



Puzzle Games in Problem-Based Learning to Enhance Students' Character Values Understanding

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Abstrak: Rendahnya pemahaman siswa tentang nilai-nilai karakter masih menjadi masalah signifikan dalam Pendidikan Kewarganegaraan (PPKn) di tingkat sekolah dasar. Keterbatasan ini memengaruhi kemampuan siswa untuk menginternalisasi dan menerapkan nilai-nilai karakter dalam situasi kehidupan nyata. Oleh karena itu, diperlukan pendekatan pembelajaran yang secara efektif menghubungkan pemahaman konseptual dengan konteks dunia nyata. Penelitian ini bertujuan untuk meningkatkan pemahaman siswa tentang nilai-nilai karakter dalam ranah kognitif melalui implementasi model Pembelajaran Berbasis Masalah (PBL) yang didukung oleh media puzzle. Penelitian ini menggunakan Penelitian Tindakan Kelas (KAR) yang dilakukan dalam dua siklus yang melibatkan siswa kelas tiga di SDN Purwoyoso 04. Data dikumpulkan menggunakan tes dan lembar observasi. Hasil penelitian menunjukkan bahwa implementasi model PBL yang dibantu oleh media puzzle secara efektif meningkatkan pemahaman siswa tentang nilai-nilai karakter. Persentase penguasaan pembelajaran meningkat dari 74% pada pra-siklus menjadi 84% pada Siklus I dan mencapai 93% pada Siklus II. Temuan ini menunjukkan bahwa pembelajaran kontekstual yang didukung oleh media konkret membantu siswa lebih memahami dan menghubungkan nilai-nilai karakter dengan situasi kehidupan nyata. Penting untuk dicatat bahwa peningkatan yang diamati dalam penelitian ini terutama terjadi di ranah kognitif, khususnya dalam pemahaman siswa tentang nilai-nilai karakter, dan bukan secara langsung menunjukkan perubahan dalam karakter siswa.

Kata Kunci: Pendidikan kewarganegaraan, Pembelajaran berbasis masalah, Media puzzle, Pemahaman nilai karakter

Abstract: Students' low understanding of character values remains a significant issue in Civic Education (PPKn) at the elementary school level. This limitation affects students' ability to internalize and apply character values in real-life situations. Therefore, an instructional approach that effectively links conceptual understanding with real-world contexts is required. This study aims to improve students' understanding of character values in the cognitive domain through the implementation of the Problem-Based Learning (PBL) model supported by puzzle media. The study employed Classroom Action Research (CAR) conducted in two cycles involving third-grade students at SDN Purwoyoso 04. Data were collected using tests and observation sheets. The results indicate that the implementation of the PBL model assisted by puzzle media effectively improves students' understanding of character values. The percentage of learning mastery increased from 74% in the pre-cycle to 84% in Cycle I

and reached 93% in Cycle II. This finding suggests that contextual learning supported by concrete media helps students better understand and relate character values to real-life situations. It is important to note that the improvement observed in this study primarily occurred in the cognitive domain, particularly in students' understanding of character values, rather than directly indicating changes in students' character.

Keywords: Civic education, Problem-based learning, Puzzle media, Character value understanding

INTRODUCTION

The development of 21st-century education emphasizes not only cognitive achievement but also the cultivation of character values among students. Education is expected to produce individuals who are not only intellectually competent but also possess strong moral and social values Yadav et al. (2018). However, in practice, a significant gap exists between the goals of character education and students' actual understanding of character values. Many students can recite character values theoretically yet struggle to internalize or apply them in real-life contexts (Altavilla et al. 2021).

In Indonesia, these expectations are institutionalized within Pancasila and Civic Education (Pendidikan Pancasila dan Kewarganegaraan/PPKn), a subject area explicitly designed to foster national identity, civic awareness, and moral conduct from an early age. Character education, as defined by Lickona (1996), refers to the deliberate effort by schools to cultivate positive values, ethical reasoning, and civic virtues in students. At the elementary school level, this process is especially critical, as early childhood represents a formative period for moral and cognitive development (Yusnan, 2022). Scholars have distinguished between surface-level character education which merely exposes students to moral concepts, and deeper character education that fosters genuine understanding, commitment, and application of values (Berkowitz & Schwartz, 2006). The latter requires pedagogical approaches that move beyond rote instruction and enable students to engage critically with moral situations.

This gap signals a deeper cognitive challenge: students lack the conceptual foundation necessary to interpret, analyze, and relate character values meaningfully. Without sufficient cognitive understanding, character education becomes abstract knowledge rather than meaningful guidance for behavior. Addressing this cognitive gap is thus a critical prerequisite for authentic character development.

Many students are able to recognize and mention character values theoretically, yet they often struggle to internalize and apply these values in real-life situations. This indicates that the problem lies primarily in the cognitive domain, particularly in students' understanding of character values. Without sufficient understanding, character education

tends to be perceived as abstract knowledge rather than meaningful guidance for behaviour. Therefore, improving students' understanding of character values is a crucial step toward fostering their character development.

The importance of building this understanding is underscored by the Pancasila Student Profile (Profil Pelajar Pancasila), a national framework that outlines six core dimensions of student competence: (1) faith and noble character, (2) global diversity, (3) mutual cooperation (*gotong royong*), (4) independence, (5) creativity, and (6) critical reasoning. These dimensions serve as both aspirational goals and measurable indicators of students' development in the affective and cognitive domains. For elementary school students, developing an understanding of these values forms the foundational layer upon which character behaviours can later be built.

Despite the strategic importance of PPKn, conventional instructional approaches continue to dominate classroom practice. Lessons frequently rely on teacher-centered delivery methods that fail to contextualize character values within students' lived experiences (Munasib et al., 2023; Dewantara et al., 2019). Similarly, as expressed by Muspika et al., (2025) that many learning approaches in elementary schools are still conventional, monotonous, and less interactive, resulting in low student interest and understanding of Pancasila values. As a result, students perceive character education as a set of abstract rules to memorize rather than principles to understand and apply. This pedagogical limitation calls for a fundamental shift toward more active, contextual, and student-centered learning models.

Nevertheless, abstract problem scenarios alone may not be sufficient for elementary-age learners, who benefit significantly from concrete, visual, and tactile learning experiences. Instructional media encompass any tools, materials, or technologies used to convey learning content and support student comprehension (Widyatmoko, 2019). According to Dale's Cone of Experience, students retain information more effectively through direct, concrete experiences than through abstract verbal instruction alone; instructional media bridge this gap by representing abstract concepts in visual, auditory, or tactile forms (Rohimah et al., 2024). Among various types of media, puzzle games represent a particularly promising tool. By requiring students to assemble fragmented images into coherent wholes, puzzles engage both spatial reasoning and analytical thinking. In the context of character education, puzzles depicting scenes related to Pancasila values can prompt students to identify, interpret, and discuss the character values represented, thereby deepening conceptual understanding (Nurizka et al. (2022)). Furthermore, collaborative puzzle activities support the development of teamwork and communication skills, which are themselves key character values.

Problem-Based Learning (PBL) offers a theoretically grounded and empirically validated response to this challenge. Rooted in constructivist epistemology, PBL is an instructional model in which students learn through the process of working collaboratively to solve complex, real-world problems. Unlike traditional teacher-centered instruction, PBL positions students as active constructors of knowledge, guided by a facilitating teacher rather than a direct transmitter of information. The model typically involves five stages: (1) problem orientation, (2) problem organization and individual study, (3) collaborative investigation, (4) presentation of results, and (5) evaluation and reflection (Wijnia et al., 2024). By anchoring learning in real-life dilemmas, PBL enables students to see the relevance of character values and actively apply them within meaningful contexts (Rosfiani et al., 2024; Noor et al., 2023;). Extensive empirical research supports PBL's effectiveness in improving conceptual understanding and higher-order thinking skills, as well as enhancing student engagement and learning outcomes in PPKn (Hmelo-Silver et al., 2019; Savery & J. R., 2006).

The integration of PBL with puzzle media thus creates a complementary instructional framework: PBL provides the contextual and cognitive scaffolding, while puzzles offer the concrete and interactive experience that supports conceptual understanding. Despite the theoretical alignment between these approaches, empirical research specifically examining their combined effect on elementary students' understanding of character values in PPKn remains limited. Most previous studies have primarily focused on cognitive achievement and general learning outcomes, while limited research specifically examines how the integration of Problem-Based Learning and puzzle media can improve elementary students' understanding of character values.

Nevertheless, abstract problem scenarios alone may not be sufficient for elementary-age learners, who benefit significantly from concrete, visual, and tactile learning experiences. In this regard, instructional media serve as essential cognitive bridges, transforming abstract concepts into accessible and meaningful representations. Among various types of media, puzzle games represent a particularly promising tool, as they combine visual stimulation with collaborative activity, encouraging students to analyze situations, interpret images, and engage in structured peer discussions Nurizka et al (2022).

The integration of PBL with puzzle media thus creates a complementary instructional framework: PBL provides the contextual and cognitive scaffolding, while puzzles offer the concrete and interactive experience that supports conceptual understanding. Despite the theoretical alignment between these approaches, empirical research specifically examining their combined effect on elementary students' understanding of character values in PPKn remains limited. However, most previous studies have primarily focused on cognitive

achievement and general learning outcomes, while limited research specifically examines how the integration of Problem-Based Learning and puzzle media can improve elementary students' understanding of character values.

Several prior studies provide an empirical foundation relevant to the present research. Rosfiani et.al. (2024) found that PBL significantly improved elementary students' engagement with character values by situating moral concepts within authentic problems, though they noted that PBL alone remained challenging without supplementary concrete media. Similarly, Nurizka et al. (2022) demonstrated that picture puzzle games depicting Pancasila-related scenarios significantly enhanced students' ability to identify and articulate character values, with collaborative puzzle activities deepening conceptual understanding; however, their study lacked a structured learning model framework. Noor et al. (2023) further showed that combining problem-solving approaches with visual media significantly improved students' cognitive domain comprehension scores across learning cycles, reducing tendencies toward rote memorization of character values. Collectively, these studies affirm the individual effectiveness of PBL and puzzle media, while revealing a gap in research that explicitly integrates both approaches within a single instructional design a gap the present study directly addresses.

This study aims to address this gap by investigating the effectiveness of the Problem-Based Learning model assisted by puzzle media in improving third-grade students' understanding of character values within the cognitive domain. The research was conducted at SDN Purwoyoso 04 Semarang using a Classroom Action Research (CAR) design across two instructional cycles. The findings are expected to contribute practical insights to educators and curriculum designers committed to strengthening character education at the elementary level.

METHOD

This study employed Classroom Action Research (CAR) as its research design to address classroom-based problems related to students' low understanding of character values in Pancasila and Civic Education (PPKn). The primary objective of this research was to improve students' understanding of character values in the cognitive domain through the implementation of the Problem-Based Learning (PBL) model assisted by puzzle media.

This research followed the model proposed by Kemmis and McTaggart, which consists of four stages in each cycle: planning, action, observation, and reflection. The study was conducted in two cycles, where each cycle was designed to improve the weaknesses identified in the previous cycle (Siregar, 2025). The subjects of this study were 25 third-grade students (Class III B) at SDN Purwoyoso 04 Semarang in the 2022/2023 academic year. The

selection of participants was based on the identified problem of low understanding of character values in the classroom (Kemmis et al., 2013). Data were collected using tests and observation sheets. The tests were used to measure students' cognitive understanding of character values, while observation sheets were used to assess students' learning activities, participation, and engagement during the learning process.

The indicators of character values in this study were adapted from the Pancasila Student Profile (Profil Pelajar Pancasila), which includes: (1) faith and noble character, (2) global diversity, (3) mutual cooperation, (4) independence, (5) creativity, and (6) critical reasoning. However, this study focused on three relevant indicators: (1) faith and noble character, (2) mutual cooperation, and (3) creativity.

The instructional intervention integrated the Problem-Based Learning (PBL) model with puzzle media across two learning cycles. In each cycle, the PBL model was implemented following five core phases: (1) problem orientation, in which students were presented with real-life scenarios related to Pancasila character values; (2) organizing learning activities, in which students were assigned to collaborative groups; (3) guided investigation, in which groups analyzed the problem using puzzle images as cognitive tools; (4) presentation of findings, in which groups shared their interpretations and conclusions; and (5) evaluation and reflection, in which the teacher provided feedback and students consolidated their understanding. Puzzle media consisted of image-based puzzles depicting situations related to the three targeted character value indicators: faith and noble character, mutual cooperation (gotong royong), and creativity. These indicators were selected for their direct relevance to the learning material and classroom conditions observed during the pre-cycle phase.

Data analysis was conducted using descriptive quantitative analysis by calculating the percentage of students' learning mastery in each cycle. The study was considered successful if at least 75% of students achieved mastery learning based on the minimum mastery criterion (KKM) set by the school. The improvement in students' understanding was identified by comparing the results of the pre-cycle, Cycle I, and Cycle II. To ensure the validity of the research instruments, the cognitive tests and observation sheets were reviewed and validated by the classroom teacher and a collaborating lecturer prior to implementation. Ethical considerations were addressed by obtaining informed consent from school administration and ensuring that students' identities were treated as confidential in all data reporting.

RESULTS AND DISCUSSION

Results

This study focuses on improving students' understanding of selected character values within the Pancasila Student Profile, namely: (1) faith and noble character, (2) mutual cooperation (gotong royong), and (3) creativity. These indicators were selected based on their relevance to the learning material and classroom conditions.

1. Overall Improvement of Students' Understanding

Figure 1 presents the overall improvement in students' understanding of character values across the research cycles. The data show a consistent increase from the pre-cycle to Cycle II. The percentage of students' understanding was 74% in the pre-cycle, increased to 84% in Cycle I, and reached 93% in Cycle II.

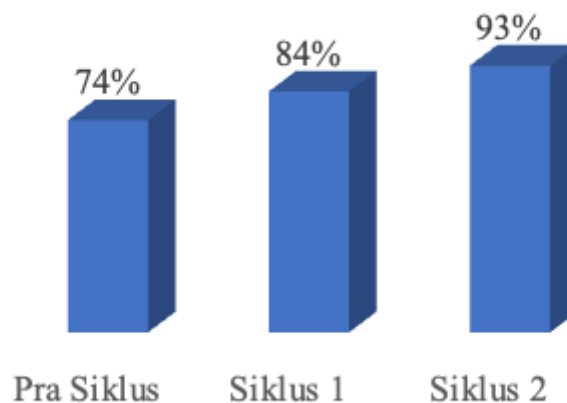


Figure 1. Percentage of Each Cycle

In the pre-cycle phase, the percentage of students achieving mastery learning was 74%, indicating that a substantial portion of students had not yet developed an adequate cognitive understanding of character values. Following the first cycle of PBL-integrated puzzle-based instruction, the mastery percentage increased to 84% a gain of 10 percentage points. By the conclusion of Cycle II, the mastery percentage reached 93%, representing a total improvement of 19 percentage points from the pre-cycle, substantially exceeding the 75% minimum mastery threshold established as the criterion for research success.

2. Student Learning Activities during Puzzle-Based Learning

Figure 2 illustrates students' learning activities during the implementation of puzzle-based learning. The data show that students were actively involved in assembling puzzle pieces, discussing with group members, and interpreting the meaning of the images related to Pancasila values. Students who had previously exhibited disengagement or passive reception of information demonstrated increased willingness to contribute ideas, pose questions to peers, and take responsibility within group tasks.



Figure 2 Students activities to assembling puzzle

Collaborative puzzle activities also supported the development of interpersonal skills aligned with the character values under study. Students practicing gotong royong were observed dividing responsibilities, supporting peers who encountered difficulties, and working toward shared goals within the very structure of the learning activity.

3. Student Learning Activities during Puzzle-Based Learning

Figure 3 presents the improvement in each character value indicator observed across cycles. The results show a consistent increase across all three aspects.

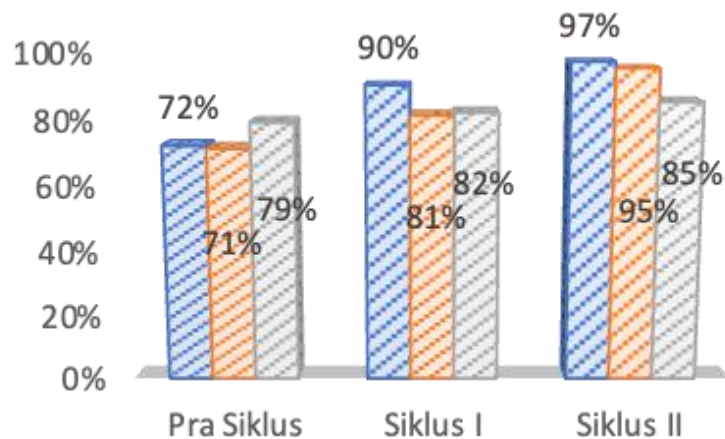


Figure 3. Percentage of Each Aspect of the Pancasila Student Profile

In the aspect of faith and noble character, the percentage increased from 72% in the pre-cycle to 90% in Cycle I and reached 97% in Cycle II. In the aspect of mutual cooperation (gotong royong), the percentage increased from 71% in the pre-cycle to 81% in Cycle I and improved further to 95% in Cycle II. In the aspect of creativity, the percentage increased from 79% in the pre-cycle to 82% in Cycle I and reached 85% in Cycle II.

Discussion

1. Effectiveness of PBL and Puzzle Media on Students' Understanding

The improvement in students' understanding across cycles demonstrates that the implementation of the Problem-Based Learning model assisted by puzzle media was effective in enhancing students' cognitive understanding of character values. At the beginning of the learning process, students tended to have limited understanding of character values and were less able to relate them to real-life situations, a condition consistent with findings by (Komalasari & Saripudin, 2018), who observed that students frequently possess declarative knowledge of character values without the conceptual depth required to apply them meaningfully. This initial condition reflects the broader pedagogical challenge identified by Berkowitz and Schwartz (Berkowitz & Schwartz, 2006), who distinguish between surface-level character exposure and deeper character understanding that requires active cognitive engagement with moral concepts. The conventional, teacher-centered instruction that dominated classroom practice prior to the intervention had reinforced passive learning patterns, preventing students from developing the analytical capacity necessary to connect character values with real-life contexts.

However, after the implementation of PBL and puzzle media, students became more capable of identifying, analyzing, and explaining character-related situations a progression that aligns with Hmelo-Silver's (Hmelo-Silver et al., 2019) assertion that PBL promotes deeper conceptual understanding by situating learning within authentic, problem-rich contexts that demand active cognitive engagement rather than passive reception. The role of puzzle media in this process further corroborates the findings of (Nurizka et al., 2022) , who demonstrated that visual and tactile puzzle-based activities significantly enhance students' capacity to interpret and articulate abstract values, particularly when embedded within collaborative group structures. Furthermore, Rosfiani et al. (2024) similarly reported that the integration of contextual instructional approaches in PPKn produced measurable gains in students' cognitive engagement with character values across successive learning cycles. It is important to emphasize, however, that this improvement primarily occurred in the cognitive domain, particularly in students' understanding, rather than directly indicating changes in their character a distinction underscored by Berkowitz and Schwartz (Berkowitz & Schwartz, 2006), who argue that cognitive understanding of values constitutes a necessary but insufficient condition for behavioral character formation.

2. Role of Instructional Factors in Supporting Learning

The improvement in students' understanding can be attributed to several key instructional factors. First, the use of triggering questions at the beginning of the lesson played a significant role in activating students' prior knowledge and directing their attention toward learning objectives, encouraging students to think critically and articulate their initial understanding within a constructivist learning environment.

Second, the PBL model provided students with contextual and meaningful learning experiences. By engaging with real-life problems related to Pancasila values, students were encouraged to analyze situations, discuss possible solutions, and construct their own understanding. This finding is consistent with previous studies demonstrating that PBL enhances students' conceptual understanding and critical thinking skills by promoting active rather than passive knowledge acquisition (Hmelo-Silver et al., 2019; Savery & J. R., 2006)

Third, puzzle media functioned as a cognitive bridge that transformed abstract character values into concrete and visual representations, supporting the theory that instructional media facilitate comprehension by making abstract concepts more accessible and meaningful. Through puzzle-based activities, students were engaged not only cognitively but also socially, as they collaborated with peers to solve problems and interpret visual information.

Fourth, the iterative structure of Classroom Action Research particularly the reflection-informed refinement between cycles allowed the teacher to identify and address specific instructional gaps. Adjustments made between Cycle I and Cycle II, including more targeted questioning and differentiated group composition, contributed to the accelerated improvement observed in the second cycle.

3. Engagement and Participation as Enabling Conditions

The engagement and participation documented during puzzle-based learning activities represent enabling conditions for cognitive learning rather than direct evidence of character development. The shift in student engagement is consistent with research demonstrating that interactive media promote intrinsic motivation and active learning . Increased motivation and collaboration during class activities contribute to improved understanding; however, behavioral character change extends beyond what can be inferred from a short-term classroom intervention.

The engagement and participation documented during puzzle-based learning activities represent enabling conditions for cognitive learning rather than direct evidence of character development. Prior to the intervention, many students exhibited passive learning behaviors characterized by limited initiative and minimal peer interaction patterns that Dewantara et al. (Dewantara et al., 2019) attribute to the dominance of teacher-centered instructional approaches that suppress students' intrinsic motivation to engage critically with learning content. The shift in student engagement observed during puzzle-based activities is consistent with research by (David & Weinstein, 2023), who demonstrated that interactive media promote intrinsic motivation and active learning by providing students with concrete, stimulating tasks that encourage voluntary participation and sustained attention. This behavioral shift is further supported by (Walker et al., 2015), who found that collaborative

problem-solving environments such as those created by group puzzle activities — foster a sense of shared responsibility and collective efficacy that naturally increases individual engagement and willingness to contribute.

Increased motivation and collaboration during class activities contribute meaningfully to improved cognitive understanding; however, behavioral character change extends considerably beyond what can be inferred from a short-term classroom intervention. As Lickona (1996) argues, genuine character development encompasses not only cognitive knowing of values but also affective commitment and consistent behavioral practice dimensions that require sustained, long-term cultivation across multiple educational and social contexts. The engagement documented in this study therefore represents a promising but preliminary indicator: it signals that students are developing the motivational and cognitive foundations upon which deeper character formation can be built, rather than constituting character development itself. Longitudinal studies employing behavioral observation instruments and affective assessment tools would be necessary to trace whether the cognitive and motivational gains produced by this intervention ultimately translate into enduring character behaviors

CONCLUSIONS

This study concludes that the implementation of the Problem-Based Learning (PBL) model assisted by puzzle media effectively improves students' understanding of character values in PPKn learning, as evidenced by the consistent increase in learning outcomes from 74% in the pre-cycle to 84% in Cycle I and 93% in Cycle II. The integration of contextual learning through PBL and interactive puzzle media helped students better understand abstract character values by connecting them with real-life situations, while simultaneously encouraging active participation, peer discussion, and greater confidence in expressing ideas. However, it is essential to note that the improvements observed in this study primarily occur in the cognitive domain particularly in students' understanding of character values alongside enhanced learning engagement and motivation. Therefore, the results should not be interpreted as a direct transformation of students' character, but rather as a foundational and necessary first step toward authentic character development through improved cognitive understanding. In conclusion, the combination of the PBL model and puzzle media constitutes an effective instructional strategy for supporting students' understanding of character values at the elementary school level. Future studies are recommended to examine the long-term impact of this integrated approach on students' actual behavioral character development through longitudinal research designs incorporating appropriate affective assessment instruments.

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