

Integrated PJBL-PBL Management: Strengthening Character Values in Vocational Education in Bandung City

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Abstract:

This study addresses the importance of strengthening students' character in the global era, when conventional learning often fails to integrate cognition and values. It examines the planning, implementation, and evaluation of a learning model combining Project-Based Learning and Problem-Based Learning, and its implications for character values in vocational high schools. Using a qualitative multi-site case study at SMK Negeri 12 and SMK Vijaya Kusuma, Bandung, the study involved teachers and students through observation, interviews, and documentation. The findings show that the model was implemented systematically through relevant projects/problems, dynamic group organization, and authentic assessment, with Islamic Religious Education teachers playing a key role as character facilitators. This approach improved students' independence, collaboration, creativity, and responsibility through active engagement in real-world problem-solving and work production. The study concludes that the combined model is effective and relevant for vocational education because it strengthens both vocational competence and character formation.

Keywords: learning management; Problem-Based Learning; Project-Based Learning; strengthening character values.

INTRODUCTION

Islamic Religious Education (PAI) in Vocational High Schools actually bears a responsibility that goes far beyond teaching the dogmatic or cognitive aspects of religion. PAI plays a strategic moral infrastructure that shapes students' professional ethics and spiritual integrity. From the perspective of contemporary Islamic education, PAI is positioned as the foundation of *Al-Mas'uliyah*, namely an awareness of moral responsibility to God, society, and the world of work. Its existence is not merely a complement to the curriculum, but also determines the quality of vocational high school graduates in responding to the demands of the industrial era that demands work ethics, responsibility, and strong character. The constellation of vocational education requires graduates who are not only technically proficient (hard skills) but also competent in character (soft skills). The 21st-century workplace emphasizes collaboration, problem-solving, honesty, leadership, and discipline in completing collective projects. Ironically, however, the reality of PAI learning management in many vocational high schools still runs conventionally, dominated by lectures and one-way knowledge transfer. This

passive learning does not provide students with space to practice making ethical decisions or experience moral dilemmas directly, resulting only in moral knowing, not moral doing.

This imbalance often prevents Islamic Religious Education from reaching the cognitive level, while the affective and psychomotor dimensions, which should be core to character, fail to develop fully. Students may understand the meanings of trust, responsibility, and honesty theoretically, but are not trained to apply them consistently when working in teams, under project pressure, or when reporting work results transparently. This creates a gap between conceptual religiosity and actual professionalism. In the context of vocational schools (SMK), which are heavily project- and industrial-simulation-based, Islamic Religious Education should not stop at conveying normative moral narratives but become an applicable guide that fosters discipline, integrity, and professional morality. However, a learning approach that does not present an authentic workplace context prevents students from directly experiencing situations in which Islamic values are tested in action. This situation demonstrates the need for a serious managerial transformation of the Islamic Religious Education learning model to make it more contextual, collaborative, and dialogical, rather than merely informative.

Integrated learning management of Project-Based Learning (PjBL) and Problem-Based Learning (PBL) plays a crucial role in strengthening character values in vocational high schools (SMK). PjBL is a learning approach that places students in real-world projects relevant to the workplace, enabling them to develop both hard (technical) skills and soft skills such as collaboration, communication, and time management. A study by Firmansyah et al. (2023) showed that the implementation of PjBL in vocational subjects had a positive impact on student learning outcomes due to their active involvement in the learning process and the relevance of the material to industrial practices (Wati & Kuswanto, 2025). Meanwhile, PBL encourages students to independently solve authentic problems, developing critical thinking and problem-solving skills that are essential for future work readiness. The integration of these two models—PjBL with a focus on products and solutions, and PBL with a focus on critical analysis of authentic issues—provides a strong synergy to shape student character who not only master techniques but also have an attitude of integrity and responsibility in practice (Asprila & Subiyantoro, 2024). In the context of SMK Negeri 12 and SMK Vijaya Kusuma in Bandung City, learning management that combines PjBL and PBL can provide a contextual, collaborative, and dialogic learning experience. This model overcomes the weaknesses of conventional Islamic Religious Education, which focuses only on one-way knowledge transfer and is unable to shape real moral action. With this integrated approach, students are placed in situations that test character values such as honesty, discipline, and trustworthiness through real-life projects relevant to the needs of the workplace and complex ethical challenges.

For successful implementation, research recommends systematic management including adaptive curriculum planning, learning implementation responsive to student and industry contexts, and ongoing evaluation that measures both the technical outcomes and moral aspects of student projects. Support from teachers as facilitators and moral managers is key, especially in facilitating group dynamics and building project integrity, which is highly strategic in a multicultural environment like Bandung. With good integrated PjBL-PBL learning management, vocational schools can produce graduates who are not only technically prepared but also strong in character and work ethics. This model bridges the gap between religious theory and professional practice in the vocational world, shaping students into responsible individuals who are able to face the complexities of the modern industrial world in an Islamic and professional manner (Laana, 2025).

The transformation of learning models that not only teach values but also hold students accountable for them through action. This means that Islamic Religious Education learning must place students in realistic experiences, moral dilemmas, project-based teamwork, and assignments that simultaneously demand moral and technical competencies. This is where the urgency of an integrative approach between Problem-Based Learning (PBL) and Project-Based Learning (PjBL) becomes significant (Risana et al., 2025). Recent literature shows that the PjBL model excels in developing productive and innovative skills because students are required to produce a concrete product. This model is highly suited to the characteristics of vocational high schools (SMK). Meanwhile, PBL focuses on authentic problem-solving and critical analysis before acting, making it very powerful in shaping moral thinking structures. However, these two models have so far generally been applied separately, even predominantly in non-religious subjects. When applied solitarily, PBL tends not to produce industrially measurable products, while PjBL often lacks depth in moral reflection on the social problems it addresses (Rohili et al., 2025). Therefore, the innovation offered by this research is Islamic

Religious Education learning management based on the Integrative PjBL–PBL model. In this model, students are first faced with a real case or dilemma (PjBL phase), then required to formulate a solution in the form of a real project (PjBL phase) which is not only assessed on technical quality, but also on moral integrity and spiritual responsibility demonstrated in the process. This means that the value of *Al-Mas'uliyah* is not merely a normative narrative but an ethical framework throughout the entire academic process.

This research is not solely focused on the effectiveness of the method, but rather on a holistic managerial analysis in the context of Islamic Religious Education in vocational high schools (SMK). This research examines how the planning, implementation, and evaluation of Islamic Religious Education learning are reengineered to truly measure moral action rather than just understanding values. Attention is also directed to the transformation of the role of Islamic Religious Education teachers as moral facilitators and managers of students' ethical experiences. Teachers not only deliver material, but also construct ethical practice spaces that resemble industrial realities, including managing team conflict dynamics and ensuring the sustainability of a culture of morality in collaborative processes. The multicultural character of vocational high schools in Bandung City underscores the urgency of this model, as the social environment of students demands tolerance, collaboration across backgrounds, and integrity in teamwork. Islamic Religious Education teachers are also positioned as good examples tasked with creating a safe, reflective learning ecosystem and encouraging collective responsibility. Based on this foundation, this research specifically aims to: (1) comprehensively describe how Islamic Religious Education learning planning is designed with a combined approach of PjBL and PBL in SMK Negeri 12 and SMK Vijaya Kusuma; (2) describe how the implementation of this model is carried out in a managerial context that is responsive to authentic student situations; and (3) analyze how evaluation is carried out to measure the effectiveness of strengthening character values, especially related to *Al-Mas'uliyah*. Based on the results of this in-depth analysis, the research aims to make a practical contribution in the form of an Islamic Religious Education learning management model that can be replicated by other vocational schools as a best practice. This model is expected to be a strategic solution that not only bridges the gap between religious theory and work ethics practice, but also strengthens PAI's position as a central actor in producing a generation of professionals with noble morals and ready to enter the industrial world by introducing *Mas'uliyah* ethics.

Previous research provides an important foundation for understanding the development and implementation of innovative learning models designed to strengthen student character. Several previous studies have shown that the integration of Project-Based Learning (PjBL) and Problem-Based Learning (PBL) approaches has been proven to improve students' critical thinking skills, creativity, collaboration, and learning independence. For example, research conducted in various vocational education units shows that project-based learning and problem-solving are not only effective in improving 21st-century skills competencies but also have a significant impact on the internalization of character values such as responsibility, discipline, cooperation, and social awareness. However, most studies still apply PjBL and PBL partially, without emphasizing systematically integrated learning management according to the context of the needs of the world of work. Furthermore, studies on the implementation of the PjBL-PBL model in vocational high school settings, especially in Bandung City, remain relatively limited, particularly those that examine how learning management is designed, implemented, and evaluated to directly strengthen students' character values. Therefore, this study aims to fill this gap through an in-depth analysis of two vocational schools: SMK Negeri 12 and SMK Vijaya Kusuma in Bandung City.

First, research conducted by Andy Ariyanto, Sutarna, Markhamah (2022) on "Project-Based Learning (PjBL) for Strengthening Independent Character." This research focuses on implementing the Project-Based Learning (PjBL) model to build students' independent character. The research findings show significant developments in several character values, including friendly attitudes, critical and creative thinking skills, and concern for the surrounding environment. Through the PjBL approach, students engage in a learning process that provides ample space for independent learning, exploring real-life experiences, and internalizing character values according to their environmental conditions and developmental stage. This research used qualitative methods with observation techniques and questionnaires distributed to fourth-grade elementary school students. Overall, the implementation of PjBL has proven relevant and effective in strengthening students' character through direct involvement in project activities that require a sense of responsibility, cooperation, and experience-based problem-solving (Ariyanto et al., 2022).

Second, research conducted by Taufik Muchtar, Syahrul, and Andi Muh Akbar Saputra (2025) on "The Influence and Problems of Project-Based Learning (PjBL)." Other research confirms that the implementation

of Project-Based Learning (PjBL) has a significant impact on improving students' critical thinking skills, creativity, and collaboration in the learning process. Through this model, students are encouraged to more actively determine and manage the projects they work on independently, thus directly contributing to strengthening the character and 21st-century competencies that are highly needed in modern professional environments. The research findings also show that PjBL is closely related to the Independent Learning Curriculum policy, because it provides space for students to learn according to their interests and potential. Furthermore, project-based learning can foster high intrinsic motivation in students, because they feel they have full control and responsibility for the learning process and outcomes (Muchtar et al., 2021).

Third, research conducted by Yanuar Eko Saputra (2016) on "The Application of Project Based Learning (PjBL) Learning Model to Improve the Activeness and Learning Outcomes of Control System Engineering of Class XII EI 3 Students of SMK N 3 Wonosari." This research focuses on the implementation of the Project Based Learning (PJBL) model in Engineering learning at SMK Negeri 3 Wonosari. The results of the study showed a significant increase in student activeness and learning outcomes in the Control System Engineering subject. Through the PJBL approach, students are directly involved in project activities that require analytical skills, problem solving, and collaborative work, thus creating a more dynamic and participatory learning atmosphere. This model is considered effective because it not only encourages active student involvement in the learning process, but is also able to strengthen the understanding of technical concepts through real practical experiences. Overall, PJBL has proven to be a relevant learning strategy and has a positive impact on improving the quality of learning in the SMK environment, especially in engineering skills-based subjects (Y. E. Saputra, 2016).

Fourth, research conducted by Ryan Dwi Saputra (2013) on "The Application of Project Based Learning (PBL) Method to Improve Learning Achievement of Computerized Aided Design (CAD) Competence with Inventor Software of Grade XI Students of Machining Engineering at SMK Negeri 2 Klaten." In the context of developing Computer Aided Design (CAD) competency in the vocational high school environment, this research uses project-based learning method as the main strategy to increase student activeness during the learning process. Through the PJBL approach, students are encouraged to be directly involved in the planning and completion of projects that are relevant to the needs of the industrial world, thus creating more contextual and applicable learning. The research findings show a significant increase in the level of student activeness, both in discussions, material exploration, and completion of project-based assignments. This strengthens the understanding that PJBL is not only effective in improving mastery of technical skills, but also plays a role as a means of strengthening character through learning that demands responsibility, collaboration, and the ability to solve problems independently and in a directed manner (R. D. Saputra, 2013).

Fifth, research conducted by Tiok Setiawan, Juliana Margareta Sumilat, Noula Marla Paruntu, and Non Norma Monigir (2016) on "Analysis of the Implementation of Project Based Learning and Problem Based Learning Models for Elementary School Students." This research examines the integrative implementation of the Project Based Learning (PJBL) and Problem Based Learning (PBL) models and their impact on improving learning outcomes and strengthening student character. The results of the study indicate that the combination of the two models is able to significantly develop critical and creative thinking skills, while simultaneously encouraging student learning independence. Through this approach, students are not only required to understand the material theoretically, but are also invited to engage in real problem-solving activities directly related to the challenges of the world of work. This project-based and problem-based learning process opens up a wide space for students to collaborate, communicate, and make decisions responsibly. Thus, the implementation of the PJBL-PBL model has proven effective as a holistic learning strategy, because it is able to integrate character strengthening with the mastery of academic and vocational skills in a balanced manner (Setiawan et al., 2016).

From the various studies above, it can be concluded that Project Based Learning consistently demonstrates effectiveness in encouraging active learning, building independent character, and improving students' readiness to face real-world challenges. However, the majority of research still focuses on the implementation of PjBL alone and tends to emphasize improving academic learning outcomes or student activeness, so there is not much in-depth study of the managerial aspects in managing integrated learning between PjBL and PBL. In addition, previous research was generally conducted at the elementary school level or in the context of specific subjects, so that a research gap arises regarding how this PjBL-PBL integration can be managed systematically in the vocational education ecosystem, especially in vocational high schools that have a direct orientation to the needs of the industrial world. Thus, it is important to conduct studies that

not only examine the effectiveness of the PjBL-PBL integrative model in improving 21st-century competencies, but also how such learning management is implemented to strengthen students' character holistically. This gap is the main basis of this research, especially in the context of SMK Negeri 12 and SMK Vijaya Kusuma, Bandung City, as representatives of urban vocational schools that demand character-based pedagogical innovation and problem-solving.

METHOD

This research was conducted using a qualitative approach with a Multisite Case Study design to gain a deep understanding of the learning management process based on a combination of Project Based Learning (PjBL) and Problem Based Learning (PBL), as well as how the dynamics of character value strengthening take place from the perspective of actors directly involved in the natural context. The selection of a multisite design was intended to enrich the data through a comparison of management implementation in two schools with different institutional characteristics, namely SMK Negeri 12 Bandung, as a public school subject to government regulations, and SMK Vijaya Kusuma Bandung, as a private school that has more flexible autonomy in managing its curriculum. This comparative approach aims to identify general patterns and unique practices, particularly related to the Islamic Religious Education curriculum's adaptation strategy of combining PjBL and PBL as an integrative learning model oriented towards character strengthening (Suprayitno et al., 2025). The selection of research subjects was carried out using a purposive sampling technique, or deliberate selection, based on the relevance and involvement of the subjects in implementing the PjBL-PBL model. Three main informant groups were involved: (1) Educational managers, namely the principal and deputy principal for curriculum, who play a role as managerial policy makers; (2) Islamic Religious Education teachers as direct implementers of the learning model as well as moral manager figures who play a role in internalizing character values; and (3) Students as the main actors in learning, who were interviewed to explore learning experiences, collaborative interactions, and character transformations they experienced while following the learning model (Sianturi & Silalahi, 2025).

Data collection was conducted through triangulation using three main techniques. First, Participatory Observation was used to directly witness the planning, implementation, and evaluation of learning, including how teachers spontaneously implemented character interventions (*uswah hasanah*) and how students' responses were evident in independence, collaborative work, and project-based problem-solving. Second, In-depth interviews were conducted with all key informants to explore their perspectives on strategies, challenges, and the actual practices for strengthening the value of responsibility (*Al-Mas'uliyah*) in learning. Third, Documentation was used to collect data in the form of learning tools such as lesson plans, project-based and problem-based teaching modules, authentic assessment rubrics, and student character development journals that served as managerial evidence and final learning products. The research process was carried out through four main systematic stages. The first stage was pre-fieldwork, which included initial orientation activities, field context mapping, and the official licensing process. The second stage was fieldwork, namely intensive data collection through observation, interviews, and documentation until the information reached saturation point. The third stage is data analysis, which is carried out simultaneously and interactively throughout the data collection process. The final stage is the preparation of the final report, in which all research findings are compiled comprehensively and systematically (Sirait et al., 2024).

Data analysis was conducted using Miles and Huberman's interactive, cyclical model. The analysis begins with the Data Reduction stage, which is the process of sorting, focusing, and classifying information according to the research theme; followed by the Data Display stage, where the data is arranged in the form of descriptive narratives, thematic matrices, or comparison schemes between sites to facilitate interpretation. The final stage is Conclusion Drawing and Verification, which is a deep interpretation of the data and confirming it through cross-verification (Miles & Humberman, 1992). To ensure the validity and credibility of the findings, triangulation techniques are rigorously applied, including source triangulation (comparison among informants) and method triangulation (comparison of observation results, interviews, and documents). The application of this triangulation is a crucial step in maintaining the accuracy of interpretation, particularly in understanding the managerial movement of learning and the process of strengthening character values in the context of Islamic Religious Education based on the PjBL-PBL model. Thus, this study not only describes learning practices, but also critically interprets how learning management plays a strategic role in shaping students' character holistically and contextually according to the demands of today's vocational education world (Sari et al., 2025).

RESULTS AND DISCUSSION

Planning a Combined PjBL and PBL Learning

This study focuses on the analysis of Islamic Religious Education learning management that integrates Project-Based Learning (PjBL) and Problem-Based Learning (PBL) models in two Vocational High Schools (SMKs), namely SMK Vijaya Kusuma and SMK Negeri 12. The main focus of the study is on how managerial strategies are designed and implemented to strengthen students' character values through the integrative learning model. The research findings are then systematically organised into three key aspects: the learning planning stage, the classroom implementation process and the evaluation mechanism used to assess the effectiveness of character strengthening. Through this approach, the study successfully describes explicitly the dynamics of project-based PAI learning management and problem-solving with a character perspective as the main orientation.

Planning at both study sites demonstrates an explicit effort to adapt the Islamic Religious Education curriculum to be more contextual and relevant to the characteristics of vocational students. PAI teachers consciously designed Islamic project- and problem-based learning that focused not only on mastering cognitive knowledge but also aimed to stimulate the strengthening of character values through real-life learning experiences. This planning began with a curriculum needs assessment, in which teachers identified the core competencies most likely to be developed through problem-solving projects, particularly those related to morality, responsibility, collaboration, and an Islamic work ethic. At the conceptual level, the planning was structured so that all learning activities were directly relevant to students' vocational lives, including the industrial world, public service, and professional work dynamics. PAI teachers developed project designs and case studies based on real-life problems, for example, related to digital communication ethics, professional attitudes in the workplace, and social responsibility in the context of entrepreneurship. The preparation of the Learning Implementation Plan (RPP) and teaching modules is carried out in an integrative manner, where the PjBL elements emphasize real project-based products, while the roots of PBL emphasize the process of critical reasoning and collaborative problem solving (Shidiq et al., 2024).

Furthermore, the assessment instruments are designed in an authentic format that both measures and fosters character, not just academic achievement. Assessments are not solely based on written tests, but utilize behavioral observation rubrics, reflection sheets, project portfolios, and student character development journals. In this context, teachers act as both learning management designers and values managers, ensuring that each stage of student activity incorporates dimensions of spirituality, morality, and responsibility. Therefore, the PjBL-PBL planning for Islamic Religious Education learning in these two vocational schools is not merely administrative or formalistic, but is designed strategically and visionarily, placing character as the primary orientation, and positioning students not as recipients of material, but as active subjects in building knowledge and values through meaningful, contextual experiences.

Table 1: Focus of Planning the PjBL-PBL Combination Model in Islamic Education

No	Planning Focus	Implementation Details	Description
1	Curriculum Integration	Selection of PAI Basic Competencies (KD) that are relevant to vocational/community issues (PBL) and can be realized in work (PjBL).	The process of describing the adaptation of PAI objectives to align with students' vocational competency needs.
2	Problem & Project Definition	Determination of authentic problems (e.g.: morality issues in marketing) that are responded to through projects (e.g.: creation of ethical digital Islamic preaching content).	Ensuring a strong connection between real challenges and student work output.
3	Group Formation	Heterogeneous group division based on initial ability and character profiles	Designed to optimize social interaction and encourage intense peer learning.
4	Integrated Assessment	Preparation of assessment rubrics that measure products (PjBL), problem investigation processes (PBL), and character indicators.	Integrating cognitive assessment, skills, and affective aspects (soft skills).

Table 1 describes the focus of planning a combined learning model of Project-based Learning (PjBL) and Problem-based Learning (PBL) in the context of Islamic Religious Education in vocational schools, developed to integrate religious and vocational competencies synergistically.

The first focus is Curriculum Integration, which emphasizes the selection of Islamic Religious Education Core Competencies (KD) relevant to vocational or societal issues, so they can be realized in the form of student work through PjBL. This approach allows for the adaptation of Islamic Religious Education objectives to align with students' vocational skills needs, so that they not only understand religious theory but also apply it in real-life professional and social contexts. Thus, the Islamic Religious Education curriculum does not operate in isolation from vocational education, but rather integrates the two to shape students' character and practical competencies.

The second focus is Problem and Project Determination, which emphasizes selecting authentic problems faced by students in real life, such as morality in marketing or business ethics. These problems are then used as the basis for projects, such as creating ethical digital Islamic preaching content. This approach ensures that the challenges raised in learning are directly relevant to students' lives and society, so that students' work is not merely an academic assignment but also has religious value and practical benefits. This is reflected in the statement by a PAI teacher at SMK Vijaya Kusuma, who emphasized the importance of real-life problems for students' projects to have social and religious meaning.

The third focus is Group Formation, where students are divided into heterogeneous groups based on their initial abilities and characteristics. This strategy is designed to optimize social interaction and facilitate peer learning. With diverse abilities within a group, students can complement each other and support the investigation process and product production. Furthermore, strategic group formation encourages the development of soft skills, such as communication, collaboration, and leadership, which are crucial in the context of PjBL and PBL. Interactions within heterogeneous groups also allow teachers to observe social dynamics and provide appropriate guidance to enhance learning quality.

The final focus is Integrated Assessment, which emphasizes the development of a comprehensive assessment rubric, encompassing project products (PjBL), problem-solving processes (PBL), and indicators of character and social skills. With integrated assessment, teachers can assess student achievement holistically, not only cognitively but also in terms of practical skills and affective aspects. This helps ensure that Islamic Religious Education learning emphasizes not only theoretical mastery of religious material but also fosters character, ethical values, and social responsibility that can be applied in real life. This table shows that the planning of the combined PjBL-PBL model in PAI focuses on four interrelated aspects: curriculum integration, problem and project setting, heterogeneous group formation, and integrated assessment. This strategy ensures that learning is not only academic, but also applicable, ethical, and relevant to students' daily lives. The implementation of this model encourages students to think critically, creatively, and collaboratively, while instilling strong religious values and character, so that Islamic Religious Education can contribute significantly to the formation of individuals who are vocationally competent and possess noble character.

Implementation of Combined PjBL and PBL Learning

The implementation of a combination of Project-Based Learning (PjBL) and Problem-Based Learning (PBL) in Islamic Religious Education emphasizes a significant shift in the role of teachers. In this model, teachers no longer function solely as conveyors of material or information, but rather transform into project managers and facilitators of student character development. This transformation requires teachers to manage the entire learning process, from planning to evaluation, while still emphasizing the formation of moral and social values relevant to students' daily lives. This approach allows teachers to simultaneously integrate academic, practical, and character aspects, resulting in more holistic and meaningful learning (Afifah et al., 2025). In its implementation, the prominent initial phase is problem analysis in accordance with PBL principles. Students are given the opportunity to identify, formulate, and understand authentic problems related to their religious and social contexts. The problems raised are usually real, complex, and require critical thinking to find appropriate solutions. The teacher acts as a facilitator who guides students in this process, providing direction when needed, but still encouraging students to explore and find answers independently. This stage fosters critical and analytical thinking skills and prepares students to face real-world challenges ethically and responsibly.

After analyzing the problem, the next stage is designing and executing a solution through Project-Based Learning (PjBL). In this phase, students design a project that addresses the identified problem. The project can take the form of a creative work, a social program, educational media, or other tangible forms appropriate to the religious and social context. Teachers actively monitor the project's progress, ensuring each group works according to plan and assessing the extent to which students apply moral and ethical principles in the learning process. This approach allows for the integration of knowledge, practical skills, and character values in a structured and meaningful activity (Afifah et al., 2025). One of the most crucial aspects is just-in-time character intervention. During the project, teachers respond to conflicts that arise within the group, for example, regarding task allocation, honesty, or cooperation among members. An Islamic Religious Education teacher at SMK Negeri 12 revealed that moments of conflict during the project presented important opportunities to instill moral values in a concrete way. Teachers not only resolved technical issues but also provided guidance on manners, responsibility, and ethics, so that students learned to integrate moral knowledge and behavior into their actions. This strategy ensures that learning is responsive and adaptive to group dynamics, while emphasizing that character education is not only delivered theoretically but also through real-life practices in social interactions (Munir, 2025). The implementation of a combination of PjBL and PBL learning emphasizes a holistic, responsive, and integrative approach. Teachers act as project managers who organize the course of activities, facilitators who accompany students in finding solutions to problems, and character mentors who provide timely interventions. This model not only enhances students' critical, creative, and collaborative thinking skills but also instills religious values, ethics, and social responsibility. Thus, Islamic Religious Education learning based on a combination of PjBL and PBL can produce graduates who are not only academically intelligent but also morally and socially mature, ready to face real-world challenges with strong integrity.

Evaluation of Strengthening Character Values

The evaluation of character value strengthening in the combined PjBL and PBL learning model emphasizes the close relationship between theory and practice, while integrating moral aspects into the learning process. This model demonstrates a consistent positive influence on student character development because it is designed to provide students with autonomy in managing assignments and projects, while adapting the learning context to the real-life situations they face. This autonomy enables students to make independent decisions, learn to take responsibility for each step in the project, and understand the consequences of their actions, thereby fostering integrity, honesty, and a strong sense of responsibility (Afifah et al., 2025). In the Problem-Based Learning (PBL) phase, students are confronted with authentic problems that require critical thinking and analysis based on Islamic values. This process not only trains intellectual abilities but also instills a deep ethical understanding. Students learn to assess situations from a moral perspective, consider religious principles, and formulate solutions that align with Islamic norms. Thus, PBL is an effective means of building value awareness as well as reflective, critical, and analytical thinking skills (Bariyah et al., 2022). Project-Based Learning (PjBL) emphasizes concrete action and accountability for the resulting product. Students not only understand values theoretically but are also required to apply them in concrete projects with practical benefits. This process teaches discipline, collaboration, and a commitment to quality work, while emphasizing social awareness and professional ethics. This link between PBL and PjBL creates a consistent feedback loop: understanding values from problem analysis is put into practice in projects, and these practical experiences deepen students' understanding of the applied values (Masruri & Misbah, 2023).

The integration of these two models also allows teachers to continuously monitor and evaluate character, so that every student's actions can be assessed not only from an academic or skill perspective, but also from the application of moral values. With this approach, students are trained to internalize character values in every aspect of learning and daily life, making Islamic Religious Education education more effective in shaping individuals who are not only intellectually intelligent, but also morally and socially mature. Evaluation of the strengthening of character values shows that the combined PjBL and PBL models successfully combine critical thinking, concrete actions, and accountability, resulting in holistic, value-oriented, and applicable learning.

Table 2: Main Character Values and Evaluation of the Combination Learning Model

No	Main Character Values	Evaluation of Combination Model
1	Independence & Initiative	Full autonomy in seeking resources and solutions (PBL) and responsibility for project outputs (PjBL).
2	Collaboration & Communication	Complex multidimensional tasks require intense team negotiation and synergy.
3	Responsibility & Integrity	Authentic assessment of processes and products demands personal and group accountability.

Table 2 displays the relationship between core character values and the evaluation of the combined PjBL-PBL learning model in Islamic Religious Education. This table emphasizes how each character value is developed through the application of integrated methods of Problem-Based Learning (PBL) and Project-Based Learning (PjBL), so that learning focuses not only on mastering material but also on strengthening students' moral and social aspects. The first value is independence and initiative, which is evaluated by providing full autonomy to students. In the PBL phase, students are required to actively seek resources, analyze problems, and formulate solutions independently. This ability encourages them to take initiative in the learning process and make decisions without always relying on the teacher. In the PjBL phase, this independence is integrated with responsibility for the resulting project output. Students not only design and execute projects but also ensure the results meet predetermined standards of quality and relevance, thus fostering a sense of responsibility and ownership of their work. The second character value is collaboration and communication, which is evaluated through complex, multidimensional assignments. Projects and problems typically require intense collaboration among team members, requiring students to negotiate, convey ideas, listen to input, and align strategies to achieve shared goals. Evaluation focuses on the effectiveness of team interactions and students' ability to communicate ideas, solve problems together, and maintain group harmony. Thus, PjBL-PBL learning hones social skills while increasing students' awareness of the importance of synergy in achieving optimal results. The third character value is responsibility and integrity, which is evaluated through authentic assessment of the learning process and product. The assessment not only looks at the final project results but also assesses attitudes, work ethics, and adherence to moral principles throughout the process. Students are taught to act honestly, obey rules, value the contributions of their peers, and be accountable for every decision they make. This evaluation emphasizes that integrity and accountability are integral parts of learning, ensuring comprehensive and continuous character building. Table 2 shows that the combined PjBL and PBL model not only emphasizes cognitive abilities and practical skills but also systematically instills character values. Independence, collaboration, responsibility, and integrity are developed through an authentic, contextual, and project-based learning process, providing students with a holistic, applicable, and value-oriented learning experience.

Planning a Combined PjBL and PBL Learning

The discussion on planning confirms that the successful implementation of the combined Project-Based Learning (PjBL) and Problem-Based Learning (PBL) model is highly dependent on the descriptive ability of the Islamic Religious Education curriculum adaptation. This is a crucial stage that requires not only administrative accuracy in selecting Basic Competencies (KD) but also a philosophical and strategic vision for contextualizing religious teachings within a vocational framework. This adaptation must explicitly describe how the intrinsic values of PAI can functionally strengthen the hard and soft skills required by students' vocational competencies. This process ensures that PAI shifts from being an isolated theoretical subject to becoming a moral and ethical "operating system" for all students' technical skills. Detailed planning serves to ensure that the issues raised are real (authentic) issues faced by students, schools, or industry, with an Islamic ethical or moral dimension. Thus, the resulting project output (PjBL) will not only have academic value but also simultaneously have religious value and practical benefits. The value of worship here refers not only to formal rituals, but also to the internalization of pure intentions (ikhlas) and work processes that reflect ihsan (doing something with the best quality), which are the practices of sharia. Meanwhile, practical benefits refer to the contribution of implementable solutions, solving real-world problems. Therefore, this planning becomes the primary mechanism for decontextualizing Islamic Religious Education teachings from text to practice,

transforming the concepts of faith (aqidah) and sharia into measurable moral behavior in the professional realm (Inayati, 2022).

Theoretically, this curriculum adaptation fundamentally addresses the challenge of relevant education, as advocated by John Dewey, where knowledge should not be fragmented but rather meaningfully integrated with students' real-life contexts. In the context of Islamic education, this integration effectively breaks the dichotomy of knowledge, ensuring that religious knowledge and general/vocational knowledge are mutually reinforcing, producing individuals who are *ulul albab* (spiritually and professionally intelligent) (Jamal et al., 2023).

The success of this adaptation description depends heavily on the pedagogical and professional competence of Islamic Religious Education teachers. Teachers must have the capacity to bridge the gap between sacred texts and industrial practices. For example, teachers must be able to operationally formulate how the concept of Amanah (trust) in Islamic Religious Education can be implemented in ethical supply chain management or how the principle of Shura (law) is applied to project team decision-making in a corporate environment. This requires teachers to not only master *tafsir* (interpretation of the Qur'an) and *fiqh* (jurisprudence), but also possess a basic understanding of contemporary vocational issues.

Strategic planning includes designing an Integrated Assessment that can measure all three learning domains (cognitive, affective, and psychomotor) simultaneously. Assessment rubrics must be carefully designed, not only focusing on the quality of the final product (PjBL) or the depth of problem analysis (PBL), but also including explicit indicators for character values (e.g., cooperation, integrity, perseverance). This emphasis on authentic and integrated assessment demonstrates that the planning at both vocational schools has successfully developed an operational curriculum that is both output-oriented and process-oriented. This rubric design serves as a primary managerial instrument that guides teachers in the ongoing evaluation process, particularly in tracking the consistency of Al-Mas'uliyah values (Masruri & Misbah, 2023).

This planning innovation is also evident in the Problem-Setting and Authentic Projects strategy. The selected problem must be challenging enough to trigger in-depth analysis (PBL) but also doable enough to be solved as a real-life project (PjBL). This balance is crucial for maintaining student motivation and ensuring a productive learning process. The connection between real-world problems and Islamic solutions strengthens students' understanding that religion is a practical guide to life, not just a set of dogmas. The Heterogeneous Group Formation strategy in planning is a pedagogical intervention designed to optimize social character development. Heterogeneity, both in terms of cognitive abilities and initial character profiles (soft skills), is prepared to force students to interact, negotiate, and complement each other (Rasyid Akbar et al., 2025). This directly hones the values of tolerance (*tasamuh*) and cooperation (*ta'awun*), creating a miniature working community based on the values of brotherhood. All stages of this planning, from basic competency analysis to assessment design, are fundamental pillars that predict the long-term sustainability and impact of the learning model. This planning ensures that Islamic Religious Education is not merely a compulsory subject but also becomes the core of character development and professionalism for vocational school graduates, preparing them for work with a strong moral foundation. Failure in the planning stage will result in shallow projects, artificial problems, and assessments that fail to capture the essence of strengthening Islamic character. Therefore, the successful planning of the Project-Based Learning (PjBL-PBL) at SMK Vijaya Kusuma and SMK Negeri 12 can be categorized as a curricular innovation that transforms the goal of Islamic Religious Education from mere knowledge transfer to a learning experience that demands internalization of values and practical application. This demonstrates that the Islamic Religious Education curriculum can be dynamic and responsive to the demands of the vocational world without sacrificing the depth of religious teachings. The development of a Learning Implementation Plan (RPP) that adopts this model must be flexible and adaptive, encompassing potential critical moments that can be utilized as teachable moments for character interventions during the implementation phase. This means that the planning anticipates that conflict and integrity issues are a normal part of the project-based learning process, and Islamic Religious Education teachers are positioned as moral authorities ready to provide guidance (Holil, 2023).

Implementation of Combined PjBL and PBL Learning

The effective implementation of this integrative model fundamentally changes the paradigm of Islamic Religious Education teaching. Teachers no longer hold a static position as sources of information (*mu'allim*), but actively transition into Project Managers and, most importantly, Islamic Character facilitators (*murabbi*).

This role transformation is central to successful implementation. The implementation process, which integrates problem analysis (PBL) and solution execution (PjBL), creates a learning environment full of dynamics, conflict, and ethical challenges, which serves as a natural laboratory for character formation. In this real-world setting, character interventions become an inherent part of project management, not a separate lecture session. The role of the teacher as an ideal role model (*uswah hasanah*) becomes central and irreplaceable. This aligns with the theoretical description based on Albert Bandura's Social Learning Theory. This theory emphasizes that moral and behavioral learning is strongly influenced by observational learning. When students see their teachers (as authority figures) directly, calmly, and fairly resolve team conflicts, demonstrate good manners in communication, or uphold honesty (*Shidiq*) when integrity issues arise in project reports, they are not only receiving moral instruction but also witnessing a living and authentic demonstration of these values. Teachers serve as concrete examples of how Islamic teachings should be implemented under the pressure and complexity of professional tasks.

The most prominent implementation strategy is Just-in-Time Character Intervention. This intervention occurs incidentally when teachers detect critical moments, such as group disagreements, attempts at free-riding (dishonest contributions), or ethical obstacles related to data sources. Rather than ignoring or punishing them directly, teachers use these moments of crisis as teachable moments to open discussions or provide brief recitations about the relevance of relevant Islamic Religious Education values. For example, teachers link interpersonal conflict to the concept of *Ghibah* (backbiting) or discuss the principles of *Amanah* (responsibility) and *Istiqamah* (consistency) when a member fails to contribute according to commitments. This responsive approach is a practical application of Moral Dialogue Facilitating. Teachers act not merely as moral police but as guides, helping students reflect on their actions through the lens of Islamic teachings. This implementation explains the improvement in character values because these values are taught, modeled, and consistently enforced in real-life and pressing contexts (Jamal et al., 2023). Students learn that morality is not merely a ritual, but a work ethic. This transforms Islamic Education values from mere texts into actions modeled and facilitated by teachers. Successful implementation requires Islamic Education teachers to possess dual competence: robust managerial skills to manage project timelines, resources, and complex group dynamics, and profound spiritual-didactic skills to deliver appropriate, relevant, and contextual *taujih* and *mau'izhah* (religious teachings). This balance between project management and character management is key to the success of this integrative model. Systematic monitoring is also integral to implementation. Islamic Education teachers not only evaluate outcomes but also monitor the process through direct observation, student reflection journals, and peer assessment. This process monitoring is crucial because character values (such as cooperation and integrity) are evaluated throughout the process, not just on the final outcome. Thus, this process provides immediate positive reinforcement for Islamic behavior and appropriate correction of ethical deviations. Through careful monitoring and appropriate intervention, this implementation effectively ensures Islamic Education functions as a moral "operating system" that controls and directs students' vocational skills. Islamic Religious Education teachers become architects of learning environments that demand self-accountability (*muhasabah*) and collective responsibility (Holil, 2023).

Evaluation of Strengthening Character Values

The evaluation of the findings shows that the combined PjBL and PBL model has a very strong mechanism to explain and predict the improvement of students' core character values. The central concept that is formed and strengthened thoroughly through this model is *Al-Mas'uliyah* (Responsibility/Accountability), which serves as an umbrella for the development of Independence, Collaboration, and Integrity. The integrated nature of this model successfully creates a consistent and authentic feedback between the understanding of values (PBL) through ethical investigation and analysis of problems and the practice of values (PjBL) through concrete actions and accountability for the resulting products. Theoretically, the strengthening of the character of Independence and Initiative, which arises from full autonomy in finding solutions and responsibility for project outputs, aligns perfectly with Self-Determination Theory (SDT). SDT states that fulfilling the psychological need for autonomy in tasks will increase intrinsic motivation and self-efficacy. In the context of Islamic Religious Education, this autonomy encourages students to take the initiative in finding solutions that are in accordance with Islamic law, which spiritually fosters the character of *Ijtihad* (striving hard) and Moral Self-Confidence. Students feel ownership of the projects and solutions they create, leading to a high level of commitment to the process and

outcomes, far exceeding external compliance. The complex task demands of multidimensional projects, which inherently require team synergy, automatically predict improved collaboration and communication skills. To achieve effective project outcomes, students must practice *shura* (deliberation), negotiation, and internal team conflict resolution. These are fundamental practices of the values of *Ukhuwah Islamiyah* (brotherhood) and *Tasamuh* (tolerance). These soft skills are not only relevant in the classroom but also functionally transferable to the real-world workplace, serving as a predictive mechanism for the sustainability of vocational high school graduates' Islamic character in the professional world. They learn that *farḍu kifayah* (obligatory obligations) in a project context requires synergy and effective communication (Masruri & Misbah, 2023).

The role of authentic assessment and public accountability (through project presentations or exhibitions) is a powerful mechanism for fostering a stronger commitment to responsibility and integrity. When their projects are assessed through a transparent process and the results are published as tangible solutions (public accountability), the pressure to maintain integrity and responsibility becomes internal. This process serves as a mechanism that reinforces the multidimensional concept of *Al-Mas'uliyah*: responsibility to oneself, to the group, and most fundamentally, responsibility to Allah SWT (*muraqabah*). By utilizing the PjBL and PBL processes as a vehicle for internalizing values, this model successfully transforms Islamic Religious Education from a set of rules into an applied work ethic. Values such as *istiqamah* (consistency), Honesty, and *amanah* (trustworthiness) are tested in scenarios of time and resource pressure, becoming internalized as work habits (habits of character). Therefore, this combined learning management offers a new framework in which Islamic Religious Education functions as an integrated system oriented toward tangible work results (vocational) and the formation of noble character (Islamic pedagogy). These findings predict that vocational high school graduates who implement this model will possess superior and competitive soft skills and noble character, capable of combining spiritual intelligence (SQ) with professional intelligence (IQ and EQ). This model is an empirical response to the needs of contemporary Islamic education to produce *khairu ummah* (the best people) in the industrial realm. Authentic assessment as a managerial accountability mechanism. This model emphasizes that the evaluation process is an integral part of character building. The role of Authentic Assessment and public accountability (through project presentations or exhibitions) is a powerful mechanism for triggering a strengthened commitment to Responsibility and Integrity. When projects are assessed through a transparent process, using student reflection journals and peer assessment, and the results are published as concrete solutions, the pressure for integrity becomes internal (Masruri & Misbah, 2023). This transparent evaluation process serves as a mechanism that explains the strengthening of the multidimensional concept of *Al-Mas'uliyah*: responsibility to oneself, to the group, and most fundamentally, responsibility to Allah SWT (*muraqabah*). Thus, this integrated evaluation ensures that PAI functions as an applied moral accountability system oriented towards real work results and the formation of noble morals.

CONCLUSION

The Integrative Project-Problem Based Learning model (a combination of PjBL and PBL) is a superior, structured, and effective pedagogical solution in achieving the dual goals of vocational education and character building in vocational high schools, with consistent effectiveness across both study sites. In the Planning aspect, this model serves as a critical pillar. Planning successfully marries authentic moral and vocational problems (PBL) with innovative and Islamic project output design (PjBL), effectively breaking the dichotomy of religious knowledge and vocational education. Establishing integrated assessments early on ensures that cognitive, skill, and affective (character) dimensions are measured holistically, serving as a managerial guide in tracking moral action. Implementation becomes an arena for the manifestation of values. Structured implementation transforms the role of Islamic Religious Education teachers from mere instructors to managers of moral projects and good practices. This process deliberately creates urgent teachable moments, where just-in-time character interventions become an inherent part. By utilizing group conflict as a means of moral dialogue facilitation, values such as *adab*, *shura*, and *amanah* are transferred from theory to the actual practice of student behavior. Evaluation as the pinnacle of this model's success lies in improving the quality of character value reinforcement and the formation of *al-mas'uliyah* (Islamic accountability). The strict accountability demands of authentic evaluation force students to internalize Islamic values as work ethics. Thus, the combined PjBL and PBL model is a sustainable framework for producing graduates who are vocationally intelligent and morally noble, relevant, and impactful in the professional era.

REFERENCES

- Affah, R. D., Hunaida, W. L., & Muqit, A. (2025). Model Problem Based Learning Berbasis Media sosial: Inovasi Pembelajaran untuk Penanaman Nilai-Nilai Islami [Social Media-Based Problem Based Learning Model: Learning Innovation for Instilling Islamic Values]. *Jurnal Pendidikan Agama Islam*, 2(3), 1–15. <https://doi.org/10.61132/karakter.v2i1.352> [In Indonesian]
- Ariyanto, A., Sutama, & Markhamah. (2022). Pembelajaran Project Based Learning (PJBL) Untuk Penguatan Karakter Kemandirian [Project Based Learning (PJBL) to Strengthen Independent Character]. *Jurnal Ilmiah Mitra Ganesha*, 9(2), 101–116.
- Asprila, F. D., & Subiyantoro, S. (2024). Project-Based Learning: An Innovative Learning Model to Improve the Understanding of Science in Fifth-Grade Students. *Cognitive Development Journal*, 2(2), 40–48. <https://doi.org/10.32585/cognitive.v2i2.36>
- Bariyah, E. M., Hidayatullah, I., & Jaenudin, E. (2022). Efektifitas Penggunaan Model Pembelajaran Problem Based Learning (PBL) terhadap Kemampuan Berpikir Kritis Peserta Didik pada Mata Pelajaran Sejarah Kebudayaan Islam [The Effectiveness of Using the Problem Based Learning (PBL) Learning Model on Students' C. *Jurnal Jendela Pendidikan*, 2(02), 284–294. <https://doi.org/10.57008/jjp.v2i02.163> [In Indonesian]
- Holil, M. (2023). Pendekatan Saintifik dalam Pembelajaran Pendidikan Agama Islam melalui Discovery Learning, Problem Based Learning, dan Project Based Learning [Scientific Approach in Learning Islamic Religious Education through Discovery Learning, Problem Based Learning, a. *LISAN AL-HAL: Jurnal Pengembangan Pemikiran Dan Kebudayaan*, 17(1), 124–138. <https://doi.org/10.35316/lisanalhal.v17i1.124-138> [In Indonesian]
- Inayati, M. (2022). Penerapan Model Pembelajaran Berbasis Masalah (Problem Based Learning) dalam Pembelajaran PAI; Teori David Ausubel, Vigotsky, Jerome S. Bruner [The Application of Problem-Based Learning Models in Islamic Religious Education Learning; Theories of David Aus. *Al Yasini : Jurnal Keislaman, Sosial, Hukum Dan Pendidikan*, 7(2), 144. <https://doi.org/10.55102/alyasini.v7i2.4875> [In Indonesian]
- Jamal, Najiha, I., Saputri, S. N., Hasbiyallah, & Tarsono. (2023). Menumbuhkan Sikap Sosial melalui Pembelajaran Project Based Learning pada Pendidikan Agama Islam [Cultivating Social Attitudes through Project-Based Learning in Islamic Religious Education]. *JIIP - Jurnal Ilmiah Ilmu Pendidikan*, 6(10), 7834–7841. <https://doi.org/10.54371/jiip.v6i10.2489> [In Indonesian]
- Laana, D. L. (2025). Pendekatan Sistematis dalam Administrasi dan Manajemen Kurikulum untuk Mencapai Pembelajaran Holistik [A Systematic Approach in Curriculum Administration and Management to Achieve Holistic Learning]. *Inculco Journal of Christian Education*, 5(1), 47–60. <https://doi.org/10.59404/ijce.v5i1.234> [In Indonesian]
- Masruri, E. M. H., & Misbah, M. (2023). Studi Literatur: Efektivitas Penerapan Project Based Learning (PjBL) dalam Pembelajaran Pendidikan Agama Islam dan Budi Pekerti Tingkat Sekolah Menengah Atas [Literature Review: The Effectiveness of Implementing Project Based Learning (PjBL) in Islamic Re. *Jurnal Kependidikan*, 11(2), 301–317. <https://doi.org/10.24090/jk.v11i2.9297> [In Indonesian]
- Miles, A. M., & Humberman. (1992). *Analisis Data Kualitatif: Buku Sumber Tentang Metode-Metode Baru* [Qualitative Data Analysis: A Sourcebook of New Methods]. UI-Press.
- Muchtar, T., Syahrul, & Saputra, A. M. A. (2021). Pengaruh dan Permasalahan Pembelajaran Project Based Learning (PJBL) [The Influence and Problems of Project Based Learning (PJBL)]. *Jurnal Review Pendidikan Dan Pengajaran*, 8(1), 96–106. https://www.jstage.jst.go.jp/article/jjet/44/Suppl./44_S44103/_article-char/jal
- Munir, M. (2025). Peran Guru PAI sebagai Uswah Hasanah dalam Meningkatkan Emotional Quotient Intelligence (EQ) Peserta Didik [The Role of Islamic Religious Education Teachers as Uswah Hasanah in Increasing Students' Emotional Intelligence Quotient (EQ)]. *Ambarsa : Jurnal Pendidikan Islam*, 5(1), 53–65. <https://doi.org/10.59106/abs.v5i1.273> [In Indonesian]
- Rasyid Akbar, A., Arifin Siregar, A., & Abdul Wahid, F. (2025). Strategi Efektif dalam Optimalisasi Soft Skills Siswa SMK untuk Kesiapan Kerja dan Daya Saing Global di Era Industri 4.0 [Effective Strategies in Optimizing Vocational High School Students' Soft Skills for Job Readiness and Global Competitiveness in

- the I. *PESHUM: Jurnal Pendidikan, Sosial Dan Humaniora*, 4(2), 2497–2503. <https://doi.org/10.56799/peshum.v4i2.7305> [In Indonesian]
- Risana, F., Hadi, A. I. M., Pratama, A., Rahmah, F., & Syafe, I. (2025). Transformasi Metode Pembelajaran Pendidikan Agama Islam: Dari Konvensional ke Pendekatan Student-Centered Learning [Transformation of Islamic Religious Education Learning Methods: From Conventional to Student-Centered Learning Approach]. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, 10(1). <https://doi.org/10.23969/jp.v10i01.23618> [In Indonesian]
- Rohili, I., Ruswandi, I., Supiana, & Zaqiah, Q. Y. (2025). Transformasi Pembelajaran Pendidikan Agama Islam di Era Digital: Peran Guru Inovatif dan Implementasi Model Discovery Learning [Transformation of Islamic Religious Education Learning in the Digital Era: The Role of Innovative Teachers and the Implementati. *An-Nahdlah: Jurnal Pendidikan Islam*, 5(1). <https://doi.org/10.51806/an-nahdlah.v5i1.721> [In Indonesian]
- Saputra, R. D. (2013). *Penerapan Metode Pembelajaran Project Based Learning (PBL) untuk Meningkatkan Prestasi Belajar Kompetensi Computerised Aided Design (CAD) dengan Software Inventor Siswa Kelas XI Teknik Pemesinan di SMK Negeri 2 Klaten [Implementation of Project Based Lear.*
- Saputra, Y. E. (2016). *Penerapan Model Pembelajaran Project Based Learning (PjBL) untuk Meningkatkan Keaktifan dan Hasil Belajar Pere kayasaan Sistem Kontrol Siswa Kelas XII EI 3 SMK N 3 Wonosari [Implementation of Project Based Learning (PjBL) Learning Model to Improve the Acti.*
- Sari, A. S., Aprisilia, N., & Fitriani, Y. (2025). Teknik Pengumpulan Data dalam Penelitian Kualitatif: Observasi, Wawancara, dan Triangulasi [Data Collection Techniques in Qualitative Research: Observation, Interviews, and Triangulation]. *Indonesian Research Journal on Education*, 5(2018), 539–545. <https://doi.org/10.31004/irje.v5i4.3011> [In Indonesian]
- Setiawan, T., Sumilat, J. M., Paruntu, N. M., & Monigir, N. N. (2016). Analisis Penerapan Model Pembelajaran Project Based Learning dan Problem Based Learning pada Peserta Didik Sekolah Dasar [Analysis of the Application of Project Based Learning and Problem Based Learning Models to Elementary School Students]. *Jurnal Basicedu*, 6(6). <https://doi.org/10.31004/basicedu.v6i6.4161> [In Indonesian]
- Shidiq, M., Aziiz, A., & Kurnia, D. (2024). Model Pembelajaran PBL (Problem Based Learning) dan PBJL (Project Based Learning) [PBL (Problem Based Learning) and PBJL (Project Based Learning) Learning Models]. *Rayah Al-Islam: Jurnal Ilmu Islam*, 8(4), 1–11. <https://doi.org/10.37274/rais.v8i4.1213> [In Indonesian]
- Sianturi, C. A. I., & Silalahi, T. (2025). Pengaruh Model Pembelajaran Problem Based Learning (PBL) dan Project Based Learning (PjBL) Berbantuan Audio Visual untuk Meningkatkan Hasil Belajar Siswa/I pada Mata Pelajaran Pertemuan Rapat di SMK Negeri 7 Medan T.A 2024/2025 [The Effect of Problem Base. *IKRAITH-EKONOMIKA*, 8(2), 534–540. <https://doi.org/10.37817/IKRAITH-EKONOMIKA> [In Indonesian]
- Sirait, A. A., Febrian, M. A., Saifundi, & Halimah, S. (2024). Pengembangan Perangkat Pembelajaran Kompetensi (PP-PK) dalam Kurikulum Merdeka [Development of Competency Learning Tools (PP-PK) in the Independent Curriculum]. *DIROSAT: Journal of Islamic Studies*, 9(2), 183–194. <https://doi.org/10.28944/dirosat.v9i2.2000> [In Indonesian]
- Suprayitno, D., Amalia, K., & Khamidi, A. (2025). Manajemen Pembelajaran Berbasis Proyek dalam Upaya Peningkatan Prestasi Akademik Peserta Didik (Penelitian Multi Situs di SMKN 1 Cerme dan SMKN 1 Dudusampeyan) [Project-Based Learning Management in an Effort to Improve Students' Academic Achievement (Mul. *JPG: Jurnal Pendidikan Guru Journal*, 6(2), 331–342. <https://doi.org/10.32832/jpg.v6i2.20076> [In Indonesian]
- Wati, P. K., & Kuswanto, A. (2025). Implementasi Model Pembelajaran Berbasis Proyek (PjBL) dalam Meningkatkan Keterampilan Praktik Administrasi Perkantoran Siswa: Tinjauan Pustaka Untuk Guru SMK [Implementation of Project-Based Learning (PjBL) Model in Improving Students' Practical Office A. In *Book Chapter Administrasi Perkantoran Jilid 1* (pp. 305–326). <https://doi.org/10.15294/bap.v1i1.413> [In Indonesian]



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