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TECHNOLOGY-BASED PAI LEARNING STRATEGIES TO IMPROVE STUDENTS' UNDERSTANDING

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Abstract: *This study aims to examine the effectiveness of technology-based Islamic Religious Education (PAI) learning strategies in improving students' understanding at the secondary school level. The background of this study is based on the low interest and understanding of students in PAI material delivered conventionally. This study uses a quantitative method with a quasi-experimental approach involving two groups of students, namely the experimental group using technology-based learning media (such as interactive videos, digital quizzes, and online learning applications), and the control group using conventional methods. Data were collected through pre-tests and post-tests to measure students' understanding before and after treatment. The results of the analysis showed that there was a significant increase in students' understanding in the experimental group compared to the control group. The use of technology has been shown to increase student engagement, enrich learning experiences, and clarify abstract concepts in PAI. This study concludes that technology-based learning strategies are an effective alternative in improving students' understanding of Islamic Religious Education material. The recommendations of this study are aimed at teachers to integrate technology into the learning process in order to create more interesting and interactive learning.*

Keywords: *Learning Strategy, Islamic Religious Education, Educational Technology, Student Understanding, Interactive Media*

INTRODUCTION

Islamic Religious Education (PAI) has an important role in shaping the character and morals of students. In the context of the world of education in the current digital era, the challenges of PAI learning are increasingly complex. Students live in an environment full of the influence of technology and digital information that continues to develop. Therefore, teachers are required to adjust learning methods to be relevant to the development of the times, especially in delivering abstract and conceptual PAI materials. (Abbad, 2021). However, in reality, many PAI learning processes are still conventional and less interesting for students. Lecture and memorization methods are still the main approaches, so students tend to be passive and not actively involved in the learning process. This has an impact on the low level of student understanding of the material presented. The lack of use of interactive and technology-based learning media makes the delivery of material feel monotonous and less touching on students' real lives. Along with the development of information technology, the world of education is now starting to adopt various digital media in the learning process. The use of technology such as learning videos, interactive quiz applications, and online learning platforms are becoming a great opportunity to improve the effectiveness of learning, including in Islamic Religious Education subjects. Through this approach, students can learn in a more enjoyable, visual way, and in accordance with their learning style. In addition, technology-based learning can also increase student learning motivation and strengthen the understanding of religious concepts in a more contextual way. (Abdurrohman & Syamsiar, 2017).

The purpose of this study is to examine technology-based Islamic Religious Education learning strategies in improving student understanding. This study is important to provide solutions to the problem of low student understanding in Islamic Religious Education learning and to provide an overview of how technology integration can have a positive impact on the learning process and outcomes. Through the development of appropriate strategies, it is hoped that teachers will be able to create a more interactive, interesting, and meaningful learning atmosphere. (MAB et al., 2024)

Thus, this study focuses on the analysis of technology implementation in Islamic Religious Education learning and its impact on students' understanding. The results of this study are expected to contribute to the development of Islamic Religious Education learning methods in schools and become a reference for educators in designing adaptive and innovative learning in the digital era.

METHODS

This study uses a quantitative approach with a quasi-experimental method to measure the effectiveness of technology-based Islamic Religious Education learning strategies in improving student understanding. The subjects of the study consisted of two groups of eighth grade students at a public junior high school, namely the experimental group that used technology-based learning media (interactive videos, digital quiz applications, and online learning platforms), and the control group that used conventional methods in the form of regular lectures and discussions. (PDNUMPd, 2022)

The instrument used in this study was a comprehension test in the form of multiple-choice questions given before and after treatment (pre-test and post-test). The test result data were analyzed using descriptive and inferential statistical tests (t-test) to determine significant differences between the two groups. In addition, observation and documentation were also used to complete data related to the learning process in the classroom. This study was conducted for four weeks with meetings twice a week. With this method, it is expected to obtain objective data about the influence of the use of technology on improving student understanding in Islamic Religious Education learning. (DAMPd S. Ag & M.Pd.I, 2024)

RESULTS & DISCUSSION

Improving Student Understanding Scores. The increase in students' understanding scores is the main indicator in assessing the effectiveness of technology-based learning strategies in Islamic Religious Education (PAI). Based on the results of data collection through pre-test and post-test, a significant increase was found in the average scores of students in the experimental group compared to the control group. Before the treatment, the average pre-test scores of the two groups did not show a significant difference, indicating that both groups were at a relatively similar initial level of understanding. However, after implementing technology-based learning for several weeks, the post-test scores of the experimental group increased drastically, while the increase in the control group was not very significant. (Warmansyah et al., 2023)

This difference shows that the integration of technology in the learning process plays a major role in helping students understand the material better. Technology allows the presentation of material that is more interesting, interactive, and in accordance with the learning styles of today's students who are more visual and digital-native. Media such as animated videos, digital quizzes, and online learning applications provide a different learning experience compared to traditional lecture methods. Through visual media, students find it easier to understand abstract concepts that are difficult to explain with words alone. For example, when the teacher explains the value of sincerity in worship, students can see a simulation or visual story display that illustrates sincere behavior in everyday life. This not only improves understanding but also helps in internalizing religious values. (Abbad, 2021)

In addition, technology-based learning provides students with the opportunity for independent and repetitive learning. When students have difficulty understanding a concept, they can re-access the material via video or application at any time. This is not possible in conventional learning, where time and resource constraints mean that students can only rely on direct teacher explanations. With the flexibility provided by technology, students can adjust their own learning pace. The ability to repeat this material very helpful in strengthening students' memory and understanding of important concepts in Islamic Religious Education.

The results of this study are also supported by statistical data. Based on the t-test analysis, the significance value between the experimental group and the control group after treatment showed a significant difference. This indicates that technology-based learning has a strong influence on improving student learning outcomes. In addition, the results of interviews with several students from the experimental group showed that they found it easier to understand the material explained through technological media compared to the teacher's explanation verbally alone. This shows that the use of technology not only improves cognitive understanding but also provides a more enjoyable and meaningful learning experience. (DS Dalimunthe, 2023)

Furthermore, teachers also acknowledge that the use of technology makes the teaching process easier. Teachers can organize materials more systematically with the help of digital presentations and interactive media, and can monitor student development through online learning platforms that provide progress tracking features. Teachers are not only the ones who deliver the materials, but also the facilitators who guide students in exploring knowledge through technology. Thus, the increase in students' understanding in technology-based Islamic Religious Education learning is not only caused by the media used, but also because of changes in the roles of teachers and students in the learning process itself. Students become more active and involved, while teachers play a greater role as companions in the learning process.

In conclusion, the increase in students' understanding scores in this study proves that technology-based PAI learning strategies are effective in improving learning outcomes. By utilizing technology optimally, the learning process becomes more interactive, contextual, and in accordance with the needs and characteristics of students in the digital era. Therefore, the integration of technology in learning is not just a trend, but a necessity in creating relevant and meaningful education for the current generation. (Djollong & Akbar, 2019).

Student Responses to Technology-Based Learning One of the important indicators of learning success is student response to the method used. In this study, technology-based learning has a positive influence on student responses during the Islamic Religious Education (PAI) learning process.

Observations made during the study showed that students in the experimental group who participated in technology-based learning showed higher enthusiasm than the control group. They were more active in asking questions, answering questions, and engaging in group and individual discussions. When teachers use interactive media such as animated videos or digital quizzes, the classroom atmosphere becomes more lively and dynamic. (ANALYSIS OF STUDENT ENGAGEMENT AND RESPONSE IN ONLINE LEARNING USING GOOGLE CLASSROOM IN THE FUTURE

COVID-19 PANDEMIC | Febrilia | FIBONACCI: Journal of Mathematics and Mathematics Education, ND).

Students consider that digital media used in learning provides new variations that are fun and not boring. They feel more interested in following the lessons because the material is presented with attractive visuals, clear sound, and easy-to-understand narration. In addition, the interactive quizzes through the application make students feel challenged and entertained. The game elements and point systems in digital learning applications increase students' motivation to continue following the material with enthusiasm. This shows that the integration of entertainment elements (edutainment) in learning can increase students' emotional involvement which greatly influences understanding and retention of the material.

The results of interviews with several students also supported this finding. Most of them stated that they preferred learning methods that used technology compared to traditional lecture methods. They felt that learning with the help of technology made it easier for them to understand because they could see concrete examples of the concepts explained directly. For example, when discussing zakat and alms, the teacher showed a short documentary video showing the practice of alms in society. Students not only received theoretical information, but could also see the application of these values in real life. Responses like this show that learning becomes more meaningful and touches the affective side of students. (Khodafi et al., 2024)

Furthermore, the use of technology also facilitates various learning styles of students. Some students have a visual learning style, while others prefer audio or hands-on practice. Technology allows teachers to present materials in various forms such as text, images, videos, and audio simultaneously, so that all types of learning styles can be accommodated. This has an impact on increasing student satisfaction with the learning process and their confidence in understanding the material.

In general, students' positive responses to technology-based learning indicate that this method is able to answer today's learning needs. In the midst of an increasingly digital world, the use of technology in learning not only increases the efficiency of the teaching and learning process, but also strengthens the relationship between teachers and students through more active and collaborative interactions. Thus, good student responses are an important factor in improving the overall quality of Islamic Religious Education learning. (M.Kom et al., 2020) **The Effectiveness of Interactive Media in Explaining Abstract Concepts**

One of the main challenges in learning Islamic Religious Education (PAI) is conveying abstract concepts such as faith, piety, sincerity, and piety in a way that is easy for students to understand. These concepts are non-physical and are often difficult to explain only through oral explanations or texts in textbooks. Therefore, the use of technology-based interactive media is a very effective solution in bridging students' understanding of this abstract material. (Kirana & Ghani, 2024).

In conducting the research, teachers in the experimental group used various interactive media, such as animated videos that explain the meaning and examples of honest behavior, as well as simulation applications that describe real-life situations related to Islamic values. For example, when explaining the concept of sincerity, students were shown a short story video depicting two characters with different motivations in worship. Through this display, students can see concretely how sincere and insincere intentions impact a

person's deeds. This kind of learning not only conveys information verbally, but also activates the visual and emotional aspects of students, so that the meaning of abstract concepts becomes more real and easier to understand. (Prasetyo, 2020).

The effectiveness of interactive media can also be seen from the increase in student participation and absorption. Many students who were initially passive in conventional learning become more active when the material is delivered through visual media and technology. They find it easier to ask questions, express opinions, and are able to relate the material to their daily lives. Interactive media opens up a wider space for exploration and discussion. Students no longer just memorize definitions of religious values, but are also able to analyze and apply them in a social context. This shows that technology-based media not only conveys knowledge, but also builds a deeper and more reflective understanding. (Ag & MA, 2019)

In addition, the use of interactive media also supports the diversity of student learning styles. For students who understand material better visually, media such as images, diagrams, and animations greatly help them in grasping the meaning of concepts. Meanwhile, students with auditory learning tendencies are also helped by narration and voice explanations in learning videos. This diversity is very important to create an inclusive learning process that is responsive to different learning needs. Thus, interactive media is not only effective in conveying abstract material, but also makes learning fairer and more equitable for all students. (Adab, nd)

Thus, the results of the study indicate that technology-based interactive media has a strategic role in explaining abstract concepts in Islamic Religious Education. Technology helps transform material that was initially difficult to digest into something more concrete, contextual, and easily accepted by students. This proves that the use of appropriate media not only improves students' understanding but also makes learning more lively and meaningful. In the future, the integration of interactive media should be an inseparable part of the Islamic Religious Education learning strategy in the digital era. Student Involvement in the Learning Process Student engagement is an important factor in determining the success of a learning process. In this study, student engagement increased significantly when the technology-based Islamic Religious Education (PAI) learning strategy was implemented. Students are no longer passive recipients of material, but actively participate in various learning activities that are designed interactively and digitally. This creates a more lively, dynamic, and collaborative classroom atmosphere. (BOEDIROCHMINARNI et al., 2024)

Through the use of media such as digital quizzes, online discussion forums, and video simulations, students are encouraged to think critically, work together, and explore the material independently. For example, when teachers give group discussion assignments through online learning platforms, students exchange opinions about the application of tolerance values in everyday life. Activities like this foster a sense of responsibility and increase students' cognitive and social involvement in the learning process. Activities do not only occur in the classroom, but also continue outside of class hours through interactions in online discussion groups. (ZHMPd S. Sos, 2023). In addition, technology-based learning facilitates personalization of learning, where students can access materials according to their individual needs and pace.

Features such as repeatable learning videos, self-paced practice questions, and automatic feedback from digital quizzes allow students to be more independent in their learning. With this independent access, students' affective involvement in the material increases because they feel more responsible for their own learning process. Students who were previously less active in class also began to show higher interest and participation. (EM Dalimunthe et al., 2023)

From the observation results, teachers also noted an increase in the frequency of questions and interactions during the learning process. Students are more confident in asking questions because the classroom atmosphere is more inclusive and comfortable. Technology also provides space for shy or less confident students to express themselves through chat features or discussion forums, without the pressure of speaking in front of the class. This kind of engagement is essential to ensure that every student gets an equal

opportunity to understand the material, without being hindered by their personality traits. (EM Dalimunthe et al., 2023)

With the increasing involvement of students cognitively, affectively, and socially, Islamic Religious Education learning becomes more meaningful and effective. The learning process is no longer one-way, but two-way or even multi-way, where students become the main subjects in building their own knowledge. This shows that technology-based learning not only enriches teaching methods, but also significantly strengthens the interaction and active participation of students in teaching and learning activities.

Technical Barriers and Solutions. Although technology-based learning provides many benefits in improving student understanding, its implementation is not free from various technical obstacles. In this study, several obstacles that emerged during the learning process in the experimental group included limited technological devices, unstable internet connections, and lack of teacher and student skills in operating certain digital media. (M.Ag, 2024)

One of the main obstacles is the limited number of devices available in schools. Not all students have personal devices that support digital learning, and school computer lab facilities are also limited. As a result, in some learning sessions, students have to study in turns or in groups, which can reduce the effectiveness of individual learning. In addition, weak internet connections.

often hinders access to video-based learning content or online quizzes, thereby disrupting the smooth running of the teaching and learning process. However, these obstacles did not stop the learning process. Teachers took the initiative to overcome these obstacles with several strategies. First, teachers prepared materials in offline form, such as videos that can be played without an internet connection, and quiz applications that can be used offline. Second, teachers set a schedule for using devices so that all students still get the opportunity to learn equally. Third, short training was conducted for students and teachers to understand how to use the digital learning applications used, so that there was no confusion during the learning process. (Nurrohmah et al., 2023)

Another quite effective solution is to utilize technology that is commonly used by students, such as WhatsApp and Google Classroom, which are considered lighter and can be accessed through simple devices. Teachers also provide alternative assignments in two versions, digital and manual, so that students who experience technical difficulties can still follow the learning material according to their abilities. This flexible approach has been proven to help maintain the continuity of the learning process without burdening students or teachers.

In other words, although technical barriers are a challenge in implementing technology-based learning, the existence of creative and adaptive solutions from teachers and schools can minimize its impact. In fact, through this challenge, teachers and students are encouraged to be more innovative and collaborative. This shows that the success of learning does not only depend on the availability of technology, but also on the ability to adapt and utilize existing resources optimally. (Learning Islamic Religious Education in Public Universities: Challenges ... - Dr. Yusnaili Budianti, M.Ag. - Google Books, nd)

CONCLUSION

Based on the results of the research and discussion that has been conducted, it can be concluded that the technology-based Islamic Religious Education (PAI) learning strategy has a significant influence in improving student understanding. The application of technological media such as learning videos, digital quizzes, and interactive platforms has been proven to be able to create a more interesting, interactive, and effective learning atmosphere compared to conventional methods. Students become more active in following the learning process, find it easier to understand abstract concepts, and show a positive response to material delivered. Technology is not only a learning tool, but also a means that can change the educational approach to be more contextual and relevant to the lives of today's students.

The increase in the average post-test score in the experimental group shows that the use of technology has a real impact on the understanding of religious material. In addition, student involvement in the learning process also increased significantly. They are more enthusiastic, more focused, and participate more in discussions and other learning activities. Interactive media is also able to bridge the gap between abstract material and its application in everyday life, so that students not only understand cognitively, but also affectively and psychomotorically. However, this study also found several technical barriers, such as limited devices and internet connections. However, these barriers can be overcome through adaptive approaches such as the use of offline learning media, application usage training, and the use of lightweight platforms that are easy to access. This shows that the success of technology-based learning is not only determined by the availability of facilities, but also by the creativity and readiness of teachers in designing flexible learning strategies. Thus, it can be concluded that technology-based PAI learning strategies are an effective and relevant approach in the digital era. Therefore, it is highly recommended that teachers continue to improve digital literacy and innovate in utilizing technology for learning. Schools and the government also need to provide support in the form of training and provision of technological infrastructure so that the digital-based learning process can be implemented optimally and evenly in all educational units.

REFERENCES

- Abbad, MF (2021). Pesantren and Social Change: Culture, Authority, Values and Transmission of Knowledge. *ASNA: Journal of Islamic and Religious Education*, 3(1), Article 1.
- Abdurrohman, A., & Syamsiar, H. (2017). Islamic Religious Education (PAI) Learning Inclusive Religious Model to Prevent Religious Radicalism Among High School Students. *FENOMENA*, 9(1), 105–122. <https://doi.org/10.21093/fj.v9i1.789>
- Adab, AS, Publisher. (nd). PAI LEARNING MEDIA. Adab Publishers.
- Ag, PDSG, M., & MA, DS (2019). Development of Educational Interaction in Islamic Religious Education Learning: Theory & Practice. Ar-Raniry Press.
- ANALYSIS OF STUDENT ENGAGEMENT AND RESPONSE IN ONLINE LEARNING USING GOOGLE CLASSROOM DURING THE COVID-19 PANDEMIC*
 19 / Febrilia / FIBONACCI: Journal of Mathematics and Mathematics Education. (nd). Retrieved August 6, 2024, from <https://jurnal.umj.ac.id/index.php/fbc/article/view/7406>
- BOEDIROCHMINARNI, A., PRAKOSA, GG, WIBOWO, FAC, & FITRI, ACK (2024). Collaborative Strategies in Environmental Conservation and Sustainable Economic Development. Civilization Library.
- Dalimunthe, DS (2023). Transformation of Islamic Religious Education: Strengthening Spiritual Values, Ethics, and Islamic Understanding in a Modern Context. *Al-Murabbi Journal of Islamic Education*, 1(1), Article 1. <https://doi.org/10.62086/al-murabbi.v1i1.426>
- Dalimunthe, EM, Ihsan, M., & Dalimunthe, DM (2023). PARENTAL PARTICIPATION IN THE IMPLEMENTATION OF PAUD PROGRAMS. *Comprehensive*, 1(2), 435–440.
- Djollong, AF, & Akbar, A. (2019). THE ROLE OF ISLAMIC RELIGIOUS EDUCATION TEACHERS IN INSTALLING THE VALUES OF TOLERANCE AMONG STUDENTS OF MULTI-RELIGIOUS CONGREGATIONS TO REALIZE HARMONY. *Journal Al-Ibrah*, 8(1), Article 1.
- Khodafi, M., Zulaili, IN, Juma', J., & Sa'adah, SI (2024). Islamic Civilization in the Digital Era: The Diversity of Muslim Religious Expression in Social Media. *JUSPI (Journal History Civilization Islam)*, 8(1), Article 1. <https://doi.org/10.30829/juspi.v8i1.19137>

Kirana, DA, & Ghani, MA (2024). EFFORTS TO OVERCOME DIFFICULTIES IN LEARNING SQUARE TRIANGLE MATERIAL USING MEDIA

