

Students' Perception of Flipped Classroom Approach in Distance Learning During the COVID-19 Pandemic

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ABSTRACT

Flipped classroom is a form of blended learning which aims to promote active engagement in learning. This study is intended to determine students' perception of flipped classroom approach in distance learning during the COVID-19 pandemic. Padlet is an e-learning tool that is widely used in education. It is a user-friendly digital canvas, which compiles information in a single wall and is accessible at any time convenient to the learners. A series of Padlets was created to share resources and learning materials with the students. The uploaded materials include tutor's lecture notes, engaging videos, and articles. The links were made accessible to the students via Microsoft Teams channel, which provides a platform for student-tutor interaction for queries and discussion. A set of quizzes was also assigned as a reflection of their understanding of the materials given. Following this, a virtual session was allocated to discuss the topics with active participation from the students. After the session, a structured questionnaire was distributed to the students, on effectiveness of learning materials and perception towards flipped classroom. Data were analyzed using quantitative descriptive analysis. Results indicate that the majority of the students found the learning materials were relevant and engaging. Most of them agreed that flipped classrooms approach increased self-motivation and helped them understand the topics as it enhanced active and independent learning. In addition, 80% of them suggested that flipped classroom should be implemented in

other subjects. These findings help to better understand the learning needs in preparation to produce knowledgeable students in the future.

Keywords: Flipped classroom, distance learning, online learning, Padlet

INTRODUCTION

The COVID-19 pandemic has created a drastic change in education, with the sudden rise of online learning using various digital platforms. Restriction of physical gathering in the classroom has shifted the usual face-to-face classes into distance learning. Distance learning is a method of studying in which the main elements include physical separation of teachers and students during instruction and the use of technologies to facilitate student-educator and student-student communication. Teachers and students do not meet in the classroom but use the internet, emails, or any available application for the instruction that is pre-set on the learning platform. There are various types of distance learning which include synchronous learning, asynchronous learning, hybrid (combination of synchronous and asynchronous) learning, and electronic learning or e-learning. Hybrid learning, also referred to as blended learning, is an approach that combines online educational materials with traditional in-person classroom methods (Johnson et al., 2022).

Flipped classroom, which is a form of blended learning aims to promote active and independent learning. In this model, students explore the content outside of class by viewing the resources such as pre-recorded lecture videos and reading articles via online platforms (Estes et al., 2014). This provides a greater flexibility for students to work at their own time and pace. Since the preparatory work is done earlier, the class session can be utilized for interactive activities, exercises and discussion on the topic that involve students' active participation in class. Flipped classroom requires students to assume more responsibility for their learning experience and allows students to take more concern for their own learning (Roehl et al., 2013; Al-Samarraie et al., 2020).

In Malaysia, institutions at all levels are still using traditional methods of learning. However, due to the COVID-19 outbreak, the traditional classroom has shifted to distance learning which requires the use of technologies to ensure continuous learning. For this, implementation of flipped classroom approach is seen to be one of the good alternatives. Therefore, this study aims to determine students' perception of flipped classroom approach in distance learning during the COVID-19 pandemic.

LITERATURE REVIEW

Traditional vs Flipped Classroom

In traditional educational classrooms, the learning process starts from the tutor to the students. Students listen to the lecture passively to absorb information transmitted by their tutors and do some exercises or homework after the lecture to assess their understanding. On the other hand, in flipped classroom models, activities traditionally conducted in the classroom become homework, and activities that normally assigned as homework become classroom activities

(Bergmann & Sams, 2012). The flipped classroom involves preparatory work outside the classroom, and this is the key difference between traditional and flipped learning. Students must come to class prepared to participate, and when in class are ready to participate (Prust et al., 2015). Therefore, they are required to complete the preparatory work before attending the classroom sessions. The materials are usually in digital format such as recorded lectures, tutorial videos, notes and reading articles. With the rise of technology and availability of internet access, content review could be done at anytime and anywhere convenient to the learners.

Flipped classroom approach gives more flexibility to tutors to utilize class time to focus on active learning activities, collaborative work, demonstrations, small group tutoring and discussion sessions (Peisachovich et al., 2016). This methodology fulfills students' learning needs as they can discuss their ideas, ask questions, and clarify any misconceptions. The role of tutors is more of facilitators for self-directed learning rather than authority. Instead of focusing on the presentation of information, tutors use class time to focus on important gaps in learners' understanding and help them to relate the information they have gathered before the class (Graziano, 2017).

The flipping method promotes active and independent learning which provides more time for self-paced activities. Active learning focuses on student activity and engagement in the learning process (Prince, 2004; Hyun et al., 2017). According to Bonwell and Eison (1991), teaching methods that promote active learning are those "instructional activities involving students in doing things and thinking about what they are doing". Therefore, activities should be designed in such a way that the important learning outcomes are emphasized and require student participation (Prince, 2004; Roehl et al., 2013).

Implementation of flipped classrooms is growing in health science fields such as medical, nursing, dentistry, and pharmacy. The use of flipped classroom approach for medical students (Entezari & Javdan, 2016; Sourg et al., 2023), pharmacy students (Pierce & Fox, 2012; Barua et al., 2014) and nursing students (Saunders et al., 2017) reported greater satisfaction and enhanced students' learning experience compared to traditional lectures. Several studies in nursing programs reported higher theoretical knowledge and skill scores (Betihavas et al., 2016; Li et al., 2020) as the flipped learning promotes person-centered care, enhances transition to the professional role and prepares students well for their clinical placement (Saunders et al., 2017). Tune et al. (2013) found that flipped classroom model is effective to disseminate physiological concepts to graduate students. In the study, they reported that participants in the flipped course scored significantly higher in cardiovascular, respiratory, and renal sections. Another study by Entezari and Javdan (2016) concluded that flipped classrooms coupled with active learning strategies could help improve students' performance and attitude in the introductory Anatomy & Physiology course.

Even though many studies reported positive findings, some studies reported no significant difference in student's performance between the traditional and flipped classroom (Shiau et al., 2018; Sezer & Esenay, 2022; Sourg et al., 2023). There may be a number of factors associated with these results, such as students' acceptance and readiness towards a new approach of learning, tutors' level of teaching experience, and tutors' effort, as flipped method needs a significant workload to ensure it reaches its objectives. Other challenges include technical difficulties, time management, resources and self-discipline (Crothers et al., 2017; Al-Samarraie et al., 2020).

Validation of feedback questionnaires for monitoring flipped classroom activities was successfully reported in a study conducted for a group of undergraduates in the Pharmacy program (Barua et al., 2014). The questionnaire was adapted from a validated questionnaire developed by Pierce and Fox (2012). The responses were based on a five-point Likert scale and the questionnaire was revalidated to suit the needs of the study. The questions include availability and relevance of pre-reading materials, classroom arrangement, effectiveness of flipped classroom sessions on learning, and instructor's skills during the flipped classroom activity. With overall Cronbach's alpha value of 0.912, the authors recommended using the feedback questionnaire for monitoring flipped classroom activities wherever appropriate (Barua et al., 2014).

Padlet

Padlet (www.padlet.com) is a free web 2.0 application that provides a virtual wall for interaction between tutor and learners. It may be used for pre-class preparation, in-class activities, post-class consolidation and group project work. Padlet is a user-friendly tool and accessible from any internet-enabled device via a standard website browser. It is relatively easy to use for both tutors and students. Tutors do not require any special training and students do not need to create an account or login to post questions or comments on existing Padlet (Fisher, 2017).

Padlet has been shown to reduce communication gap between students, tutor, and peers. Brown et al. (2014) reported that students were comfortable with the ability to share their views anonymously particularly in a large classroom. Other studies also found that Padlet minimized the barrier that students felt in contributing to the discussion with tutors (Ellis, 2015). Some students may be in the process of learning how to discuss an issue as a group in a formal setting. They may also be shy or fear of speaking in public (Fuchs, 2014). Therefore, this feature that enables them to post anonymously is a great opportunity to share their thoughts with others. However, the disadvantage of this feature is that tutors do not have the control of the students' posts in which the content may not be appropriate or irrelevant to the subject.

Padlet provides a platform for generating new knowledge and enhances student engagement with the subject materials. Hence, it promotes active and independent learning, increases self-motivation, and creates positive learning experiences (Dewitt et al., 2015; McLean et al., 2016; Naamati-Schneider & Alt, 2023).

METHODS

Study participants were the first year of undergraduate students enrolled in a medical program at the Faculty of Medicine, Universiti Teknologi MARA, Malaysia. The students were encouraged to take part voluntarily and anonymously in this study. All information was kept confidential and protected.

This study was held during the first semester of the program when students were undergoing the Musculoskeletal System module. A series of Padlets was created to share resources and learning materials with the students. The Padlets comprehensively cover the basic and essential points of the lecture topics in physiology of the musculoskeletal system. The uploaded materials include lecturers' notes, engaging videos, and concise reading articles. Students were required to view all the shared content online at any time convenient to them. In

addition, a set of quizzes and questions were assigned as an exercise and reflection of their understanding of the materials posted on the Padlet wall. The links for the series of Padlets were made accessible to the students via Microsoft Teams channel, which provides a platform for student-lecturer interaction. A virtual interactive session was scheduled to discuss the essential points of the lecture topics, as well as quizzes and exercises which were assigned earlier prior to the session.

After the class session, a structured online questionnaire using Google Form was circulated to the students to assess their perception of flipped classroom approach in distance learning. The questionnaire was adapted and modified from a validated questionnaire (Barua et al., 2014) according to the needs of this study. The response options of the questionnaire items were based on five-point Likert-type scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree) except for a question on their opinion of flipped classroom mode to be implemented in other lectures (yes or no) and an open-ended question on their suggestion for improvement in learning methods. The Likert-type scale was used for questions on the effectiveness of learning materials, contribution of flipped classroom to learning, and skill and responsiveness of the lecturer during the flipped classroom session. Data were collected and analyzed using quantitative descriptive analysis.

RESULTS AND DISCUSSION

Out of 226 students, 175 students responded anonymously to the questionnaire, giving a response rate of 77%. Table 1 shows students' responses on the learning materials prepared for the flipped classroom session. The majority of respondents agreed that the learning materials were available on a suitable online platform, adequate time was given to study the learning materials, and the resources such as reading articles, videos, lecture notes and quizzes were relevant and helped them understand the topics. Based on the response, most of them (89.7%) agreed that the resources were uploaded on a suitable online platform and easily accessible at anytime convenient to them.

Once the learning materials had been uploaded on the Microsoft Teams, students were given three days to view and explore the content in the Padlet. On the fourth day, a class session was scheduled to discuss the topic. Based on the response, about 80% of them found that the duration given was adequate to study the shared resources. Completion of the preparatory work is one of the challenges in implementing flipped classroom. Therefore, tutors need to ensure that students have completed the task so that they can apply the concept and content in class. Time management is crucial to get the tasks done to achieve optimal knowledge and understanding of the topics for discussion during in-class sessions (McLean et al., 2016).

The uploaded learning materials include reading articles, videos, lecture notes, and quizzes. The majority of respondents agreed that all the items were relevant and helped their understanding of the topics. Of all those items, videos and lecture notes carried the highest percentage of respondents who strongly agreed on their relevance (73.7% and 74.9% respectively). The videos were curated from YouTube with a duration of no longer than 15 minutes. The optimal duration of video length with audiovisual components were able to engage students to explore and understand the topics. Video materials are considered invaluable, as they could be reviewed on multiple occasions, at any preferred time and place (Crothers et al., 2017).

Lecture notes were provided in Portable Document Format (PDF) slides highlighting essential points with some elaborations. The majority of respondents found that the notes are very useful and is the main resource for the flipped classroom session. Quiz was also included in the learning materials. It is a form of gamification that makes learning fun and enjoyable. A set of quizzes was prepared using the Quizizz application which composed of 18 questions related to the shared materials. Over 90% of the respondents agreed that the quizzes were relevant and helped them understand the topics.

Table 1
Students’ response on learning materials prepared for the flipped classroom

Statement	Percentage of respondents (%)				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Learning materials were available on suitable online platform	64.0	25.7	8.0	1.7	0.6
Adequate time was given to study the learning materials	51.4	29.1	15.4	2.9	1.1
The reading materials were relevant and helped me to understand the topics	54.9	28.0	16.0	0.6	0.6
The videos were relevant and helped me to understand the topics	73.7	18.3	7.4	0.6	0.6
The lecture notes were relevant and helped me to understand the topics	74.9	19.4	5.1	0.6	0.6
The quiz was relevant and helped me to understand the topics	68.6	24.6	6.9	0.0	0.0

Table 2 shows students’ responses on the contribution of the flipped classroom to learning. The majority of respondents agreed that the flipped classroom approach increased motivation to pursue further learning (82.9%), increased level of understanding of the topic (86.2%) and enhanced active and independent learning (86.9%). In addition, 80% of them agreed that more lectures should be conducted in the flipped classroom mode as depicted in Figure 1. These findings show their acceptance towards flipped classroom as a new learning approach. Similar findings were reported in several studies involving undergraduate students enrolled in the Medical and Health Sciences programs (Pierce & Fox, 2012; Barua et al., 2014; Yañez et al., 2023; Sourg et al., 2023). One of the reasons for this could be due to flexibility and greater applied learning opportunities in student-centered learning (Tune et al., 2013). In flipped classes, students could have more interaction and communication with their instructors and peers, and be more engaged by this learning method (Sourg et al., 2023). In addition, implementing varieties of learning activities could bring a positive influence on students’

motivation and involvement since every student has different learning styles (Haak et al., 2011).

Table 2
Students' response on contribution of flipped classroom to learning

Statement	Percentage of respondents (%)				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
The flipped classroom model increased my motivation to pursue further learning	44.6	38.3	13.1	2.9	1.1
The flipped classroom model increased the level of my understanding of the topics	53.1	33.1	9.7	4.0	0.0
The flipped classroom model enhanced active and independent learning	54.3	32.6	9.7	1.7	1.7

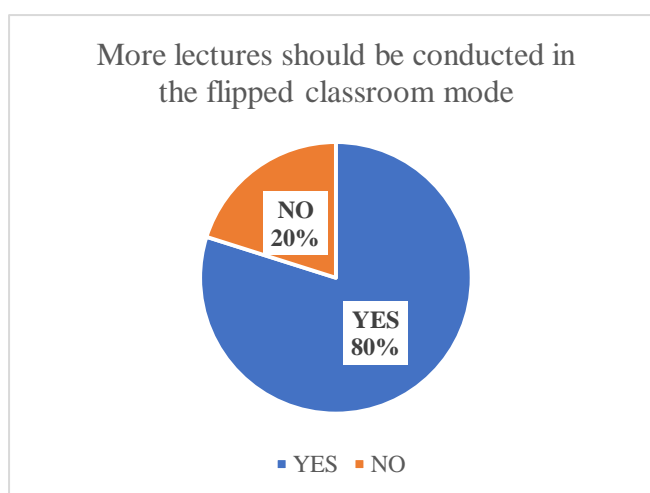


Figure 1: Students' opinion on implementation of flipped classroom in other lectures

Table 3 shows students' responses on skill and responsiveness of the lecturer for the flipped classroom activity. The majority of respondents agreed that the lecturer was able to expand the content of each lecture topic (91.4%), stimulate students' interest to learn (90.8%) and always be available and responsive towards questions (96.0%). 93.7% of respondents also found that the lecturer's presentation was clear, understandable, and well organized, and the time spent for the class activity was adequate as agreed by 91.4% of them. Tutors play a major role in facilitating students for self-directed learning. It is very important to use class time efficiently to focus on important gaps in learners' understanding and help them to relate the information they have gathered during the pre-class preparation (Graziano, 2017).

Table 3
Students' response on skill and responsiveness of the lecturer

Statement	Percentage of respondents (%)				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Lecturer was able to expand the content of each lecture topic	58.3	33.1	7.4	0.0	1.1
Presentation of the lectures was clear and organized	64.0	29.7	5.1	0.6	0.6
Lecturer stimulated students' interest to learn	61.7	29.1	8.0	0.6	0.6
Lecturer was available and responsive towards queries and questions	70.9	25.1	2.9	0.6	0.6
Adequate time was spent for the flipped classroom activity	65.1	26.3	6.9	1.1	0.6

LIMITATIONS OF THE STUDY

There are few limitations in this study. One of them is the respondents in which only one group of students participated. A bigger sample size would give a better picture of the responses. The timing of the study was also limited to only one module which was the Musculoskeletal System. In this module, there are only three Physiology lectures, whereas other modules for example Cardiovascular System comprises 12 lectures. This discrepancy would give a different response feedback when flipped classroom is implemented. Flipped classrooms require significant workload and effort from the tutors. The expectation may vary from tutor to tutor and coordination among staff is important to ensure standardization in the grading and quality of assignment.

In this study, Padlet was used as a platform to share learning materials and resources. It is a user-friendly tool, easily accessible, and bridges the gap between tutors and students. However, tutors have no control of what students may type or post on the wall. The content created may not be appropriate or relevant to the subject. The wall may also be overwhelmed with lots of information that could end up with confusion among the learners.

CONCLUSION AND SUGGESTIONS

This study shows that the majority of students agreed that flipped classroom approach gives positive impacts to their learning. Flipped classrooms increased their self-motivation, enhanced active and independent learning and helped them understand the topics. The use of Padlet in the study has shown to be effective in sharing learning resources. Students are able to preview key concepts of a subject and reinforce things they have learned.

Therefore, there is a need for tutors to take training in flipped classrooms to provide thorough guidance of the concept for the benefit of students. Time management and commitment are crucial to achieve the objectives of this mode of learning. Tutors are encouraged to utilize educational technologies such as web 2.0 tools to provide optimal knowledge and content for discussion. Padlet is an example of an application that seems to be a good tool to produce innovative and knowledgeable students with higher levels of thinking skills. The challenge of having full participation and engagement from the students will remain, hence tutors are required to be creative and find various ways to produce an effective learning environment.

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Conflict of Interest

The authors declared that there is no conflict of interest in this article.



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Authors' Contributions

Author 1 carried out the fieldwork and prepared the draft of the write-up. Author 2 overlooked the write-up of the whole article.

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