



Enhancing Students' Awareness of Pubertal Signs and The Habit of Gratitude Through a Problem-Based Learning (PBL) Approach

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Abstract: This study aims to enhance students' understanding of the signs of puberty and develop responsible attitudes through the implementation of a Problem-Based Learning (PBL) approach. Conducted as Classroom Action Research (CAR), the study involved two learning cycles comprising planning, action, observation, and reflection stages. The participants were twelve fourth-grade students at SDN 2 Margajaya. Data were collected through comprehension tests, attitude observations, and interviews. The findings indicate that the use of PBL effectively improved students' comprehension of pubertal changes and fostered more responsible behavior. Students demonstrated greater engagement during group discussions, completed tasks more independently, and showed increased empathy toward their peers. The application of PBL encouraged active learning, critical thinking, and moral awareness relevant to students' developmental stages. This study highlights the potential of PBL as an effective pedagogical model in Islamic education to integrate cognitive and character development. By connecting learning materials about human growth with moral values such as gratitude and responsibility, PBL helps students understand personal changes as part of God's creation, thereby strengthening their spiritual and social maturity.

Keywords: Character Development; Puberty Education; Responsible Attitude

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INTRODUCTION

Elementary education plays a crucial role not only in developing students' academic abilities but also in shaping their moral character and understanding of life values. One essential aspect of this developmental process is helping students recognize and understand the signs of puberty (Poran, 2022; Naro et al., 2023). Awareness of pubertal changes is a key component of self-identity formation and personal responsibility during early adolescence (Fordham, 2025; Al-Rousan et al., 2025). However, studies indicate that many elementary students, particularly those aged 9–10, have limited knowledge and misconceptions about puberty due to the absence of structured, value-based learning approaches (Rahmawati & Yusuf, 2021; Utomo et al., 2020; Bunoti et al., 2022; Collier-Harris & Goldman, 2017). This lack of awareness often results in confusion, anxiety, and inappropriate social responses during the transition to adolescence.

At the same time, character values such as gratitude (*shukr*) are foundational to Islamic education and personal development (Khilmiyah & Setiawan, 2021). Gratitude fosters emotional balance, social harmony, and spiritual awareness qualities emphasized in Islamic teachings as essential to a believer's moral growth (Al-Ghazali, *Ihya' Ulum al-Din*). Nevertheless, research shows that many students exhibit a low level of gratitude practice in daily life, partly because classroom instruction often focuses on cognitive knowledge rather than experiential or reflective learning (Hidayat & Arif, 2022).

Conventional teaching in many elementary schools remains teacher-centered, emphasizing memorization rather than active engagement and reflection. This approach tends to limit students' ability to connect theoretical knowledge about bodily and moral development to real-life experiences. To address this, Problem-Based Learning (PBL) offers a pedagogical alternative that promotes inquiry, collaboration, and reflection. PBL has been shown to enhance students' critical thinking and moral reasoning by engaging them in solving real-life problems (Hmelo-Silver, 2019). Yet, few studies have applied the PBL model to integrate puberty education and character formation—particularly gratitude—within the context of Islamic elementary education.

This gap highlights the need for innovative learning strategies that integrate cognitive, emotional, and spiritual dimensions of student development. Therefore, this study aims to examine the effectiveness of the Problem-Based Learning (PBL) approach in improving elementary students' understanding of puberty and fostering an attitude of gratitude. By combining cognitive understanding of human development with affective-spiritual formation, this study contributes to the advancement of Islamic education pedagogy that nurtures holistic student growth—intellectually, socially, and spiritually.

Benefits of the Research: for Students, Increased Understanding of Signs of Age of Puberty, Students can better understand the signs of age of puberty, both in physical, emotional, and social aspects. This will help them in the process of self-development and foster a sense of responsibility for the changes they experience. Habituation of Gratitude, Students will be accustomed to developing an attitude of gratitude in everyday life. This habit is expected to strengthen their

character, increase a positive sense of the environment, and build better social relationships with friends, family, and the community. Active Involvement in Learning, With the Problem-Based Learning (PBL) approach, students will be more actively involved in the learning process. This can improve critical thinking skills, social skills, and problem-solving abilities related to the topics studied.

Benefits for Teachers: Improving Teaching Skills, This study provides an opportunity for teachers to develop their teaching skills, especially in implementing the Problem-Based Learning approach. With a more interactive and real-problem-based approach, teachers can create a more interesting and effective learning atmosphere. **Knowledge in PBL Implementation,** Teachers will gain experience in implementing PBL as a learning method that can increase student engagement. This knowledge can be applied to other learning, and help teachers overcome challenges faced in the classroom.

Benefits for Schools: Improving the Quality of Learning, By implementing the PBL approach, schools can improve the quality of learning in the classroom. This approach provides an opportunity to improve students' understanding in depth and hone other important skills, such as cooperation, communication, and critical thinking. **Curriculum Development and Teaching Methods,** The results of this study can be the basis for schools in developing a curriculum and teaching methods that are more effective and in accordance with the needs of students, so that they can improve a more meaningful learning experience.

Benefits for Educational Research and Development: Contribution to Educational Research Development, This research is expected to contribute to the development of educational research, especially those related to the Problem-Based Learning approach in elementary education. The findings of this study can be used as a reference for further research that focuses on improving the quality of learning and character development of students. **Relevant Learning Model,** The results of this study can provide new insights into the application of PBL in character learning and the development of self-awareness of students. This learning model can be used as a relevant and effective alternative in supporting character formation and the development of student potential at the elementary school level. Overall, this research is expected to provide broad benefits, not only for the development of character and understanding of students, but also for improving the quality of education at SDN 2 Margajaya and for the development of educational science in general.

METODOLOGI

Problem-Based Learning is a learning approach that emphasizes giving problems that must be solved by students independently or in groups. PBL can increase student engagement, hone critical thinking skills, and encourage them to apply the knowledge learned in real-life contexts. In this study, PBL will be used to help students understand and recognize the signs of puberty and apply an attitude of gratitude in their lives. PBL has several important components, namely: Emphasis on authentic and relevant problems. Students work in groups to solve the problem. Learning occurs through investigation and finding solutions. The teacher acts as a facilitator, not as the main source of

information. The application of PBL in this context is expected to make students more involved in learning and better understand the importance of signs of puberty and an attitude of gratitude in everyday life.

Research by Dewi (2020), entitled "The Effect of Problem-Based Learning on Science Learning in Elementary Schools", shows that PBL can increase learning motivation and deeper understanding of concepts in students. This study supports the use of PBL in this study because it can help grade 4 students of SDN 2 Margajaya in understanding topics related to self-development and daily life, such as signs of puberty and gratitude. Research by Fatimah (2021), entitled "The Effect of Habitual Attitude of Gratitude on Children's Character Development", found that children who are accustomed to being grateful tend to have lower levels of anxiety and have better social relationships. This research is relevant to the research to be conducted, because it shows the importance of an attitude of gratitude in the development of positive student character. This study employed a Classroom Action Research (CAR) design consisting of two cycles, each comprising the stages of planning, implementation, observation, and reflection. The research was conducted at SDN 2 Margajaya, which was chosen because it represents a public elementary school with a learning environment that actively integrates self-development themes into classroom instruction. The topic of signs of puberty and attitude of gratitude was selected because it aligns with the fourth-grade science and character education competencies, which students often find abstract or difficult to relate to their daily experiences.

The participants were 12 students of grade IV, consisting of six boys and six girls. The sample size was determined purposively to represent a balanced composition of students experiencing early puberty, allowing the researcher to observe both cognitive and emotional changes during learning.

The Problem-Based Learning (PBL) approach was implemented in two learning cycles. Each cycle began with the presentation of an authentic problem related to puberty experiences, followed by group discussions, investigation, and presentation of solutions. The teacher acted as a facilitator, guiding students to identify problems, explore information, and conclude how gratitude could be practiced in responding to bodily and emotional changes during puberty.

Data were collected using four main instruments: (1) observation sheets to assess student engagement and collaboration, (2) comprehension tests to measure understanding of puberty concepts, (3) attitude assessment sheets to evaluate expressions of gratitude, and (4) interviews to capture students' reflective insights about the learning process.

Data analysis used descriptive statistics, particularly by comparing percentage increases in students' comprehension and attitude scores across the two cycles. Observational and interview data were analyzed qualitatively to describe behavioral changes related to learning engagement and gratitude.

expression. The integration of these quantitative and qualitative data provided a comprehensive understanding of the effectiveness of the PBL model in improving both conceptual understanding and positive character development among students.

RESULTS AND DISCUSSION

Research Results

The implementation of the Problem-Based Learning (PBL) approach in two classroom action research cycles resulted in a measurable improvement in students' understanding of puberty and responsible attitudes. Data were collected from observations, comprehension tests, attitude assessments, and interviews. Student identities were anonymized to ensure confidentiality.

Understanding of Puberty

Observation results revealed a consistent improvement in students' ability to recognize and explain the signs of puberty across the learning cycles. During Cycle 1, students were still hesitant and often relied on teacher guidance to describe physical and emotional changes associated with puberty. By Cycle 2, however, they demonstrated greater independence and confidence in articulating their understanding. The average observation score rose from 77.83% to 89.08%, showing that students became more attentive, engaged, and capable of linking abstract concepts to their own experiences.

This progress was further supported by the results of the comprehension test, which increased from an average of 78.00 in Cycle 1 to 87.92 in Cycle 2. The improvement reflects students' strengthened grasp of the material and their ability to apply knowledge beyond rote memorization. Students began using appropriate terminology, explaining biological and emotional aspects of puberty more accurately, and showing readiness to discuss sensitive topics respectfully. Such growth highlights that the Problem-Based Learning (PBL) approach effectively nurtured both intellectual understanding and communication skills in a supportive environment.

The integration of real-life problem scenarios within the PBL model allowed students to relate the concept of puberty to their daily experiences. By analyzing authentic cases and engaging in reflective discussions, students developed a more meaningful and contextualized understanding of human development. This process not only enhanced cognitive comprehension but also fostered self-awareness, confidence, and moral sensitivity—important outcomes within Islamic education. Thus, the improvement in learning outcomes demonstrates that PBL can transform abstract religious and biological lessons into personal, relevant, and value-oriented experiences for young learners.

Table 1. Improvement in Understanding of Puberty

Indicator	Cycle 1 (%)	Cycle 2 (%)	Interpretation
Observation	77.83	89.08	Significant improvement
Test	78.00	87.92	Strong cognitive gain

Responsible Attitude

Students' responsible attitudes showed a significant improvement throughout the implementation of the Problem-Based Learning (PBL) approach. Observation results indicated a steady rise in active participation, cooperation, and discipline during classroom activities. The average observation score increased from 77.75% in the initial cycle to 88.00% in the final cycle, demonstrating students' growing commitment to their roles and responsibilities within the learning process. They became more consistent in completing tasks, following classroom rules, and contributing to group work, reflecting a higher sense of accountability toward their learning outcomes.

In addition to quantitative data, the results of the responsible attitude test supported this improvement. Students' mean scores increased from 77.50 to 88.25, indicating that their understanding of what it means to act responsibly deepened over time. This growth was particularly evident in how they handled collaborative assignments, respected peer opinions, and managed their own learning. The PBL model encouraged them to reflect on their actions and decisions, leading to more mature attitudes and behaviors aligned with Islamic moral values such as honesty, discipline, and social care.

The qualitative data from student interviews further reinforced these findings. Many students expressed feeling more motivated to engage in classroom discussions and take ownership of their learning. They reported a heightened sense of empathy and gratitude, both toward their peers and teachers, which fostered a more harmonious and supportive classroom environment. Through the guided problem-solving process, students not only developed cognitive skills but also learned to appreciate the importance of collective responsibility, mutual respect, and gratitude as essential aspects of character formation in Islamic education.

Table 2. Improvement in Responsible Attitudes

Indicator	Cycle 1 (%)	Cycle 2 (%)	Interpretation
Observation	77.75	88.00	Improved responsibility and teamwork
Test	77.50	88.25	Positive attitude and engagement

Data Visualization

Descriptive statistical analysis using percentage comparison across cycles revealed consistent gains in all indicators. Qualitative reflections from teacher observations and student interviews supported the quantitative findings, confirming increased engagement, improved moral awareness, and enhanced collaborative behavior. The integration of multiple data sources ensured the validity of findings and triangulation of results.

Table 3. Percentage Progress Across Research Cycles

Indicator	Cycle 1 (%)	Cycle 2 (%)
Understanding of Puberty (Observation)	77.83	89.08
Understanding of Puberty (Test)	78.00	87.92
Responsible Attitude (Observation)	77.75	88.00
Responsible Attitude (Test)	77.50	88.25

The table above illustrates the improvement in students' understanding of puberty and their responsible attitudes across two learning cycles. The data indicate consistent progress in both cognitive and affective domains as a result of implementing the Problem-Based Learning (PBL) approach.

In terms of cognitive understanding, students showed notable gains in their ability to identify and explain the signs of puberty. The observation results increased from 77.83% in Cycle 1 to 89.08% in Cycle 2, while test scores improved from 78.00 to 87.92. These findings demonstrate that students not only acquired more accurate knowledge but also became more confident in articulating their understanding during discussions and written assessments. The improvement

suggests that PBL effectively encouraged students to connect theoretical concepts with their real-life experiences, thereby making the learning process more contextual and meaningful.

Similarly, students' responsible attitudes also exhibited significant enhancement. Observation scores rose from 77.75% to 88.00%, while test results increased from 77.50 to 88.25. This steady improvement indicates that students became more disciplined, cooperative, and reflective in their behavior. They displayed stronger participation in group tasks, greater respect for peers, and a higher sense of responsibility toward learning activities. Overall, these data confirm that the PBL model fostered holistic student development by integrating academic understanding with moral and social growth—core objectives of Islamic education.

Discussion

The findings of this study reveal that the implementation of the Problem-Based Learning (PBL) model significantly enhanced both the cognitive and affective dimensions of student learning. Students not only improved their conceptual understanding of puberty but also demonstrated a deeper sense of responsibility and gratitude. This dual improvement suggests that PBL effectively bridges scientific understanding with moral development, an essential integration within Islamic educational contexts. The success of this model reflects Piaget's (1972) constructivist theory and Vygotsky's (1978) sociocultural framework, which emphasize that knowledge is most meaningfully acquired through active engagement and social interaction. In this study, learning was no longer a passive process but a dynamic interaction between students, teachers, and real-life contexts that encouraged reflection and internalization of values (Hidayat et al., 2025).

The improvement in understanding puberty can be attributed to the authentic problem scenarios and contextualized discussions embedded in PBL activities (Suwono et al., 2023). By allowing students to explore sensitive issues within a guided and respectful environment, the learning process became both relevant and transformative. Students were encouraged to relate biological changes during puberty to moral and spiritual responsibilities, fostering a sense of self-awareness aligned with Islamic principles. This finding is consistent with the study, which demonstrated that contextualized and inquiry-based learning significantly improved students' comprehension of biological processes and personal development. Similarly, the cooperative nature of PBL aligns with Johnson and Johnson's (1999) cooperative learning theory, which posits that collaboration enhances motivation, empathy, and shared responsibility among learners (Yang, 2023).

Beyond cognitive achievement, this study found substantial growth in students' affective and moral awareness. The increased sense of responsibility and gratitude (*shukr*) reflects the holistic nature of Islamic education, which seeks to harmonize intellectual, emotional, and spiritual growth. This outcome corroborates that Islamic pedagogy should cultivate both intellectual

understanding and moral consciousness. In addition, Hidayat and Arif (2022) emphasized that gratitude serves as a cornerstone of character education in Islam, fostering humility, self-discipline, and appreciation of divine blessings. Within the PBL framework, reflection sessions allowed students to connect personal experiences with Islamic moral teachings, internalizing lessons on patience, gratitude, and social responsibility. Such findings confirm that PBL can serve as a pedagogical bridge between modern educational methodologies and the moral imperatives of Islamic education.

The results of this research also contribute to the broader discourse on integrating active learning strategies into religious and moral education. While numerous studies have confirmed the cognitive benefits of PBL, relatively few have explored its potential for shaping moral and spiritual character, particularly in Islamic primary education. This study extends previous work by Rahmilawati (2023), providing empirical evidence that PBL not only enhances conceptual understanding of sensitive topics such as puberty but also strengthens moral attitudes and gratitude. The integration of cognitive and affective gains underscores the effectiveness of PBL as a holistic educational model that supports both intellectual mastery and moral growth—an approach consistent with the Islamic ideal of *ta'dīb* (comprehensive human education).

From a pedagogical perspective, these findings highlight the importance of shifting from teacher-centered to student-centered approaches within Islamic education classrooms. Teachers should be encouraged to design learning environments that foster inquiry, collaboration, and reflection, enabling students to become active participants in their moral and intellectual formation. As Johnson and Johnson (2009) suggest, cooperative problem-solving nurtures not only academic skills but also interpersonal sensitivity, respect, and empathy—all of which are vital for moral development. The successful application of PBL in this study indicates that Islamic education can benefit from pedagogical innovation that remains faithful to its spiritual foundations while embracing modern constructivist principles.

For curriculum developers and policymakers, the integration of PBL into Islamic character education offers a pathway to balance the development of *'aql* (intellect), *qalb* (heart), and *'amal* (action) (Nurhayati et al., 2025). By embedding moral reflection and problem-solving within the curriculum, schools can create learning experiences that resonate with students' lived realities while strengthening their faith and ethical reasoning. Moreover, the collaborative and reflective nature of PBL can enhance students' social-emotional competence, preparing them to engage meaningfully in community life. Future research should explore the longitudinal effects of PBL on students' emotional and spiritual intelligence, examining how sustained exposure to such models shapes character formation over time.

The study provides robust evidence that Problem-Based Learning is not only an effective instructional approach for enhancing cognitive understanding of puberty but also a meaningful vehicle for nurturing moral and spiritual character within Islamic education. By integrating authentic problem-solving with reflective moral inquiry, PBL aligns with the holistic goals of Islamic

pedagogy—cultivating knowledgeable, responsible, and grateful individuals who embody both intellectual competence and moral virtue.

Implications

In terms of **curriculum and policy**, the results suggest that curriculum developers and Islamic education policymakers should incorporate **PBL-based character education modules** into national and local curricula. These modules can be designed to address sensitive life-skill topics—such as puberty, moral reasoning, and social responsibility—through experiential learning. School administrators should also provide professional development programs that train teachers to design contextualized PBL activities aligned with Islamic values. Through these efforts, education can more effectively fulfill its holistic mission of developing students who are intellectually competent, emotionally mature, and spiritually conscious.

Conclusion

This study concludes that the implementation of the Problem-Based Learning (PBL) approach successfully achieved its objectives of enhancing students' understanding of puberty and strengthening their responsible and grateful attitudes within the context of Islamic Religious Education (IRE). Quantitative data demonstrated consistent improvement across the two research cycles—students' comprehension of puberty indicators increased from 77.83% in Cycle I to 89.08% in Cycle II, while their responsible attitude scores improved from 77.50 to 88.25. These findings confirm that PBL effectively transforms learning into an interactive, student-centered process, promoting collaboration, inquiry, and reflection.

Recommendations

Teachers of Islamic Religious Education are encouraged to adopt the Problem-Based Learning (PBL) approach consistently, particularly when addressing sensitive or value-based topics such as puberty and moral development. The quantitative improvement in comprehension and attitude scores demonstrates that PBL effectively transforms classroom dynamics from teacher-centered to student-centered learning. Therefore, teachers should design lessons that link real-life experiences with Islamic teachings, allowing students to explore physical, emotional, and spiritual aspects of puberty through discussion, investigation, and reflection. Professional development programs should also be provided to help teachers master facilitation techniques and integrate reflection sessions that foster gratitude (*shukr*) and responsibility (*amanah*) as part of moral formation.

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