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Multimodal Learning during the COVID-19 Pandemic: Exploring Students' Preferences

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Abstract: This study explores students' preferences for the various online learning activities that leveraged digital learning tools. Quantitative and qualitative data were collected from 23 education major students who learned online during the COVID-19 pandemic. Students found the multimodal activities effective in making them stay focused, engaged and acquire new knowledge and skills at a deeper level.

Keywords: Multimodality, online learning, COVID-19 pandemic

1. Introduction

During the COVID-19 pandemic, educators worldwide were compelled to transform their teaching modality entirely online to ensure continuity in their lessons. Educators had to adapt quickly to redesign their instruction as students were prohibited from being on campus for face-to-face classes. The unexpected closure of universities in Malaysia on 18 March 2020 due to the national lockdown ended students' campus life. All students were instructed to return home, where they continued to attend lessons remotely. The prolonged campus shutdown afforded educators some time to create appropriate learning activities with multimodalities by considering how students learn best to achieve the course learning outcomes.

May (2022) surmised that multimodal learning involves using various fun media to engage the learner's brain. According to Ferguson (2021, para.1), multimodal learning "engages students with content using multiple modes, or mediums of communication". In other words, multimodal learning is teaching a concept through various methods — visual, auditory, reading, writing, and kinaesthetic (Litonjua, 2020). Multimodality improves the teaching quality and enhances students' learning experience through the engagement of the aforesaid four methods. Multimodal learning creates a learning environment for students to be more engaged because they do not need to conform to a specific learning style that does not suit them (Lintonjua, 2020).

Given the aforesaid context, we, as the course instructors of a compulsory course (Educational Technology, FCE3401) had an unanticipated opportunity to explore our students' preferences for the various learning activities that leverage digital learning tools that they were familiar with as students.

2. Objective of the study

This study aims to explore students' preferences of various learning activities that they were exposed to when FCE3401 was conducted synchronously and asynchronously for 14 weeks of the semester.

3. Course descriptions

Educational Technology (FCE3401) aims to equip students with fundamental knowledge and skills in educational technology through a 2-hour lecture and a 3-hour practical session for 14 weeks. During the COVID-19 pandemic, we prepared a robust assortment of activities to target many modalities for the entire semester. In other words, supplement our content delivery with a variety of media. We prerecorded our lectures using the Loom app. The pre-recorded lectures and the corresponding PowerPoint slides were shared with the students weekly. Communications with students were mainly done through WhatsApp. Students could access the pre-recorded lectures weekly at their convenience. To ensure that students do so as scheduled, students had to participate in a weekly online quiz for each topic through a differentiated assessment system — PutraPacer. Participation in the online quiz was compulsory, but it was not graded. Learning materials such as PowerPoint slides, assignments and rubrics were uploaded to the Learning Management System — Putrablast one week before each lesson commenced. Practical sessions were conducted synchronously using GoogleMeet, where students were given hands-on experience to learn basic computer coding using Scratch. They also learned to use Canva to create an infographic poster, and lastly, they produced an Augmented Reality teaching tool using Metaverse.

4. Methods

4.1 Participants

A total of 29 Education major students enrolled in FCE3401 at the Faculty of Educational Studies, Universiti Putra Malaysia (UPM). Specifically, they were from the Bachelor of Education (Home Science) programme. They were invited to participate in an online survey at the end of the course. Twenty-three students responded to our invitation.

4.2 Instrumentation and data collection

Students responded to five items related to their preferences for online activities. The scales ranged from 1 (definitely not helpful) to 10 (definitely very helpful). Students were also asked to express their opinions on their choices on the rating scales. The items in the questionnaire were developed by the second author and were content validated by the first author of this paper.

5.0 Results and Findings

Figure 1 shows most students found the instructions and information we gave promptly every week through WhatsApp very helpful in keeping track of the weekly lectures and activities. The following two excerpts reflect the students' positive feelings:

> *Instruction in the WhatsApp group could help students with a poor internet connection to join the learning because it did not use up much internet bandwidth. Students also wouldn't be left behind and can refer back to the instruction on WhatsApp when needed (student #17)*

> *I rated this activity at 10 because all of the instructions given are easy to understand and easy for me to read again for few times if I need to (student #19)*

Figure 1: Instructions given through WhatsApp group.

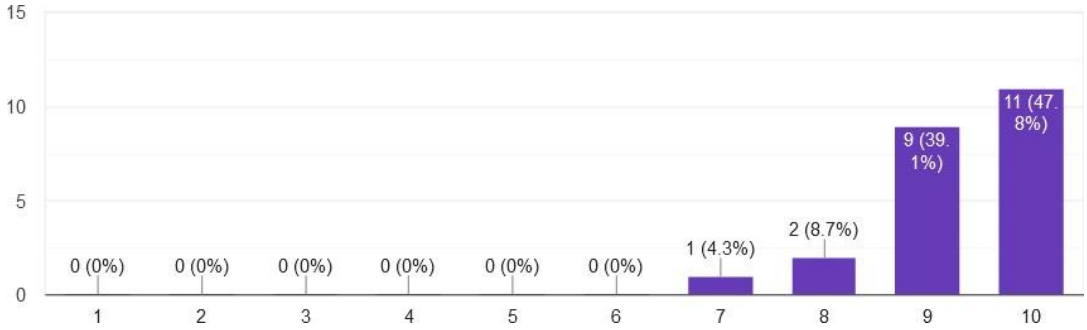


Figure 2 shows that students found the pre-recorded lectures helpful as accessing them conveniently at their own pace. They could also replay the video to understand the lessons better. Two students said the following:

> *I rated this activity at 8 because the recorded video of the lecture helped me to be disciplined on my timing and also help me to learn smoothly when the internet connection is good. The recorded video also helps to replay on the part that I'm don't really understand clearly. Overall, I am happy with all the recorded video given by Prof because it is so clear on the topic that we learn (student # 2)*
>
> *It's so convenient for me, I can watch the video many times if I cannot understand it. I can watch it when my internet access is stable (student #3)*

Figure 2: Video lectures on Loom (asynchronous learning)

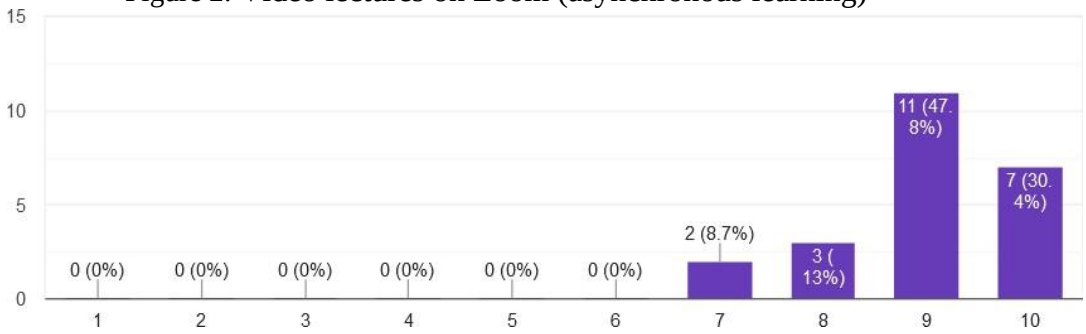


Figure 3 shows that most students found the weekly knowledge reinforcement activities to help fortify their understanding of each topic taught in the pre-recorded lecture. Students were able to gauge their knowledge of the weekly topics. They did not find the quiz a burden as the number of questions was adequate and related to the topic. One student expressed the following:

> I feel the exercise helped to enhance my understanding of the topic learned. The number of questions given was just right (student #15).

Figure 3: Knowledge reinforcement activities on PutraPacer (Pop Quiz)

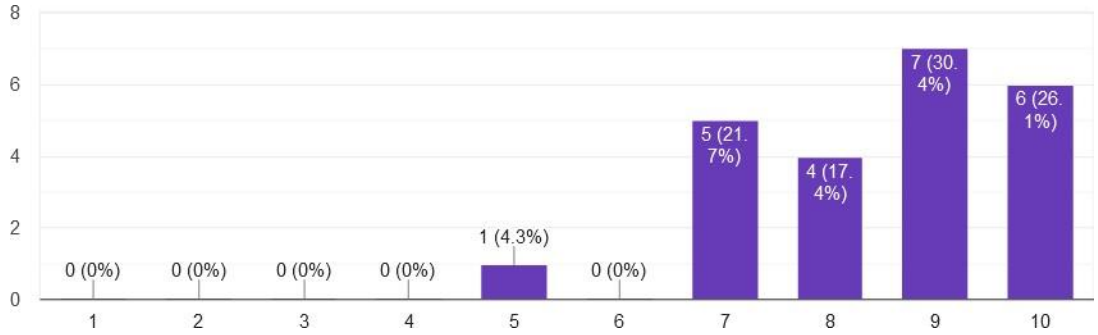
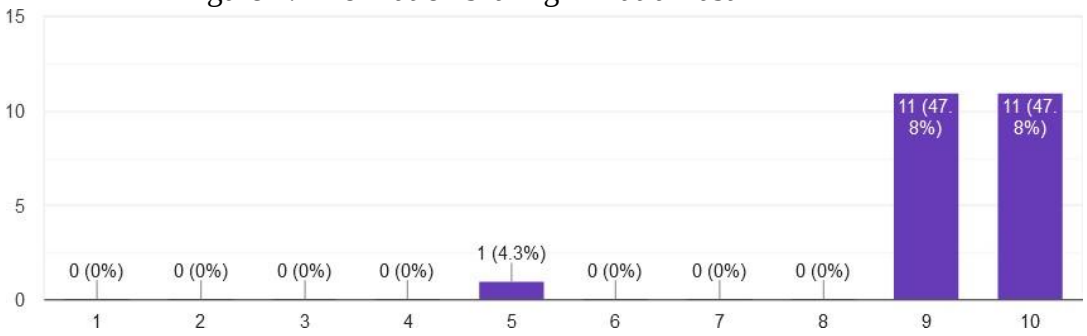


Figure 4 shows almost all students found Putrablast to be helpful in sharing relevant information about the course. Given that PutraBlast is the university's official learning management system, students were familiar with it. One student said:

> It's convenient to access it because students use it frequently to receive updates from lecturers (student #6)

Figure 4: Information sharing in PutraBlast



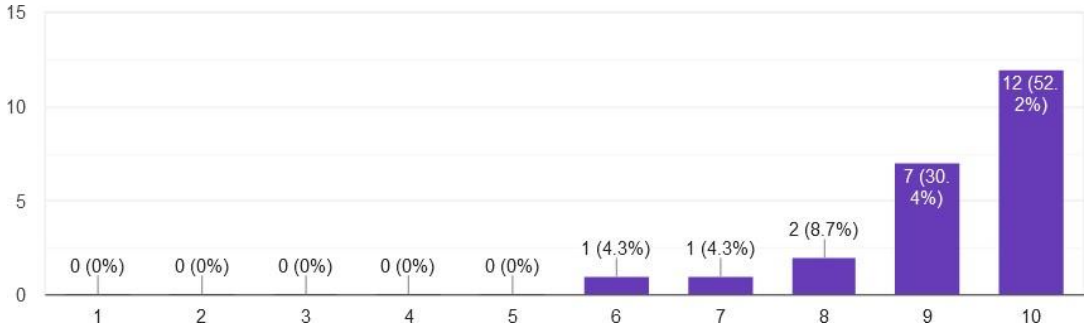
Most students found the online practical sessions through GoogleMeet beneficial (Figure 5). However, poor internet connection was a hindrance to learning. The following three excerpts captured the essence of the students' sentiments:

> *....online practical session is very good. We were able to ask our instructor questions on the spot if we didn't understand about the apps that we learned* (student #4).

> *The activity conducted in our online practical class was enjoyable, but at times the Internet access was poor. This caused me to miss some important part of the lesson. However, I was able to catch up because I recorded the session* (student #11).

> *Online practical sessions is convenient because we can learn wherever we are. However, synchronous learning may be hard for students with poor access of internet* (student #17).

Figure 5: Online practical sessions (synchronous learning)



6.0 Discussion and conclusion

This study explored students' preferences for various resources we utilised in our fully online course. We considered the resources appealing to our students as most found them helpful in their learning. Students were grateful to learn at their own pace (Wong & Md. Khambari, 2021). This is in congruence with Bdair's (2021) findings that online learning afforded flexibility, especially for students with easy access to various learning materials. Students also appreciated learning activities that required low bandwidth. Despite the positive sentiments, poor internet access was a problem for students.

To conclude, the multimodal activities we designed effectively made our students stay focused and engaged; and acquire new knowledge and skills at a deeper level. As we transition into the endemic stage where students return to campus, it is worth continuing with multimodal learning given the positive outcomes. Educators, therefore, must be proficient in implementing multimodal learning to create a holistic educational experience for their students.

For future studies, we recommend including more samples from other studies programmes to better represent the population at the Faculty of Educational Studies. A more comprehensive questionnaire should also be designed to capture more meaningful participant data.

7.0 Limitations of the Study

The data were collected through questionnaires comprising closed and opened ended questions. These data were based entirely on participants' honesty and how they perceived the digital learning tools utilised in the course. It must also be recognised that participants who participated in this study were 23 student teachers from only one programme of study at the Faculty of Educational Studies, UPM. Therefore, caution must be taken when generalising any findings for the entire population at the Faculty of Educational Studies, UPM.

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