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Application of Project-Based Learning in Islamic Education using the Scientific Approach

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Abstract

Education is one of the basic needs of humans as cultured and rational beings who also act as caliphs on earth. Islamic Religious Education (PAI) functions to form humans who are faithful, pious, have noble character, and have a complete personality through the transfer of experience, knowledge, and skills. This study aims to examine the application of a scientific approach in PAI learning with the Project Based Learning (PBL) method in high schools. This study uses a descriptive field research method with a qualitative approach. Data were collected through observation, interviews, and documentation of PAI teachers and the learning process. The analysis was carried out inductively to understand the existing phenomena. The results of the study showed that PAI teachers designed a scientific approach before the semester began by reviewing the syllabus, Core Competencies (KI), Basic Competencies (KD), educational calendar, materials, methods, learning models, assessments, time allocation, and learning resources. The application of a scientific approach with the PBL method involves learning activities including preliminary, core, and closing activities. This approach makes students more active in the learning process, especially in the 5M stages: observing, asking, trying, reasoning, and communicating. The contribution of this research lies in the finding that a scientific approach applied with PBL strategies can increase student motivation and engagement, thereby creating a more meaningful learning experience according to each student's learning style.

Keywords: Islamic Religious Education, Scientific Approach, Project Based Learning

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INTRODUCTION

The Project Based Learning (PBL) model is one of the pedagogic approaches that has been in the spotlight in contemporary education(Guslyakova et al., 2021; Mouton, 2020; Smith et al., 2022). PBL is designed to provide a contextual learning experience where students engage in real-world problem-solving through projects that are relevant to their lives(Hojeij et al., 2021; Jawaid et al., 2020; Maulidia, 2023). Implementing PBL in the context of learning Islamic Religious Education (PAI) in high school presents a unique opportunity to explore students' understanding of religious values in daily life(Afandi & Ningsih, 2023; Arif & Aziz, 2023; Hamdan et al., 2022; Nasucha et al., 2023; Faiz et al., 2023). This approach has been widely accepted as an effective method for preparing students for the challenges of the 21st century, such as critical thinking, creativity, and collaboration(Aifan, 2022; Aulia, 2022; Hidayah et al., 2021; Purwanto & Wafa, 2023). Its implementation in the field still faces various obstacles, such as teachers' lack of understanding of implementation strategies and limited school support facilities. This shows the need for in-depth research to understand how PBL

can be optimized in PAI learning.

Various literatures show that PBL has a positive impact on student learning outcomes. PBL improves the understanding of concepts in depth(Hidayati et al., 2021; Maftuh, 2023; Uliyandari et al., 2021). PBL approach supports the development of collaborative and problem-solving skills(Hidayah et al., 2021; Zhang & Hwang, 2023; Ridlo & Yanti, 2023). The success of PBL in increasing student motivation in learning science(Khairani et al., 2020; Rahayu et al., 2024; Safaruddin et al., 2020). Research by Arif & Aziz (2023) emphasizes that PBL in the context of PAI encourages students to integrate religious values with concrete actions. Kong et al. (2023) study identified that PBL can increase students' understanding of moral concepts. Research by Rafiq et al. (2023) states that this approach also effectively increases student involvement in the learning process. These facts show the great potential of PBL in various learning contexts, but in-depth studies in PAI learning, especially at the high school level, are still minimal. Although many studies have been conducted on PBL, there is a significant research gap, especially in the context of PAI learning in high school. Most previous studies have focused more on science and technology, with little attention paid to applying PBL in value-based subjects, such as PAI. It's important to explore further how the PBL model can be effectively applied in PAI learning so that it can answer more holistic pedagogic needs.

This study aims to analyze the implementation of a scientific approach through the PBL model in PAI learning at Klepek Sukosewu Bojonegoro Islamic High School. This study explores approaches that can improve students' understanding of teaching materials, their skills in practising religious values, and the level of student involvement in the learning process. This research offers a new perspective by integrating a scientific approach into PBL for PAI learning, which is expected to provide a more systematic framework relevant to the needs of students in the modern era.

The argument of this study suggests that the PBL model with a scientific approach has great potential to answer three main issues in PAI learning: increasing material understanding, skills, and student engagement. First, the scientific approach in PBL allows students to delve deeper into the material through observation, experimentation, and critical analysis to improve their understanding of religious concepts. Second, the project-based learning process encourages students to develop practical skills, such as communication, collaboration, and problem-solving, that are relevant to the practice of religious values. Third, student engagement can be enhanced through engaging and meaningful project assignments designed to connect learning to their real lives. Thus, this research is expected to significantly contribute to developing PBL-based PAI learning theory and practice in high school.

RESEARCH METHOD

This study uses a qualitative approach with a case study type to explore the implementation of the Project Based Learning (PBL) model in Islamic Religious Education (PAI) learning. SMA Islam Klepek Sukosewu Bojonegoro was chosen because it is known for its commitment to the development of a curriculum based on religious values and has implemented innovative learning methods. In addition, a supportive school environment, as well as the active involvement of students and teachers in project-based learning, provide a rich context to explore the dynamics of PBL implementation in PAI.

The data in this study consists of primary and secondary data. Primary data includes the results of interviews with students and teachers, observation of the learning process, and documentation of student project activities. Secondary data includes school documents, such as learning implementation plans (RPPs), student learning outcome reports, and related curriculum policies. The combination of these data allows researchers to obtain a comprehensive

understanding of the implementation of PBL in the context of PAI learning.

Data collection techniques are carried out through interviews, observations, and documentation. Interviews were conducted with four students and nine teachers to reveal their views on the effectiveness of PBL in PAI learning. The interview was conducted by involving 4 students and 9 teachers to explore their perceptions, experiences, and evaluations of the application of the Project Based Learning (PBL) model in Islamic Religious Education learning. The information obtained through this interview is expected to provide a deeper understanding of the views and direct experiences of students and teachers regarding the effectiveness of PBL as shown in Table 1. Observation is used to observe firsthand how students and teachers interact in the project-based learning process. Documentation includes an analysis of relevant school official documents.

Table 1. Research Matrix

Technique	Research Subject	Data Collected
Interview	4 students	Perception and experience of PBL
Interview	9 teachers	Perception, teaching, and evaluation of PBL
Observation	Learning process	Student and teacher interactions in project activities
Documentation	School documents	Lesson plans, learning outcome reports, and curriculum policies

The data analysis was carried out based on the Miles and Huberman interactive model, which included three main stages: data reduction, data presentation, and conclusion drawn(Williams, 2021). Data reduction is done by filtering important information from interviews, observations, and documentation to focus on key issues. The presentation of data is carried out in the form of descriptive narratives and tables, which provide a systematic overview of the research findings. Finally, conclusions are drawn by connecting empirical findings with the theoretical framework used in this study. This approach allows researchers to identify important patterns and provide an in-depth interpretation of the implementation of PBL in PAI learning at SMA Islam Klepek Sukosewu Bojonegoro.

FINDINGS AND DISCUSSION

Learning Plans that Use a Scientific Approach in PAI Subjects

Learning plans, or what are often called RPPs, are crucial in learning. The success of the learning process depends on the RPP that has been prepared before starting learning. Teachers must adjust the materials, strategies/methods, models and media used to create a good learning design. Because every strategy cannot be applied to all materials, the same applies to materials suitable for specific models. The syllabus document includes subject identity, school identity (education unit), core competencies, essential competencies, primary material, learning activities, assessment, time allocation and learning resources. PAI teachers carry out a scientific approach before the start of the semester. In preparing the RPP, teachers also review the syllabus and pay attention to KI and KD in the RPP; not only that, teachers also review the calendar, learning materials, learning methods, learning models, assessments, time allocation and learning resources.

The Learning Implementation Plan (RPP) format used in this study refers to the latest guidelines outlined in the Minister of Education and Culture Regulation Number 22 of 2016, which concerns the process standards for basic and secondary education. The RPP designed by the PAI teacher at Islamic High School Klepek Sukosewu Bojonegoro includes several key components. These components are the school identity, consisting of the school name, subject, class/semester, and time allocation; core competencies (KI); essential competencies (KD); indicators; learning

materials; steps for learning activities; assessment, remediation, and enrichment strategies; media/tools, materials, and learning resources; and an attachment containing the assessment instrument.

Table 2. RPP Components Based on Ministerial Regulation

Component	Details
School Identity	School name, subject, class/semester, time allocation
Core Competencies (KI)	Main capabilities students are expected to develop
Basic Competencies (KD)	Specific skills and knowledge linked to KI
Indicators	Measurable achievements linked to KD
Learning Materials	Topics and content relevant to PAI
Steps for Learning Activities	Sequence of activities for achieving learning objectives
Assessment, Remediation, and Enrichment	Methods to evaluate, support, and advance student learning
Media/Tools, Materials, and Learning Resources	Supporting tools and resources for effective learning
Attachment	Assessment instrument to measure student outcomes

Table 2, this comprehensive structure ensures that the RPP aligns with educational standards while addressing the specific needs of PAI learning through innovative methods like PBL. Islamic Religious Education (PAI) learning at Klepek Sukosewu Bojonegoro Islamic High School uses the Project Based Learning (PBL) model to discuss faith material to the Last Day. The learning process begins with the teacher introducing the postulates of *Naqli*, which describes the Last Day's events. The teacher explained how people should behave in the face of belief in the Last Days, the importance of introspection as the implementation of true faith, the various types of apocalypse and the stages of life afterwards. The teacher also shows relevant *Naqli* postulates so that students understand the material being taught.

The students were then divided into four groups, each of five. The teacher conveyed the stages of learning activities that will be carried out with a scientific approach, including five main stages: ob:sk, explore, association, and communicate. Each stage facilitates active and collaborative learning so students can better understand the material.

The first stage is observing, where the teacher shows a video describing the Last Day's events. These videos provide an engaging and contextual visualization of the apocalypse concept, helping students understand the material more easily. All students listened to the video seriously to add to their initial insights. After that, at the ask stage, students carry out a question-and-answer session with the teacher and between students, which discusses various questions about the Last Day. This interaction encourages students to think critically and deepen their understanding of the material.

In the exploration stage, each group is given a different task according to the worksheets that have been shared. Group 1 observed images related to understanding the apocalypse and provided comments. Group 2 read and interpret Surah Al-Qariah verses 4-5 and Az-Zalzalah verses 1-2, then discuss the events of the *Kubro* apocalypse. Group 3 read about the process of human life on the Last Day and illustrated the stages of human life from the grave to heaven or hell. Meanwhile, Group 4 read an inspirational story about a prospective inhabitant of heaven and discussed the story's wisdom.

At the association stage, each group formulates the results of their discussion and develops a formulation to present their findings in an organized manner. This stage encourages students to integrate information gained from their exploration and discussion. Finally, at the communication stage, each group presents the results of their discussion to the group leader. Other groups provided responses and inputs to enrich the discussion. The teacher then reinforces the material, concludes the learning that has been carried out, and, together with the students, reflects on the

activities that have been carried out. In closing, the teacher provides an overview of the material that will be studied at the next meeting to maintain the continuity of learning.

The observation results show that implementing PBL in PAI learning has increased student engagement and understanding. The video shown at the observation stage attracts students' attention and makes it easier for them to understand the Last Day's events. In the exploration stage, students actively discuss in groups, demonstrating critical thinking skills and good collaboration. For example, the group interpreting Surah Al-Qariah can provide an in-depth understanding of the *Kubro* apocalypse. In contrast, the group that makes illustrations illustrates their creativity and skills in visualizing the material.

The students responded positively to this method; they found learning more interesting and relevant. The results of the presentation also showed that students could convey their understanding. Overall, this method enriches students' understanding of faith in the Last Days and improves their skills in critical thinking, communication, and cooperation.

Application of a Scientific Approach to PAI Subjects

The 2013 Curriculum has been implemented at Klepek Sukosewu Bojonegoro Islamic High School since 2016. The 2013 Curriculum motivates students to learn because, in its implementation, the 2013 Curriculum encourages students to be more active in learning than teachers. Based on the facts that researchers found, the teachers at the school had implemented a scientific approach. However, its implementation has not been implemented optimally. The teachers at Klepek Sukosewu Bojonegoro Islamic High School have implemented a scientific approach because they have received special training on implementing the 2013 Curriculum from the Education Office and for PAI Teachers. An approach that includes aspects of a teacher in which research, discussion and study include the educational process, such as the teacher's way of teaching.

The teacher uses a student-centred learning approach based on a scientific method, where students play a central role in the learning process. This approach involves several scientifically grounded steps to enhance student engagement and understanding. The first step is observation, where students are introduced to the real world through sensory experiences such as seeing, hearing, reading, and interacting with media. In this step, students are guided to observe pictures, watch videos, read guidebooks, or search for information about believing in the last day. At this stage, students were divided into five groups and assigned to explore guidebooks on the topic, enhancing their understanding of the material.

The next step is asking questions, where students are encouraged to express their curiosity about the topic. This questioning process helps students deepen their understanding by asking logical and relevant questions about their observations. Questions are directed to the teacher and their peers, stimulating interactive discussions. This stage builds upon the observations and fosters an inquisitive mindset, allowing students to explore unanswered aspects of the material actively.

Following the questioning stage is the experimental phase, where students actively seek additional information related to the topic of the last day. Students are encouraged to use internet resources, supported by the school’s wi-fi, to expand their knowledge. This hands-on approach helps students develop data collection and research skills, providing a broader context for their learning.

After gathering information, students engage in the association phase, where they analyze and critically compare the information they have obtained from various sources. This reasoning process allows them to draw meaningful conclusions, integrating their prior knowledge with newly acquired insights. During this step, students enhance their ability to synthesize and evaluate

information.

The final stage is communicating, where students present the results of their discussions and findings. Presentations can be conducted orally or in writing, allowing students to articulate their understanding and share their insights with peers. This step builds confidence and fosters collaborative learning as students provide feedback to one another.

The school's support system is critical in successfully implementing this scientific approach. For instance, the school committee actively collaborates with the administration to ensure the availability of effective learning media. By providing diverse teaching aids, teachers can deliver lessons more effectively, and students can quickly grasp the material. Daily congregational Zuhr prayers in the school's prayer room also instil discipline and spiritual values, with weekly sermons further enriching students' character education.

Figure 1. Stages of Scientific Approach Involvement

Figure 1, another form of support is ensuring equitable training in the 2013 Curriculum. While some teachers have participated in relevant training, the school recognizes the need to extend such opportunities to all educators. This inclusive approach ensures that all teachers are equipped to implement professional and effective teaching strategies, thereby improving the overall quality of education.

An interview with one of the teachers at Klepek Sukosewu Bojonegoro Islamic High School revealed that this scientific approach significantly impacts student enthusiasm. The teacher noted that combining structured steps and interactive methods fosters a more engaging learning environment. Students become more active participants and are better prepared to apply their learning to real-life situations. The teacher emphasized the importance of continued support and training to enhance the effectiveness of this approach, highlighting the role of collaboration between the school and its committee in achieving these goals.

Learning Impact on Students

A teacher's initial learning activities must pay attention to several stages in the learning process, such as the teacher asking about student attendance, noting absent students and asking students about previously studied material, and providing opportunities for students to ask questions about material that has not yet been studied, as well as conducting Apperception of students with previously studied material is done briefly but includes aspects of initial learning activities. Based on the results of interviews and observations of researchers with one of the PAI teachers at Islamic High School Klepek Sukosewu Bojonegoro. That is, by the learning plans made by the teacher. Based on the results of observations seen from the teacher activity observation sheet and student activity observation sheet, we have implemented the steps of the inquiry learning model regarding faith on the final day.

In the ongoing learning process, students are more active in learning, where students pay attention to the teacher's explanations and discuss the material with each other. In the ongoing learning process, students appear to be more active in learning, where students pay attention to the explanations that the teacher explains, discuss the material with each other, respond to the teacher's questions, respect each other and share knowledge with their friends.

Creating active students in the learning process is the task of a teacher to arouse students' enthusiasm in participating in the learning process. If students are active in class, teacher and student interaction will occur. Based on interviews with PAI teachers regarding learning that creates active students, it is explained as follows, "In order to make students active, it must be a discussion method because the Project Based Learning (PBL) method is used, namely a model that expects students to play an active role in solving a problem given by the teacher, here the teacher just directs".

A teacher's initial learning activities must consider several important stages in the learning process to ensure that students are ready and engaged. These stages include checking student attendance, noting absentees, and revisiting previously studied material. Teachers should also provide opportunities for students to ask questions about topics they do not fully understand and briefly conduct an apperception to link past material with the current lesson. This approach helps set a clear foundation for the learning process. Based on interviews and observations conducted by the researcher with one of the PAI teachers at Islamic High School, Klepek Sukosewu Bojonegoro, it was found that these activities align with the learning plans prepared by the teacher. The teacher emphasized the importance of structuring initial activities to foster an environment of readiness and curiosity.

From the observations recorded in the teacher and student activity observation sheets, implementing the inquiry learning model on faith on the last day was effectively implemented. Students were visibly more engaged in the learning process. They paid close attention to the teacher's explanations, actively discussed the material in groups, responded to questions, and displayed mutual respect by sharing their knowledge with peers. This active participation demonstrated that the inquiry learning model encouraged collaboration and critical thinking.

Creating active learners is one of the primary responsibilities of a teacher. According to the PAI teacher, this involves designing lessons that can ignite students' enthusiasm and curiosity. The teacher shared, "To make students active, it is essential to use discussion methods. For example, with the Project-Based Learning (PBL) method, the model encourages students to play an active role in solving problems provided by the teacher. Here, the teacher's role is simply to direct the process." This method ensures that students engage with the material and develop problem-solving and teamwork skills, which are critical in contemporary education.

During the interview, the teacher also highlighted the importance of preparation and adaptability in the teaching process. "A teacher must come with a well-prepared plan but also be flexible to adapt to the needs and interests of the students. When students show particular enthusiasm for a topic, the teacher should capitalize on that interest to deepen their understanding." This perspective underscores the dynamic nature of teaching, where the teacher acts not only as an instructor but also as a facilitator who guides students in exploring knowledge.

In addition to using the PBL method, the teacher described other strategies to maintain student engagement. "We often start lessons with something intriguing, such as showing a video or sharing an interesting story related to the material. This captures their attention and sets the tone for an interactive session." The teacher further explained that incorporating multimedia and storytelling enhances students' ability to connect abstract concepts to real-world scenarios, making the learning process more meaningful.

Another critical aspect mentioned was the role of assessment and feedback. "After every group discussion or project presentation, I ensure to provide constructive feedback, highlighting their strengths and areas for improvement. This motivates students to strive for better results and take ownership of their learning," the teacher noted. The feedback process not only aids student development but also fosters a classroom culture of continuous learning and mutual respect.

The learning process observed at Islamic High School Klepek Sukosewu Bojonegoro demonstrates a commitment to student-centred methodologies. The teacher successfully cultivates an engaging and interactive learning environment through careful planning, active facilitation, and the strategic use of PBL and inquiry-based approaches. The integration of such methods aligns with modern pedagogical practices, ensuring that students are equipped with the critical skills needed for academic and personal success.

Discussion

Applying a scientific approach in Islamic Religious Education (PAI) learning using the Project Based Learning (PBL) model shows that project-based learning can create an active and collaborative learning atmosphere(Arif & Aziz, 2023; Saputra et al., 2023; Padang et al., 2023). The learning process, which includes five stages: observing, asking, exploring, associating, and communicating, encourages students to be directly involved in each stage(Puspitaningrum et al., 2023; Tambak et al., 2022). The observation stage, with the help of visual media, such as video, is a practical first step in attracting students' attention while providing learning context. The exploration and association stage also strengthens students' critical, analytical, and creative thinking skills through group discussions and project-based activities(Sari et al., 2023; Sucilestari et al., 2023; Mouton et al., 2020). This model is relevant to constructivism theory, where learning is focused on how students build understanding based on their experiences.

Learning with a scientific approach can improve students' critical thinking skills and a deep understanding of concepts. They found that using PBL methods encouraged students to participate more actively and helped improve communication and collaboration skills. In addition, students who study with the PBL model in PAI learning show a better understanding of religion than the lecture method. This research corroborates the results of observations at SMA Islam Klepek Sukosewu Bojonegoro, where students were able to integrate their understanding of faith in the Last Days in a creative and applicable way, such as through illustrations and group discussions. In conclusion, integrating a scientific approach with PBL in PAI learning improves students' understanding of the material and develops indispensable 21st-century skills.

Applying a scientific approach to learning Islamic Religious Education (PAI) at Klepek Sukosewu Bojonegoro Islamic High School reflects a real effort to increase students' involvement and understanding of teaching materials, especially regarding faith in the Last Day. This approach prioritizes student-centred learning through five scientific stages: observing, questioning, experimenting, associating, and communicating. These stages encourage students to interact with the material actively, develop critical thinking skills, and expand their knowledge by exploring information sources(Puspitaningrum et al., 2023; Safaruddin et al., 2020). School support, including the provision of learning and training media for teachers, is a significant supporting factor in ensuring the effective implementation of this approach. However, challenges such as equitable distribution of curriculum training and method optimization still need to be addressed to maximize learning outcomes.

The study's results support this scientific approach's effectiveness in improving students' learning skills. A scientific approach significantly improves students' critical thinking skills and confidence in PAI learning. The scientific approach increases students' interest in learning by integrating active exploration activities relevant to daily life. This study aligns with observations at SMA Islam Klepek Sukosewu Bojonegoro, where students show high enthusiasm in every stage of learning. By involving students directly in the learning process, this approach makes it easier for students to understand the concept of faith and trains them to apply religious values in real-life situations. This confirms that the success of the scientific approach depends on close collaboration

between teachers, students and a supportive school environment.

Applying the Project-Based Learning (PBL) model and inquiry approach at SMA Islam Klepek Sukosewu Bojonegoro shows efforts to create an active and collaborative learning environment. Student activities that include discussion, information sharing, and problem-solving reflect the application of a student-centred learning approach. This model provides opportunities for students to develop critical thinking, collaboration, and problem-solving skills independently with minimal direction from the teacher(Aulia, 2022; Hidayati et al., 2021; Zaini, 2023). Based on interviews with PAI teachers, the importance of teachers' flexibility in responding to student needs is a supporting factor for the success of this method. Teachers are not only facilitators but also motivational drivers who create relevant and engaging learning experiences through the use of multimedia and stories.

The study's results support the effectiveness of the PBL method in increasing student engagement. PBL improves cognitive learning outcomes and builds students' social skills and confidence(Aifan, 2022; Hamdan et al., 2022; Hidayati et al., 2021). Inquiry-based methods significantly improve students' analytical abilities and encourage exploratory-based learning. In the local context, implementing this strategy at SMA Islam Klepek Sukosewu Bojonegoro has successfully created dynamic learning, as reflected in the active interaction between students and teachers. Teachers reinforce a continuous learning cycle by providing constructive feedback, aligning with modern pedagogical principles to build an inclusive and participatory learning environment.

CONCLUSION

Integrating a scientific approach in Islamic Religious Education (PAI) learning at SMA Islam Klepek Sukosewu Bojonegoro enhances students' learning experiences by encouraging critical thinking skills, problem-solving, and active engagement. This approach combines systematic and empirical methods, such as the Problem-Based Learning (PBL) model, which helps students understand Islamic concepts in a more relevant context. Through observation, discussion, and exploration, students strengthen their understanding of religious values and develop 21st-century skills, such as collaboration, communication, and independent learning. This implementation shows significant potential in creating a dynamic and effective educational environment in PAI, preparing students to face the challenges of the modern world.

Despite this, the results of this study have limitations that need to be considered. This study is limited to one location, SMA Islam Klepek Sukosewu Bojonegoro, so the results may not fully reflect the success of implementing a scientific approach in other contexts with different characteristics. In addition, constraints such as the availability of supporting facilities, teacher skills in applying methods, and the level of student participation can affect the effectiveness of this approach. Further research in various schools with diverse backgrounds is needed to strengthen the generalizability of the findings and explore other factors that may influence the success of implementing a scientific approach in Islamic Religious Education learning.

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