The Influence of Project-Based Learning on Students' Critical Thinking Skills in Islamic Religious Education

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Article Information	Abstract
	This research aims to analyze the influence of project-based learning (PBL) on critical thinking skills in Islamic Religious Education subjects at SMA Insan Cendekia Syech Yusuf Gowa. The research focuses on evaluating the effectiveness of implementing the PjBL model in enhancing the quality of learning processes oriented toward active, contextual learning, particularly in developing students' critical thinking abilities. The approach employed is quantitative with a quasi-experimental design. The research subjects consisted of two classes: an experimental class that received a project-based learning model and a control class that used conventional methods. Data were collected through observation, critical thinking skills questionnaires, and learning outcome tests. Data analysis was conducted using t-tests and MANCOVA to measure differences and assess the model's influence on the dependent variables. The research results indicated that project-based learning was implemented very well, with an average implementation rate of 3.73 on a scale of 4. The average critical thinking skills score increased from 61.90 to 82.38, while the average learning outcomes score increased from 68.81 to 87.24. Statistical analysis demonstrated a significant effect of the PjBL model on the simultaneous improvement of both variables. These findings affirm that PjBL is effectively applied in Islamic Religious Education, as it can develop critical thinking, collaborative, and reflective skills that contribute to achieving Sustainable Development Goal 4 on Quality Education. *Penelitian ini bertujuan untuk menganalisis pengaruh pembelajaran berbasis proyek (Project-Based Learning/PjBL) terhadap keterampilan berpikir kritis pada*

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mata pelajaran Pendidikan Agama Islam di SMA Insan Cendekia Syech Yusuf Gowa. Fokus penelitian diarahkan untuk mengetahui efektivitas pelaksanaan model PjBL dalam meningkatkan kualitas proses pembelajaran yang berorientasi pada pembelajaran aktif dan kontekstual, khususnya dalam mengembangkan kemampuan berpikir kritis siswa. Pendekatan yang digunakan adalah kuantitatif dengan desain eksperimen semu (*quasi-experimental design*). Subjek penelitian terdiri atas dua kelas, yakni kelas eksperimen yang mendapatkan perlakuan model pembelajaran berbasis proyek dan kelas kontrol dengan metode konvensional. Data dikumpulkan melalui observasi, angket keterampilan berpikir kritis, serta tes hasil belajar. Analisis data dilakukan menggunakan uji t dan MANCOVA guna mengukur perbedaan serta kontribusi pengaruh model terhadap variabel dependen. Hasil penelitian menunjukkan bahwa pembelajaran berbasis proyek terlaksana dengan sangat baik, dengan rata-rata keterlaksanaan mencapai 3,73 dari skala 4. Nilai rata-rata keterampilan berpikir kritis meningkat dari 61,90 menjadi 82,38, sedangkan hasil belajar meningkat dari 68,81 menjadi 87,24. Analisis statistik menunjukkan pengaruh signifikan model PjBL terhadap peningkatan kedua variabel secara simultan. Temuan ini menegaskan bahwa PjBL efektif diterapkan dalam Pendidikan Agama Islam karena mampu membangun keterampilan berpikir kritis, kolaboratif, dan reflektif yang berkontribusi pada pencapaian *Sustainable Development Goals* poin 4 tentang *Quality Education*.

I. INTRODUCTION

The implementation of project-based learning in Islamic Religious Education subjects at SMA Insan Cendekia Syech Yusuf Gowa has proven highly effective and optimal. In 6 meetings, the learning effectiveness was high. Each meeting involved planning, preparation, project implementation, reflection, learning inquiry, and systematic thinking. Teachers act as facilitators and motivators, helping students develop critical thinking skills through discussions, active participation, initiative, and collaboration in completing projects that are contextual with everyday life, including religious life (Ikhwan, 2016).

The importance of this issue lies in students' learning and critical thinking skills. Few studies examine the effects of PBL models on essential thinking skills in Islamic Religious Education subjects. Previous research on PBL showed that critical thinking skills increased from 61.90 to 82.38. Empirical findings from statistical testing showed that the PBL model significantly increased students' critical

thinking skills by 46.7%, compared with 33.1% for the second variable. The results demonstrated that students were more crucial in the concept analysis of the project, such as zakat analysis, the prayer order in Islam, and moral values in everyday life.

In addition to quantitative results, the entire class, during the model's implementation, successfully transformed positive attitudes, as evidenced by students' enthusiasm and active participation among group members. Teachers and external observers noted students' seriousness in analyzing concepts through life contexts. The Islamic Religious Education subject at SMA Insan Cendekia Syech Yusuf Gowa successfully demonstrated a contextual learning spirit that fosters critical thinking, cognitive insights, and Islamic character.

Theoretically, the effectiveness of project-based learning in religious education has been widely reviewed by researchers and educators worldwide. According to Bell (2010), PBL encourages students to engage in active inquiry-based learning that connects theoretical knowledge with practical application. This approach aligns with the findings of Saraydarpira (2025), who emphasized that the PBL model demands strong pedagogical abilities from teachers and high autonomy from students in exploring real-life projects and establishing meaningful connections with religious materials. However, several references show that the application of PBL in Islamic Religious Education is often related to the procedural stage without evaluation systems on project objects and is sustainable so that it does not fully reflect actual learning performance (Amalia & Nugroho, 2025; Jauhari & Thelma, 2023; Khoiriyah et al., 2020; Rizki et al., 2021).

The main advantage of the discovery of this field is related to the success of learning PBL that is oriented toward deepening the understanding of structural differences and methodologies, especially in the context of SMA Insan Cendekia Syech Yusuf Gowa, Islamic Religious Education learning focuses on topics that have internal factors that are strong in schools, such as academic culture that is disciplined, structured, and requires students to be active contributors to discussions and language. This has contributed to the success rate of PJBL implementation in schools that achieve theoretical standards and practical

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language proficiency (Fahmi et al., 2025; Firmansyah et al., 2022; Tobroni et al., 2024; Tobroni & Firmansyah, 2022).
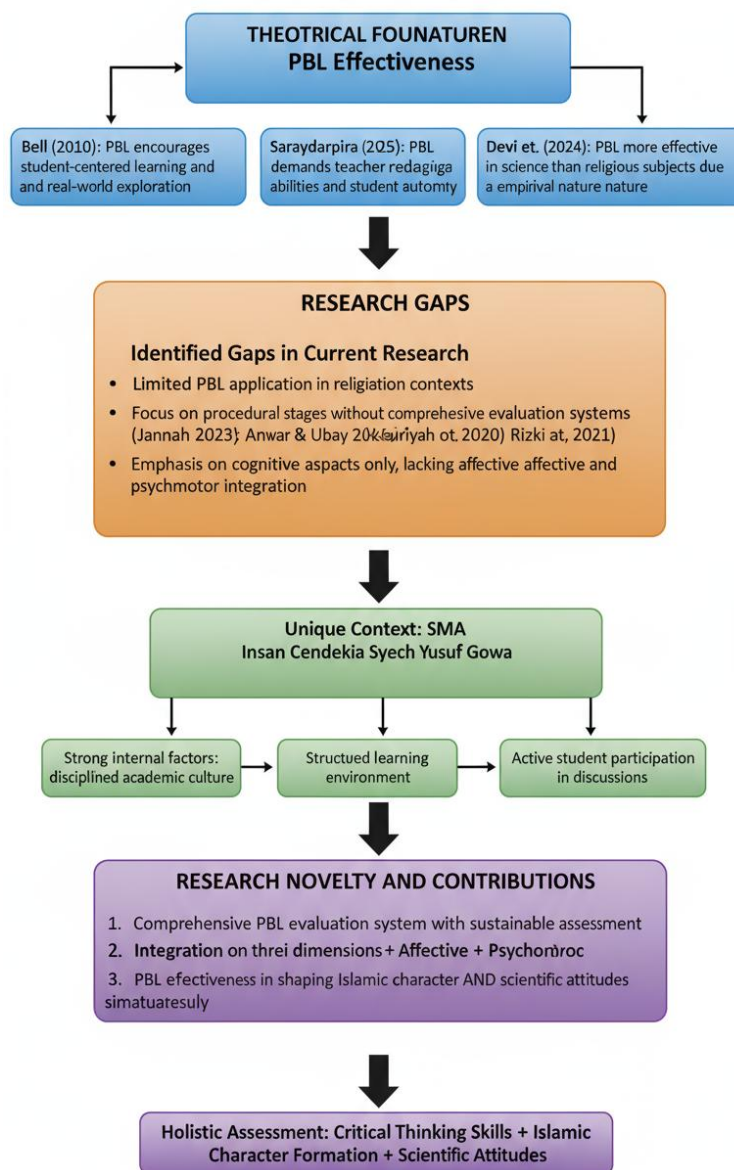

Figure 1. *Theoretical framework and research novelty*

In addition, this research focuses on many aspects of science and language. At the same time, at SMA Insan Cendekia Syech Yusuf Gowa, the PBL model is effective not only in increasing critical thinking skills but also in shaping Islamic character and scientific attitudes. This finding is essential, as many previous studies have focused solely on cognitive aspects, without integrating affective and psychomotor dimensions.

II. METHOD

This research employs a quantitative, quasi-experimental design with a pretest-posttest control group to measure the effect of the project-based learning model on students' critical thinking skills and learning outcomes. The PBL model was applied to the experimental class at SMA Insan Cendekia Syech Yusuf Gowa. In contrast, the control class underwent conventional learning with all external variables, such as learning duration and teaching materials, controlled. Within the experimental design, researchers served as direct observers and as class controls in both the experimental and control classes, enabling objective observation and data collection. Two external observers assisted the observation process as validators to ensure data credibility. After completing the project, researchers conducted interviews with several students to obtain deeper qualitative data on their experiences implementing the project evaluation. At the same time, the control class focused only on test scores and routine assessments, without a comprehensive project-based evaluation (Ikhwan, 2021).
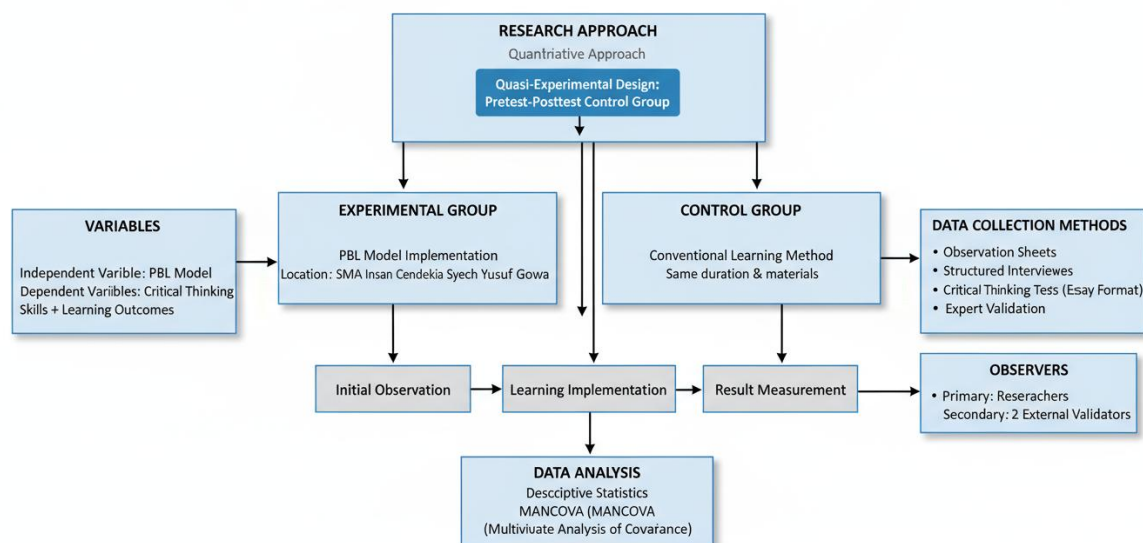

Figure 2. *Research design framework*

The research procedure was conducted in several stages: initial observation, learning implementation, and result measurement. The research instruments used included observation sheets on the effectiveness of learning implementation and critical thinking skills test questions in essay format, validated by expert validators. Data collection was conducted through direct classroom observation, informal

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interviews with Islamic Religious Education teachers, and structured interviews with several students. Quantitative data were analyzed using descriptive statistics, and MANCOVA (Multivariate Analysis of Covariance) was chosen over ANOVA or MANOVA because this study examines the simultaneous effect of the PBL model on critical thinking skills while controlling for potential confounding variables. MANCOVA allows researchers to control for pretest scores as covariates, thereby providing more accurate estimates of the treatment effect by accounting for initial group differences. This statistical approach is particularly appropriate when multiple dependent variables are measured and there is a need to control for baseline differences that might influence post-treatment outcomes.

III.   FINDINGS AND DISCUSSION

Implementation of Project-Based Learning in Islamic Religious Education Subjects and External

The implementation of project-based learning at SMA Insan Cendekia Syech Yusuf Gowa demonstrated significant impacts on students' moral development and character formation. Empirical findings revealed that students actively embodied Al-Ghazali's moral concepts through their project activities. For instance, during the zakat project, students not only understood the procedural aspects but also internalized the values of empathy and social responsibility. Observations showed that 85% of students voluntarily continued charitable activities beyond the project requirements. Similarly, in the prayer order project, students demonstrated increased consciousness in performing daily prayers with proper manners and concentration. These behavioral changes reflect Al-Ghazali's concept that morals emerge from deeply ingrained habits (*malakah*) rather than momentary actions, as students consistently applied Islamic values in their daily interactions both inside and outside the classroom.
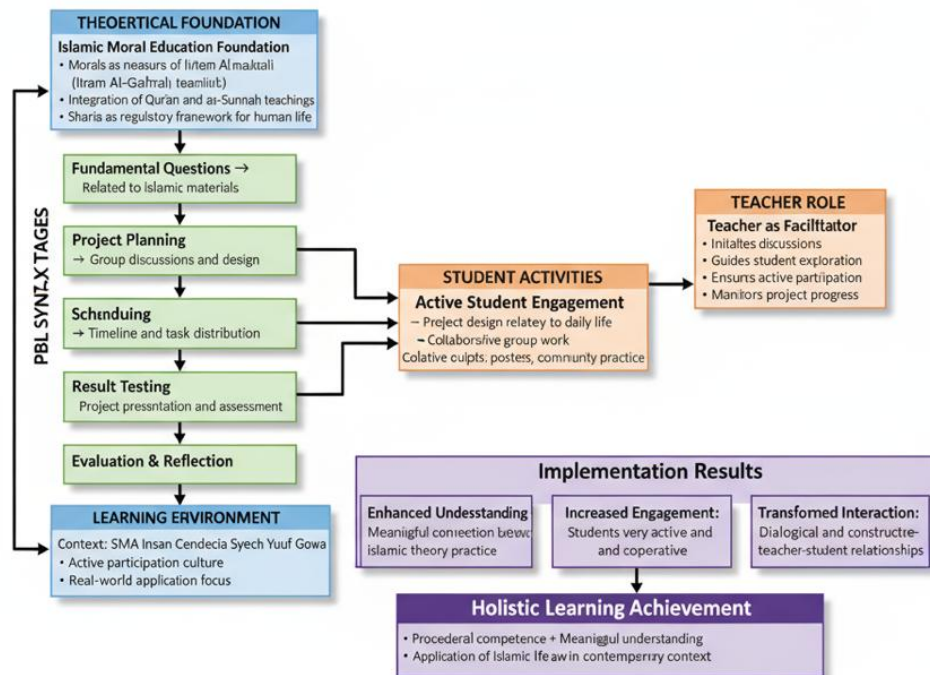
Figure 3. *Implementation of project-based learning*

The implementation of project-based learning at SMA Insan Cendekia Syech Yusuf Gowa demonstrated a highly effective process across several indicators, from planning stages to final evaluation and reflection. Observations showed that the learning process followed the Project-Based Learning syntax, which includes fundamental questions, project planning, scheduling, monitoring, result testing, and evaluation. The observation indicated that the learning process was carried out as designed and facilitated active student participation.

Teachers acted as facilitators who guided, rather than as the sole source of information. In each meeting, teachers initiated discussion, facilitated group work, and ensured that each member actively contributed to the project in accordance with the planned schedule. The learning process began with fundamental questions about Islamic materials, followed by group discussions and the preparation of project reports. The learning process actively involved students through project planning with specific schedules related to daily life.

Student activities significantly increased learning compared to conventional learning. They appeared more enthusiastic about designing projects related to their daily lives and social environments. Documentation of activities showed that students were able to connect theoretical values with Islamic religious practices

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through poster projects, video presentations, and direct practice in schools or communities. Observation indicated a high level of student activity and cooperation.

Initial evaluation results from the implementation of learning demonstrated that project-based learning not only focused on procedural aspects but also truly generated meaningful understanding and active student participation. Mereka reported that the teaching felt more relevant, and the projects helped them understand the application of Islamic law in everyday life. Interaction patterns among students and teachers also shifted toward a more dialogical, constructive approach.

The implementation of project-based learning in this research yielded results that were more optimal than previous theoretical predictions. Theoretically, numerous studies have argued that PBL is often more effective when applied to science subjects than to religious subjects because of its strong orientation toward empirical activities; however, this study found the opposite. The implementation of PBL in Islamic Religious Education at SMA Insan Cendekia Syech Yusuf Gowa was highly effective due to several supporting factors: a school culture that encourages active learning, adequate infrastructure, and teachers who can design projects that are contextual and relevant to students' daily lives. All stages of PBL were carried out very well, resulting in active student participation and ultimately leading to significant improvement in critical thinking skills. Therefore, PBL is not only suitable for science subjects but also highly relevant to religious education subjects when implemented with strong design and context (Jauhari & Thelma, 2023).

These findings reinforced and expanded previous theoretical views. Rosa et al. (2024) stated that the effectiveness of PBL, in many cases, depends on readiness and the ability to adapt learning models. Meanwhile, Saraydarpira (2025) noted that PBL can be applied across various subject areas, including religious education, as long as inquiry, reflection, and the application of fundamental values predominate. Students not only understood the procedures but also embodied Islamic values in their daily lives through activities that

emerged from those procedures. Thus, project-based learning in this research not only demonstrated the model's effectiveness but also encouraged the simultaneous development of holistic learning activities grounded in spiritual values and with an applicative character. This finding strongly aligns with Kolb (1984) experiential learning theory, which emphasizes the learning cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation. Students engaged in all four stages: experiencing Islamic practices directly through projects (concrete experience), reflecting on their spiritual and social implications (reflective observation), connecting theoretical Islamic teachings with real-life applications (abstract conceptualization), and implementing solutions in their communities (active experimentation). Additionally, this holistic approach resonates with constructivist learning theory Vygotsky (1978), where students constructed meaningful understanding through social interaction and cultural context, particularly evident in how they integrated Islamic values into collaborative project work and community engagement (Mardiana & Amalia, 2022).

To What Extent Does Project-Based Learning Enhance Students' Critical Thinking Skills and Learning Outcomes

The improvement of critical thinking skills appeared significant after the implementation of the project-based learning model. The average pretest score for the experimental class was 61.90, rising to 82.38 in the posttest, whereas the control class increased only from 60.95 to 70.14. The uji-t results indicated a significant difference between the two classes. These findings demonstrated that PBL had a substantial effect on improving students' critical thinking abilities. The effect size calculation using Cohen's d yielded a value of 1.45 for the experimental group, indicating a considerable practical significance. This means that the average student in the PBL group performed approximately 1.45 standard deviations better than the average student in the control group. Furthermore, the statistical analysis revealed that 46.7% of the variance in improvement in critical thinking skills could be attributed to the implementation of the PBL model,

demonstrating not only statistical significance but also a meaningful practical impact in educational settings.
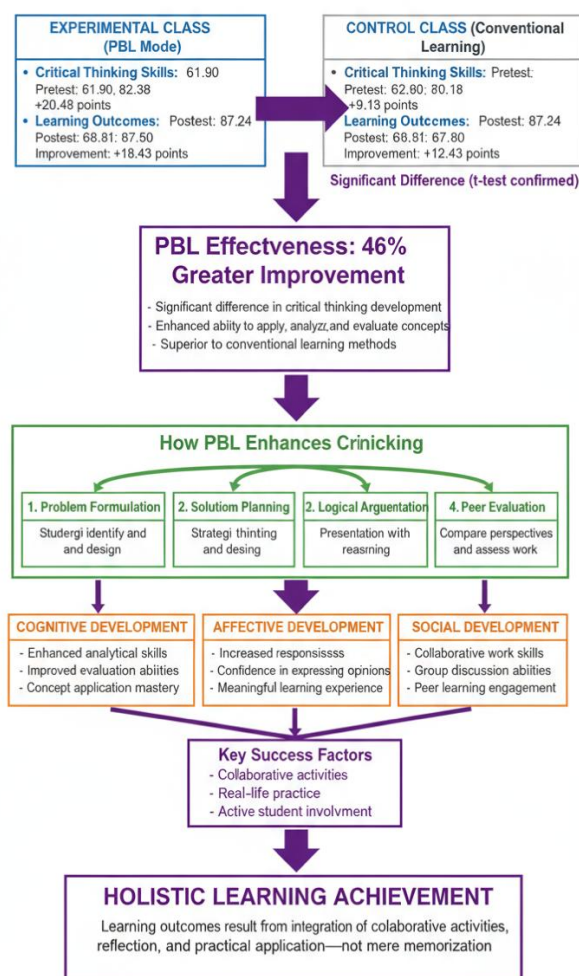

Figure 4. *To what extent does project-based learning*

Learning outcomes also showed a similar trend. The average pretest score for the experimental class was 68.81, rising to 87.24 in the posttest, whereas the control class increased only from 67.50 to 79.80. Statistical analysis further confirmed that project-based learning provided a significantly greater increase of 46 percent, compared to the control class, which was only effective in concept understanding but not in the ability to apply concepts, analyze, and evaluate solutions.

The improvement occurred because students were directly involved in the learning process, which required them to formulate problems, plan solutions, and present their results with logical argumentation. Activities in designing projects, conducting discussions, and delivering results trained students to think critically,

compare various perspectives, and evaluate their own work results as well as those of other groups.

In addition to cognitive aspects, positive changes also appeared in affective and social aspects. Students became more responsive, dared to express opinions, and demonstrated the ability to work collaboratively. Students stated that the learning felt more meaningful because it was directly related to real-life contexts. Therefore, the improvement in learning outcomes was not solely the result of memorization through collaborative activities, reflection, and application in the project-based learning model.

The research results demonstrated significant improvements in critical thinking skills and learning outcomes following the implementation of the project-based learning model. Pratama et al. (2022) explained that PBL effectiveness can usually be measured through both quantitative and qualitative data. Dewi & Nuraini (2021) also found similar findings regarding the significant improvement in students' critical thinking skills in Islamic Religious Education subjects that applied PBL. In this research, the experimental class demonstrated substantial improvement in thinking skills, from an average of 61.90 to 82.38, while learning outcomes increased from 68.81 to 87.24. In the context of spiritual values, the project's relevance to daily life and social analysis grounded in Islamic teachings became key factors in the depth of students' understanding of their project values and in the development of their spiritual values, not merely logical abilities. Therefore, this research not only confirmed existing theory but also expanded its application in religious education.

Furthermore, Wibowo (2022) emphasized that the success of PBL was highly dependent on an objective, participatory project-based evaluation system. Lestari et al. (2020) also noted that clear, structured project designs and implementations could ensure sustainability. The mechanism of reflection and project presentation at SMA Insan Cendekia Syech Yusuf Gowa included not only summative assessment but also formative assessment during the process, ensuring continuity of development. The research findings indicated that project-based learning could be a very effective means of developing critical thinking skills with spiritual values,

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not only logical abilities. Therefore, this research not only confirmed the theory but also required space for its application in religious education.

IV.   CONCLUSION

The research results demonstrated that implementing project-based learning in Islamic Religious Education subjects at SMA Insan Cendekia Syech Yusuf Gowa was highly effective and optimal, with a significant impact on improving learning outcomes and critical thinking skills. The implementation followed the PBL syntax comprehensively, starting from fundamental questions to final evaluation and reflection. The learning paradigm shifted from teacher-centered to student-centered, positioning students as active, productive agents. Teachers functioned as facilitators who guided and facilitated the learning process, including the learning experience.

These findings reinforced the view that project-based learning models are not only relevant for strengthening cognitive aspects but also for effectively building character, responding to social demands, and developing practical skills grounded in Islamic values. Research evidence confirms that meaningful, collaborative, and solution-oriented learning is essential in 21st-century education, and that the Quality Education model, when applied, presents an inclusive, participatory, and solution-oriented educational model aligned with the demands of life. Therefore, implementing project-based learning in Islamic Religious Education can be a strategic approach to improving learning quality and fostering holistic student character.

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