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The Application of Mentimeter to Improve Critical Thinking Skills in Al Islam dan Muhammadiyah (AIK) Course

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ABSTRACT

Recent learning processes have not been fully student-cantered. The assessment tends to only giving score and ignores the skill of critical thinking. It requires changes in the use of learning strategies, methods, and media that activate students in the learning process in order to develop the skill of critical thinking. In this case, the use of Mentimeter can be an alternative. The objectives of the research is to find out the application of Mentimeter in the course of Al Islam and Muhammadiyah in the material of Ramadhan Fast, and to know how Mentimeter media can improve critical thinking skill of Nursing Department Students of Universitas Muhammadiyah Pekajangan Pekalongan that consist as 32 students of class A as experiment class and 34 students of class B as the control class. This study uses a quantitative research approach, specifically using a quasi-experimental method, the research design is pre-test, and the design of the control group is post-test. Based on the prerequisite test these two groups are not homogeneous and not normally distributed. From the results of research using the Mann Whiteney test, it is known that the Asymp. Sig. (2-tailed) of 0.00 0 which is less than 0.05. So, according to the basis for making a decision on the Mann Whitney U test, it can be concluded that Ho is rejected and Ha is accepted. This shows that there are significant differences in learning outcomes in the experimental class and the control class. The findings from this study indicate that Mentimeter media can effectively improve critical thinking skills.

Keywords: *Mentimeter; Critical thinking; AIK*

ABSTRAK

Proses pembelajaran saat ini belum sepenuhnya berorientasi pada siswa. Penilaiannya cenderung hanya memberi skor dan mengabaikan keterampilan berpikir kritis. Untuk itu diperlukan perubahan penggunaan strategi, metode, dan media pembelajaran yang mengaktifkan siswa dalam proses pembelajaran guna mengembangkan keterampilan berpikir kritis. Dalam hal ini penggunaan Mentimeter dapat menjadi alternatif. Tujuan penelitian adalah untuk mengetahui penerapan Mentimeter pada mata kuliah Al Islam and Kemuhammadiyahan pada materi Puasa Ramadhan, dan mengetahui bagaimana media Mentimeter dapat meningkatkan kemampuan berpikir kritis Mahasiswa Jurusan Keperawatan Universitas Muhammadiyah Pekajangan Pekalongan yang terdiri dari sebanyak 32 siswa kelas A sebagai kelas eksperimen dan 34 siswa kelas B sebagai kelas kontrol. Penelitian ini menggunakan pendekatan penelitian kuantitatif, khusus menggunakan metode

quasi eksperimen, desain penelitian adalah pre-test, dan desain kelompok kontrol adalah post-test. Berdasarkan uji prasyarat kedua kelompok ini tidak homogen dan tidak berdistribusi normal. Dari hasil penelitian dengan menggunakan uji Mann Whiteney diketahui bahwa Asymp. Sig. (2-tailed) sebesar 0,00 0 yaitu kurang dari 0,05 jadi berdasarkan dasar pengambilan keputusan pada uji Mann Whitney U dapat disimpulkan Ho ditolak dan Ha diterima. Hal ini menunjukkan bahwa terdapat perbedaan hasil belajar yang signifikan pada kelas eksperimen dan kelas kontrol. Temuan penelitian ini menunjukkan bahwa media Mentimeter efektif meningkatkan keterampilan berpikir kritis.
Kata-kata Kunci: Mentimeter; Berpikir kritis; AIK

1. INTRODUCTION

In the digital era which is subject to complexity and change, religious education, especially Al Islam and Muhammadiyah (AIK) as one of the courses, must be able to become the foundation of student life in facing various challenges (Umamah, 2018), including access to broad and various information, the influence of culture and secularism, the influence of social media, the use of technology, and challenges to morality and ethics. This must be anticipated so that the use of digital technology does not negatively affect student life. Unfortunately, many students are less interested in taking this course. Their orientation is only on scoring, ignoring critical thinking patterns that lead them to a true and deep understanding of religious teachings. In their view, the process of learning religious subjects is still dominated by lecturers, and the methods and the use of media are less varied and seem monotonous. To overcome this, the selection of learning media is very important to attract and involve students actively in the learning process.

There are many applications that can be used as learning media, one of which is Mentimeter application media. Mentimenter application is a medium that can be used to attract and involve students actively in the Al Islam and Muhammadiyah learning process. The use of Mentimeter application can motivate students and focus their attention on the learning process, and it allows them to understand certain concepts (Stanciu, 2019). In addition, this media also strengthens student involvement, collaborative learning, and interaction between students and teachers/lecturers in the learning process which is carried out online. The application makes it easier for lecturers to monitor the learning process at that time. Mentimeter application is suggested in face-to-face learning to improve the quality of learning (Pichardo et al., 2021, Tarazi & Ortega-Martín, 2023, Hasyyati & Zulherman, 2021). Therefore, Mentimeter application can be an alternative in selecting media in the learning process

Mentimeter application is an online application that allows users to display various diagrams of the results of social interactions between groups of people. In this application, the appearance is in the form of a poll or opinion that is expressed openly and briefly (Istiandaru &; Prabowo, 2020). This application has a presentation menu

such as *multiple choice*, *word cloud*, *open*, and others (Mahmashony, 2018), and it allows users to upload images and charts, make citations, display student answer reports if they are made in the form of questions, and provides answer information (Makris, 2021). Mentimeter allows students to anonymously give their opinions using their smart phones in discussion activities by displaying responses or answers to questions in real-time and immediately visualizing them in graphic form that is easy to observe (Kunto Aribowo, 2022) The use of this digital platform aims to increase student involvement, learning outcomes, and critical thinking habits during the learning process.

To develop logical thinking pattern, critical thinking involves thinking process to evaluate opinions and obtain ideas with various meanings. Critical thinking helps someone develop statement supported by evidence and centre the arguments and reasoning (Sinaga et al., 2021). Thinking critically is the combination of analyzing ideas on specific matters, selecting, identifying, studying, and developing activities in a more perfect direction (Moch. Syakroni, Endang Suprapti, & Junaidi Fery Efendi, 2021). Someone with critical thinking skill tends to accept new ideas, evaluates them critically, and is able to change their opinions as a response to the evidence (Dwi Anggriani & Eko Atmojo, 2022).

The indicators of critical thinking skills in this study are taken from Finken and Ennis (1993) which include: focus (correctness and clarity of ideas); support (accuracy and depth of ideas); reasons (reasons or evidence and alternative solutions to arguments); organization (level of clarity of flow of ideas and firmness of plans); convention (good use of language); and integration (task evaluation according to instructions) (Zubaidah, Corebima, & Mistianah, 2015). Critical thinking indicators are assessed in the form of tests based on learning Al Islam and Muhammadiyah Studies.

Al Islam and Muhammadiyah (AIK) is a course at Muhammadiyah universities which must be held with a larger credit and more study hours than Islamic Religious Education at state universities (M. Arifin, 2019). This material is taught in all courses and is mandatory for all students. The AIK course at Muhammadiyah universities has a strategic position and is a driving force for the spirit and main mission of Muhammadiyah higher education organizations (S. Arifin, 2015). In addition, it becomes strength for Muhammadiyah universities as a basis of spiritual, moral and intellectual strength, and mobility for the entire academic community. The success of AIK is an indicator of achievement of the mission of organizing and managing Muhammadiyah universities, which is as a part of the mission of *amar makruf nahi munkar* (AIK, 1998). The importance of this role is that AIK learning should not only be known and memorized, and oriented only to score but rather to critical and in-depth understanding so that it can have a positive influence on students in dealing with the development of digital technology.

This research aims to answer the limitation of the previous research which the most of the focuses are on the utilization of Mentimeter application to improve student motivation and learning outcomes in online education, which is not including AIK. Meanwhile, the use of Mentimeter application in the offline learning process to improve critical thinking skills in AIK courses has not attracted the attention of previous researchers. Therefore, this study will formulate how the implementation of the mentimeter application improves student learning outcomes in face-to-face learning and how the mentimeter application can improve students' ability to think critically in AIK courses on Ramadan Fast material. It is hoped that the result of this research can be the reference, especially for the managers of AIK course on Ramadhan fast, and the managers of other courses on materials that may apply Mentimeter application.

This essay is based on the finding that accurate media selection determines the quality of the learning process itself and that the active participation of the students in the learning process will make learning more meaningful (Dwi Anggriani & Eko Atmojo, 2022). The selection of Mentimeter application media can be used as an alternative to maximize the positive use of digital technology, optimize student involvement in the learning process, improve learning outcomes, and improve critical thinking skills (Dwi Anggriani & Eko Atmojo, 2022) (Andriani et al., 2019),(Andrini & Pratama, 2021) so that students can understand the material in depth and practice the religious values contained in the material of Ramadan fast in the AIK course.

2. METHOD

This research is a pseudo-experimental study with a pre-control group design using an experimental class and a control class (Fitriyyah, Sri, & Wulandari, 2019). The research population is all students of the Nursing Department, consisting of two classes. Class A has 32 students, and Class B has 34 students. This research uses cluster sampling (Sugiyono, 2010). Class A is an experimental class that receives the media treatment of the Mentimeter application during the learning process, including the delivery of material and assignments in the form of essay questions. Class B is the control class which does not receive the media treatment of the Mentimeter application during the learning process.

The data collection techniques include tests to measure the achievement of learning outcomes and observation sheets to obtain data on students' critical thinking skills (Santoso, Sajidan, & Sudarisman, 2013). The research instrument uses written test questions that forms a description rubric and critical thinking assessment includes: focus (truth and clarity of ideas), support (accuracy and depth of ideas), reasons (reasons or evidence and alternative solutions to arguments), organization (level of clarity of idea flow and firmness plan), convention (use of good language) and integration, which evaluates whether the task is in accordance with what is given (Zubaidah et al., 2015).

Data analysis techniques use descriptive analysis, normality test, and homogeneity test as prerequisites before testing the difference in the average rats and testing the hypothesis. After the prerequisite test is done with homogeneity and normality, a t test is conducted with the Mann-Whitney U to analyze the differences in the use of the media application Mentimeter and the use of conventional media in the learning process on learning outcomes and students' critical thinking skills. The basis for Mann Whitney's decision making is if the asimp value Sig <0.05, then the hypothesis is accepted. However, if the asimp value Sig > 0.05, the hypothesis is rejected. Data analysis calculations are done with the help of SPSS windows version 22.

3. RESULT AND DISCUSSION

a. Implementation of Mentimeter Application in AIK Course

The use of Mentimeter application in learning activities is started by accessing the address https://www.mentimeter.com, then the application can be downloaded by lecturers by registering through a Google account (Rosida, 2020). Students can access it without downloading the application. Mentimeter implementation in learning activities can be conducted through several stages, which are perception, implementation, and evaluation.

1) Preparation Stage

In this stage, teachers prepare the materials and test questions. Course materials are prepared in the form of learning presentation slides, pictures, or videos to make them interesting. The questions are made in form of essay to measure the critical thinking skill. To ease the use of slides in form of PowerPoint, they can be changed into JPEG file to be uploaded by choosing picture option on the application menu.

At this stage, lecturers prepare all the components needed to support the use of the Mentimeter application so that the learning process can run optimally in terms of material, network and infrastructure. At this point, lecturers make the content as attractive as possible, both in form and image, to prevent students from finding the learning process boring and monotonous. The questions are given in accordance with the material presented and in accordance with the problems often faced by students so that students can easily understand the material in depth.

2) Implementation

The learning using Mentimeter application is implemented face-to-face started with opening, reception, and explanation on the objectives of learning using Mentimeter media. Before delivering the materials, a pre-test is conducted in control class and experimental class to figure out students' critical thinking skill as the initial data before being treated with the use of Mentimeter application media.

The next step is the implementation of learning using Mentimeter media in the experimental class and using conventional methods in the control class. In the experimental class, the lecturer starts the lesson by opening the material in a Mentimeter account and displaying it on the LCD screen, while students access the material through their smart phone by typing the link code on the screen. This is intended to focus students' attention on the learning process. Students who open the access code can read the material and mark that they have read it by clicking the thumb icon. The lecturer monitor student activities when accessing material through the Mentimeter application on a laptop screen, while students access slides on an LCD screen, as shown in figure 1.

Figure 1. Students who have accessed the slides can be identified by looking at thumb sign on the slides

Figure 1 displays the right corner as an indicator that students have accessed and read the material presented by the lecturer. The results of direct monitoring in class are seen by 32 students. According to the AIK course lecturer; there are 84.3%, or 27 students who are actively involved in the learning process, while 5 other students cannot access it due to network and technical issues. According to monitoring findings, it has a beneficial impact on student participation in the learning process. According to Bloom (1984), student involvement in the learning process has great benefits. This is in line with research which found the benefits of active student involvement, including motivating students in the learning process, increasing understanding so that it can shape student attitudes, and improving their learning outcomes on the material studied (Stanciu, 2019, Andriyani et al., 2014).

The use of Mentimeter applications or online applications was initially used as a learning tool for students (Tarazi & Ortega-Martín, 2023, Hasyyati & Zulherman, 2021, (Hasyyati & Zulherman, 2021) Nugraha et al., 2021), when the

COVID-19 pandemic hampered the ability of teachers and lecturers to monitor student activities and involvement in the learning process (Pichardo et al., 2021). However, in its development after the COVID-19 pandemic, this application is still used by some educators as an alternative media to enable student involvement in the learning process and improve learning outcomes by combining it with face-to-face learning (Dwi Anggriani & Eko Atmojo, 2022, Andrini & Pratama, 2021).

3) Evaluation

Evaluation stage or scoring is conducted after a series of learning activities to measure the learning achievement. The questions are given in the form of essay as much as 5 questions with description of cases on Ramadan fast problems that require solutions and critical thinking. This evaluation is related to research conducted by Zubaidah (2015) that measuring a person's ability to think critically can be done by asking questions in the form of essays (Zubaidah et al., 2015). In addition, critical thinking skills can also be presented in the form of essay questions with the provision of problems or cases that students must solve. This is intended to improve their ability to understand material critically and in depth (Dwi Anggriani & Eko Atmojo, 2022). A deep understanding of the material, especially AIK religious material, can shape attitudes (Andriyani et al., 2014) and motivate someone to practice it in everyday life (Niam, 2021).

b. The Application of Mentimeter in Improving Critical Thinking in AIK Course

Students' critical thinking skill in this research is obtained from the result of pre-test and post-test conducted by the researchers in the process of AIK course learning for the material of Ramadan Fast. Data statistical description of the critical thinking skill obtained from pre-test and post-test at experimental class and control class can be seen on table 1.

Table 1. Statistical Description of Pre-Test and Post-Test Results

Statistical Description					
	N	Minimum	Maximum	mean	Deviation Standard
Pre-test experiment	32	52	80	67.19	7.000
Post-test experiment	32	80	92	85.00	4.429
Pre-test control	36	52	80	67.56	8.540
Post-test control	36	64	88	76.44	5.719
Valid N (listwise)	32				

Table 1 shows the lowest score in the experimental class pre-test is 52 and the highest score is 80, with a class average of 67.19. The lowest post-test score in the experimental class is 80, the highest is 92, and the pre-test average is 85.00, while the

lowest pre-test score in the control class is 52, the highest is 80, and the average value is 67 ,56. The lowest post-test score in the control class is 64, the highest is 88, and the average score is 76.44. Comparison of the measurement of critical thinking skills on the Ramadan Fast material is shown in table 2.

Table 2. Comparison Table of Measurement Results on Critical Thinking Skill in the Experimental Class and the Control Class

Measuring Critical Thinking Skills	Class Average Score		Significant Difference
	Experiment	Control	
Pre-test	67.19	67.56	0,37
Post-test	85.00	76.44	8.56

Based on the comparison results in table 2, the pre-test average in the control class and the experimental class differed by 0.37 before treatment, while the post-test in the control class and the experimental class differed by 8.56 after treatment with Mentimeter and conventional media. The data also show an increase in the experimental and control classes after treatment with the use of Mentimeter and conventional media. The normality of the pre-test and post-test data results is then tested. The normality test can be seen in table 3.

Table 3. Normality Test

	Experimental Class	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	Df	Sig.
Learning target	Pre-test Mentimeter Experimental	.223	32	.000	.926	32	.030
	Post-Test Mentimeter Experimental	.214	32	.001	.849	32	.000
	Pre-Test Conventional Control	.176	34	.009	.918	34	.014
	Post-Test Control Conventional	.171	34	.013	.945	34	.087

a. Lilliefors Significance Correction

Table 3 shows the results of the normality test of learning outcomes from pre-test and post-test in the experimental class and control class with the Shapiro-Wilk technique via SPSS. If the value is significant > 0.05, it can be assumed that the data is normally distributed; on the other hand, if the value is significant <0.05, then the data is not normally distributed. Based on the data in Table 3, the data is not normally distributed because the significance value is <0.05. Therefore, a T-test analysis is done using the Mann-Whitney test with the help of SPSS. This is to find out whether there is

a difference between the experimental class and the control class in the ability to think critically about the Ramadan Fast material. The results of the analysis can be seen in table 4.

Table 4. Differences in Statistical Test Results

Statistical Test[a]	
	Critical Thinking Skill
Mann-Whitney U	143,000
Wilcoxon W	809.000
Z	-5.414
Asym. Sig. (2-tailed)	.000
a. Grouping Variable: Class	

Based on table 4, on the results of the Mann Whitney test, the Asymp value is found. (2-tailed) mark is 0.000; because the value of 0.000 is less than 0.05, it can be concluded that Ho is rejected and Ha is accepted. In another word, there is a significant difference in the results of critical thinking skills between the use of Mentimeter and conventional media among Nursing Department students of Universitas Muhammadiyah Pekajangan Pekalongan. From the data in table 3, it can also be tested to determine whether the hypothesis is accepted or rejected. The hypothesis in this study is:

Ho: There is no significant difference in the results of critical thinking skills between the use of conventional media and the use of Mentimeter in the Nursing Program of Muhammadiyah University of Pekajangan Pekalongan.

Ha: There is a significant difference in the results of critical thinking skills between the use of conventional media and the use of meters in the Nursing Program of Muhammadiyah University of Pekajangan Pekalongan.

The hypotesis is examined using the outputs from SPSS through GIS coefficience

1. if sig value <0,05, Ho is rejected
2. if sig value >0,05, Ho is accepted

The results the hypothesis test calculation using the Mann-Whitney test show a significance of 0.000, which means less than 0.05 (0.000 <0.05), indicating that Ho is rejected and Ha is accepted. This shows that there is a significant difference in learning outcomes between using Mentimeter media and using conventional media on the results of critical thinking skills of the Nursing Department students of Universitas Muhammadiyah Pekajangan Pekalongan. Thus, it can be concluded that the use of meter media in the learning process can improve students' critical thinking skills and is effective in the learning process of Ramadan Fast material of AIK course. Factors that lead to an increase in the results of critical thinking skills motivate students to take part

in learning, be actively involved, and focus their attention during the learning process, so that they understand the material in depth.

The finding of the research is strengthened by the previous research finding that Mentimeter can maximize the learning process. Students directly involve in the learning process and can communicate interactively with teachers/lecturers (Stanciu, 2019, Pichardo et al., 2021) so that the learning results improve. Moreover, the research of Herlawati et. al. (2021) states that students are more motivated to use Mentimeter media in e-learning because it is more interesting and motivating student in the learning process. Accordingly, Andrini and Pratama's research (2021) also finds that the use of Mentimeter application as an interactive quiz motivates students to take part in the learning process, where students demonstrated positive competency every time a quiz is given. It is always more fun and varied than using a smart phone, and it improves student learning outcomes.

On the other hand, based on the analysis of data from relevant research results, it is also proven that there is an effect of learning using Mentimeter media on students' critical thinking skills if collaborated with problem-based learning models or with essay questions in the form of case descriptions (Dwi Anggriani &; Eko Atmojo, 2022, Zubaidah et al., 2015, Niam, 2021). (Niam, 2021) This study also contains implications that the use of Mentimeter media is expected to be supplemented with essay questions by providing examples of cases that occur in everyday life on Ramadan Fast material which can motivate students to take AIK courses and improve students' ability to think critically. Thus, students have an in-depth understanding of course material related to religion which is expected to shape attitudes and become the basis for behaviour and then be able to practice it in their daily lives. This is indeed a preventive effort to avoid the negative effects of the development and use of digital technology.

4. CONCLUSION

The implementation of the Mentimeter media for Ramadan Fast material at AIK can run optimally through several stages; *preparation* that includes preparing interesting material, adequate infrastructure, connectivity, mastering Mentimeter skills, *implementing* activities according to procedures, and *evaluating* with essay questions supplemented with case studies to measure students' critical thinking skills. Mentimeter media and conventional media have different effects on students' critical thinking skills. Normality and homogeneity prerequisite tests indicate the significance or possibility of deviant and inhomogeneous situations. The Mann-Whitney test results 0.000, which is less than 0.05. So, Ho is rejected and Ha is accepted. It also reveals that Mentimeter media and traditional media have significant effects on students' critical thinking skills. Other studies that use Mentimeter media in the learning process must not ignore the essence of the AIK material presented so that students can understand and practice it.

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