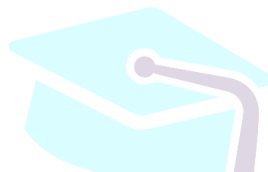


Improving Islamic Education Learning Outcomes with Technology Integration Based on the TPACK Method at SD Negeri 21 Bonjol

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Abstract: This study aims to improve student learning outcomes in Islamic religious education learning using technology integration based on the TPACK Method. This study is a classroom action research that uses four steps, namely planning, action, observation and reflection. The subjects of this study were elementary school students. The data for this study were obtained by test and observation techniques. Tests are used to measure learning outcomes and observations are used to analyze teacher and student learning activities. The data analysis technique used in this study is descriptive statistics by comparing the results obtained with indicators of research success. The results of the study indicate that technology integration based on the TPACK Method can improve student learning outcomes in Islamic religious education learning. This can be seen from the increase in the percentage of student learning completion in each cycle with details of the pre-cycle 47.56%, the first cycle 65.47% and in the second cycle increased to 85.57%. Thus, the use of technology integration based on the TPACK Method can be used as an alternative to improve student learning outcomes in Islamic religious education learning.

Keywords: TPACK method, learning outcomes, islamic education.

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INTRODUCTION

Education is one of the main pillars in forming a generation that is intelligent, characterful, and with integrity. In the context of education in Indonesia, Islamic Religious Education (PAI) has a strategic role in building the spiritual, moral, and ethical values of students. However, the challenges faced in learning PAI in the modern era are increasingly complex, especially with the rapid development of information technology. This requires the integration of technology in learning so that PAI material can be delivered more interestingly, relevant, and in accordance with the needs of the times.

At SD Negeri 21 Bonjol, the learning results of students in PAI subjects, especially grade 4, show that some students still have difficulties in understanding the material. Based on the results of initial observations, several factors that affect low student learning outcomes are the lack of variety in learning methods, the lack of use of technology, and the lack of active student involvement during the teaching and learning process. Conventional learning methods that tend to be monotonous cause students to be less motivated to learn, so that the achievement of learning outcomes is not optimal.

Along with the development of technology, innovative learning methods such as the TPACK (Technological Pedagogical Content Knowledge) model are one of the potential solutions. The TPACK approach combines three main components, namely content knowledge, pedagogy, and technology, thus creating an interactive and contextual learning process. By using this method, teachers can design learning that is more engaging, dynamic, and relevant to student needs. The implementation of the TPACK method in PAI learning is believed to improve student learning outcomes through the integration of technology in the delivery of materials, so that students can understand religious concepts better. Article 31 of Law Number 20 of 2003 concerning the National Education System states that National Education functions to develop abilities and shape the character and civilization of a dignified nation in order to educate the life of the nation, aiming to develop the potential of students to become human beings who believe in and devote themselves to God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent, and to be democratic and responsible citizens. From the mandate of the legislation as above, religious education subjects must be given to students, from the Kindergarten (TK) to Higher Education (PT) levels.

This requires changes in organizing classes, the use of teaching methods, teaching and learning strategies, as well as teachers' attitudes and characteristics in managing the teaching and learning process. Teachers play the role of managers of the teaching and learning process, acting as facilitators who try to create effective teaching and learning conditions, so as to enable the teaching and learning process, develop study materials well, and improve students' ability to listen to lessons and master the educational goals that they must achieve. To fulfill the above, teachers are required to be able to manage the teaching and learning process that provides stimulation to students, so that they want to learn because students are the main subjects in learning. The subject of Islamic Religious Education substantially contributes to providing mitigation to students to practice the values of religious beliefs (tauhid) and moral values in daily life. Religious education is intended to increase spiritual potential and form students to become human beings who believe in and fear God Almighty and have noble character. Noble morals include ethics, ethics, and morals as a manifestation of religious education. Increasing spiritual potential includes the recognition, understanding, and inculcation of these values in individual or collective life in society.

Joint learning activities can help spur active learning. Learning and teaching activities in the classroom can indeed stimulate active learning. However, the ability to teach through small group work activities will make it possible to promote active learning activities in a special way. What students discuss with their peers and what students teach their peers allow them to gain an understanding and mastery of the subject matter. There are many ways that a teacher can do to make learning in the classroom effective, one of which is the use of technology-based media that can activate students. From the results of the observation, it can be concluded that the condition as described above is caused by the learning media chosen by the teacher is not right. Therefore, teachers will try to use one of the media, namely technology-based media in the form of, youtube, video and PPT, to improve the learning achievement of Islamic Religious Education in grade IV students in the second semester of SD Negeri 21 Bonjol, so that this Class Action Research is entitled "IMPROVEMENT OF PAI LEARNING OUTCOMES WITH THE INTEGRATION OF TECHNOLOGY BASED ON THE TPACK METHOD IN GRADE 4 STUDENTS OF SDN 21 BONJOL".

METHODS

This study uses a quantitative approach to measure the influence of technology-based media use on student learning outcomes objectively through statistical analysis. The type of research chosen is Classroom Action Research (PTK) because its focus is on improving student learning outcomes through the application of technology media such as YouTube,

learning videos, and PowerPoint. The research process consists of planning, implementing actions, observations, and reflections, which are carried out in cycles to improve the quality of learning. The research location was carried out at SDN 21 Bonjol, Bonjol District, Pasaman Regency, in the second semester of the 2024/2025 school year, with the research subject of grade IV students.

PTK was chosen because it provides opportunities for teachers to carry out contextual interventions, continuous reflection, and improvement of learning practices directly in the classroom. This research is carried out through several stages: first, the researcher formulates the problem, goals, and action plan, including research instruments and learning tools. Second, actions and observations are carried out to build students' understanding and observe the impact of technology-based media. Third, reflection is carried out by analyzing the results of observations and considering the necessary improvements. The research cycle is carried out in four rounds, each containing planning, implementation, observation, and reflection to improve teaching.

Data collection techniques include observation, tests (pre-test and post-test), interviews, questionnaires, documentation, and teacher reflections. The data collected was analyzed to determine the improvement of student learning outcomes and the effectiveness of technology-based media. The research instruments include learning outcomes, teaching modules, student activity sheets, observation sheets, and formative tests. The data analysis technique used is qualitative descriptive analysis to evaluate learning achievement and student responses to learning.

RESULTS

The application of hadith learning using technology shows positive results through the improvement of each cycle. In Cycle I, the results of teacher and student observation showed scores of 77 and 75 respectively, with some students lacking focus and distracted by other activities. However, after making innovations in Cycle II, such as delivering more detailed learning steps and creating more conducive classroom conditions, the results improved. In Cycle II, the observation of teachers and students showed significant improvements, with an increase in the average score and percentage of student completion, which reached 88.88%. These results reflect that the use of technology media in learning has a positive impact on students' understanding of the hadith material, gathering, and asmaul husna. The percentage of student completion also increased from 77.7% in Cycle I to 88.88% in Cycle II, showing the effectiveness of improvements implemented in the learning process.

The learning of hadith gathering using technology media shows a significant increase from Cycle I to Cycle III. In Cycle I, the observation results of teachers and students were 77 and 75 respectively, with some students lacking focus and engaging in other activities. In Cycle II, after improvements in material delivery and classroom management, the observation results increased. Cycle III showed even better results, with the average score of students reaching 94, exceeding the KKTP set. The percentage of student completeness also experienced a significant increase in each cycle. The innovations made, such as the use of the "make a match" method and technological media, make learning more interactive and fun, leading to an increase in students' understanding and memorization skills.

In Cycle I, the average score of students was 76 with a classical completeness level of 55.6%. However, in Cycle II, after improvement, the average score increased to 82 and classical completeness reached 80%. The main factor supporting this increase is the use of technology-based media such as learning videos and PowerPoint presentations, which help with the visualization of the material and increase interactivity in learning. The increase in student and teacher activity is also evident between the two cycles. In Cycle I, teacher and student activities only reached 77.9% and 76%, respectively, but in Cycle II, teacher and student activities increased to 85% and 83%. This increase is driven by the

use of structured teaching modules, the division of work groups, and the use of interactive media that attract students' interest. Additionally, the integration of technology-based media, such as learning videos and presentations, has proven to be effective in presenting material in a more engaging and easy-to-understand way for students.

The TPACK method applied in this study combines technological knowledge, pedagogy, and content to create learning that is relevant and appropriate to the digital era. Nonetheless, the challenges faced include limitations in technological infrastructure and distractions during the use of technological devices. To overcome these obstacles, in Cycle II, improvements were made in teacher readiness and student interaction, with steps such as clearer media introduction and the preparation of more structured teaching modules. The implication of the results of this study is that the use of technology in learning can improve the effectiveness of teaching and student understanding. Teachers are expected to continue to improve their skills in the use of technology, while schools need to provide adequate technological facilities to support technology-based learning.

Learning the attributes of the Apostle using technological media shows significant improvement through improvement in each cycle. From cycle I to cycle IV, there was an increase in the observation results of teachers and students, caused by innovations based on input from subject teachers. In the first cycle, the observation results of teachers and students were 77 and 75 respectively, but there were still obstacles such as lack of student focus. Better improvements occurred in cycles II and III, with improvements in learning steps and more conducive classroom conditions. In cycle IV, the application of the "make a match" method with technology media further improved learning outcomes, with a final score of 96.8, which has exceeded the set KKTP. This increase shows that the innovations made, such as the use of technology and interactive methods, make students more active and enthusiastic in understanding the material.

DISCUSSION

The findings of this study reveal that integrating technology into the learning process, using the Technological Pedagogical Content Knowledge (TPACK) framework, significantly improved the learning outcomes of PAI (Pendidikan Agama Islam) for fourth-grade students at SDN 21 Bonjol, Pasaman Regency. The integration of technology not only helped engage students more actively but also enhanced their understanding and retention of Islamic religious education content. This study confirms the importance of applying a comprehensive approach that incorporates technological, pedagogical, and content knowledge to improve learning outcomes.

One of the key aspects of the TPACK framework is the effective integration of technology into teaching practices, aligning it with the content being taught and the pedagogical methods employed. In this study, various digital tools such as interactive multimedia presentations, educational apps, and online resources were used to present PAI material in a more engaging and accessible manner. These tools provided students with the opportunity to explore the content in a way that traditional methods alone could not achieve. The multimedia presentations, for instance, helped illustrate abstract religious concepts and stories, making them more tangible and relatable for young learners. The pedagogical strategies employed alongside technology also played a crucial role in improving learning outcomes.

Teachers, who were equipped with both the technical and pedagogical skills needed to use these digital tools effectively, were able to provide an enriched learning experience. By designing lessons that combined both traditional and digital learning materials, the teachers created a more dynamic classroom environment. This allowed students to not only absorb the content in a variety of formats but also encouraged them to participate actively in the learning process, which is essential for deeper understanding and retention. The students' engagement with the technology, as indicated by their enthusiasm and increased participation in the lessons, was one of the most striking results

of this study. As students interacted with digital tools such as educational games, videos, and quizzes, their motivation to learn improved significantly.

Research has consistently shown that when students are engaged and motivated, their ability to learn and retain information improves. In the context of PAI, where memorization and understanding of religious principles are key, this increased engagement was especially important in enhancing learning outcomes. In addition to increased motivation and engagement, the study also highlighted the importance of the teacher's role in guiding and facilitating the use of technology. Teachers were not only responsible for integrating technology into their lessons but also for ensuring that the technology supported the content and pedagogical goals of the lesson.

This alignment between content, pedagogy, and technology is central to the TPACK framework, which emphasizes that technology should not be used as an add-on but rather as an integral part of the learning experience. When used appropriately, technology can provide new ways for students to engage with PAI content and develop a deeper understanding of Islamic teachings. Despite the positive outcomes, there were some challenges that emerged during the implementation of the TPACK method. One challenge was ensuring equal access to technology for all students, as some students faced difficulties in accessing digital tools outside of school.

This discrepancy could potentially widen the gap between students with higher access to technology and those without. Future studies could address this issue by exploring ways to ensure that all students, regardless of their technological resources, benefit equally from technology-integrated learning. Additionally, while the study demonstrated improvements in student learning outcomes, further research could examine the long-term impact of technology integration on PAI learning.

In conclusion, the integration of technology based on the TPACK framework proves to be an effective strategy for improving the learning outcomes of PAI for fourth-grade students at SDN 21 Bonjol. By blending technological tools with pedagogical practices that align with the content of Islamic education, the study demonstrates that students are more engaged, motivated, and able to achieve better understanding and retention of the material. This research contributes to the ongoing exploration of how technology can transform education, particularly in religious subjects, and underscores the importance of teacher preparation and support in successfully implementing technology-driven teaching methods.

CONCLUSION

The class action research entitled "Improving PAI Learning Outcomes with the Integration of TPACK Method-Based Technology in Grade IV Students of SD Negeri 21 Bonjol" has been successfully carried out in several cycles. Based on the results of the study, it can be concluded that, 1) The use of technology based on the TPACK method in Islamic Religious Education learning has been proven to be effective in improving student learning outcomes. This is shown by an increase in the average student score and the level of learning completeness from cycle to cycle; 2) Technology-based media such as YouTube, learning videos, and PowerPoint are able to increase student engagement during the learning process. Students become more active, motivated, and enthusiastic in participating in learning; 3) The application of the TPACK method that integrates technology, pedagogy, and content holistically helps students understand the learning material in a more in-depth and contextual way, especially in the Surat At-Tiin material. This research aims to improve the learning outcomes of Islamic Religious Education (PAI) in grade IV students of SDN 21 Bonjol by integrating technology based on the TPACK method. The results of the study showed a significant improvement in student learning outcomes after the implementation of technology-based learning.

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