste the time.
- Games and gamification to facilitate the students' engagement in the online or offline classes could make the students happier and paid attention more to the classes [8].
- It is very necessary to modify and update the current curriculum to familiarize future generations of students with the new technological innovations and to facilitate their transition into the world of work [9].
- Online teaching should focus on developing students' creative thinking, especially in higher education, rather than only considering knowledge sharing, discovery, discussion, and application [10].

#### IV. CONCLUSION

This study showed that the factors that affected the students to participate in the hybrid classes, especially to enter the offline classes were the schedule of hybrid classes and the online classes, the permit of the parents. The university and the department should also concern about the quality of the facilities that were provided.

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