

Research Article

Influence of Students' Engagement towards Students' Achievement between the Quiz-Based Micro-Lecture Approach and Discussion-Based Micro-Lecture Approach in Flipped Classroom Environment

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Abstract: Student-centered approaches that attempt to embrace technology have become the teaching medium due to recent changes in higher education. Therefore, the efficacy of educational materials and instructional methods in teaching and learning is critical. In higher education institutions, the micro-lecture approach can be used as a self-study medium or as an educational technique to enhance the learning process. One of the most recent approaches to using video as a learning tool is flipped classroom. As a result, the micro-lecture approach in teaching and learning is linked to the flipped classroom. Interaction is required in the teaching and learning process to engage students, and there is a relationship between interactivity and engagement. Aside from that, student engagement has been shown to have a significant impact on student achievement. The purpose of this study is to compare the influence of student engagement on student achievement in a flipped classroom environment between the quiz-based micro-lecture approach and the discussion-based micro-lecture approach. In a flipped classroom environment, linear regression was used to investigate the influence of student engagement on student achievement between the quiz-based micro-lecture approach and the discussion-based micro-lecture approach. In a flipped classroom environment, the results of this study show that there is no significant difference in student engagement between the quiz-based micro-lecture approach and the discussion-based micro-lecture approach. Students in the quiz-based micro-lecture approach outperform students in the discussion-based micro-lecture approach in each test, even though student engagement has no effect on student achievement. Furthermore, students in the quiz-based micro-lecture approach were more enthusiastic and made more positive comments about actively participating in learning activities than students in the discussion-based micro-lecture approach. Based on the findings of this study, many recommendations can be made to promote collaboration, efficacy, and collegiality, as well as to investigate the opportunities for student engagement and achievement provided by flipped classroom environments using quiz-based micro-lectures. The study's findings have some commercialization potential. The micro-lecture approach can improve the learning outcomes for the target audience. It is applicable to industries other than education, such as research and development.

Keywords: Micro-lecture; Flipped Classroom; Students Engagement; Students Achievement



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1. INTRODUCTION

Student-centered approaches that attempt to embrace technology have become the teaching medium due to recent changes in higher education. In higher education, technological advancements

have influenced a new intervention paradigm by introducing new methodologies and innovation tools that move away from traditional approaches and towards a student-centered approach (Mingorance Estrada et al., 2019). Furthermore, student-centered learning lays the foundation for a more supportive and engaging learning environment in which the instructor acts as a facilitator and injector of ideas, while students act as implementers in the development and exploration of those ideas (Ramli et al., 2023). Although many public and private colleges and universities in Malaysia still use the traditional method, e-learning, blended learning, and virtual classrooms are becoming more popular. Therefore, the efficacy of educational materials and instructional methods in teaching and learning is critical. In higher education institutions, the micro-lecture approach can be used as a self-study medium or as an educational technique to enhance the learning process. One of the most recent approaches to using video as a learning tool is flipped classroom. As a result, the micro-lecture approach in teaching and learning is linked to the flipped classroom. Interaction is required in the teaching and learning process to engage students, and there is a relationship between interactivity and engagement. Aside from that, student engagement has been shown to have a significant impact on student achievement (Abubakar et al., 2017; De Villiers & Werner, 2016; Rajabalee et.al, 2020).

In order to help the students develop 21st-century skills, the flipped classroom has grown in popularity recently, especially during COVID-19 (Latorre-Coscolluela et al., 2021). The flipped classroom is a blended learning strategy in which students watch multimedia video lectures before class, followed by interactive exercises and activities in class (Christensen et al., 2013; Johnson & Renner, 2012; Nwosisi et al., 2016). Numerous studies evaluating the effectiveness of the flipped classroom have already been completed (Karabulut-Ilgü et al., 2017; Koh, 2019; Mandasari & Wahyudin, 2021; Sergis et al., 2018). This study involved educators from different educational levels and contexts. The micro-lecture approach works well in flipped classrooms. A micro-lecture is a concise audio or video presentation that focuses on a single, clearly defined topic, according to Educause (2012). In a flipped classroom, using micro-lectures is becoming more and more common, according to Sweet (2014). The micro-lecture is also a useful technique that can be applied in a variety of contexts, including face-to-face instruction, blended learning, and online learning. Recent studies have found that the micro-lecture is a modern technology product because it is a teaching method that attracts students' attention, promote learning, and boost academic performance (Han, 2019; Tianjiao, 2020).

2. METHOD & MATERIAL

The purpose of this study is to compare the influence of student engagement on student achievement in a flipped classroom environment between the quiz-based micro-lecture approach and the discussion-based micro-lecture approach. The pre-class micro-lectures, in-class and out-of-class learning activities, and the post-test were the materials and instruments used for the study because it placed a strong emphasis on quantitative data. A two-group post-test-only randomised experiment design was used to study an 80-student sample enrolled in an Information and Communication Technology (ICT) course at a Malaysian university. The students were randomly split into two groups and assigned to either the experimental group, which was given a micro-lecture with quizzes, or the control group, which was given a micro-lecture with discussions. Prior to class, both groups watched the micro-lecture and participated in educational activities. The micro-lecture was viewed by both student groups on a different learning platform. Bloom's Taxonomy, Gagne's Nine Events of Instruction, Instructional Design Principles, Technology Competency Standards, Understanding and Avoiding Plagiarism, and Open Educational Resources were all covered in this study. Each subject was tested to see how well the students understood it. Each test consisted of ten multiple-choice questions about the lecture topic. Each test is completed after the class lesson.

Students who participated in the quiz-based micro-lecture approach watched them on Edpuzzle before class, while those who participated in the discussion-based micro-lecture approach watched them on Padlet. This study includes a multiple-choice quiz and short answer questions in the micro-lecture. Before moving on to the next slide, students must respond to the questions. As a result, it is referred to as a quiz-based micro-lecture rather than a discussion-based micro-lecture, which is a typical video with a discussion. In this study, a micro-lecture was created by combining a video recording of ICT topics displayed on a computer screen with audio narration and images. A micro-lecture with the same content as a classroom lecture is prepared at a slower, more deliberate pace. They took part in educational activities in class with their classmates. After the topic was introduced, each student in each group was required to take a post-test. The researcher collected quantitative data (test results) from the students, combined sets of data, and developed meaningful interpretations to answer the research questions. Six tests' results were analysed quantitatively. In a flipped classroom environment, linear regression was used to investigate the influence of student engagement on student achievement between the quiz-based micro-lecture approach and the discussion-based micro-lecture approach.

3. FINDINGS

In a flipped classroom environment, the results of this study show that there is no significant difference in student engagement between the quiz-based micro-lecture approach and the discussion-based micro-lecture approach. The r square is .044; therefore, about 4.4% of the variation in the students' achievement explained by students' engagement. $p = .192$, which is more than 0.05, and the result indicates that students' engagement is no significant to influence the students' achievement. On the other hand, the r square is .052; therefore, about 5.2% of the variation in the students' achievement explained by students' engagement. $p = .159$, which is more than 0.05, and the result indicates that students' engagement is no significant to influence the students' achievement in discussion-based micro-lecture,

4. DISCUSSION

The findings of this research reveal that students' engagement is no significant difference to influence the students' achievement between quiz-based micro-lecture approach and discussion-based micro-lecture approach in flipped classroom environment.

Contradictory to findings in the literature, many researchers in previous studies suggested that student engagement was positively correlated with academic achievement as the engagement was one of the predictors that could have positive interrelation with the students' academic achievement (Abubakar et al., 2017; De Villiers & Werner, 2016; Rajabalee et.al, 2020). Student engagement produces a significant effect on achievement. Fredricks & McColskey (2012) supported this statement as student engagement brought a meaningful impact on student performance. Furthermore, Lee (2014) studied that student engagement could have a significant influence on students' academic success. Moreover, Gunuc (2014) agreed that student engagement had a significant relationship with academic achievement.

Despite many previous studies were shown student engagement was related to achievement, there are still many findings suggesting that engagement is not a predictor of the academic performance. Osman et al. (2016) asserted that student engagement was not significant positively correlated with learning the outcome. In a flipped classroom context, Jamaludin et.al (2016) stated that student engagement had no interrelation on the levels of achievement. Besides that, Yekta & Alighadr

(2016) stated that there was no significant relationship between the behavioral, cognitive, and emotional engagement in the high-stakes and low-stakes exam. Moreover, Yue & Tan (2016) found that student engagement domains did not show any significant prediction of student academic achievement.

In this study, although student engagement is no significant influence on students' achievement, the students in the quiz-based micro-lecture approach score better than the students in the discussion-based micro-lecture in each test. Besides that, students in the quiz-based micro-lecture approach had higher excitement and positive comments to engage actively in learning activities compared to the students in the discussion-based micro-lecture approach. They need to complete each quiz question which embedded in the micro-lecture before class which assists them in gaining deeper learning in the topics, and able to engage effectively in class. With the quiz-based micro-lecture approach and the interactive learning activities in class, students have positive feedback as they gain a lot of knowledge and information. This finding proves that the flipped classroom environment supports social constructivism. Jones (2012) stated that learning was a social activity where the learners constructed the knowledge through social interaction, communication, collaborative activity with others. Besides that, micro-lecture approach in a flipped classroom environment reduces the cognitive load of the students' learning which contribute to their academic performance. There were several studies supported that flipped classroom elements could reduce student cognitive load (Bergmann & Sams, 2012; Hamdan et al., 2013; Seery and Donnelly, 2012).

5. CONCLUSION

Based on the findings of this study, many recommendations can be made to promote collaboration, efficacy, and collegiality, as well as to investigate the opportunities for student engagement and achievement provided by flipped classroom environments using quiz-based micro-lectures. The study's findings have some commercialization potential. The micro-lecture approach can improve the learning outcomes for the target audience. It is applicable to industries other than education, such as research and development.

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