Assistance In the Implementation of The Project Based Learning Model (PjBL) of Integrated Science of Islamic Values at MI Miftakhul Huda Bakalan Kediri

Ummiy Fauziyah Laili[1], Atika Anggraini[2], Nabila Amelia Kurnia Putri[3*]

[1] UIN Syekh Wasil Kediri, Indonesia, email: ummiyfauziyahlaili@uinkediri.ac.id

[2] UIN Syekh Wasil Kediri, Indonesia, email: atikaanggraini@uinkediri.ac.id

[2] UIN Syekh Wasil Kediri, Indonesia, email: nabilaameliaa56@gmail.com

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ABSTRAK

Kegiatan pengabdian kepada masyarakat ini bertujuan untuk meningkatkan kompetensi pedagogis guru dan motivasi belajar peserta didik melalui pendampingan penerapan pembelajaran berbasis proyek pada mata pelajaran Ilmu Pengetahuan Alam yang terintegrasi dengan nilai-nilai Islam di MI Miftakhul Huda Bakalan, Grogol, Kediri. Kegiatan dilaksanakan dengan pendekatan penelitian tindakan partisipatif yang melibatkan 12 guru sebagai mitra. Pengumpulan data dilakukan melalui tes, observasi, angket, wawancara dan dokumentasi. Data yang diperoleh dianalisis secara kuantitatif dan deskriptif kualitatif. Hasil kegiatan menunjukkan bahwa kompetensi pedagogis guru mengalami peningkatan yang signifikan, yang diikuti dengan peningkatan motivasi belajar peserta didik. Dengan demikian, program pendampingan ini efektif dalam mewujudkan pembelajaran Ilmu Pengetahuan Alam yang aktif, kontekstual, dan terintegrasi dengan nilai-nilai Islam.

ABSTRACT

This community service activity aims to improve teachers' pedagogical competence and students' learning motivation through assistance in the implementation of project-based learning in Natural Sciences subjects that are integrated with Islamic values at MI Miftakhul Huda Bakalan, Grogol, Kediri. The activity was carried out with a participatory action research approach involving 12 teachers as partners. Data collection was carried out through tests, observations, questionnaires, interviews and documentation. The data obtained were analyzed quantitatively and qualitatively descriptive. The results of the activity showed that teachers' pedagogical competence experienced a significant increase, which was followed by an increase in students' motivation to learn. Thus, this mentoring program is effective in realizing active, contextual, and integrated Natural Science learning with Islamic values.

INTRODUCTION

Basic education has a very important role in shaping students' thinking skills, character, and skills as a provision to face the development of the times (Ixfina & Rohma, 2025). At the Madrasah Ibtidaiyah (MI) level, the learning process is not only oriented to mastering knowledge, but also directed to build a strong religious character through the integration of Islamic values in every learning activity. One of the subjects that has a strategic role in developing students' scientific thinking skills is Natural Sciences (IPA). Science learning is essentially a discovery process that involves observing, questioning, trying, reasoning, and communicating the results of observations of natural phenomena around students. Through science learning, students are

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expected to be able to understand scientific concepts while developing critical, creative, and problem-solving skills needed in daily life.

However, the implementation of science learning at the elementary school level still faces various challenges. Learning is often teacher-centered and emphasizes more on verbal delivery of material than on the active involvement of students in the learning process (Suryadinata et al., 2025). This condition causes students to tend to be passive, easily bored, and lack the opportunity to develop science process skills optimally. In fact, the characteristics of elementary school-age students require a concrete, contextual, and hands-on learning experience so that the concepts learned can be understood more meaningfully. The limited variety of learning models used by teachers is one of the factors that cause the learning process to not be able to accommodate the learning needs of students to the maximum.

In order to answer these challenges, efforts are needed to strengthen teachers' competence in implementing innovative and student centered learning models. One of the models that is assessed according to the characteristics of science learning is Project-Based Learning (PjBL). The project-based learning model provides opportunities for students to be actively involved in solving real problems through planning activities, project implementation, group collaboration, and presentation of works. Through these activities, students not only gain an understanding of concepts, but also develop critical thinking, creativity, communication, and collaboration skills that are part of 21st century competencies (Fatah, 2023). In addition, the PjBL model allows teachers to utilize the surrounding environment as a learning resource so that learning becomes more contextual and meaningful.

Project based learning (PjBL) is an inquiry oriented learning approach that focuses on the fundamental concepts and principles of a particular subject. It engages students in sustained inquiry throught the use of various resources and authentic real world activities, enabling them to address interconnected problems and develop a comrehensive project within a specified period (Singha, 2024). Through this approach, students are encouraged to take an active role in the learning process by identifying problems, designing project plans, collecting and analyzing information, developing solutions, and presenting the results of their work (Herlina, 2025). PBL also promotes meaningful learning experiences by connecting theoretical knowledge with real-life situations, allowing students to understand how scientific concepts can be applied to address problems in their surroundings (Ristiani, 2025). Furthermore, the collaborative nature of project-based learning provides opportunities for students to develop essential 21st century skills, including critical thinking, creativity, communication, collaboration, problem-solving, and independent learning (Lubis, 2024). Therefore, PBL can serve as an effective learning model for creating contextual, active, and student-centered science learning experiences

Effective science learning is not only oriented to mastering science and technology (IPTEK), but also needs to be integrated with religious values (IMTAK) (Handayani, 2025). The integration of Islamic values in science learning is important to form students who are not only intellectually intelligent, but also have religious character and concern for the environment. Through learning that is integrated with Islamic values, students can understand that natural phenomena are part of the signs of the greatness of Allah SWT that need to be studied, appreciated, and preserved. This integration is expected to be able to foster an attitude of responsibility, discipline, honesty, cooperation, and environmental concern as the implementation of the role of humans as caliphs on earth.

Science education, by its very nature, is not only aimed at developing students' understanding of scientific concepts but can also serve as a means of instilling and developing

Islamic values (Khairullina, 2024). Science explores various natural phenomena, including living organisms, ecosystems, energy, matter, the Earth, and the universe, which, from an Islamic perspective, are part of Allah SWT's creation (Arief, 2023). Therefore, the process of studying and understanding the order, balance, and complexity of nature through science can be directed toward fostering students' awareness of the greatness and power of Allah SWT. The integration of science and Islamic values does not imply mixing scientific concepts with religious doctrines rather, it involves incorporating Islamic values into the learning process and the interpretation of scientific knowledge so that the knowledge acquired by students can encourage religious awareness and responsible behavior (Asykur, 2025).

Such integration can be achieved by connecting scientific concepts and phenomena with relevant Islamic values, such as gratitude for Allah's creation, responsibility for protecting the environment, honesty in conducting observations and reporting data, discipline in following scientific procedures, and cooperation in solving problems (Rosita, 2025). For example, when studying ecosystems and environmental balance, students not only develop a scientific understanding of the relationships between biotic and abiotic components but are also encouraged to recognize the importance of maintaining environmental balance as a manifestation of human responsibility as khalifah (stewards) on Earth (Haya, 2025). Similarly, during experimental activities, the value of honesty can be applied by recording observational results according to the actual findings without manipulating the data (Hamzan, 2026). Thus, the integration of science and Islamic values can create learning experiences that are not solely oriented toward knowledge acquisition but also contribute to developing students' religious character, integrity, environmental awareness, and responsibility in the application of scientific knowledge

MI Miftakhul Huda, which is located in Bakalan Village, Grogol District, Kediri Regency, is one of the Islamic basic education institutions that has a strong commitment to realizing students who excel academically and have Islamic characteristics. This madrasah has great potential to develop innovative science learning because it is supported by a surrounding environment that is rich in learning resources, such as agricultural areas, local vegetation, and various natural phenomena that can be used as natural laboratories. In addition, the availability of basic technology facilities and support from the madrasah committee is an important capital in the development of project-based learning innovations.

However, the results of initial observations and interviews with madrasah heads and teacher councils show that the utilization of this potential is still not optimal. Most teachers still rely on the lecture method because it is considered easier to manage the classroom and in accordance with the characteristics of students who are dominant in having an auditory learning style. As a result, science learning tends to take place one-way and lacks a meaningful learning experience for students. In addition, the use of the surrounding environment as a learning medium is still very limited because teachers have difficulties in designing systematic out-of-class learning activities that are in accordance with learning objectives. This condition is exacerbated by the lack of training and mentoring that focuses on developing innovative project-based learning models and the integration of educational technology.

Based on these conditions, an empowerment program is needed that is able to improve teachers' competence in a sustainable manner in designing and implementing science learning that is innovative, contextual, and integrated with Islamic values. The Assistance Program for the Implementation of the Project-Based Learning (PjBL) Model of Integrated Science with Islamic Values is one of the solutions that can be applied to answer these needs. This program is designed

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in the form of intensive training and mentoring which includes the preparation of learning tools, the development of teaching modules, the practice of project-based learning implementation, the use of the school environment as a natural laboratory, and the evaluation and reflection of learning implementation.

Through this mentoring program, teachers are expected to be able to improve pedagogical competence in implementing project-based learning models, develop a more active and student-centered classroom atmosphere, and integrate Islamic values substantively in science learning. In addition, the use of the environment around the school as a learning resource is expected to improve the quality of students' learning experience while fostering awareness of the importance of protecting the environment as a mandate from Allah SWT. Thus, the mentoring program for the implementation of Project-Based Learning (PjBL) of Integrated Science with Islamic Values at MI Miftakhul Huda, Bakalan Village, Grogol District, Kediri Regency not only focuses on improving teacher competence, but also becomes an integrated strategy in realizing active, contextual, meaningful, and Islamic science learning.

METHOD

This Community Service (PkM) activity is carried out using the Participatory Action Research (PAR) approach. The PAR approach was chosen because it emphasizes active and collaborative involvement between the service team and partners, namely the head of the madrasah and the teacher of MI Miftakhul Huda Bakalan, in identifying problems, designing solutions, implementing actions, and conducting continuous evaluation and reflection. Through this approach, teachers not only play the role of participants in activities, but also as partners as well as agents of change who are directly involved in each stage of the program (Elda Felani et al., 2025). The activity was carried out at MI Miftakhul Huda Bakalan, Grogol District, Kediri Regency during the 2025 academic year. The target of the activity includes 12 high-class teachers and science teachers as the main partners in the development of science learning based on projects integrated with Islamic values. The PAR method used adapts the Kemmis and McTaggart cycles consisting of planning, action, observation, and reflection stages that are realized into four operational stages of activities as presented in table 1.

Table 1. Stages of Service with the Participatory Action Research (PAR) Method

PAR Stages	Stage Description	Activities Carried Out
Planning	The initial stage is to identify the needs of partners, map science learning problems, and develop a mentoring program that is in accordance with the conditions of the madrasah.	a. Coordination with the head of the madrasah and the teacher council. b. Analyze the needs and identify problems of science learning. c. Mapping of curriculum and science materials that have the potential to be developed through PjBL. d. Preparation of activity schedules and design of mentoring programs.

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Implementation of Actions	The program implementation stage is in the form of training and assistance in the implementation of Project-Based Learning (PjBL) science integrated with Islamic values.	a. Workshop sintaks Project-Based Learning (PjBL). b. Training on the preparation of teaching modules for PjBL Science integrated with Islamic values. c. Preparation of learning tools and project assessment rubrics. d. Simulation of learning (peer teaching) and implementation practice in the classroom. e. The use of the school environment as a natural laboratory.
Observing	The stage of data collection and monitoring of program implementation to determine the effectiveness of the actions that have been taken.	a. Observation of the project-based science learning process. b. Assessment of teachers' pedagogical competence uses observation sheets. c. Observation of student activities and engagement during learning. d. Data collection through pre-test, post-test, learning motivation questionnaire, and activity documentation.
Reflection and Follow-up	Evaluation and reflection stage together to identify the success of the program and make improvements in the next cycle.	a. Reflective discussion with teachers and madrasah heads. b. Constraint analysis during project learning implementation. c. Preparation of recommendations for module improvement and learning strategies. d. Periodic monitoring every two months to ensure the sustainability of the program.

		e. Preparation of scientific reports and articles as a result of service.

This mentoring program is carried out on an ongoing basis through the PAR cycle which allows for improvements at each stage of implementation. Through this process, teachers get the opportunity to reflect on the learning practices that have been carried out and develop learning innovations based on real needs in the classroom.

Activity data was collected using *a mixed methods* approach that combines quantitative and qualitative data. Teachers' pedagogical competency data was obtained through an objective pre-test and post-test of 20 questions as well as an assessment of the developed teaching module portfolio. Meanwhile, student learning motivation data was obtained using the ARCS *(Attention, Relevance, Confidence, Satisfaction)* Likert scale questionnaire which consisted of 24 statements.

Quantitative data analysis was carried out using the Paired Sample t-Test to determine the difference in teacher competence before and after the mentoring program. Before hypothesis testing, the data is first tested for normality using the Shapiro-Wilk test. The decision-making criterion, namely H_0, is rejected if the Sig. (2-tailed) value < 0.05. In addition, the effectiveness of the program was analyzed using Normalized Gain (N-Gain) to determine the level of improvement in teachers' pedagogical competence and student learning motivation. The N-Gain criterion refers to Hake, namely the high category ($g > 0.70$), the medium category ($0.30 \leq g \leq 0.70$), and the low category ($g < 0.30$). Qualitative data obtained through observation, interviews, and reflections were analyzed descriptively to strengthen the interpretation of quantitative results and provide a comprehensive picture of the impact of the mentoring program.

RESULT AND DISCUSSION

Result of Quantitative Analysis of Teachers' Pedagogical Competence

The clinical mentoring program and interactive workshop of PjBL Science Integrated with Islamic Values at MI Miftakhul Huda Bakalan Kediri showed a significant increase in the pedagogical competence of the 12 target teachers. A summary of descriptive data on teachers' competence in compiling the Islamic Value Integrated Science PjBL tool is presented in the table below:

Table 2. Descriptive data on teachers' competence in compiling the Islamic Value Integrated Science PjBL

Measurement Variables	Minimum	Maximum	Track-Track (Mean)	Standard Deviation
Teacher Competency Pre-Test	40,00	65,00	54,17	7,93
Post-Test Teacher Competency	75,00	95,00	86,50	6,22
Gain Difference	20,00	45,00	32,33	6,91

Prior to the intervention, the teacher's initial ability profile was in the less than ideal category with an average score of 54.17 out of a maximum scale of 100, and an alarming minimum score of 40.00. This condition reflects the theoretical and practical limitations in understanding the syntax of Project-Based Learning (PjBL), with teachers still stuck in rigid and memorization-

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oriented conventional learning structures. The standard pre-test deviation of 7.93 confirms a fairly wide range of understanding between teachers, where senior teachers tend to show further resistance to authentic assessment technical terms than younger teachers.

After the implementation of intensive mentoring which included personalized module analysis, teaching simulations, and project classroom management guidance, there was a massive spike in scores. The average score of pedagogical competence shot up to 86.50, with the highest score of 95.00 and the lowest score of 75.00. All teachers without exception have exceeded the minimum eligibility threshold of basic competencies. The standard deviation that shrank from 7.93 to 6.22 indicates a narrowing of the gap of understanding among the teacher council, signaling an evenly distributed knowledge transfer and not just centred on one or two specific individuals.

Inferential significance tests using the Paired Sample t-Test were calculated to prove the validity of the program's influence, with the following results:

Table 3. Inferential significance tests using the Paired Sample t-Test were calculated to prove the validity of the program's influence

Paired Statistical Test	Average Difference	T-calculated value	df	Sig. (2-tailed)
Score Pre-Test – Post-Test Teacher	32,333	-16,214	11	0,000

Before the paired t-test was carried out, the pre-test and post-test score data were confirmed to meet the classical assumption in the form of a normality test of data distribution using the Shapiro-Wilk method (N=12). The calculation results show that the significance value of the data distribution is greater than 0.05, so that the data is declared perfectly normal and qualified for parametric statistical analysis. From the output table, a t-calculation coefficient of -16.214 with a degree of freedom (df) = 11, and a probability value of significance of Sig. (2-tailed) of 0.000. Since 0.000 < 0.05, H_0 is rejected and H_a is accepted absolutely. This rejection of H0 provides a very strong empirical basis to conclude that there is a very real, significant, and meaningful difference between the pedagogical competence of teachers before and after the mentoring program. A negative mark on the t-count indicates a direction of change where the post-test score is much greater than the pre-test. The absolute magnitude of the t-count that exceeds the critical limit of the t-table for df=11 emphasizes the very high level of reliability of the intervention.

Furthermore, in order to measure the level of effectiveness and degree of success of the program quantitatively, a Normalized Gain Score (N-Gain) analysis was carried out based on the Hake formula. From the results of the calculation of the learning tool portfolio data and teachers' theoretical mastery, an average N-Gain Score of 0.71 was obtained. Based on the criteria for interpreting Hake's effectiveness, a g value above 0.70 (g > 0.70) is officially categorized into High or Highly Effective. This high effectiveness is triggered by the combination of theoretical aspects of science methodology and field operational practices, where teachers are guided directly to map the curriculum to accommodating science materials to be realized in low-cost projects utilizing the local environment of Bakalan Grogol Village. The active involvement of teachers as PAR subjects in designing their own projects makes the absorption of pedagogical knowledge optimal and lasts a long time.

Cumulatively, all quantitative indicators ranging from the increase in the descriptive mean, the rejection of H_0 in the Paired Sample t-Test, to the achievement of the high category in the N-Gain Score index are markers of the success of the initial phase of this service. The numerical data confirms that the 12 target teachers now have the provision of independent, mature, and comprehensive pedagogical capacity to organize an interactive science classroom climate as the main foundation for the implementation of the Islamic value integrated science project at the level of students in the next phase of action.

Results of Quantitative Analysis of Students' Learning Motivation

The implementation of Project-Based Learning (PjBL) by the supervised teacher had a direct impact on 65 students in Grades IV and V. Students' learning motivation was measured using a questionnaire based on the ARCS motivational model, which consists of four components: Attention, Relevance, Confidence, and Satisfaction. The questionnaire was used to identify changes in students' learning motivation before and after the implementation of the PjBL intervention. The questionnaire items were developed to represent these four motivational dimensions and were administered under the same conditions during the pre-intervention and post-intervention measurements.

The results of the conversion of the ARCS model motivational questionnaire score before (Pre) and after (Post) intervention are presented in the table below:

Table 4. conversion of the ARCS model motivational questionnaire score before (Pre) and after (Post)

Motivation Score Categories	Questionnaire Score Range	Pre-Intervention Percentage (%)	Post-Intervention Percentage (%)
Very High	X ≥ 96	12%	72%
Height	80 ≤ X < 96	25%	23%
Enough / Sufficient	64 ≤ X < 80	58%	5%
Low	X < 64	5%	0%

Prior to the implementation of the project-based model, the distribution of student motivation tended to accumulate at a less enthusiastic level, with the majority being in the Sufficient category (58%), followed by High (25%), Very High (12%), and still remaining 5% in the Low category. These findings indicate that before the intervention, most students had not yet reached the highest level of learning motivation. The dominance of the sufficient and low categories is empirical evidence that conventional science learning centered on teachers has not been able to activate the intrinsic learning passion of elementary school children optimally.

After the implementation of PjBL, a substantial positive shift was observed in the distribution of students' learning motivation. The proportion of students in the Very High category increased from 12% to 72%, representing an increase of 60 percentage points. Meanwhile, the High category decreased slightly from 25% to 23%, while the Sufficient category decreased considerably from 58% to 5%. The Low category also decreased from 5% to 0%. This distribution suggests that students' motivation shifted predominantly toward the Very High category following the implementation of PjBL.

The observed improvement can be discussed in relation to the four components of the ARCS model. The Attention component was supported by project activities that involved students directly in exploring problems, manipulating learning materials, and producing project outcomes. These activities provided students with more varied learning experiences than conventional teacher-centered instruction. The Relevance component was strengthened by connecting science

concepts with students' daily experiences, their surrounding environment, and Islamic values. Such connections enabled students to recognize the relevance of science learning to their lives and environment.

The Confidence component was fostered through the systematic stages of project implementation, including planning, task distribution, project development, and presentation. Working collaboratively and completing each project stage provided students with opportunities to experience success and develop confidence in carrying out learning tasks. Meanwhile, the Satisfaction component was reflected in the completion and presentation of students' project products. The opportunity to demonstrate their work and receive appreciation for their efforts could provide a sense of achievement and reinforce students' positive learning experiences.

Although the increase in the Very High motivation category from 12% to 72% represents a substantial descriptive improvement, these findings should be interpreted cautiously. In this study, the available data do not include the results of specific validity and reliability testing of the ARCS questionnaire. Therefore, the findings are presented as descriptive changes in students' motivation rather than as evidence of the statistical effectiveness of the intervention. Nevertheless, the consistent use of the ARCS framework across the pre- and post-intervention measurements provides a basis for describing changes in students' motivation across the four dimensions of Attention, Relevance, Confidence, and Satisfaction.

The quantitative findings show a considerable shift in students' learning motivation following the implementation of PjBL integrated with Islamic values. The substantial increase in the Very High category and the reduction of students in the Sufficient and Low categories indicate a positive change in the observed distribution of motivation. Further research involving systematic validity and reliability testing of the ARCS instrument, as well as inferential statistical analysis, is recommended to provide stronger evidence regarding the effectiveness of PjBL in improving students' learning motivation.

The observed increase in students' learning motivation can be discussed in relation to the four main components of the ARCS model incorporated into the project-based learning activities (Setyowati et al., 2022). The Attention component was supported by project activities that involved students in exploring questions related to real phenomena in their surrounding environment and directly manipulating learning materials. Activities such as cutting, painting, gluing, and assembling project materials provided students with hands-on learning experiences that could attract and maintain their attention during the learning process (Ramadhani & Sulisworo, 2022).

The Relevance component was reflected in the connection between science projects, students' everyday experiences, their surrounding environment, and Islamic values in the madrasah. By relating scientific concepts to familiar contexts and values, students could recognize the meaningfulness and usefulness of science learning. The Confidence component was supported through the structured stages of project implementation, in which students worked on manageable tasks, collaborated with peers, and received guidance from the teacher. Such experiences provided opportunities for students to complete learning tasks progressively and develop greater confidence in addressing scientific problems (Ikhlasani et al., 2023).

Meanwhile, the Satisfaction component was reflected in the completion and presentation of students' project products. The opportunity to present their work and receive appreciation for their efforts could provide students with a sense of achievement and positive learning experiences. Thus, the increase in the distribution of students' learning motivation observed after the implementation of PjBL can be understood in relation to learning activities that provided attention, contextual relevance, opportunities to build confidence, and experiences of

achievement. The integration of PjBL with Islamic values also provided a contextual learning experience in which scientific knowledge was connected with students' daily lives, environmental responsibility, and religious values.

Reconstruction of the Pedagogical Paradigm of Madrasah Teachers

The surge in teacher competence from 54.17 to 86.50 reflects a profound paradigm shift among MI Miftakhul Huda Bakalan Kediri educators. Before the program, teachers were trapped in the myth that a good classroom was a quiet, passive, and fully controlled classroom with the teacher's instructions in front of the board. There is a collective fear that allowing elementary school-age children to work in groups with high physical mobility will disrupt the daily order of the madrasah, trigger unproductive noise, and obscure the focus of delivering science material. This fear is considered rational because teachers have not mastered project-based instructional management techniques comprehensively. Without an understanding of structured learning syntax, allowing elementary school students to do their activities freely outside of the classroom has the potential to create chaotic situations. It is this limitation that over the years has made teachers feel safer sticking to a single interactive lecture method, even if it gradually comes at the expense of students' creativity and kinesthetic skills.

In order to solve this methodological impasse, the service team was present through a *Participatory Action Research* (PAR)-based clinical assistance approach. The team directly demonstrated the design of a strict learning contract at the beginning of the project with students, the preparation of group assignments with fair cognitive-motor role sharing, and the functioning of teachers not as central speakers but facilitators who actively go around the classroom. Through this personal guidance, teachers are trained to be observant of group dynamics, direct passive students, and arrange classrooms into mini-laboratories that are friendly to children's physical mobility (Yamin et al., 2025).

Concrete evidence of the success of reconstruction and clinical assistance can be seen from the quality of teacher administration products, where the portfolio of self-developed learning tools reached 85% completeness in the Very Capable category. Madrasah teachers are no longer awkward in compiling process assessment instruments that are often considered complicated in the new curriculum. They are proficient in mapping student performance indicators, aligning project targets with basic science learning outcomes, and packaging worksheets that guide children's natural curiosity in a systematic manner. The authentic assessment that has been successfully prepared now includes a very comprehensive assessment aspect, ranging from daily project progress assessment instruments, assessment of collaboration and communication aspects between students, to *self-assessment* and peer-assessment techniques that are simplified specifically for elementary school students. The mastery of this non-test evaluation instrument is a strong indicator that teachers have completely come out of the shackles of conventional cognitive evaluation that is only based on written exams. This new independence provides assurance that teachers are ready to organize 21st century science learning that is of high value, meaning, and able to accommodate the unique potential of each student in a sustainable manner.

Motor Stimulation, Cognitive Retention, and ARCS Model

The surge in student learning motivation in the Very High category (72%) is closely related to the success of teachers in implementing the PjBL Science syntax in its entirety. Elementary school-age children are at a stage of concrete operational development that requires real objects to understand abstract scientific concepts (Imanulhaq & Ichsan, 2022). When grade

IV students were tasked with creating a "Simple Ecosystem Mockup from Recycled Materials" and grade V creating a "Water Cycle Physical Teaching Aid", all the motivational elements of the ARCS model were stimulated simultaneously. *Students' attention* is provoked when confronted with challenging fundamental questions and manipulation of physical materials in an open laboratory of the environment. *Relevance* is felt directly because the project is associated with the conservation of nature in the environment around their residence and the use of laptops/projectors for critical stimulation. *Confidence* thrives because projects are divided into small, measurable bi-monthly targets, so students don't feel burdened by the complexity of the task. *Satisfaction* is achieved when the group successfully exhibits and presents their functional products in front of the class, triggering *long-term memory retention* because the concept of science is learned through direct kinesthetic experience (*learning by doing*).

Internalization of Substantive Islamic Values (Tadabbur Science)

One of the main *novelties* of Community Service activities at MI Miftakhul Huda Bakalan in 2025 is the success of eroding the pseudo-integration method that has been widely practiced. In the old paradigm, the integration between religious values and the natural sciences was often stuck in cosmetic formalities, such as simply reciting verses from the Qur'an or reciting prayers at the beginning and end of class without any contextual content connection. This superficial practice makes students see religion and science as two separate entities, where science is studied for intellectual intelligence, whereas religion is merely a spiritual ritual that has no implications for the way they view natural phenomena.

Through an intensive mentoring program, the teacher's theological-pedagogical mindset was successfully reconstructed completely. Madrasah teachers who have been trained are now able to apply the integration of Islamic science in a substantive, in-depth, and contextual way directly into the syntax of the projects carried out by the children. They no longer impose the haphazard compatibility of verses (kauniyah verses), but rather guide students' curiosity to find the absolute order of natural laws (sunnatullah) behind every science material that is being explored through the physical project (Wakit et al., 2025).

As a concrete example, in the project of making physical teaching aids for water cycle by class V, teachers no longer only focus on assessing the success of the mechanical functional aspects of the teaching aids made by students. More than that, the teacher intelligently directs the final reflection session and focused discussion in the classroom to examine the greatness of Allah SWT in designing the process of precipitation, condensation, and evaporation of water precisely for the survival of living things on earth, as implied in the text of the Qur'an. Through this approach to science tadabbur science, hydrological phenomena are no longer just a cold cycle memorization on paper, but turn into a medium of strengthening faith that touches the inner consciousness of students (Desanda & Af'idah, 2025).

The impact of this deep internalization of values has been proven to trigger the strengthening of the character of religiosity that grows organically and applicatively in students. Islamic character is no longer taught as a doctrine of moral memorization, but manifests in real daily behavior changes (Untung et al., 2022). Students consciously begin to build environmental morals (*al-akhlaq al-bi'iyyah*), such as showing a frugal attitude in the use of water in the madrasah environment, maintaining the cleanliness of the ablution area independently, and taking full responsibility for cleaning the remnants of project waste materials in the classroom as a real implementation of the reflection of the values of faith that they have discussed.

The success of substantive integration at the elementary school level empirically proves that science teaching at Madrasah Ibtidaiyah institutions can go hand in hand with the moral-spiritual strengthening of children without having to degrade the weight of the scientific material itself. This PjBL learning model that breathes Islamic values emphasizes that the content of basic science does not lose its academic depth when juxtaposed with religious values. On the contrary, Islamic spiritual values actually act as an existential meaning that makes basic science material much more lively, relevant, and transformative in shaping the character of the young generation of Muslims in the 21st century.

Partnership Synergy and Sustainability Challenges

The successful implementation of this service program is fully supported by positive synergy and strong cross-sectoral collaboration among madrasah stakeholders. An innovation in learning in elementary school will not be able to take root properly if it only relies on the role of teachers in the classroom. In the context of PkM at MI Miftakhul Huda Bakalan Kediri, the harmonious partnership climate between the madrasah management, school committees, service teams, and parents of students is the main catalyst that accelerates the massive internalization of *the basic science Project-Based Learning* model .

The real manifestation of this ecosystem support can be seen from the high participation of parents of students who voluntarily help provide various recycled materials from home for the needs of children's science projects. This active involvement shows the expansion of the extended *classroom*, where the home ecosystem is no longer passive but is responsible for supporting the madrasah academic program (Zulyusri et al., 2023). When parents accompany children to collect used bottles, cardboard, or leftover materials suitable for use at home, there has been an indirect strengthening of science literacy and affective communication between children and parents that support students' psychological readiness before practicing projects at madrasah.

However, as part of the *Participatory Action Research* (PAR) approach, the service team and teachers still identified several micro-challenges that emerged in the field during the project execution phase. The main and most crucial challenge is the strict management of academic time for Madrasah Ibtidaiyah children who have a fairly dense religious learning schedule. Teachers in the field need extra guidance and mature tactical strategies to direct students to complete project products on time, without having to sacrifice or cut the allocation of hours for other important subjects in the madrasah.

In addition to time allocation constraints, the dynamics of the elementary age group also give rise to instructional challenges in the form of handling children who are passive or dominate in the group. The characteristics of MI students who are still in the early emotional development phase require personal intervention from teachers as facilitators so that the division of cognitive and motor tasks in making science aids can be distributed fairly (Maisyaroh & Miterianifa, 2023). Teachers are required to be observant in motivating students who tend to withdraw so that they still get a portion of kinesthetic learning experience that is equivalent to their peers.

In order to overcome these various operational obstacles, the service team together with the teacher council used the bi-monthly reflection forum as a forum for clinical evaluation and *problem solving* collectively. Through this forum, a technical reconstruction was carried out in which the level of complexity of children's science project products was simplified in such a way that it remained in a child-friendly corridor and compatible with the duration of daily lesson hours. This adjustment is carried out carefully so that technical modifications in the manufacture of teaching aids do not reduce the essence of the basic science and Islamic values that want to be

internalized, so that the sustainability of PjBL innovation in this madrasah can continue to be well maintained.

CONCLUSION

Based on the implementation of the Community Service (PkM) program at MI Miftakhul Huda Bakalan, involving 12 teachers and 65 Grade IV–V students, the mentoring program for implementing Project-Based Learning (PjBL) integrated with Islamic values through a Participatory Action Research (PAR) approach showed positive results. Teachers' pedagogical competence increased from 54.17 to 86.50, with a significance value of 0.000 (<0.05) and an N-Gain score of 0.71 (high category), while the proportion of students with Very High learning motivation increased from 12% to 72%. Theoretically, this program strengthens the application of PjBL in science learning integrated with Islamic values as an approach that connects scientific concepts, real-world experiences, and character development. Practically, the program provides a PAR-based mentoring model that can assist teachers in designing and implementing contextual, collaborative, and meaningful science learning. Thus, PjBL integrated with Islamic values has the potential to serve as a strategy for improving teachers' pedagogical competence and supporting students' learning motivation.

Madrasah are recommended to make PjBL Science integrated with Islamic values as part of the regular learning program and provide adequate facilities and budget support. Teachers are expected to continue to develop an internal learning community to share good practices and improve the quality of project-based learning. Meanwhile, further service or research can be focused on developing a digital system for project portfolio assessment and its integration with the madrasah learning outcome reporting system to support more effective and sustainable learning.

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