Investigating Students' Perception and Preferences of Online Learning in UiTM Pasir Gudang Campus

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Abstract: Numerous firms across the globe are now fully utilizing a variety of cutting-edge online communication platform technologies as a result of the COVID-19 epidemic. The usage of various online communication tools by students and instructors is required by higher education institutions in order to maintain an uninterrupted educational process. The goal of this study is to discover more about how university students perceive the advantages and challenges of online learning. It will also look at how students prefer online learning based on prior experiences. In order to determine the degree of agreement among the respondents based on their feedback comments, the 238 data sets that were collected were analysed using the average index value. Frequency analysis was carried out to examine the frequencies and Average Index Value of the respondents in relation to the survey variables. According to students, the most important advantages of online learning were the replay function, which allowed students to access lecture slides and recorded video at a later time to review the courses, and the flexibility of time, which allowed them to access the lecture materials whenever there was a reliable internet connection. On the other hand, inability to maintain concentration in online classes and a lack of self-discipline were the most frequent obstacles with online learning. When it comes to the preferences of students for online learning, the vast majority of them favoured synchronous learning and wanted access to recorded lecture videos and lecture slides after the class for subsequent topic revision. The research findings contribute to the body of knowledge on students' views and preferences toward online learning by considering the perspective of diploma students.

Keywords: Diploma students, Engineering students, Online learning, Students' perceptions, Students' preferences.

1. Introduction

There are several options available for sharing information and uploading documents in various formats when learning online. Additionally, there are aspects of online learning that support and develop the learning-teaching process. Because it is a web-based system, no additional software needs to be installed, and once the content has been uploaded, users can view it whenever they want (Raheem & Khan, 2020). A network where information is distributed to a large audience via electronic resources is

also thought of as online learning. Computers and the internet are the primary components that guarantee the proper operation of such systems. When it comes to gaining knowledge and incorporating technology, online learning is typically seen as an addition to or a replacement for traditional classroom training (Razami & Ibrahim, 2021).

The internet has recently transformed the way we work and is now expected to transform education as it is adopted and developed as a tool for communication. Universities are becoming more enthusiastic about the potential of online learning to give accessible and current education to people of all ages and social backgrounds, regardless of time and place, as academics have grasped its tremendous potential as a learning tool. Universities were forced to conduct all of their activities with students solely online as a result of the pandemic. In this regard, numerous governments acted to stop the virus from spreading and to guarantee the ongoing nature of the educational process, and institutions all over the world adopted online education (Wahab, 2020). Universities around the world have either cancelled all campus activities, such as conferences, workshops, sports, and other events, or have moved quickly to switch many courses and programs from a traditional classroom setting to an online one. The deadly coronavirus epidemic, which appeared at the end of 2019 and slowly spread over the world, brought about immediate and significant changes in education. The governments of numerous nations throughout the world, including Malaysia, enacted a mandatory shutdown of educational institutions and all of their physical teaching and learning activities as a measure to control and minimize viral spread. The sickness first appeared in Malaysia at the end of February 2020, and a lockdown was subsequently implemented on March 18, 2020, as a result of a government-issued Movement Control Order (MCO). Academic institutions had no choice but to deploy emergency remote education in order to guarantee continued learning.

The Malaysian government includes school shutdown as part of the physical separation policy to reduce the transmission and lessen the strain on the health system. While some higher education institutions (HEIs) are caught off guard, proactive universities are ready with their backup online learning resources. On the other hand, the epidemic had some beneficial effects on schooling as well. Universities all over the world have a fantastic opportunity to test remote learning methods and give students a complete experience with technology-supported learning because of the current situation. Additionally, it gives professors and students the chance to become familiar with and use the various features of online learning systems and applications. Universities nowadays must adapt to the needs, wants, and expectations of students while the higher education system undergoes a constant state of change. As a result, universities are increasingly investing in online systems and gadgets since they are recognized as necessary to carry out their work. This includes information technology and online learning platforms. However, integrating cutting-edge online learning platforms to enhance and strengthen both teaching and learning is one of the major difficulties facing universities in the technology era (Popovici & Cosmina, 2015). Higher education uses a variety of online platforms to facilitate e-learning. One of the most crucial features of online learning systems is the ability for teachers and students to collaborate asynchronously through forums, video, audio, and writing communication through web conferences, and real-time contact between users through chat.

Several online technologies are now being used for education as a result of the switch to online distribution. To better prepare for this new challenge, numerous HEIs have signed up for a variety of online teaching platforms, including Cicso Webex, Blackboard Collaborate, Canvas, Moodle cloud, and Edmodo LMS. They offer a number of capabilities, including a whiteboard, video streaming, the ability to share screens and a text chat box, Internet resources, and numerous audio and video connections. They are reliable and fully functional synchronous web conferencing systems (Mohd Yusuf & Ahmad, 2020). In the same vein, free online video call solutions like Skype, Zoom, and Microsoft Teams are available for conferences and classroom instruction. Additionally, they provide chances for personalized learning while facilitating simple connection between real and digital learning materials. Particularly WhatsApp provides a platform for students to stay updated and to share issues with their classmates as well as professors in order to support peer-to-peer learning and to create a welcoming environment for students to interact.

Few education systems, even the best-performing ones, might not be sufficiently prepared to provide online education for all pupils on such a broad scale. When considering the cost and infrastructural support, technological advancements frequently surpass the capacity of decision makers to stay up. It must be determined that suitable information and communications technology (ICT)

support is required for the delivery of online and blended learning, including hardware and software support systems, infrastructure, and tools. Even though Malaysia has an Internet penetration rate of over 80%, there is a significant infrastructure gap between urban and rural areas. For instance, compared to rural areas with slower speeds and some locations without connection to the Internet, residents of the capital city can access high-speed Internet at speeds up to 800 megabytes per second. Students' access to online education and performance differ as a result of the varied Internet infrastructure between urban and rural areas. According to a study, kids in the United States of America without access to broadband and mobile devices performed worse than students with access to broadband, creating a significant achievement gap for students who live in rural and metropolitan areas. Therefore, internet infrastructure needs to be enhanced so that everyone has access to reliable internet, allowing students in particular to complete online coursework from their homes even when they live in rural areas. Today's students frequently have close relationships with ICT. All across the world, young children today are exposed to electronic devices like mobile phones and tablets. The aforementioned statement is supported by an empirical study (Jesse, 2015), which found that 99.8% of students have access to mobile phones and utilize them for activities other than calling, such as texting, visiting social media sites, and using applications.

Digital teaching resources that incorporate text, graphics, music, and animations are known as multimedia contents. Teachers frequently use these materials to enliven lessons in the classroom by employing them to more effectively illustrate and clarify challenging ideas that are difficult to express through text alone (Wahab, 2020). According to studies, there are a number of advantages to using multimedia-enhanced content in educational settings. The usage of ICT technologies can enhance students' comprehension of instructional materials (Sihombing et al., 2021). Students do recognize the benefits of online learning, including the ability to continue their education from the comfort of their homes, the value of having recorded videos to help them with studying and revision, and the improvement of their self-directed learning skills. In addition to the flexibility of learning (Prabawangi et al., 2021) whenever and wherever you want, as well as the savings on travel time and costs, a different survey from the past identified a comfortable learning environment as one of the most important advantages of online education (Al-Balas, et al., 2020).

Although online learning made it possible for teaching and learning to continue while minimizing the impact on students' academic progress and enabling international students unable to leave their countries to attend classes in-person to do so from a distance, there are still a number of obstacles to overcome. On the student side, a significant portion of pupils' lack internet access, have a sluggish internet connection at home, or need to get through a firewall in many communities, particularly in mainland China (Zhang, 2020). This indicates that a move to online education could make already-existing equity issues worse. Even though the university provided all lecturers and students with training for online learning, not everyone in the community has quickly taken advantage of the ongoing system and the basic training. The teachers also express concerns about the infrastructure's readiness (i.e., internet connectivity, hardware, etc.) and software. The administration, social interactions, technological challenges, Internet access, learning time, learning assistance, motivation, and lack of interaction have also been issues raised by students from a number of Malaysian universities. Additionally, it is believed that students' readiness for live online education is one of the essential factors for a good learning process and academic success (Sarkam et al., 2022).

We also chose Online Distance Learning (ODL) as our new learning management system for the School of Civil Engineering (PKA) at Universiti Tekonologi Mara, Johor Branch Campus Pasir Gudang, since the COVID-19 pandemic. Since we are interacting with engineering students who are particularly pursuing a diploma, practical learning and monitoring are just as crucial as a theoretical approach. But it's crucial to keep in mind that sometimes technology can't replace the labour of teachers. Teachers continue to be crucial in providing guidance to students, developing tasks, and effectively managing big classes of pupils. Since face-to-face training in the classroom as a whole differs from online learning, it is difficult to assess the level of focus and efficacy of engineering students. Therefore, the goals of this study are to ascertain students' perception on benefits and challenges of online learning, and to study students' preferences of online learning. This survey was done for diploma candidates interested in civil engineering. This study aims to advance the body of knowledge by including the perspective of diploma students, which, as far as the author is aware, has not been fully studied.

2. Methodology

This study was carried out in UiTM Pasir Gudang campus on the students of Diploma in Civil Engineering by applying quantitative research approach. Throughout the Covid-19 epidemic, they had all of the course's online and hybrid learning experiences. Due to the Malaysian government's movement control order, some students were forced to attend lessons online from their homes, while others chose to do so from campuses with more stable internet connections. The online questionnaire developed for this study began with an introduction that informed respondents about the goal of the survey and assured them of their anonymity and the confidentiality of their responses. The questionnaire consisted of three main segments which were demographic information, students' perception on benefits and challenges of online learning and students' preference of online learning by using multiple choice questions, Likert scale and open-ended questions developed based on interviews with selected students and relevant literature, then be modified to suit the context of this research.

The total number of collected data was 238 data sets consisting of students from part 2, part 3, and part 4 of the study plan. This research excluded students part 6 which were undergoing industrial training and there were no students in part 1 and part 5. Total population of full time students in Diploma in Civil Engineering were 324 with 186 students from part 2, 19 students from part 3, and 119 students from part 4. Percentage of students who took part in this survey were 70.1% for students part 2, 68.4% from students part 3, and 78.1% from students part 4 and the involvement of students were contributed by the role of lecturers who gave the questionnaire link to the students. The response was then used to conduct analysis and produce accurate quantitative analysis. From the demographic information, 71% of respondents live in urban areas and only 29% of respondents live in rural areas.

After creating the questionnaire in Google Forms, it was reviewed by an educational technology professional and tested in a pilot test. Based on the responses from the students to the questions, some changes were made. The revised questionnaire was then distributed to the appropriate lecturers with a request to distribute it to their students via WhatsApp. The quantitative results were evaluated using the SPSS software and Microsoft Excel after the data had been screened and filtered. Some data such students' preferences of online learning which covered online learning methods, online learning platforms, and online learning materials were examined using the percentage technique, which included data checking, classification, tabulation, frequency distribution, percentage computation, and display in the form of bar charts and pie charts.

Certain quantitative findings such as students' perception on benefits of online learning and students' perception on challenges of online learning were analysed using the average index value to ascertain the respondents' level of agreement based on their feedback responses. In order to analyse the frequencies and Average Index Value of the respondents in respect to the questionnaire variables, frequency analysis was performed. The level of significance of the data was determined using average index analysis, which was utilised to analyse the data. The interpretation of the average index value is adopted and modified based on previous studies by Bujang et al., 2018; Majid & McCaffer, 1997 and Suratkon et al., 2016. The average index and importance level are displayed in Table 1. The average index was determined using Eq. (1).

$$Average\ index\ value = \frac{\sum \alpha_i x_i}{\sum x} \quad (1)$$

where

$\alpha_i \alpha_i$ constant expressing the weight given to i

$x_i x_i$ the frequency of response for i = 1,2,3,4 ,5 and illustrated as follows:

$x_1 x_1$ frequency of the response 'strongly disagree' and corresponding to 1

$x_2 x_2$ frequency of the response 'disagree' and corresponding to 2

$x_3 x_3$ frequency of the response 'average' and corresponding to 3

$x_4 x_4$ frequency of the response 'agree' and corresponding to 4

$x_5 x_5$ frequency of the response 'strongly agree' and corresponding to 5

Table 1. Average index and level of Importance

Average Index (AI)	Level of Importance or Evaluation
$1.00 \leq AI < 1.50$	Not Important/Strongly Disagree
$1.50 \leq AI < 2.50$	Less Important/Disagree
$2.50 \leq AI < 3.50$	Neutral
$3.50 \leq AI < 4.50$	Important/ Agree
$4.50 \leq AI \leq 5.00$	Very Important/Strongly Agree

3. Results and Discussion

3.1 Students' perception on benefits of online learning

The survey consisted of six questions, as shown in Fig. 1, were used to gauge the participants' perceptions of the advantages of online learning. The common benefits covered in various works of literature (Razami & Ibrahim, 2021; Al-Kumaim et al., 2021) were the subject of the survey questions. According to a survey of students pursuing a diploma in civil engineering, they recognised the value and advantages of online learning for their higher education. It is possible to conclude that students perceive online learning to have a number of advantages based on their prior experiences with it.

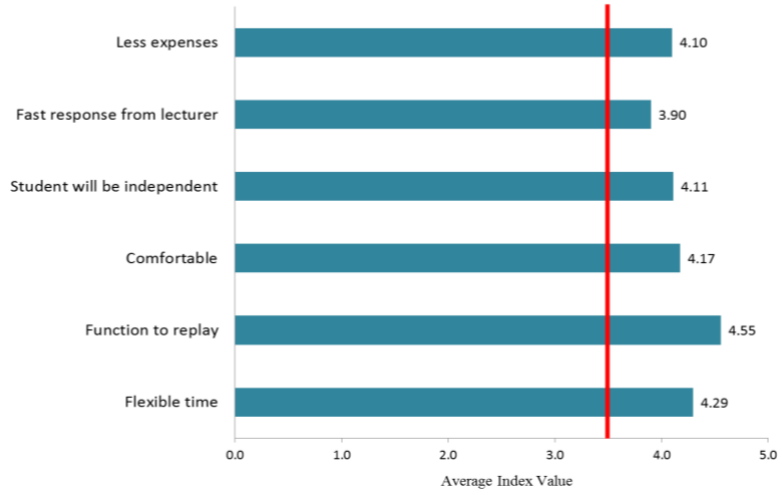

Fig. 1 Students' perception on benefits of online learning

Based on the results of the survey, it was discovered that the function to replay, which had an average index score of 4.55, was seen by students as providing the most benefits of online learning. Apart from online real-time classes, one common practice of online learning involves providing students with lecture slides and recorded video to aid in their understanding of the lecture's topic. The students can access these lecture slides and the recorded video at a later time to review the material. It was discovered that the replay function greatly aided students in reviewing the lecture anywhere and whenever it suited them. Students can fill in any knowledge gaps during online real-time classes by reviewing this content again. This replay function of online learning was extremely beneficial to those students who want to study right before tests or exams.

The next significant advantage of online learning, according to students' perceptions, was flexible time, which received a 4.29 out of 5. This finding is similar to the earlier research (Rozmayovna & Mustafoeva, 2020) that found online learning platforms were compatible with a variety of mobile and electronic devices allowing for the practice of online learning anywhere and at any time. Online learning is known to be more adaptable than traditional face-to-face instruction, particularly asynchronous online learning. The students with a poor internet connection found the flexibility of time to be quite important. For instance, students were able to access the lecture materials whenever the internet connection was stable. Students who reside in rural locations typically struggle with poor and slow internet connections, especially during busy times of the day. These students frequently struggle to participate in live online classes, which has an impact on their academic achievement. However, if these students were given access to recorded lectures, they would be able to access the information whenever they had a reliable internet connection which was typically late at night during off-peak hours. In addition, several students lacked a comfortable place to study throughout the day due to crowded housing and interruptions from family members' activities. Because of this, online learning gives individuals the flexibility to access lecture materials at a time that is convenient for them and complete the revision as needed.

Another advantage of online learning, according to students' perceptions, was comfortable, which received a 4.17 out of 5. It was thought that students could conveniently attend online classes from their homes or dorms, saving them the time required to go to physical classrooms. Students didn't feel as pressured to dress according to rigid guidelines and had more freedom in attire while still being nice. Next, it is thought that online learning makes more independent students because successful online learners exhibited strong self-discipline. In addition, online learning would be able to reduce the expenses of students compared to face to face learning in the campus and this finding confirms other studies' findings (Hernández, 2020) that one advantage of online learning was that it can save students' money. Since students could participate in online learning while still living at home, students might avoid paying for accommodations and transportations. Finally, even though they did not physically interact with the instructors, online learning students were still able to get quick responses from the lecturers. There are numerous channels that enable students to maintain contact with their lecturers, including Telegram and WhatsApp.

3.2 Students' perception on challenges of online learning

Fig. 2 displays the score of average index value for students' responses with regard to their perception on challenges of online learning. There were eight questions in this section. According to the survey, it was discovered that too many online tasks with simultaneous deadlines posed the most hurdles to online learning. There will be extra online tasks to substitute physical assessment like tests and final exams based on students' prior experiences with online learning. They will therefore be overwhelmed with numerous online assignments for different courses that had a concurrent deadline toward the end of the semester. One of the key qualities that may assist students in finishing all of the tasks assigned by the lecturers on time was their capacity to plan and prioritise their online tasks.

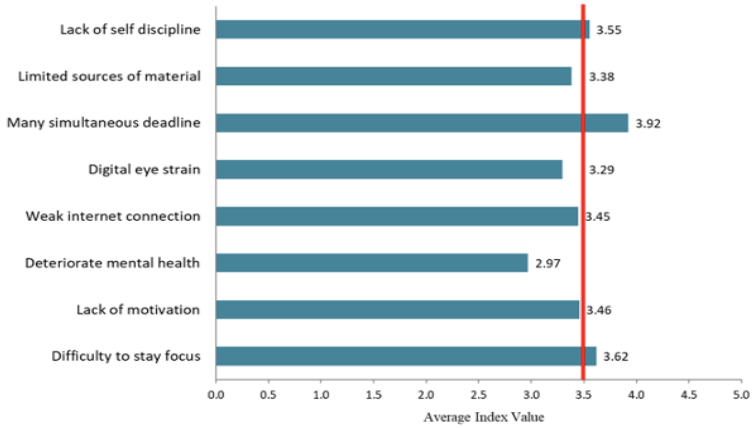

Fig. 2 Students' perception on challenges of online learning

In essence, these difficulties were also closely tied to the survey's second finding, which was that online learners lacked self-discipline. Students frequently put off doing their work until the last possible minute, which makes them feel stressed and forces them to work more at the end of the semester to make up for missed deadlines. Students typically find that online learning is relatively relaxed and simple throughout the first half of the semester, but as the semester comes to an end, they begin to feel anxious and stressed about finishing all the tasks they put off until the last minute. In addition, students are struggling to maintain positive conduct while attending online classes, which is having an impact on their online learning, particularly for asynchronous online learning.

Students' perceptions also indicated that it could be challenging to stay focused during online learning. An earlier study (Rasia, 2021) found that this challenge was contributed by the interaction atmosphere in online learning which was limited as the activities were conducted virtually and with no direct feedback from educators. The platform utilised for online learning, which helps to sustain successful student engagement throughout virtual sessions, was one of the factors that contributed to these issues. Additionally, a strong internet connection was crucial for keeping students' attention throughout online learning. If the internet connection was inconsistent, it was impossible for students to focus on online learning since their virtual class would become stuck, and they would miss some of the knowledge and information. Because both lecturers and students were only virtually present in the classes, even though students had the finest internet connection possible, online learning could not be compared to physical classes in terms of student attentiveness.

According to the study that was done, other challenges with online learning were not as prominent. For instance, the score for lack of motivation is 3.46. One of the contributing aspects to students' lack of motivation in online learning was that they experienced loneliness from being separated from their classmates. As a result, it was challenging for students to engage with their peers who were living at their respective homes. They are unable to verbally express their opinions and sentiments while yet supporting their colleagues. In addition, inadequate home learning environments may contribute to students' lack of motivation during online learning. Some students struggled with adapting their learning styles to online learning, which could also lead to a loss of enthusiasm. According to the survey that was done, students' lack of motivation was not a significant issue they faced while online learning, despite all the contributing variables discussed above.

Next, weak internet connection, the score was only 3.45. It was because the vast majority of survey participants, or 74.2% of them, reside in urban areas. As a result, they had fewer issues with speed and connectivity on the internet. Limited sources of materials scored 3.38. Basically, it wasn't a huge difficulty for the students because they could quickly access comparable resources by browsing online. Moreover, digital eye strain scores 3.29. Students using computer or smartphone screens regularly experience digital eye strain. Due to their exposure to screens and the development of technology that creates eye-comfort screens, it was discovered that the issues were not as substantial as students thought. Lastly, the average index value for deteriorating mental health was the lowest. It showed that the majority of students who completed online courses did not have any negative effects on their mental health. Nevertheless, it could not be denied that few students might have issues with their mental health during online learning.

3.3 Students' preferences on online learning

Fig. 3 displays the preferences of students for online learning depending on the main activities and assessments of the course. First, for lecture activities for courses with theory oriented where students had to spend time reading in order to retain and comprehend the material. For this type of courses, 47.3% of respondents, or the majority of students, preferred blended learning as their preferred way of teaching and learning. This result, which was in line with the findings in earlier studies (Azami & Ibrahim, 2019; Razami & Ibrahim, 2021), showed how much students wanted technology to be a part of their educational process. According to the requirements of the topics covered in the particular courses, students desire lecturers to apply both physical classrooms, also known as face-to-face classes, and online learning classes. Each course topic needs to be carefully analysed, and either traditional classroom instruction or online learning should be regarded as an effective teaching and learning strategy.

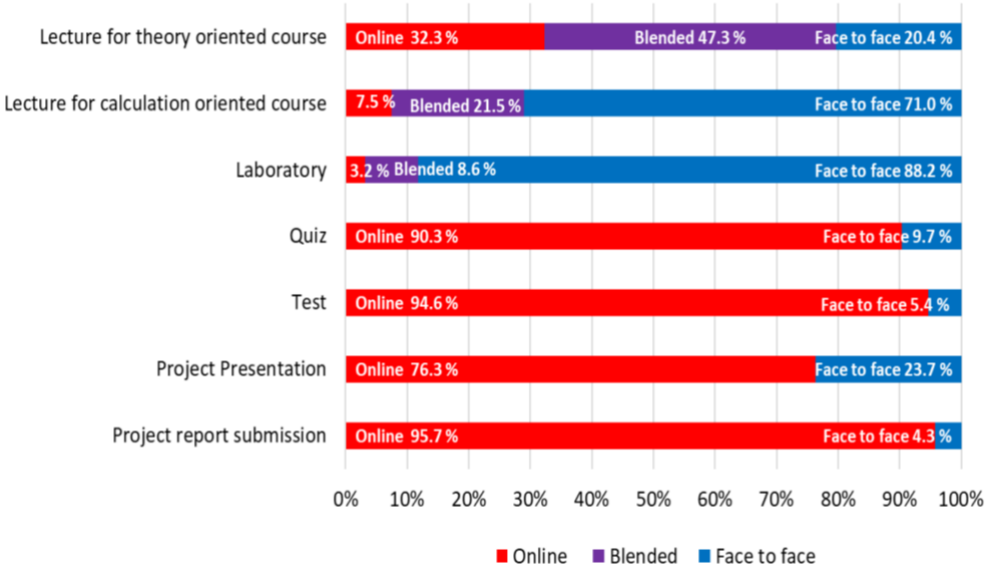

Fig. 3 Students' preferences of online learning

Next, 32.3% of the respondents preferred the theoretical oriented courses to be conducted through online learning. Online activities could be used to boost students' interest in learning and comprehending the course material. For instance, there are numerous web applications that may be used in online learning and can make learning enjoyable for the students. The creation of interactive games like quizzes that require students to respond to questions via apps can be tailored to fit online learning. This could spark healthy competition among the students for the greatest score while also teaching them something from the online activities. Students can learn more about theoretically oriented courses and retain information better by adding a fun aspect to their online learning experience. A small portion of respondents which is 20.4%, prefer face to face classes as the method of teaching and learning for theoretical oriented courses.

The majority of respondents (71%), would prefer face-to-face sessions as the way of teaching and learning for calculation-oriented courses. Calculation oriented courses for the Diploma in Civil Engineering were designed to require students to grasp mathematical principles, equations, laws, and concepts as well as discovering the implications of those principles, equations, laws, and concepts. The analytical methods used in these courses typically involve applying the concepts, formulas, and rules to solve the problems. The majority of students would prefer face to face lessons due to the complexity and difficulty of the courses since they can concentrate better in person and can clarify any issues or misunderstandings with the lecturers more promptly. Meanwhile, 21.5 % of the respondents prefer the class to be conducted through blended learning and 7.5 % of them prefer the class to be conducted fully through online learning. One benefit of online learning was that the students may review the topics by playing back the recorded video and slides. Some of the students claimed that learning while listening to music was their favourite learning method and that online learning was more conducive to it. The ability to study at a time that works best for them was another benefit of online learning for students.

The majority of respondents thought that laboratory courses should be taught on a campus. In order to achieve the course objectives for laboratory courses for the Diploma in Civil Engineering, students must engage in psychomotor and practical activities using appropriate tools and equipment. Since laboratory activities required a lot of technical considerations and procedures so that students could produce reliable data and results from the experiments, students preferred to receive face-to-face instruction from the lecturers. In addition, if learning took place online rather than on campus, students would have trouble locating the precise tools and equipment needed to execute lab activities. Instead of just seeing a demonstration or engaging in a virtual experiment, students prefer to participate in the laboratory activities physically. In addition, laboratory activities were done in a small student's group where they need to communicate and work together in a group to achieve the outcomes and all of these conditions are more practical to be done through face to face physical classes.

In contrast for activities that related to assessment such as quiz and test, almost all of the respondents prefer the assessment to be conducted online. For the quiz, 90.3 % of respondents would like it to be conducted online while for the test, 94.6 % of students would like to have it through an online platform. Based on feedback from respondents, online quizzes and tests were less stressful than those conducted in physical examination halls due to ambient differences, where more formal procedures were applied in examination halls. Students might wear more casual clothing if the quiz and test were conducted online because they would only need to be in front of laptops with their respective cameras turned on to answer the questions. In addition, some of the respondents noted that online testing will result in fewer announcement interruptions than traditional testing in an examination hall. Finally, if there were any issues concerning the questions on the quiz or test, students would receive a prompt answer from lecturers using a real-time online platform.

The survey revealed a consistent pattern of student preferences for other sorts of assessments. Fig. 3 shows that 76.3 % of respondents prefer presentation of assignment or project to be conducted online and 95.7 % of respondents prefer reports for assignment or project to be submitted through online platforms. Some students preferred conducting their presentations online in order to avoid feeling anxious and stage fright. Since the audience and panel cannot be physically seen during an online presentation, the presentation will feel less formal and the students' level of anxiety will be lower. 23.7% of the respondents preferred presentations to be conducted physically face to face and in general, it would be helpful for the students because they would obtain exposure to a proper presentation as a preparation for their future careers in the sector. Furthermore, almost all of the respondents preferred to submit reports for assignments or projects using an online platform. Because everything was managed through an online platform and correct submission records could be easily tracked. Hence, 95.7% of the respondents preferred that reports of assignments and projects be submitted online.

Both synchronous and asynchronous methods are used in online education. If students expected to continue with online learning in the future, students were surveyed about their preferred techniques. According to the results shown in Fig. 4, 68.8% of respondents preferred synchronous online learning. Meanwhile, asynchronous online learning is preferred by 31.2% of respondents. Further research revealed that 79.6% of respondents preferred Google Meet as the online platform for the real-time online classrooms when using the synchronous mode of online learning, as shown in Fig. 5. Another 20.4% of survey participants selected Microsoft Teams as their online learning platform. The students who participated in this survey did not favour other online platforms like Cisco Webex, Zoom, and others. The lecturers might just have influenced the students' preferences for these platforms because they were responsible for deciding and setting the platform that students had to follow. The preferences of the students will be influenced by the lecturers' exposure to different online learning platforms.

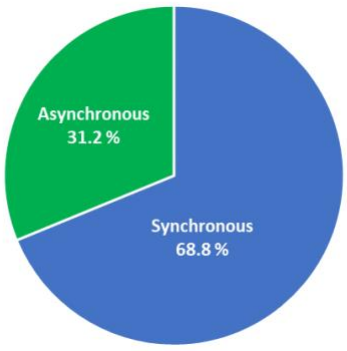

Fig. 4 Students' preference of method of online learning

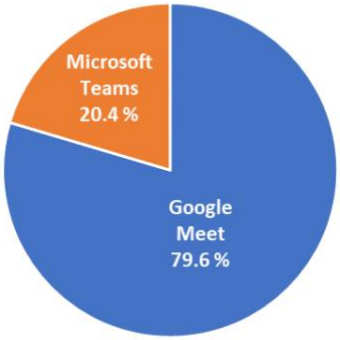

Fig. 5 Students' preferences on online platform for synchronous online learning

Figure 6 shows students' preferences of online learning materials. Despite the fact that synchronous methods were used for online learning, the study revealed that 40.5% of respondents preferred lecture slides and 36.1% preferred recorded lecture videos to be given to the students. This conclusion was corroborated by a previous study (Muthuprasad et al., 2021) which found that most respondents preferred recorded classes and live classes that could be recorded since it gave them more learning flexibility. In terms of the nature of reading materials, the same study also discovered that the majority of respondents which were 84% favoured video content in addition to reading materials. On the other hand, recorded audio, YouTube links, and pre-recorded videos were preferred by a minority of respondents which were 11.4%, 8.0%, and 4.0% of respondents respectively, for their online learning materials.

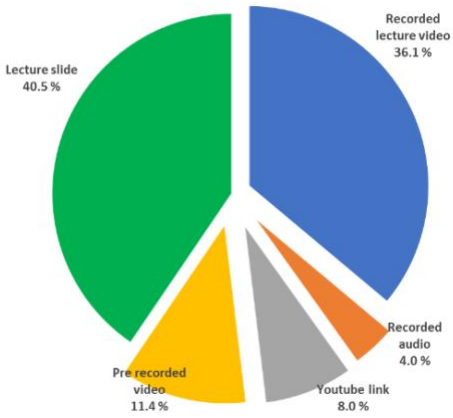

Fig. 6 Students' preferences of online learning materials

4. Conclusion

Based on students' perspectives, the study's findings indicated that online learning had both benefits and drawbacks. Blended learning could be used in courses that are primarily theoretical and require students to spend a lot of time reading in order to retain information and comprehend it in order to meet course objectives. Among the benefits of online learning in the perceptions of students of Diploma in Civil Engineering in UiTM Pasir Gudang campus was the ability to replay back course materials, such as recorded lecture videos, whenever it was most convenient for students. In addition, online learning offered students greater schedule flexibility than traditional face to face sessions, and the ability to study at home could help students cut back significantly on campus fees. Among the most prevalent issues encountered by students during online learning were many online tasks with the same deadline, difficulties for students to stay focused on online learning, and a lack of self-discipline that caused the student to complete the online tasks at the last minute of the timeline.

The results of this study could help educational institutions, teachers, and those who create and design online courses. They were able to comprehend the situation as it stands as well as students'

attitudes and preferences with regard to online learning. For instance, the majority of students preferred synchronous online learning, and the lecture slides and recorded lecture videos that they could watch again for review were the most significant materials to them. Lecturers might improve the quality of the notes to make it simpler for students to revise them as online notes are the most popular type of educational material among students.

Since the results of this study came from diploma programme students at a specific university, they are applicable to similar situations but cannot be used to generalise to all students enrolled in higher education. Future studies might aim to involve students from different institutions and academic programmes and assess how they perceive one another. To aid in the continual quality development of this learning approach, the elements that influence students' happiness with online learning could be explored.

5. Suggestions

Online learning is a method that gives many benefits and flexibility to the students. With the advancement of technology and internet connection, online learning should be enhanced in the future to ensure all people will receive a good education. Future research should explore the findings on respondents or students from different fields of studies. Then the data can be compared to determine similarity and pattern for different respondents. In addition, further research is required to study in detail students' preference on more specific subjects for theoretical and calculation subjects rather than generalize to theoretical and calculation subjects.

6. Co-Author Contribution

The authors affirmed that there is no conflict of interest in this article. Author 3 was responsible for literature review. Author 2 contributed to online questionnaires. Author 1, 4, and 5 was responsible for data analysis. All authors contributed to research methodology, survey design, data interpretation, and writing of the whole article.

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