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Unlocking the Power of Virtual Classrooms: Exploring the Impact of Cooperative Learning, Student Engagement, and Online Learning Constraints on Learning Outcomes

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ABSTRACT

The impact of online learning during the COVID-19 pandemic has significantly affected the activities, psychological conditions, and behavioral changes in adult learners, with technology-based learning becoming increasingly widespread in higher education institutions. Both professors and students have adapted to engage in distance learning interactions, including those at the Faculty of Tarbiyah, Islamic Institute of West Sumatra, who have become familiar with utilizing virtual classes through collaborative learning methods. This research aims to analyze the influence of implementing virtual classes with collaborative learning methods, student engagement, and the challenges faced by students in online learning on learning outcomes. The research method employed is a mixed-method convergent parallel design, involving the collection of both qualitative and quantitative data. Qualitative data analysis uses descriptive analysis, while quantitative data is analyzed using a cross-sectional study design. The research findings indicate that student learning through virtual classes at the Faculty of Tarbiyah, supported by platforms like Google Classroom, WhatsApp, and Zoom Meetings, has been effective and has positively impacted students' learning achievements. The challenges encountered by students and professors during online learning include technology mastery, cost, smooth communication, interactive success, internet signal, and time management. For the faculty members of Tarbiyah, it is recommended to conduct online learning based on virtual classes, involving various integrated platforms such as Google Classroom, WhatsApp, and Zoom Meetings. Additionally, preparing a comprehensive online learning guide with solutions to handle technical issues would be beneficial. This research contributes to the education field by providing insights into effective online learning practices and highlighting the challenges that need to be addressed to improve the overall learning experience.

Keywords: *Virtual Class, Cooperative Learning, Online Learning Constraints, Learning Outcome*

INTRODUCTION

At the beginning of 2020, the world was shocked by the outbreak of the coronavirus (COVID-19) which later spread to almost every country worldwide. COVID-19 was suspected to have first emerged in Wuhan, Hubei Province, at the end of 2019. This non-natural disaster was not the first of its kind to be faced by countries around the world. History records several

virus outbreaks that also pose a threat to lives if not promptly addressed, such as Ebola, SARS, H5N1 or Bird Flu, HIV, and MERS, among others (Chakraborty & Maity, 2020).

According to data from the United Nations Educational, Scientific and Cultural Organization (UNESCO), at least 290.5 million students worldwide were affected by disrupted learning activities due to school closures. On January 30, 2020, the WHO declared COVID-19 a Public Health Emergency of International Concern (Taskiran, 2021). The number of COVID-19 cases increased rapidly and spread beyond the Wuhan region and other countries. The number of infected cases continued to rise significantly in a relatively short period. Within six months, 216 countries in the world were affected by this virus. According to the WHO, the number of confirmed cases as of June 25 reached 9,296,202, with a death toll of 479,433 people (Su et al., 2021).

The impact of the coronavirus pandemic has affected the education sector; central and regional governments have implemented policies to close all educational institutions to prevent the spread of the coronavirus (Onyema et al., 2020). It is expected that all educational institutions will engage in virtual learning activities to minimize the spread of COVID-19. Many other countries worldwide have also adopted lockdown policies to reduce mass gatherings and prevent the spread of the coronavirus in society. The initial spread of the virus had a significant impact on the global economy, which subsequently extended its impact to the education sector (Haitami & Rengganis, 2021).

To respond to the need for online learning using virtual classrooms, teachers and professors need to design online learning media that support effective virtual learning processes (Yumnah, 2021). One of the approaches is the implementation of virtual classes using platforms such as Google Classroom, WhatsApp, and Zoom meetings. After three years of implementing distance learning due to lockdowns, the virtual class learning model is still maintained, even though the global health situation has improved, and in-person learning has resumed as usual (Nashir & Laili, 2021). However, in practice, IAI Sumatera Barat still employs technology-based online learning by adopting a hybrid learning model.

Hybrid or blended learning is an educational innovation that combines face-to-face and online learning processes with varying time allocations. The success of such a learning model depends on the characteristics of the students (Singh et al., 2021). According to Krismadinata et al. (2020), the benefits of blended learning include facilitating teachers and students to meet in virtual spaces at specific times outside of face-to-face classroom hours. Virtual classes can be conducted anywhere and at any time, allowing students to revisit learning materials shared by teachers on platforms like Google Classroom independently whenever they need it for enrichment (Reflianto et al. 2021). Virtual classrooms can reach a wide range of students and facilitate the storage and updating of learning materials, as well as provide students with the necessary content to enhance their learning outcomes (Alkatheiri, 2022).

The advantages of online learning include self-paced learning with high interactivity, enhancing memory retention, providing a more diverse learning experience with text, audio, video, and animations used to convey information, as well as facilitating information delivery, content updates, and downloads (Clark, 2002). Students can also send emails to each other, post comments in discussion forums, use chat rooms, and have video conference links for direct communication.

Previous research has revealed relevant findings regarding the influence of virtual classes and motivation on learning outcomes (Muthmainnah et al., 2017; Putriana & Noor, 2021; Lin & Chen, 2017; Uriarte-Portillo et al., 2023) the impact of virtual classes and self-regulated learning on learning outcomes (Saputri et al., 2022; Fahyuni et al., 2020; (Jatisunda et al., 2020; Jaramillo et al., 2022; Yeh et al., 2019) and the influence of virtual classes and learning styles on learning outcomes (Matussolikhah & Rosy, 2021; Syarifuddin et al., 2021; Sianturi & Panggabean, 2019; Huang et al., 2020; Shute & Towle, 2018). However, there are still several

other variables that need further investigation to gain a more comprehensive understanding. One of them is student engagement and technical constraints in online learning, which have been relatively understudied. This research focuses on analyzing the influence of student engagement and technical constraints in online learning on learning outcomes. By understanding these factors, instructors can develop more appropriate online learning models. Other variables to be considered include students' emotional and cognitive aspects that affect their involvement.

Based on the recommendations from previous research and the lack of comprehensive studies on the influence of using virtual classes with cooperative learning methods, student involvement, and the challenges they face in online learning on learning outcomes, the novelty offered in this research is to analyze the impact of virtual class learning with collaborative learning methods, student involvement, and learning constraints on learning outcomes. This will be done by presenting comprehensive findings using mixed-method research to unveil factors influencing student learning outcomes comprehensively in virtual class learning with cooperative learning methods, combining qualitative and quantitative data along with its impact on student engagement and the ability to overcome online learning obstacles. The application of mixed-method research aims to provide holistic empirical findings supported by patterns of student and teacher learning behaviors at one of the Islamic higher education institutions in West Sumatra.

METHODS

Research Design

This research adopts a mixed-method convergent parallel design with two stages (Creswell & Poth, 2016). First, a qualitative study is conducted, followed by a quantitative study. Descriptive analysis is used for the qualitative approach, while a survey method is employed for quantitative data processing. According to Sugiyono (2011), qualitative research is a naturalistic method conducted in a natural setting, and the collected data are analyzed qualitatively. On the other hand, the quantitative research uses a cross-sectional design. As described by Creswell (2014) a cross-sectional quantitative study collects data from various individuals or units at a specific point in time. In this design, the researcher does not observe the same subjects repeatedly over multiple periods but rather gathers data at a single moment or specific time. The main objective is to gain an understanding of the relationships between variables at a particular point in time and their contributions.

Research Sample

In the qualitative method, the sample size is based on achieving depth and richness of description. According to Schreier (2018), the sample size is not about representative opinions and views but about information richness. In this study, a sample of 3 lecturers and 6 students from the Faculty of Tarbiyah at the Islamic Institute of West Sumatra is selected. To ensure confidentiality, student respondents are identified as SA, SB, SC, SD, SE, and SF, while lecturers are identified as L1, L2, and L3. Semi-structured interviews are conducted with all participants involved in this research. To test the effectiveness of virtual-based learning using Google Classroom, WhatsApp, and Zoom meetings, an analysis of the influence and contributions of the applied methods and student engagement on student learning outcomes is carried out. Meanwhile, to measure student engagement in virtual-based learning activities, a questionnaire is utilized. The student engagement questionnaire is developed based on relevant literature, specifically using the Student Engagement in Schools Questionnaire (SESQ) adopted from Hart et al. (2011) and the technical constraints questionnaire for virtual classroom learning is based on six indicators: Technology Mastery, Cost, Smooth

Communication, Interactive Success, Internet Signal, and Time Management (Ariani et al., 2022). The testing of the impact and contribution of virtual class implementation with collaborative learning methods, student engagement, and constraints faced by students during online learning on learning outcomes is conducted with 60 students from the Islamic Institute of West Sumatra.

Data Collection

The primary data collection method involves semi-structured interviews, while secondary data is obtained from relevant scientific articles related to the research topic. The qualitative data collection stage uses the snowball sampling technique for respondent interviews (Parker et al., 2019). In the case study, respondents are interviewed until data saturation is reached, and no new information is obtained (Weller et al., 2018). The lecturer prepares questions for the respondents, and all respondents prepare papers to write down the questions and answer them one by one. The interview takes place at a time when the respondents are no longer busy and have free time. The interview is conducted in a comfortable room. Before the interview is conducted, the researcher seeks the respondents' consent and agreement to participate as informants in this study by signing the provided informed consent form. The interview process is recorded and later transcribed into written form. Data analysis and interpretation are crucial parts of qualitative research. The data analysis guideline uses thematic data (Weller et al., 2018). This method is considered the most appropriate approach for research that aims to explore various interpretations. In thematic analysis, "all possible interpretations are considered valid." The reason for choosing thematic analysis is that a rigorous thematic approach can yield an in-depth analysis that addresses research questions (Vaismoradi & Snelgrove, 2019). For quantitative data collection to test the extent of the contribution of virtual classroom learning with cooperative learning methods to student engagement and learning outcomes in religious psychology courses at the Faculty of Tarbiyah at the Islamic Institute of West Sumatra, a cross-sectional design is used. In this stage, the focus is on examining the influence of cooperative learning methods in virtual classrooms and student engagement on their learning outcomes.

Procedures and Data Analysis

This research consists of two stages. In the first stage, qualitative and quantitative data collection is conducted simultaneously. Qualitative data is gathered through semi-structured interviews. Researchers directly interview respondents after obtaining their consent. Data analysis uses coding to ensure respondent confidentiality. The interview process lasts for approximately 30 minutes for each lecturer and student via Zoom meetings. All interview results are recorded using smartphones and transcribed for data processing. The research involves triangulation of evaluators and intersubjective verification of various information (Denzin, 2020). To ensure reliability, the study also employs descriptive categories with low interference levels to obtain concrete findings (Rose & Johnson, 2020). The implementation study involves two data collectors to ensure balanced data analysis and interpretation (Majid et al., 2017). Analysis and interpretation of data are crucial aspects of qualitative research. The thematic data analysis method is considered the most appropriate for exploring multiple interpretations (Weller et al., 2018). The research is based on research questions, which are to explain the impact of the COVID-19 pandemic on student learning activities in virtual classrooms and to describe the impact of the pandemic on the implementation of online teaching activities for students at the Tarbiyah Faculty of the Islamic Institute of West Sumatra. For quantitative data collection to measure the level of student engagement in virtual classroom learning, the Student Engagement in Schools Questionnaire (SESQ) with a 5-point

Likert scale is used (e.g., one = never, five = always). The data present student responses in three groups based on the percentage of their engagement levels in learning: high, medium, and low. Regarding academic achievement, data is related to the learning outcomes of religious psychology students during online learning activities using the Google Classroom, WhatsApp, and Zoom Meeting platforms. Academic performance assessment is conducted at the end of the five-month learning period through a summative test. To determine the effectiveness of virtual classroom learning and the impact of student engagement on learning outcomes, a multiple linear regression analysis is performed.

RESULTS AND DISCUSSION

Results

1. *Qualitative Findings*

a) Student Engagement

This research aims to evaluate how the use of virtual classes with cooperative learning methods affects student engagement in the learning process. A total of 60 students from various programs at this university were respondents in this study. Data was collected through in-depth interviews using structured question guides focusing on students' experiences and perceptions of virtual classes with cooperative learning methods.

The interview results indicate that the use of virtual classes with cooperative learning methods has a positive impact on student engagement in attending lectures. One respondent, a student from the Madrasah Ibtidaiyah Teacher Education program, stated:

> "I feel actively engaged in learning because there are active discussions within the group. We exchange ideas and seek solutions together during the discussions. Through discussions, we gain many learning experiences, respect each other's opinions, and seek the truth together based on the theories taught" (Respondent SC).

Based on this quote, it is revealed that the use of virtual classes with cooperative learning methods creates an environment that allows active discussions among students. These group discussions help students interact, collaborate, and jointly find solutions to understand lecture materials. With the opportunity to participate actively, student engagement increases, positively impacting their learning experiences.

This statement is supported by their lecturers, who revealed that the implementation of virtual classes with cooperative learning methods effectively enhances student engagement in virtual class learning. In an interview with one of the lecturers, L1, who applied this method in the religious psychology class, he stated:

> "I see a significant change in student participation after implementing cooperative learning in online learning. They are more active in discussing with their peers in the group, sharing ideas, and helping each other understand the materials" (Respondent L1).

These interview results reveal that students feel more engaged and actively participate in the learning process through cooperative learning methods in virtual classes. The sense of responsibility within the group encourages them to overcome shyness or fear of speaking in public, creating a more inclusive learning environment. Additionally, collaborating with classmates allows them to gain different perspectives, deepen understanding, and solve problems together.

The following interview results also show that virtual classes with cooperative learning methods can increase students' attachment to learning content. A student from the Islamic Counseling Guidance program expressed:

> "I feel more interested in studying the online lecture content because we are given the opportunity to discuss topics more deeply and find relevance to real-life situations. The materials are provided before the virtual class lectures begin, so we can study them beforehand, making the discussions come to life" (Respondent SE).

This statement shows that the cooperative learning method in virtual classes provides opportunities for students to delve deeper into lecture materials and see their relevance to real-world situations. This increases their interest and motivation to learn as they can sense the connection between the taught materials and their daily lives, such as the study of religious psychology and its application in daily life.

This statement is also reinforced by Lecturer L2, who stated that this active student engagement also positively impacts learning motivation. Feeling supported by their group, students tend to be more motivated to attend and participate in each learning session. They view learning not merely as a burdensome task but as an opportunity to learn and grow together. As mentioned by Lecturer L2:

> "The implementation of virtual classes with cooperative learning has encouraged students to be more diligent in completing their group tasks on time and actively participate in discussions during virtual classes" (Respondent L2).

Aside from the positive aspects, some students also revealed minor challenges in using virtual classes with cooperative learning methods. This is reflected in the following respondent's statement:

> "Sometimes, we struggle to adjust our schedules to have group discussions because of the time differences and busy schedules of each group member. To overcome this, the teacher established a policy and mutual commitment for all students to allocate time during virtual class hours" (Respondent SA).

This quote highlights the practical challenges students may face when participating in cooperative learning virtually, especially when group members are located in different geographic locations with varying time zones and busy schedules. It emphasizes the need for coordination, joint commitment, and flexibility in addressing such challenges to ensure effectiveness and maximum participation in learning.

The research findings also show that the social interactions that occur in virtual classes with cooperative learning methods help students create an inclusive and supportive learning environment. A student from the Islamic Psychology program stated:

> "I feel more comfortable speaking in a small group than in a large class. I feel listened to and valued. In my opinion, virtual class greatly helps me boost my confidence when discussing in the virtual space" (Respondent SB).

This statement indicates that the atmosphere built in virtual class learning with cooperative learning methods provides opportunities for students to actively participate in small groups. This more intimate environment allows students to feel comfortable, as they feel heard and valued by their peers. This condition enhances their self-confidence and comfort in speaking and sharing opinions, which is crucial in creating a positive learning atmosphere where every voice is heard and appreciated.

Other respondents expressed enthusiasm for participating in virtual classes with cooperative learning methods. They stated that being actively involved in discussions and the conducive learning atmosphere increased their interest and motivation to attend lectures. Here is a quote from an interview with one of the students:

> "I feel more enthusiastic, and happy to participate in virtual class lectures with this cooperative learning method. I am very active in every discussion and enjoy collaborating with my peers directly in the virtual class, which motivates me to study harder" (Respondent SA).

The above quote reveals that the use of virtual classes with cooperative learning methods has increased students' enthusiasm and learning motivation. The ability to interact directly with classmates in the virtual setting enables social interactions in the learning process, contributing to higher engagement.

Virtual classes with cooperative learning methods have also proven effective in increasing the engagement of introverted students, making them more active in learning. Like the following interview quote:

> "As an introvert, virtual classes with cooperative learning methods make me feel more comfortable contributing in the group. I am more active in speaking and sharing ideas with peers during discussions" (Respondent SB).

This statement shows that virtual classes with cooperative learning methods can create an inclusive and friendly environment for various personality types. Introverted students feel more comfortable participating in group discussions because they have the opportunity to contribute without facing others directly.

b) Learning Outcomes

The learning process in virtual classes with cooperative learning methods and its influence on learning outcomes reveal that the implementation of virtual class learning using cooperative learning methods has proven to improve learning outcomes, especially in understanding religious psychology lecture materials. The lively group discussions encourage students to actively exchange opinions in solving given cases by the lecturer. With the opportunity to exchange ideas and provide support to each other, students feel more confident and enthusiastic about achieving better academic achievements. This is reflected in the following interview with a student of Islamic Psychology:

> "My problem-solving skills have improved after participating in virtual class learning with cooperative learning methods. Group discussions and tasks have truly helped me understand the materials and serve as a common ground for me to answer and discuss discussion topics" (Respondent SD).

These findings indicate that the use of virtual classes with cooperative learning methods has a positive impact on students' learning outcomes. Through active involvement in discussions and completing group tasks, students can practice and develop problem-solving skills for the materials taught by the teacher at home to deepen their understanding of the lecture materials. In an interview with Lecturer L3, who applied this method in his lecture, he also stated:

> "I see a significant improvement in students' understanding of the material and the quality of their discussions after implementing cooperative learning in virtual classes. They are more active in sharing knowledge and collaborating in finding solutions to complex problems. Through virtual classes with cooperative learning methods, students become more confident and daring to speak actively" (Respondent L3).

Based on the above findings, it is revealed that the implementation of cooperative learning methods in virtual classes provides students with the opportunity to interact more intensively with course materials and fellow students. In small groups, they support and encourage each other to achieve a deeper understanding. Structured group discussions also help them clarify difficult concepts and overcome learning barriers more effectively.

Furthermore, cooperation within the group enhances students' social skills and communication. Through these intensified interactions, students learn to listen to others' opinions, appreciate differences, and seek consensus in decision-making. This not only enriches the learning process but also helps them develop interpersonal skills crucial in the professional world and daily life.

In some cases, students also feel more open to asking questions and sharing thoughts with group members than in a traditional classroom setting. The intimacy formed within the cooperative learning environment helps reduce feelings of awkwardness or shyness in contributing, thereby facilitating more active participation from all group members.

> "I learned how to work in a team and appreciate each group member's contribution. These skills are valuable in preparing me for the real world. Working in a team, respecting others' opinions, and supporting each other in completing tasks together" (Respondent SA).

This statement highlights the long-term benefits of virtual class learning with cooperative learning methods, where students can develop their social skills. These skills are crucial for them to face the professional world, such as teamwork, appreciating each member's role, and effectively contributing. By practicing these collaborative skills during their academic studies, students feel better prepared to face the challenges of the working world, which demands competent communication and collaboration with others.

The cooperative learning method is an instructional approach that encourages interaction and collaboration among students to achieve learning goals. In this study, 60 students with similar abilities were involved. Data was collected during one semester through classroom observations, exams, and interviews with several students and related lecturers.

The interview results with students who participated in virtual classes revealed several interesting findings. One student stated:

> "Virtual classes help us interact with classmates more easily. We can discuss online, share ideas, and solve problems together. Through virtual classes, we can complete group tasks without having to meet in person at school" (Respondent SC).

This shows that the cooperative learning method in virtual classes has facilitated better interaction and collaboration among students, contributing to better learning outcomes. Interviews with lecturers also provided valuable insights. One lecturer stated:

> "I see significant changes in how students learn. They are more active participate online, and are more involved in the learning process. They can download materials on the digital platform we provided and learn in groups to understand them" (Respondent L1).

These interview results reveal that the use of virtual classes with cooperative learning methods not only affects students but also changes the lecturers' teaching approach. Based on these findings, it is evident that the use of virtual classes with cooperative learning methods has positively impacted student engagement and learning outcomes. Active interactions, collaboration, and participation in the learning process have improved academic understanding and mastery of course materials. The use of virtual technology in classes has also opened new opportunities in distance learning, allowing students to stay connected and interact amid challenging situations, such as the COVID-19 pandemic.

c) Challenges and Obstacles

A small number of students mentioned challenges they faced while participating in virtual classes with cooperative learning methods, including difficulties in adapting to the technology used and internet access issues that could disrupt their active participation. This was due to the location of their homes, where internet signals sometimes get disrupted. Therefore, it is important for educational institutions to provide adequate technical support and facilitate virtual class activities well to ensure the success of virtual classes with cooperative learning methods, as illustrated in the following statement:

> "The challenge I faced is sometimes there are issues with the internet connection that makes it difficult for me to fully participate in learning sessions, and background

noise can also interfere, so sometimes I can't hear the teacher's presentation and the discussion" (Respondent SC).

This statement highlights the technical challenges students may encounter in using virtual classes, such as unstable internet connections. This can affect student engagement and active participation in learning. Therefore, educational institutions need to provide reliable infrastructure and adequate technical support to address such issues.

Similarly, Lecturer L3 also stated that there are some challenges faced in implementing cooperative learning in the virtual environment:

"I need to provide clear instructions on group tasks so that all students can contribute effectively. Additionally, there are technical and network constraints that sometimes disrupt the collaboration process."

Based on the findings from several respondents, it is evident that the use of virtual classes with cooperative learning methods has had a positive impact on student engagement in learning. Active social interactions and opportunities for collaboration have increased students' motivation to learn. Additionally, this approach has proven effective in encouraging introverted students to participate more actively. However, practical challenges such as internet connectivity, schedule coordination, task allocation, and students' capabilities should also be considered to ensure the successful implementation of this method. Therefore, a well-balanced approach in assigning group tasks and managing time is crucial to avoid cognitive overload on students.

In conclusion, the research findings revealed that the use of virtual classes with cooperative learning methods positively contributes to student engagement and learning outcomes in the field of Islamic psychology. Active group discussions facilitate social interactions and collaboration, enhancing students' connection to the learning materials and developing problem-solving skills. However, certain practical challenges like internet connectivity and scheduling should be addressed to ensure effective implementation. Despite these challenges, the cooperative learning approach in virtual classes has proven to be an effective alternative to improving the quality of education in the digital era.

*2. **Quantitative Findings***

a) Student Engagement

The data from questionnaires gathered from students were tabulated according to their choices regarding their experiences during Islamic Psychology classes conducted via virtual classes using the cooperative learning method. The student's choices in the questionnaire were then tabulated based on the Likert scale values pre-defined for the study. Below are the results of the analysis of the student engagement questionnaire during virtual class learning with cooperative learning methods.

Table 1. Students' Engagement in the Collaborative Learning Method

No	Indicator	Likert scale	Percentage	Level
Behavioral Engagement				
1	I actively participate in online learning by answering the lecturer's questions, sharing new ideas, and engaging in discussions and debates	4.23	88.6	High
2	During online learning, I actively observe, memorize, and follow the stages of religious psychology.	4.41	89.1	High
3	I use Google Classroom and social media to actively think and ask questions about things I don't understand in the virtual class.	4.03	82.9	High
4	I compare the difficulties I encounter while working on tasks in a virtual classroom with the cooperative learning model using associative thinking.	4.12	89.8	High
5	I am continuously enhancing my knowledge and skills in religious psychology	3.82	72.4	Moderate

	concepts through cooperative learning in the virtual classroom.			
6	Using the cooperative learning method in the virtual classroom, I diligently read and comprehend information about religious psychology and human soul development.	4.28	88.9	High
7	I actively seek clarification on religious psychology concepts related to human behavioral development through the virtual classroom with the cooperative learning method.	4.73	91.2	High
8	Applying the cooperative learning method in the virtual classroom, I am more actively incorporating religious values into my behavior while studying religious psychology.	4.51	90.1	High
	Average	**4.27**	86.63	High
Emotional Engagement				
9	I enjoy practicing religious values in my study behavior using virtual classrooms with cooperative learning methods as it helps me better easily understand them.	3.16	61.2	Moderate
10	I prefer working in groups to complete religious psychology assignments given by the lecturer in the virtual classroom using Google Classroom and social media.	4.01	80.7	High
11	Discussing and collaborating with my peers in groups for the assignments in the virtual classroom, using the cooperative learning method, is something I appreciate.	4.45	88.3	High
12	To understand religious psychology concepts virtually, I find it beneficial to use video tutorials on cooperative learning methods through Google Classroom and social media.	3.16	63.2	Moderate
13	Taking a religious psychology course excites me because it deepens my understanding of religious values and children's behavioral development.	4.42	88.3	High
14	I am enthusiastic about participating in all religious psychology lecture activities, whether they are synchronous or asynchronous, in the virtual classroom.	4.16	84.9	High
	Average	**3.89**	**77.77**	Moderate
Cognitive Engagement				
15	In the virtual classroom with the cooperative learning method, I focus and actively listen to the lecture material.	4.17	85.6	High
16	I am determined to master the science of religious psychology and achieve academic success through virtual classrooms with cooperative learning methods.	3.01	60.2	Moderate
17	Through the virtual classroom with the cooperative learning method, easy for me to enrich my academic achievements.	4.29	86.7	High
18	I attend all religious psychology lectures, both synchronous and asynchronous, in the virtual classroom with the fun cooperative learning method."	4.15	84.1	High
19	I put in a lot of effort to enhance my academic performance by completing college assignments in the virtual classroom using the cooperative learning method.	4.17	84.9	High
20	I actively participate in all religious psychology lectures, both synchronous and asynchronous, in the virtual classroom with the cooperative learning method.	4.03	81.6	High
	Average	**3.97**	**80.52**	**High**
	Whole	4.05	81.64	High

Table 1 revealed that for behavioral engagement, the highest score was obtained in the indicator "I actively seek clarification on religious psychology concepts related to human behavioral development through the virtual classroom with the cooperative learning method" with a score of 4.73, indicating a high level of engagement. This statement depicts that students actively seek explanations related to religious psychology concepts concerning human behavioral development through the virtual classroom using the cooperative learning method.

Meanwhile, the lowest score in the behavioral engagement category was obtained in the indicator "Using the cooperative learning method in the virtual classroom, I diligently read and comprehend information about religious psychology and human soul development" with a

score of 3.82, indicating a moderate level of engagement. This statement shows that students diligently read and understand information about religious psychology and human soul development through the cooperative learning method in the virtual classroom.

In the emotional engagement category, the highest score was obtained in the indicator "Discussing and collaborating with my peers in groups for the assignments in the virtual classroom, using the cooperative learning method, is something I appreciate" with a score of 4.45, indicating a high level of engagement. This statement describes that students value discussions and collaborations with their peers in groups to complete assignments in the virtual classroom using the cooperative learning method.

On the other hand, the lowest score in the emotional engagement category was obtained in the indicator "To understand religious psychology concepts virtually, I find it beneficial to use video tutorials on cooperative learning methods through Google Classroom and social media" with a score of 3.16, indicating a moderate level of engagement. This statement depicts that students consider the use of video tutorials quite beneficial in understanding religious psychology concepts virtually through the cooperative learning method.

In the cognitive engagement category, the highest score was obtained in the indicator "I attend all religious psychology lectures, both synchronous and asynchronous, in the virtual classroom with the fun cooperative learning method" with a score of 4.29, indicating a high level of engagement. This statement describes that students attend all religious psychology lectures, whether synchronous or asynchronous, in the virtual classroom with the enjoyable cooperative learning method.

Meanwhile, the lowest score in the cognitive engagement category was obtained in the indicator "I am determined to master the science of religious psychology and achieve academic success through virtual classrooms with cooperative learning methods" with a score of 3.01, indicating a moderate level of engagement. This statement portrays that students have the determination to master the science of religious psychology and achieve academic success through virtual classrooms with the cooperative learning method reasonably well.

b) Learning Outcomes

After conducting the summative test at the end of the Islamic Psychology course, all students' learning outcomes were tabulated. The data of students' grades were then analyzed descriptively using the SPSS Version 16 program with the following results:

Table 2. Student Learning Outcomes Based on the Level of Student Engagement

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Hasil Belajar Siswa dengan Keterlbiatan Tinggi	20	70.00	93.00	84.9500	2.52505
Hasil Belajar Siswa dengan Keterlibatan Sedang	20	60.00	91.00	81.2000	2.15379
Hasil Belajar Siswa dengan Keterlibatan Rendah	20	50.00	90.00	72.9500	1.16325

Based on the descriptive analysis of student learning outcomes in Table 2, there are three different levels of student engagement: high, moderate, and low, each consisting of 20 students for the three measured engagement categories.

For students with high engagement, the lowest grade obtained is 70.00, while the highest grade is 93.00. The average grade for students with high engagement is 84.95, with a standard deviation of 2.52505. Meanwhile, for students with moderate engagement, the lowest grade obtained is 60.00, and the highest grade is 91.00. The average grade for students with

moderate engagement is 81.2000, with a standard deviation of 2.15379. Lastly, for students with low engagement, the lowest grade obtained is 50.00, and the highest grade is 90.00. The average grade for students with low engagement is 72.9500, with a standard deviation of 1.16325.

c) Challenges and Obstacles

After analyzing the challenges and obstacles of using the virtual classroom based on qualitative findings, these findings were then used as assessment indicators in the quantitative study through students' responses regarding the challenges and obstacles they experienced while participating in virtual classroom learning.

Table 3. Average Constraints in the Virtual Classroom

Items	Category			Mean	Level
	Low (1.00-2.33)	Moderate (2.34-3.66)	High (3.67-5.0)		
Learning technology	14 (23.33%)	15 (25.00%)	31 (51.67%)	4.13	High
Cost	22 (36.67%)	11 (18.33%)	27 (45.00%)	3.63	Moderate
Communication	20 (33.33%)	16 (26.67%)	24 (40.00%)	3.58	Moderate
interactive learning	24 (40.00%)	15 (25.00%)	21 (35.00%)	3.42	Moderate
Internet signal	18 (30.00%)	12 (20.00%)	30 (50.00%)	3.96	High
time management	23 (38.33%)	12 (16.67%)	25 (45.00%)	3.61	High
Average				3.72	High

Based on the descriptive test results in Table 3 above, this research measures the level of constraints with several assessed indicators, including learning technology, cost, communication, interactive learning, internet signal, and time management. The indicator with the highest score is obtained in the learning technology category, with an average score of 4.13, indicating a high level of assessment. More than half of the respondents (51.67%) rated this category as high regarding the use of learning technology. This indicates that the respondents are satisfied and have a positive perception of the use of technology in the learning process. On the other hand, the indicator with the lowest score is obtained in the interactive learning category, with an average score of 3.42, indicating a moderate level of assessment. 40% of the respondents rated this category as moderate regarding interactive learning. This shows that the respondents have a neutral assessment of the interactivity aspect of the learning process. Other indicators, such as cost, communication, internet signal, and time management, received moderate ratings with average scores of 3.63, 3.58, 3.96, and 3.61, respectively. This indicates that the respondents have a neutral perception of the costs, communication, internet signal, and time management aspects in the context of learning.

d) The Influence of Virtual Classes with Cooperative Learning Method, Student Engagement, and Constraints Faced by Students on Learning Outcomes

To determine the extent to which the implementation of virtual classes with cooperative learning methods, student engagement, and the constraints faced during learning influence learning outcomes, it can be explained in Table 4 below:

Table 4. The Influence of VC with Cooperative Learning Method, Student Engagement, and Constraints Faced by Students on Learning Outcomes Partially

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	13.990	9.280		1.508	.138
	VC with Cooperative Learning	.391	.101	.334	3.890	.000

	Student Engagement	.757	.122	.647	6.201	.000
	Obstacles	.685	.095	.624	7.208	.000

[a.] Dependent Variable: Learning Outcome

Based on the results of the regression table, this study evaluates the partial influence of several factors on students' learning outcomes. The factors evaluated are virtual classes with cooperative learning methods, student engagement, and obstacles faced. The analysis results indicate that there is a significant influence on students' learning outcomes for all three evaluated factors. In this case, the virtual class with a cooperative learning method has a positive influence on learning outcomes with a regression coefficient (B) of 0.391. This suggests that the use of virtual classes with cooperative learning contributes positively to improving students' learning outcomes. Furthermore, student engagement also has a positive influence on learning outcomes with a regression coefficient of 0.757. This shows that the higher the level of student engagement, the better the learning outcomes achieved. Lastly, the obstacles faced also have a significant influence on learning outcomes with a regression coefficient of 0.685. This indicates that the more obstacles students face, the lower their learning outcomes. Thus, the regression formula that can be used to predict students' learning outcomes is:

Learning Outcome = 13.990 + (0.391 * Virtual Class with Cooperative Learning) + (0.757 * Student Engagement) + (0.685 * Obstacles Faced)

To determine whether the three virtual class learning factors, namely cooperative learning method, student engagement, and obstacles faced during online Islamic psychology lectures, influence their learning outcomes, we can refer to the ANOVA results below.

Table 5. Influence of Virtual Class with Cooperative Learning, Student Engagement, and Obstacles Faced on Learning Outcomes Simultaneously

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6667.343	3	2222.448	87.817	.000[a]
	Residual	1417.240	56	25.308		
	Total	8084.583	59			

a. Predictors: (Constant), Obstacles, Student Engagement, VC with Cooperative Learning
b. Dependent Variable: Learning Outcome

Based on the results of the regression table, this study evaluates the simultaneous influence of several factors on students' learning outcomes. The factors evaluated are virtual classes with cooperative learning methods, student engagement, and obstacles faced. The analysis results show that the overall regression model has a significant influence on students' learning outcomes. This is indicated by an F-value of 87.817 with a significance level of $p < 0.001$. Thus, the evaluated factors collectively contribute significantly to students' learning outcomes. Finally, to determine the extent of the contribution of the three test variables to the improvement of students' learning outcomes in Islamic psychology, we can examine the results of the Multiple Linear Regression test in the coefficient table below.

Table 6. Contribution of the Influence of Virtual Class with Cooperative Learning, Student Engagement, and Obstacles Faced on Learning Outcomes

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.908[a]	.825	.815	5.031	.825	87.817	3	56	.000

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.908[a]	.825	.815	5.031	.825	87.817	3	56	.000

[a]Predictors: (Constant), Obstacles, Student Engagement, VC with Cooperative Learning
Dependent Variable: Learning Outcome

Based on the results of the regression table, this study examines the contribution of the influence of virtual classes on cooperative learning, student engagement, and obstacles faced by students' learning outcomes. The analysis results show that the regression model has a coefficient of determination (R Square) of 0.825. This means that approximately 82.5% of the variation in students' learning outcomes can be explained by the virtual class with cooperative learning, student engagement, and obstacles faced. The Adjusted R Square has a value of 0.815, indicating that this regression model has good capability in explaining the variation in students' learning outcomes, taking into account the number of variables and sample size. Meanwhile, the R Square Change is 0.825 with an F Change of 87.817. This indicates that the virtual class with cooperative learning, student engagement, and obstacles faced significantly contribute to students' learning outcomes.

Discussion

The Influence of Implementing Virtual Class with Cooperative Learning Method on Student Engagement

Based on the research results, it was found that the use of virtual classes with cooperative learning methods has a positive impact on student engagement during lectures. Additionally, the implementation of virtual classes also showed an increase in active student participation during lectures. Students became more actively engaged in discussions and sharing ideas. This indicates that students feel more involved and contribute actively to the learning process through the use of virtual classes with cooperative learning methods.

These findings support Herrera-Pavo (2021), who revealed that the use of virtual classes with cooperative learning methods provides greater opportunities for students to interact, collaborate, and share knowledge. In interviews with students, they reported higher levels of engagement and a sense of support within the learning groups. This research underscores the importance of social interaction and collaboration in enhancing student engagement.

Zhang et al. (2019) also presented empirical evidence on the positive influence of using virtual classes with cooperative learning methods on student engagement. In this research, through survey data analysis involving some students, it was found that the use of the cooperative learning method significantly increased the level of student engagement in online lectures. These findings provide a strong foundation for the effectiveness of the cooperative learning method in stimulating active student participation.

Qureshi et al. (2021) and Wang et al, (2021) also reported a positive and significant influence of using a virtual class with a cooperative learning method on student engagement. Experts in this field acknowledge that this method can create a collaborative, interactive learning environment that encourages active student participation in the learning process.

These consistent and robust findings provide evidence for the effectiveness of using virtual classes with cooperative learning methods in enhancing student engagement during lectures. Considering the findings from Herrera-Pavo (2021), Zhang et al. (2019) and Qureshi et al. (2021), educational higher institutions can consider implementing collaborative learning methods as innovative and effective online teaching strategies to enhance student engagement and learning outcomes.

The Influence of Student Engagement on Learning Outcomes

Based on the research results, it is evident that the use of virtual classes with cooperative learning methods has a positive influence on learning outcomes. The analysis shows a significant improvement in student learning outcomes after implementing this method. The research results also indicate an enhancement in the critical and analytical skills of students after attending lectures with cooperative learning methods in virtual classes. Students reported better abilities in analyzing problems, solving issues, and connecting the taught concepts within the context of the lectures. The data shows that the percentage of students reporting improved critical skills increased significantly after using the cooperative learning method.

The research results also show an increase in students' motivation and confidence in facing academic tasks. Students reported higher levels of motivation to learn and participate in the learning process after implementing the cooperative learning method. Additionally, an increase in self-confidence in facing academic challenges is evident in the supporting data. These findings provide strong support for the effectiveness of using virtual classes with cooperative learning methods in enhancing student learning outcomes.

These findings align with the research by Samarraie and Saeed (2018), which revealed that the use of virtual classes with cooperative learning methods significantly improved students' understanding and mastery of the subject matter. Through in-depth interviews with several students, they reported positive experiences in attending lectures with this method, where they could discuss, collaborate, and build understanding together with their peers. This research confirms that cooperative learning methods through virtual classes can have a positive impact on student learning outcomes.

Cecchini et al. (2021) also provide empirical evidence on the positive influence of using virtual classes with cooperative learning methods on student learning outcomes. In this research, through data analysis from several students using the cooperative learning method in lectures, it was found that this method significantly improved academic performance and learning outcomes. These findings provide a strong basis for the effectiveness of the cooperative learning method in enhancing student academic achievements.

Blondeel et al. (2021) and quantitative research by Qiang (2018), also demonstrate a positive and significant influence of using virtual classes with cooperative learning methods on student learning outcomes. Experts in this field acknowledge that this method can enhance students' understanding, skills, and academic achievements through interaction, collaboration, and active learning.

The Influence of Online Learning Constraints on Learning Outcomes

Based on the research conducted, it is known that technical constraints, such as unstable internet connection or inadequate devices, become barriers to effective participation and interaction in virtual classes. In another research by Khan et al. (2021), most students reported experiencing technical issues that disrupted their learning process. These constraints can limit access to learning materials, collaboration with peers, and active participation in discussions, ultimately affecting student learning outcomes. In addition to the technical constraints faced by students, instructors also encounter challenges in implementing virtual classes with cooperative learning methods. In the research conducted by Morrison-Smith and Ruiz (2020), it was found that some instructors experienced difficulties in managing interactions and collaborations in the virtual environment. Learning through virtual classes requires different technical and pedagogical skills, such as managing online discussions, providing effective feedback, and facilitating active learning. These challenges can affect instructors' ability to deliver and communicate the material effectively, resulting in increased student engagement during lectures.

Barrot et al. (2021) and Wut and Xu (2021) support these research findings by revealing that one of the common challenges is difficulty in managing interactions and collaborations among students online. Students reported barriers in communication and coordination with their peers, especially in situations that require direct and spontaneous interaction. This can affect the effectiveness of cooperative learning method in achieving learning objectives.

Turmuzi et al. (2021) and Zalat et al. (2021) also highlight other constraints, such as technical issues and unstable internet connections. In this research, it was found that some students faced difficulties in accessing virtual platforms, experiencing connection disruptions, or having limited access to required devices. These technical constraints can hinder active participation and interaction in virtual class, potentially affecting student learning outcomes.

Zhang et al. (2019) reported difficulties in developing trust and shared responsibility within online learning groups. This can affect the effectiveness of the cooperative learning method in facilitating effective collaboration and support among students.

In facing these constraints, experts in this field suggest some handling strategies. One of them is providing adequate technological support and training to students to overcome technical constraints and effectively utilize virtual platforms. Additionally, it is important to consider instructional design that facilitates interaction, collaboration, and active participation in the virtual environment. The use of effective communication tools, such as online discussion forums and collaborative applications, can also help overcome constraints in managing interactions in virtual classes.

Other challenges include additional costs, as virtual class learning requires an internet package that may result in additional expenses to support the learning process (Ariani et al., 2022). To address these challenges, some research suggests handling steps, such as providing clear guidance and resources to students and instructors to help them adapt to the online learning environment. Instructors also need to consider effective teaching strategies in the virtual environment, such as the use of affordable interactive tools, timely feedback, and facilitating collaboration among students.

The Influence of Implementing Virtual Class with Cooperative Learning Method, Student Engagement, and Distance Learning Constraints on Learning Outcomes

The implementation of virtual classes with cooperative learning methods has a significant influence on student learning outcomes in distance learning during the COVID-19 pandemic. This method encourages interaction, collaboration, and active student engagement, which in turn positively impacts their learning outcomes.

The cooperative learning method in virtual classes creates a collaborative and interactive learning environment. Through discussions, group work, and idea-sharing, students have the opportunity to build understanding and actively engage in the learning process. Furthermore, the level of student engagement also plays a crucial role in their learning outcomes. Students who actively participate, collaborate, and engage in discussions tend to achieve better learning outcomes. Through this engagement, they have the opportunity to delve deeper into the subject matter, ask questions, and share understanding with others.

Similarly, the ability to overcome challenges in virtual classroom learning also influences students' learning success. Students who successfully address technical obstacles such as unstable internet connection, costs, communication skills, and interaction in the virtual classroom will have a positive impact on their learning outcomes. Therefore, both students and instructors must address these challenges, including preparing clear guidelines on the use of virtual platforms, facilitating effective discussions and collaborations, and providing constructive feedback.

Zheng et al. (2018) demonstrate that the use of virtual classes with cooperative learning methods positively correlates with improved student learning outcomes. Wang et al. (2021)

indicate that the level of student engagement positively correlates with better learning outcomes. Students who actively participate, collaborate, and discuss in virtual classes reported higher learning outcomes.

Zalat et al. (2021), revealed that students face technical challenges such as unstable internet connection or limited access to adequate devices. These constraints are found to hurt their academic performance. Supporting data shows that students facing technical constraints tend to achieve lower average exam scores compared to those without such constraints.

To address these issues, institutions can provide adequate technical support, such as training on the use of virtual platforms and alternative solutions to overcome technical challenges. Additionally, instructors and students need to collaborate and share experiences and strategies in dealing with the challenges encountered during online learning.

By considering the influence of implementing virtual classes with cooperative learning methods, student engagement, and handling challenges faced, educational institutions can enhance students' learning outcomes in distance learning. By maximizing the potential of technology and designing interactive and participatory learning strategies, it is expected that students can achieve optimal learning outcomes.

CONCLUSION

This study demonstrates that the implementation of virtual classes with cooperative learning methods has a significant impact on student's learning outcomes in distance learning during the COVID-19 pandemic. This method creates a collaborative and interactive learning environment, allowing students to build understanding and actively engage in the learning process to a high degree. Additionally, students' level of engagement also plays a crucial role in their learning outcomes. Active, participative, and collaborative students tend to achieve better learning outcomes. However, technical constraints such as internet connectivity issues, costs, interactive and communication abilities, as well as device limitations, can hinder students' participation and access to learning materials. Therefore, adequate technical support and good cooperation between lecturers and students are required to overcome these challenges. The results of this study make a significant contribution to universities, lecturers, and researchers regarding the importance of implementing cooperative learning methods in virtual classes and the need to focus on student engagement. It also highlights the necessity of preparing an online learning guide from the outset to facilitate students and lecturers in handling technical challenges encountered during the learning process.

CONFLICT OF INTEREST

Hereby the authors declare that we have no conflicts of interest.

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