

Student Centered Post Covid Teaching Using Asynchronous Platform in Malaysia Polytechnic

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ABSTRACT

This paper is focusing on the Engineering Mathematics course that was conducted on an online platform due to the Pandemic of Covid-19. Mathematics instructors are being forced to digitize their course materials, such as videos of lecture topics over the Internet, but lack a detailed survey that addresses how students interact with course content, the tools available during class, and the available equipment at home. This presence challenge has been encountered through before and after class surveys to close the gap on the abovementioned issue through online learning. Throughout this study, the needs of students of the various departments involved were taken into account for the calculation of their satisfaction feedback that was investigated. The survey results also indicate that the problem of Internet coverage over time no longer exists for most students. Only the result of audio equipment instability due to the non-standard good quality of the equipment used during the online learning course was rated 18.3% out of 100%. The engineering mathematics content was delivered as planned and no critical learning issues were identified.

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1. Introduction

1.1 Introducing the case studies

In the digital age, where the pandemic of COVID -19 occurs, the online platform is a must not only in a lecture at universities, but also in elementary school. Moreover, not only to spend sufficient time for online class whether in synchronous or asynchronous online teaching but also to make sure the assessment for learning process, should be conducted effectively. In practice, we usually give them assignments, tests and projects, the final exam, or test. and grades. But what does that mean? Assigning tests is a mechanism to assess what student have learned.

However, with partial credit, it is impossible for a student with weak fundamentals to complete an entire engineering degree and graduate without having solved a single problem on a test completely correctly.

The solution, or one way to answer the questions posed above, is to assess student learning. We validated the survey after considering several factors related to effective assessment and instruction during the process of online learning from multiple respondents with both positive comments and constructive comments.

2. Literature Review

2.1 Synchronous teaching and Asynchronous online teaching

In the era of COVID-19 that has hit the entire country, Politeknik Malaysia has not failed to take immediate action to deliver instruction through online courses on digital platforms. Most of the lecturers have good

internet coverage that assesses learning using the preferred online platforms of Microsoft Team, Google Meet, etc. This planning is used to ensure instruction and meet all syllabi that need to be conducted. Two alternative methods were suggested to all instructors. The main one is face-to-face teaching in a virtual or synchronous world where the instructor is present at the same time as the students. This occurs almost as in a face-to-face environment. Synchronous teaching can also be done through online learning with video conferencing and live chat or instant messaging. The advantage of the face-to-face environment method in synchronous online teaching is that question can be asked spontaneously and in real time (Applebes, 2003).

In asynchronous online teaching, on the other hand, all teaching materials are provided online, and students thus learn on their own time even communicating with each other and the instructor via discussion forums or email. A good asynchronous teaching method incorporates a variety of media, including audio and video clips. This asynchronous teaching method also allows students to work at their own pace and at a time of day that works for them. Each instructor is free to ensure his or her input patterns differs from the synchronous environment by regularly reviewing and updating discussion boards or forums when it is more valuable to students than a longer session. Deadlines will be set for submission of coursework as well as for any feedback. Also, a recommended schedule is provided to students so that they have an idea of what they should be doing at any given time. In fact, a blended approach can help instructors combine the benefits of synchronous, asynchronous, and online instruction and provide a good experience for students who need to benefit from it (Applebes, 2003).

2.2 Online exams and effective assessment and effective teaching

This paper identifies the students' presence in the student digital learning environment and collects the students' feedback on their perception of the assessment and teaching tools used in engineering mathematics courses in Malaysian polytechnics. The main objective of this study is to achieve good teaching quality to ensure effective learning process. In fact, effective teaching is defined as the process that makes students learn effectively and successfully, or a good acceptance by lecturers and other professional education systems. Both definitions yield, to some degree, a list of instructional behaviors that can be assessed by trained classroom observers using created performance-based assessments. Such observation systems do not necessarily have a valid or reliable method for measuring signs of effective teaching, possibly due in part to problems in both behavior specification and quality of observation. (Guzyall, Jon and Alex, 2021).

To ensure effective assessment, the first issue to address is effective teaching, but instead, poor Internet coverage affects the entire teaching and learning process. Here, effective teaching can be defined in various ways, such as the teacher's behavior in terms of addressing current issues (friendliness, politeness, clarity), the teacher's knowledge (about subjects, students), teacher's non-exclusionary beliefs, and so on. Effective teaching is defined here as the ability to improve student achievement in relation to the knowledge taught. To understand any difficulties, each instructional platform was used in the form of a device, as shown by other researchers in previous studies (Gallagher, 1995).

3. Methodology

In this section we discuss other case studies of online student learning online using instructor-provided math assessment tools and platform. Figure 1 shows the survey process for preparing the mathematical engineering platform in this study.

Mathematical solutions can be solved if you concretely understand the basics of mathematics and how to use the given information and instructions without neglecting the important data. It is very important that you take the necessary time to implement and solve the problem. Students are encouraged to solve the question themselves by understanding the basic relationships rather than resorting to mathematical tools to find the solution. To keep things running smoothly, we have designed two scenarios for an online learning feedback survey that addresses all the way their learning performance is affected.

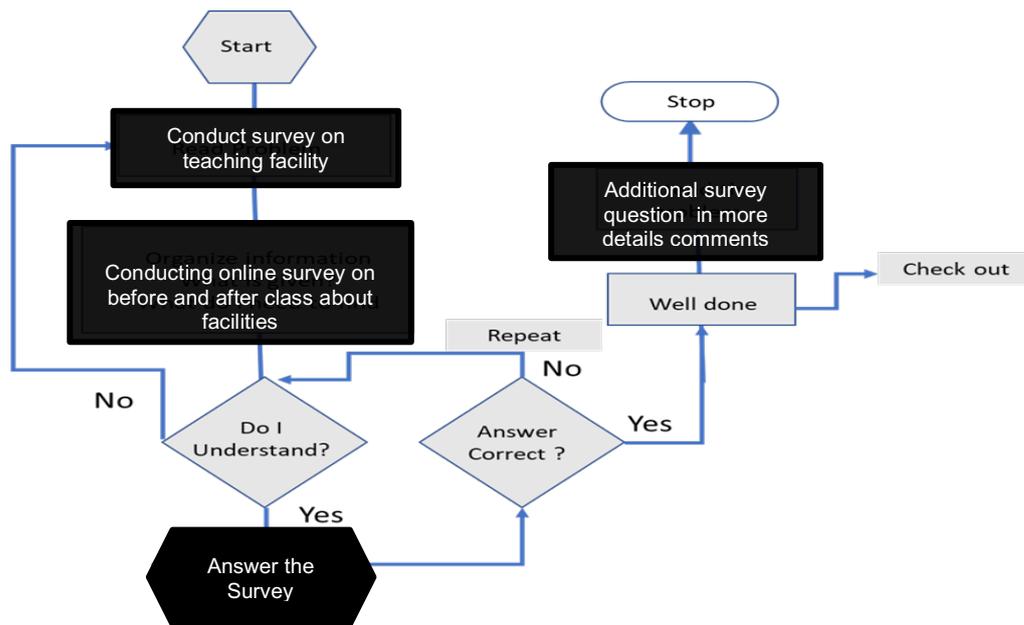


Figure 1. Flowchart process for conducting survey question

3.1 Design the Appropriate Survey data

The survey to understand preparation before and after online learning focuses on the household's socioeconomic life, where Internet coverage is strongest, type of provider, and allocation of monthly expenses for online learning and use of assistive technology, which are shown in Table 1 for 8 items and Table 2 for 6 frequently asked items.

Table 1. Survey topic conducted BEFORE online learning is conducted

Items to be Asked		
Sex(M/F)	Telco Provider type	Type of Platform
Family Background	Monthly Internet Expanses	Issue during Online Learning
Locality	Tool for Learning	

This element is very important to solve the problem of polytechnic students, most of whom come from middle-income families with little budget for online learning packages.

Table 2. Survey topic conducted AFTER online learning is conducted

Items to be Asked		
Sex(M/F)	Telco Provider type	Type of Platform
Family Background	Monthly Internet Expanses	Issue during Online Learning
Locality	Tool for Learning	

3.2 Student Feedback

This section focuses on the feedback survey that was conducted among 203 students from two departments (mechanical and electrical engineering). The survey was conducted on a specific date using Google Form and the survey time was one hour.

In this section, an online survey was conducted among 203 students focusing on the following 4 questions.

- Q1. Any experience used to application use during online class
- Q2. Any issue related to online application during teaching and learning.
- Q3. Any issue related to device issue during online learning.
- Q4. State the purpose of using math applications in online assessment.

4. Results and Discussion

4.1 Implementation of Survey data

10. Aplikasi yang pernah digunakan semasa pnp atas talian
203 responses

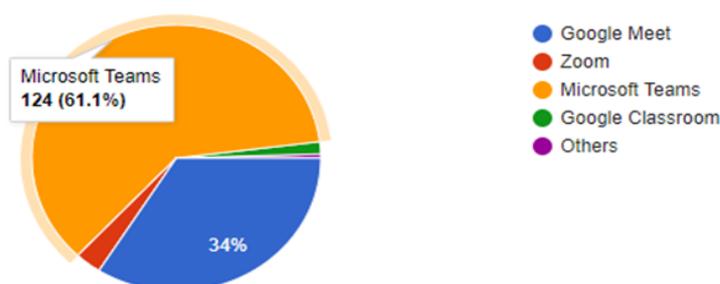


Figure 2. Q1. Any experience used to application use during online class

This Figure 2 shows the learning experience with the online learning tools most commonly used during the online course. 61.1% of the 203 respondents have prior experience with Microsoft Team and 34% with Google Meet. The remaining 4.9% of respondents provided answers about Zoom, Google Classroom, and other tools.

203 responses Internet Coverage Issue

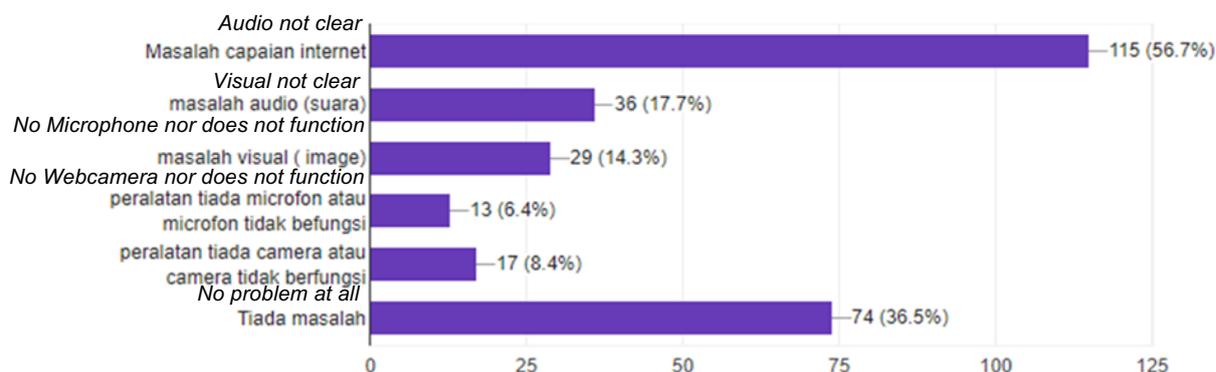


Figure 3. Q2. Any issue related to online application during teaching and learning.

Figure 3 shows the notable responses of respondents who used mathematical tools to answer the coursework before applying online, and some on the grounds that they did not really understand the content and no reference book was available. The most serious problem is that no revision has been done, but 115 respondents have clearly informed about the difficulties with the Internet, while 36 respondents have difficulties with the sound and 29 respondents have problems with the visual image, while 13 respondents and 17 respondents have the camera and microphone not working, resulting in respondents in the dashed block indicating more than one problem.

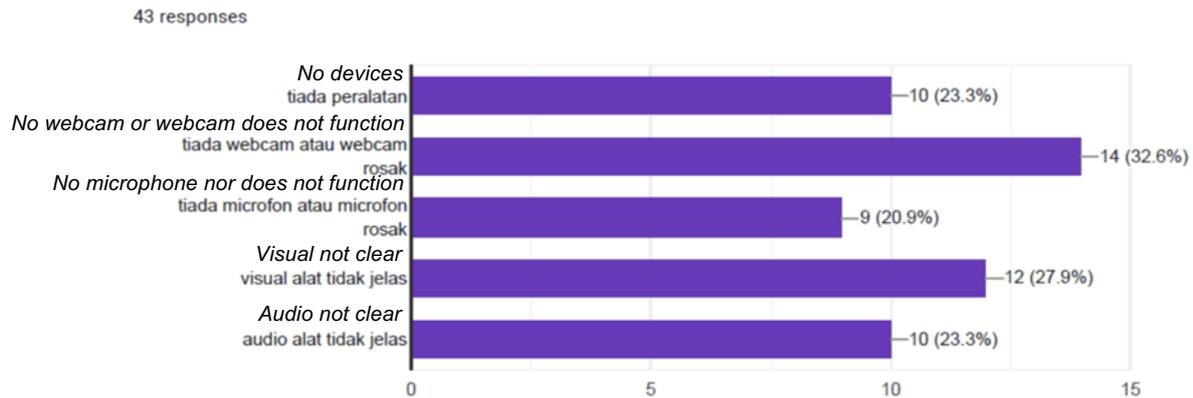


Figure 4. Q3. Any issue related to device issue after online learning with 43 respondents.

Figure 4 shows respondents' feedback explaining details of problems with audio devices and related visual and audio issues, but no problems with Internet coverage or connectivity.

Figure 5 shows a remarkable response from respondents who are concerned with the learning environment and have no problem with personnel learning aids or devices. The personnel learning aids are no longer a problem for them to participate in class, only the living area and internet coverage are still unstable due to the different local and state conditions.

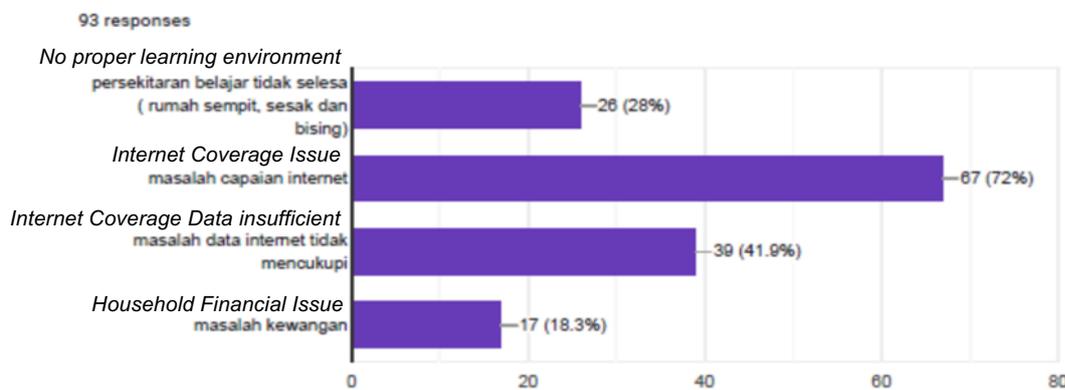


Figure 5. Q4. Other issues arise, if any.

5. Conclusion

Mathematics instructors are being forced to digitize their classes, e.g., through online videos of lecture topics, but lack detailed surveys of student questions about course content, tools available during class, Internet coverage, and, beyond that, available facilities at home. This challenge was addressed by conducting a pre- and post-class survey to fill the aforementioned gap by surveying students before and after online learning. As part of this study, various departments of students were surveyed about their satisfaction and feedback was obtained.

The survey results also indicate that the problem of internet coverage over time no longer exists for most students. The only finding of audio device instability is the non-standard good quality of the devices used during the online learning course at 18.3% out of 100%. The engineering mathematics content was delivered as planned and no critical learning issues were identified.

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