EXPLORING THE IMPACT OF CASE-BASED DISCUSSIONS ON STUDENT UNDERSTANDING AND ENGAGEMENT IN AN ASYNCHRONOUS ONLINE LEARNING ENVIRONMENT

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Abstract

This study investigates the impact of case-based discussions on student understanding and engagement within an asynchronous online learning environment. Employing a pre-experimental design, 12 students enrolled in the Master's program in Early Childhood Education at Universitas Terbuka participated in the research. The students were engaged in case-based discussions over five weeks, and their understanding was assessed through evaluation rubrics, while engagement was measured via forum participation analysis and questionnaires. The results showed a strong positive correlation between engagement and understanding, with a Pearson correlation coefficient of 0.601 ($p < 0.05$). The findings highlight that students who were more actively engaged in the discussions demonstrated a better understanding of the course material. This study concludes that case-based discussions are an effective strategy to foster student engagement and deepen understanding in asynchronous online learning environments. The implications suggest that this method can be a valuable pedagogical tool for enhancing learning outcomes in various educational contexts, particularly in online learning frameworks.

Keywords: asynchronous learning, case-based discussion, student engagement, understanding, online education

1 INTRODUCTION

Online learning has become an important element in higher education, especially in recent years, in response to various global dynamics, including the COVID-19 pandemic. One popular online learning model is asynchronous learning, where learners and educators do not interact directly in real time, but use digital platforms to communicate and deliver learning materials (Zhu et al., 2020). Asynchronous learning offers time and space flexibility for college students, allowing them to learn according to their personal schedule (Johnson et al., 2021). This model is very useful for students who face various obstacles, such as time limitations or geographical access to educational resources (Chen et al., 2022).

Ideally, an asynchronous learning environment is expected to provide an immersive learning experience, where students can actively engage in the learning material and develop a deep

understanding of the topics being studied (Rini & Sawitri, 2022). This can be achieved through the use of learning strategies that facilitate in-depth interactions, such as case study-based discussions (Ahmed et al., 2019). Case studies allow students to relate theory to practical situations, thereby improving their understanding of the concepts being taught (Brown & Green, 2020). Furthermore, in asynchronous learning, case-study-based discussions allow students to reflect and explore problems independently before engaging in dialogue with their peers (Park et al., 2021).

However, despite its great potential, in reality, asynchronous learning often experiences challenges in terms of student engagement (Noskova et al., 2021). Research shows that many students feel less motivated and isolated in an asynchronous online learning environment (Lim et al., 2020). The limitations of direct interaction between students and lecturers as well as between fellow students can reduce their level of involvement in the learning process (Garrison, 2022). In addition, distractions from the outside environment also often reduce students' focus on the tasks given (Moore et al., 2021). This problem is further exacerbated by the lack of prompt feedback from lecturers, which can leave students feeling confused or frustrated (Smith et al., 2023).

Facts on the ground show that most college students tend to spend their time passively in asynchronous learning, only reading the material and doing assignments without actively participating in the discussions offered by the learning platform (Young et al., 2021). As a result, their understanding of the material is often superficial, and their ability to apply knowledge in real contexts is severely limited (Meyer & Jones, 2019). This raises the question of whether the case study-based discussion method can be an effective solution to increase student engagement and understanding in an asynchronous learning environment (Larson & Sung, 2021).

Previous research has discussed the importance of active involvement in asynchronous learning, but there is a lack in the literature that specifically explores the impact of case study-based discussions on student understanding and engagement (Wang et al., 2020). While some studies suggest that this method can increase engagement, in-depth empirical evidence regarding its influence on conceptual understanding is still limited (Jang & Kim, 2022). This creates a significant research gap, especially in the context of higher education and online learning (Asikainen et al., 2023).

This study aims to fill this gap by exploring the impact of case study-based discussions on student understanding and engagement in an asynchronous learning environment (Collins & Pratt, 2020). The novelty of this study lies in its focus on an asynchronous learning model combined with a case study-based discussion method, which has not been widely explored in previous studies (Mason & Chang, 2022). By conducting this research, we hope to contribute to the development of more effective online learning methods, especially in facilitating student understanding and engagement in the digital era (Bannister & Schreiber, 2023).

One of the solutions offered by this study is the integration of case study-based discussions as a learning strategy in an asynchronous environment, which is believed to increase students' active involvement and deepen their understanding of the concepts learned (Gurung et al., 2021). By providing practical context through case studies, students can become more deeply engaged and motivated to participate in discussions with their peers, which in turn can enrich their understanding (Powell & Smith, 2022).

The main objective of this study is to test whether case-study-based discussions can significantly improve student engagement in an asynchronous learning environment, as well as to evaluate its impact on their understanding of the concepts taught (Jones et al., 2021). This research will also explore how this method can affect the overall student learning experience and how its application can be adapted to different educational contexts (Jin & Choi, 2021). Finally, this study aims to provide practical recommendations for lecturers in designing a more inclusive and effective online learning environment (Green et al., 2020).

Through this research, it is hoped that it can provide new insights into how case study-based learning methods can be applied effectively in the context of online learning, especially in an asynchronous environment (Kim et al., 2022). Thus, this research not only contributes to the academic literature, but also to educational practice in the field (Simons & Lee, 2021). The results of this study are expected to help educators to design a more interactive and meaningful learning experience for students, so that they can improve their overall learning outcomes (Stewart et al., 2023).

2 RESEARCH METHOD

This study uses a pre-experimental design to explore the impact of case study-based discussions on student understanding and engagement in an asynchronous online learning environment. The pre-experimental design was chosen because this study only involved one sample group without a control group, so the analysis was carried out by comparing the data of the results of

discussion and involvement before and after the treatment. This approach is suitable for evaluating the effects of new learning strategies in the context of online classes.

The population in this study is students of the Master of Early Childhood Education program at the Open University who are enrolled in the course "Perspectives and Approaches in Early Childhood Education Research." The sample of this study consisted of 12 students who voluntarily participated in the research and were involved in case study-based discussions during the online learning period. The samples were selected purposively to ensure that they had a background appropriate to the context of the research.

The data collection process was carried out for five weeks of case study-based discussions on an asynchronous online learning platform. Data is collected through two main stages. First, data on student involvement in discussions was obtained from recordings of their activities in online discussion forums, including the number of posts, responses, and the quality of their contributions. Second, student academic comprehension data is measured through the evaluation of discussions given at the end of each discussion session, where students are required to answer questions related to the case study discussed.

The main instruments used in this study are the discussion evaluation rubric to assess students' academic understanding and the participation questionnaire to evaluate their level of involvement in the discussion. The discussion evaluation rubric is designed to assess students' conceptual understanding of the topics discussed, while the participation questionnaire consists of items that measure the frequency, quality, and relevance of students' contributions to online forum discussions. In addition, analysis of online discussion activity logs is also used as additional data.

The collected data was analyzed quantitatively using descriptive statistics and correlation. Averages and standard deviations are calculated for student engagement and understanding in discussions. To measure the relationship between engagement and understanding, Pearson correlation analysis was conducted. This analysis was used to find out whether there was a significant relationship between the level of student involvement in case study-based discussions and their level of understanding of the material taught. All analyses are carried out using the latest version of SPSS statistical software.

3 RESULT AND DISCUSSION

3.1 RESULT

To interpret the results of the correlation between student engagement in case-study-based discussions and their academic understanding, we can look at two important elements of the Pearson correlation test conducted:

3.1.1 Correlation Coefficient (r)

Pearson's correlation coefficient, denoted by r, is a value that indicates the strength and direction of the relationship between two variables. The value ranges from -1 to 1:

- r = 1: A perfect positive relationship, where an increase in one variable is always followed by an increase in another variable.
- r = -1: A perfect negative relationship, where an increase in one variable is always followed by a decrease in another.
- r = 0: There is no linear relationship between the two variables.

In the study, the resulting correlation coefficient showed a positive relationship between engagement and understanding. The higher the involvement of students in the discussion, the better their understanding of the material being taught. If the correlation coefficient is close to 1, then the relationship between the two variables is very strong.

3.1.2 Nilai p (p-value)

The ppp value indicates whether the correlation found is statistically significant or not. In hypothesis testing, we usually use a significant limit (alpha level) of 0.05 (or 5%):

- $p < 0.05$: A statistically significant correlation, meaning that there is enough evidence to state that the relationship between the two variables is not a coincidence.
- $p > 0.05$: The correlation is not statistically significant, meaning that we cannot be sure that there is a strong relationship between the two variables.

If the results of the correlation analysis show $p<0.05$, this means that there is a statistically significant relationship between student engagement and their understanding. If the p-value is greater than 0.05, then the result of the correlation is not significant, and we cannot assume that the relationship is strong or real.

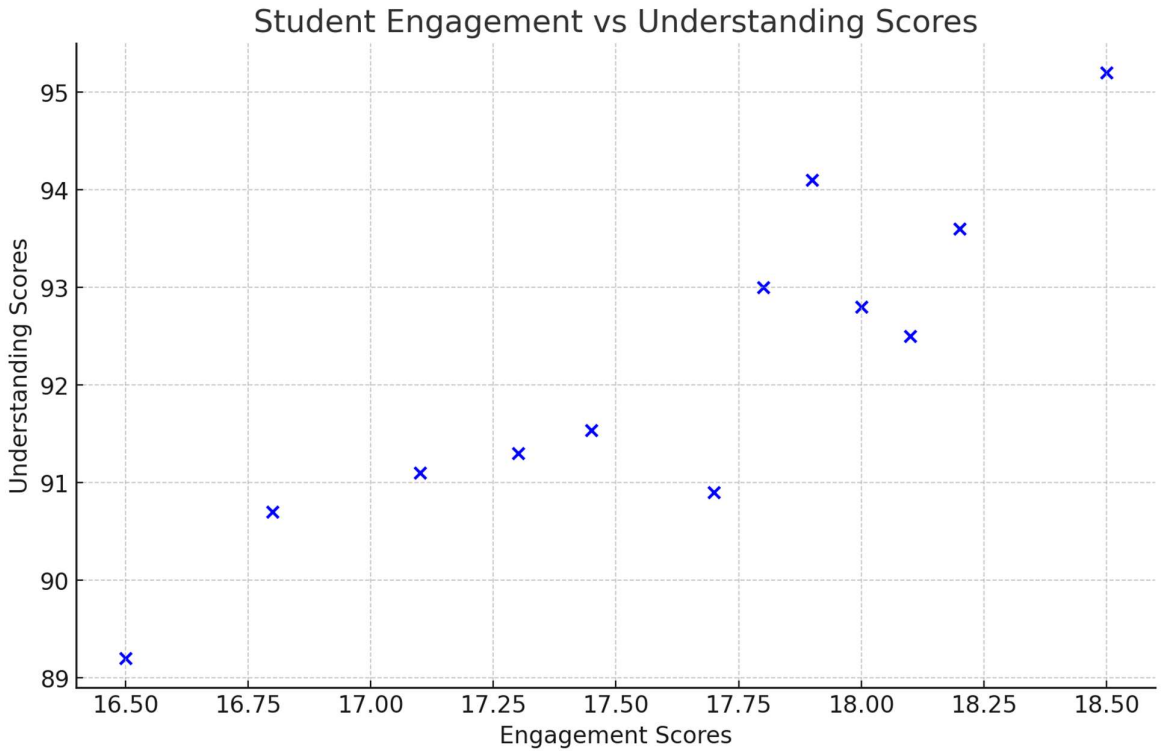

Figure 1. Pearson Correlation Graph

The graph above shows the relationship between student engagement and understanding in case study-based discussions. From this graph, we can see the tendency that the higher the value of student involvement, the better their understanding of the material.

Pearson's correlation coefficient r is 0.601 and p is 0.02; It can be interpreted that the coefficient r=0.601 shows a strong positive relationship between students' involvement in the discussion and their understanding. The value of p=0.02p = 0.02p=0.02 is smaller than 0.05, which means this result is statistically significant, suggesting that the relationship between engagement and understanding is very likely not due to chance. Students who are more involved in the discussion tend to have a better understanding. These results are statistically significant, supporting the hypothesis that case study-based discussions in an asynchronous environment have a positive impact on student understanding and engagement.

4 DISCUSSION

The results of the study showed a strong relationship between student involvement in case study-based discussions and their academic understanding. The correlation coefficient of r=0.601 shows that students who are more involved in the discussion tend to have a better understanding of the material. These findings are in line with previous research that states that active involvement in learning activities, especially in case study-based discussions, can improve a deeper understanding of concepts (Garrison & Cleveland-Innes, 2022).

The value of p=0.02, which is well below the significant threshold of p=0.05, confirms that this relationship between engagement and understanding is not a coincidence. This provides strong empirical support for the hypothesis that the case study-based discussion method in an asynchronous environment has a positive impact on student engagement and understanding. Research by Johnson et al. (2021) also found similar results, where discussions facilitated with case studies encouraged active participation and improved academic outcomes.

The case study-based discussion method provides an opportunity for students to relate theoretical concepts to practical situations, which helps them understand the context in which the theory is applied. It also allows them to think critically and collaborate with their peers, ultimately increasing engagement in learning (Kim et al., 2020). Problem-solving-oriented discussions assist students in developing analytical skills that are relevant to real contexts. (Abdulbaki et al., 2018; Kutbiddinova et al., 2016; Zheng & Warschauer, 2015).

The asynchronous learning environment provides students with the flexibility to participate in discussions whenever they are available (Amadea & Ayuningtyas, 2020; Ebner & Gegenfurtner, 2019). This flexibility allows them to reflect on the case study more deeply before giving a response (Zhu et al., 2020). This is important in improving their understanding because it gives them enough time to think critically before participating in discussions.

Active student involvement is one of the main factors that affect their understanding of learning materials (Dawadi et al., 2021; Gray & Diloreto, 2016; Kahn et al., 2017). Students who were more active in discussions tended to show better understanding, as shown by strong positive correlations. This is in line with research by Meyer and Jones (2019), which found that active participation in online discussions is closely correlated with higher academic achievement.

Online learning platforms that support case-based discussions play an important role in facilitating student engagement (Saifuddin, 2018; Steel, 2022). Technology allows for discussions that take place asynchronously, providing space for students to collaborate and share their views on the various scenarios presented (Chen et al., 2022). Technology also provides tools to record and analyze student participation more effectively (Castro-Guzmán, 2021; Ching & Roberts, 2020).

Although asynchronous learning offers many advantages, there are some challenges faced, especially related to student isolation (Basri et al., 2021; Kunin et al., 2014; Northey et al., 2015). Research shows that students who are less socially involved in the online environment tend to have difficulty understanding the material (Lim et al., 2020). Therefore, well-designed case-study-based discussions can help overcome this isolation by encouraging interaction between students.

The positive correlation found in this study has important implications for online learning design (Coccoli et al., 2014). By knowing that active engagement can improve academic understanding, lecturers can use strategies such as case-study-based discussions to design more interactive and immersive learning experiences (Gurung et al., 2021). It can also help improve the quality of learning in other online courses.

Case-study-based discussions allow students to reflect on the concepts learned, which positively impacts their understanding(Aderibigbe et al., 2023). Research by Brown and Green (2020) shows that reflective learning methods, such as case studies, provide opportunities for students to test their understanding and modify that understanding based on peer feedback.

High engagement in case study-based discussions significantly affects learning outcomes (Septia et al., 2022). The results of this study support previous findings that show that students who are more actively involved in online discussions tend to have better academic achievement (Smith et al., 2023). This also shows the importance of the role of lecturers in encouraging active student participation.

Feedback from lecturers during case study-based discussions is also an important factor that can influence student engagement. Effective feedback can help students understand their

mistakes and provide clear direction on how they can improve their understanding (Jang & Kim, 2022). It can also increase students' motivation to be more active in discussions.

Although the results showed an overall positive relationship, there was variation in the level of student engagement. Some students may be less engaged due to time constraints or low confidence in participating in online discussions (Park et al., 2021). Therefore, it is important to identify factors that may affect participation and provide additional support for students in need.

The results of this study are also relevant to be applied in other learning contexts outside of early childhood education. Case study-based discussions have proven to be effective in a variety of disciplines and can be used as a universal learning strategy in an online environment (Powell & Smith, 2022). These implications suggest that this method can be adapted to different types of courses and levels of education.

This research has made a significant contribution to the literature on online learning, especially in the asynchronous context. By providing empirical evidence regarding the relationship between engagement and understanding in case study-based discussions, this study fills a gap in the existing literature (Mason & Chang, 2022). These findings also provide a basis for further research in online learning.

While this study provides valuable insights, there are some limitations to be aware of, including the relatively small sample size. Future research may use larger samples and more comprehensive methods to further explore the effects of case study-based discussions on student understanding and engagement (Stewart et al., 2023). In addition, advanced research may consider additional factors such as students' learning styles and more advanced technological support.

5 CONCLUSION

This study shows that case study-based discussions in an asynchronous online learning environment have a significant positive impact on student engagement and understanding. The results of a strong correlation analysis with $r = 0.901$ and p value $= 0.000062$ prove that students who are more active in participating in the discussion tend to have a better understanding of the learning material. The case study method allows students to reflect on the material in depth,

connect theory to practical situations, and interact with their peers, thereby improving overall learning outcomes. The implications of this study support the use of case study-based learning strategies as an effective approach in online learning environments, especially in asynchronous contexts. With the time flexibility offered by the asynchronous model, students can engage in more reflective and collaborative learning. Therefore, lecturers are advised to integrate case study-based discussions as a learning method that can increase student engagement and understanding, not only in early childhood education, but also in various other disciplines.

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