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Developing Video-Based Image Media with Problem-Based Learning to Enhance Learning Outcomes on Pancasila History and Patriotic Attitudes

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Abstract:
This study aims to develop and evaluate video-based image media integrated with Problem-Based Learning (PBL) to improve fourth-grade students learning outcomes in Pancasila history and strengthen their patriotic attitudes. The study used a Research and Development (R&D) approach based on the ADDIE model, complemented by descriptive qualitative analysis. Participants included 30 fourth-grade students, and data were collected through observation, interviews, expert validation, pretests, posttests, and patriotic attitude questionnaires. Data were analyzed using descriptive statistics, the Shapiro-Wilk test, Wilcoxon Signed-Rank Test, and N-Gain analysis. The results showed that the developed media achieved a validation score of 91.14%, categorized as Very Valid. Students' mean scores increased from 69.07 in the pretest to 90.13 in the posttest, with a significant difference ($Z = -4.782$, $p < 0.001$) and a high N-Gain of 0.712. Patriotic attitudes reached 92.31%, categorized as Very Good. The study concludes that integrating visual media with PBL effectively supports cognitive and affective development. This suggests that this approach provides a practical model for meaningful, contextual, and character-oriented Pancasila learning.

INTRODUCTION

Pancasila history education is important because national identity and patriotic character should be cultivated from elementary school. As Indonesia's philosophical foundation and state ideology, Pancasila contains values concerning unity, humanity, democracy, and social justice that should become meaningful dispositions rather than memorized concepts (Burgos-Videla et al., 2025; Zuriah et al., 2024). Meaningful internalisation requires learning experiences that allow children to understand historical events and relate them to daily life. Social studies research indicates that conventional, teacher-centered instruction can produce superficial understanding when students have limited opportunities to interact with historical content (Rofik et al., 2023; Sun et al., 2023). Therefore, improving Pancasila history instruction is not only an educational concern but also a societal need. Learning that strengthens historical understanding alongside patriotic attitudes can support responsible participation in national life and reinforce Pancasila values across generations in Indonesian education (Dewi et al., 2026; Ristiawan & Sushartami, 2026).

A general problem in Pancasila history education is the mismatch between the importance of historical content and the instructional experiences provided. Historical narratives about the formulation of Pancasila contain abstract concepts, unfamiliar figures, chronological relationships, and complex struggles (Çeken & Taskin, 2024; Morgado et al., 2024). For fourth-grade students, who are developing concrete reasoning, such content can be difficult to visualize and connect to everyday experiences. Textbook-centered teaching and teacher lectures may transmit information, but they can restrict participation, inquiry, and discussion. Consequently, students may remember dates or figures without developing deeper historical understanding or appreciating the values represented by national struggles (Ge et al., 2025; Mutlu-Bayraktar, 2024). Innovative learning approaches are therefore needed to make Pancasila history more concrete, participatory, contextual, and meaningful for young learners (Anwar et al., 2026). Such innovation can support deeper understanding while strengthening students' connection with national values in classrooms.

The classroom phenomenon underlying this study is reflected in the limited use of interactive media and active learning strategies for teaching Pancasila history. When historical material is presented through textbooks and verbal explanations, students may struggle to imagine past events and maintain attention (Cai et al., 2023; Meng et al., 2023). Research on historical learning shows that students need opportunities to encounter content through contextual representations that connect events, people, and values to understandable situations (Kleib et al., 2024; Prihatmojo et al., 2026). Teachers also require media that can present historical scenarios without lengthy explanations. Video-based image media can respond to this need by presenting visual sequences, narration, and contextual information accessibly (Alharbi, 2024; Mir et al., 2023). Nevertheless, media alone may not guarantee active participation. Students need opportunities to investigate and exchange interpretations. This suggests integrating media with an instructional model that promotes inquiry. Such integration can make classroom interaction more meaningful while supporting students' engagement with historical content and national values.

Previous studies provide evidence that multimedia and active learning can improve educational experiences, but their contributions remain fragmented. Video and interactive multimedia can increase engagement and support historical understanding by combining visual representations. Multimedia learning is theoretically supported because combining words and pictures can facilitate information processing through complementary channels (Bali et al., 2026; Immanuel & A, 2023; Mayer, 2024). Meanwhile, Problem-Based Learning (PBL) encourages students to investigate problems, collaborate, and develop higher-order thinking skills. In social studies, PBL has demonstrated potential for strengthening critical thinking, although contextual resources for meaningful problems remain challenging (Ge et al., 2025; Suliantini et al., 2024; Wijnia et al., 2024). However, existing research has generally examined instructional media and PBL separately, leaving insufficient evidence concerning their integration in elementary Pancasila history education. This unresolved issue warrants empirical investigation in elementary classrooms where foundational civic values are developed in practice.

The literature reveals a limitation concerning learning outcomes. Many studies evaluating digital or multimedia instruction emphasize cognitive achievement, engagement, motivation, or critical thinking, while affective outcomes receive comparatively less attention (Çeken & Taskin, 2024; Liu, 2024). This limitation matters in

Pancasila education because its purpose extends beyond knowledge acquisition to developing values, attitudes, and national commitment. Multimedia research shows benefits for historical understanding but suggests that students need active learning. PBL can support critical thinking and inquiry, but its effectiveness depends on relevant contextual problems and learning resources (Alreshidi & Lally, 2024; Pimdee et al., 2024). Thus, the literature does not sufficiently explain whether combining video-based image media with PBL can simultaneously improve learning outcomes and patriotic attitudes among elementary students. Addressing this gap is essential for developing Pancasila learning that connects cognitive achievement with character formation.

The state of the art of this study lies in integrating video-based image media with Problem-Based Learning into a design focused on Pancasila history and patriotic attitudes. The approach positions video-based images as problem stimuli that students investigate collaboratively. This integration is expected to transform abstract historical narratives into situations while encouraging students to interpret events, discuss values, and formulate solutions. The novelty concerns cognitive and affective outcomes, including patriotic attitudes. Pancasila education requires students not only to understand processes but also to appreciate national values. Developing and testing this media can support instructional innovation and provide evidence for teachers seeking contextual, technology-supported, and character-oriented Pancasila learning in elementary schools. This design offers a basis for examining whether technology-supported inquiry can connect knowledge with value formation in appropriate ways.

Based on the identified problem and research gap, this study asks whether video-based image media integrated with Problem-Based Learning can improve students' learning outcomes in Pancasila history and foster positive patriotic attitudes. The study argues that combining visual representations with problem-based inquiry should produce stronger learning because students receive stimuli and actively construct meaning through investigation and collaboration (Moallem et al., 2019). Accordingly, three expectations are proposed. First, students' learning outcomes will differ significantly between pretest and posttest performance after using the developed media with PBL. Second, the intervention will be highly effective, as indicated by an N-Gain score of at least 0.70. Third, students will demonstrate positive patriotic attitudes after participating in the learning process. These expectations provide provisional answers to the research problem and establish a basis for evaluating effectiveness.

RESEARCH METHODS

This study employs a Research and Development (R&D) approach utilizing the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model. This model was selected due to its systematic, logical, and flexible stages for creating and refining instructional products based on empirical feedback. A descriptive qualitative approach complements this process by exploring students' learning needs, material characteristics, learning conditions, and user responses to the developed media. The research was conducted at SDN Bojonggede 02 (Bojonggede 02 State Elementary School), Bojonggede District, Bogor Regency, West Java, involving 30 fourth-grade students, the fourth-grade teacher, and expert validators specializing in content, language, and media. The location was chosen based on identified issues regarding students patriotic attitudes and the limited availability of video media for teaching the history of Pancasila, as well as the school's support for the research implementation.

Data collection involved observation, semi-structured interviews, documentation, questionnaires, tests, and expert validation sheets. Observations and interviews were conducted during the Analysis phase to identify student needs, learning characteristics, and challenges the teacher faced. Documentation was used to gather information on the curriculum and instructional materials, while expert validation took place during the Development phase to assess the product's feasibility in terms of content, language, and media. During the Implementation phase, data were obtained through pre-tests and post-tests, as well as questionnaires assessing students' patriotic attitudes after using the Problem-Based Learning (PBL)-based instructional media. Qualitative data were analyzed using the interactive model proposed by Miles, Huberman, and Saldaña, involving data condensation, data display, and conclusion drawing and verification (Muliati, 2026). Meanwhile, quantitative data were analy zed using N-Gain scores and relevant statistical tests to determine the product's effectiveness.

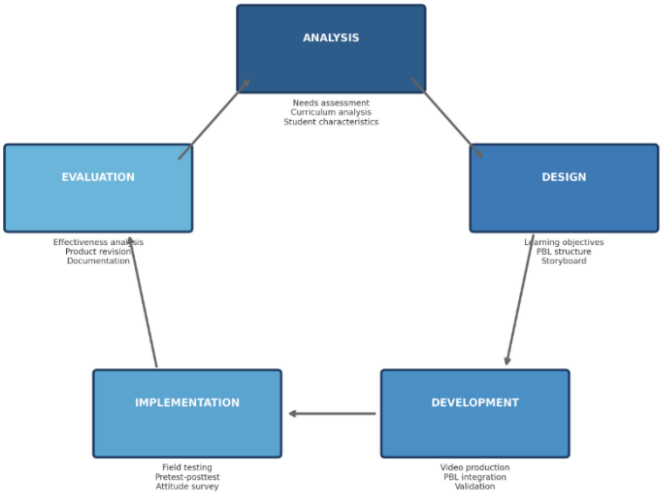

Figure 1. ADDIE Development Model

Figure 1 shows that the ADDIE model is implemented systematically through five interconnected phases: Analysis, Design, Development, Implementation, and Evaluation. The Analysis phase identifies needs, curriculum requirements, and student characteristics, which become the foundation for designing learning objectives, lesson plans, and storyboards. The Development phase focuses on video production, PBL integration, and validation. The Implementation phase involves field testing through pretest-posttest and attitude surveys. Finally, the Evaluation phase assesses effectiveness, revises production, and documents the process. The cyclical arrows demonstrate that findings from each phase provide feedback for subsequent improvements. Thus, Figure 1 shows that the ADDIE model ensures a systematic, iterative, and quality-oriented development process.

The validity of the qualitative data was ensured through source triangulation, technique triangulation, time triangulation, member checking, and expert judgment. Source triangulation was conducted by comparing information from teachers, students, and validators, while technique triangulation involved comparing data from observations, interviews, and documentation. Time triangulation was employed to ensure the consistency of findings across different learning situations. Member checks confirmed interpretations with informants to ensure alignment with actual conditions, while expert

judgment verified the suitability of the product and instruments before implementation. Through this combination of qualitative and quantitative approaches, the study not only produced a viable learning medium but also provided empirical insights into the effectiveness of the PBL-based medium in enhancing students' learning outcomes and patriotic attitudes.

Table 1. Research Design Overview: ADDIE Model Phase

Phase	Activities
Analysis	Needs assessment through observation and interviews; analysis of curriculum, student characteristics, and learning objectives; identification of learning problems related to Pancasila history content.
Design	Formulation of learning objectives aligned with curriculum standards; design of PBL syntax structure; storyboard development for video content; selection of appropriate multimedia elements.
Development	Production of video-based image media using video editing software; integration of PBL learning scenarios; expert validation by material, language, and media specialists; product revision based on validator feedback.
Implementation	Field testing with 30 fourth-grade students; pretest administration; implementation of learning using developed media with PBL model; posttest administration; distribution of patriotic attitude questionnaire.
Evaluation	Analysis of effectiveness using N-Gain and statistical testing; assessment of student patriotic attitudes; final product evaluation; documentation of limitations and recommendations.

Table 1 explains that this study systematically applies the ADDIE model to develop video-based learning media using the Problem-Based Learning (PBL) model. The Analysis stage focuses on identifying needs, curriculum, student characteristics, and learning problems. The Design stage includes formulating objectives, developing PBL syntax, and developing storyboards. The Development stage produces media that experts validate and revise. The Implementation stage is conducted through a trial with 30 fourth-grade students using a pretest, posttest, and a patriotic attitude questionnaire. Furthermore, the Evaluation stage analyzes the media's effectiveness, learning outcomes, patriotic attitudes, and product limitations.

Table 2. Participant Characteristics

Characteristic	n (%)
Gender	
Male	16 (53.3%)
Female	14 (46.7%)
Age	
9 years	8 (26.7%)
10 years	20 (66.7%)
11 years	2 (6.6%)
Prior Knowledge Level (Pretest)	
Low (< 60)	4 (13.3%)
Medium (60-75)	21 (70.0%)
High (> 75)	5 (16.7%)

Table 2 shows that the study included 30 fourth-grade students: 16 males (53.3%) and 14 females (46.7%). By age, most participants were 10 years old (20 students, 66.7%), followed by 9 years old (8 students, 26.7%) and 11 years old (2 students, 6.6%). In terms of prior knowledge, most students were in the medium category, namely 21 students

(70.0%). Meanwhile, 4 students (13.3%) were in the low category, and 5 students (16.7%) were in the high category. These findings indicate variations in the participants' initial abilities.

Table 3. Research Instruments and Validity

Instrument	Purpose	Description	Validity
Learning Outcomes Test	Measure cognitive achievement	25 Multiple choice Items covering Pancasila history facts, concepts, and analysis; blueprint aligned with curriculum standards	Expert validation; Content validity
Expert Validation Sheets	Assess product feasibility	Three validator Sheets covering material/content (7 items), language (5 items), and media aspects (20 items)	Inter-rater agreement
Patriotic Attitude Questionnaire	Measure affective outcomes	40 Likert scale Items (1–4) Across 20 indicators; 20 positive	Expert validation; Reliability (α = 0.89)

Table 3 shows that the study used three main instruments: a learning outcome test, an expert validation sheet, and a patriotism attitude questionnaire. The learning outcome test consisted of 25 multiple-choice questions measuring factual, conceptual, and analytical knowledge related to the history of Pancasila, with content validity ensured through expert validation and item analysis. The validation sheet was used to assess the appropriateness of the material, language, and media based on the assessments of three validators. Meanwhile, the patriotism attitude questionnaire consisted of 40 items with 20 indicators and had high reliability ($\alpha = 0.89$). Thus, Table 3 shows that the research instruments had adequate function, scope, and validity.

Data collection was conducted systematically through four stages. First, a pretest was administered in a 60-minute session to measure students' baseline knowledge of Pancasila history. Second, students participated in four instructional sessions (240 minutes) using video-based image media integrated with the PBL model, including problem presentation, group analysis, investigation, solution development, presentation, and reflection. Third, a posttest using the same learning outcomes test was administered to measure students' achievement gains. Fourth, students completed a patriotic attitude questionnaire to assess affective outcomes and determine changes in their patriotic attitudes following the learning intervention.

Data analysis employed descriptive and inferential statistical methods. Descriptive statistics included the mean, standard deviation, minimum, and maximum scores for pretest and posttest results. The Shapiro-Wilk test assessed data normality at $\alpha = 0.05$, given the sample size was below 50. Because the posttest data violated normality assumptions ($p < 0.05$), the Wilcoxon Signed-Rank Test was used to compare paired pretest and posttest scores (Field, 2013). Learning effectiveness was assessed using normalized gain (N-Gain), interpreted as high ($g \geq 0.70$), medium ($0.30 \leq g < 0.70$), or low ($g < 0.30$) following Hake (1998). Percentage scores categorized attitudes.

RESULTS AND DISCUSSION

Results

Expert Validation Results

Prior to field implementation, the developed video-based image media underwent a comprehensive validation process involving three experts: a material or learning expert, a language expert, and a media expert. The validation aimed to assess

the product's quality, relevance, clarity, accessibility, and technical feasibility before being implemented with students. Each expert evaluated specific aspects of the media based on predetermined assessment criteria and provided constructive feedback for further improvement. The validation results served as an important basis for revising and refining the product to ensure it was appropriate for classroom use. Table 4 summarizes the validation results obtained from the three experts.

Table 4. Expert Validation Results

Validator	Score	Percentage (%)	Category
Material & Learning Expert	32/35	91.43	Very Valid
Language Expert	23/25	92.00	Very Valid
Media Expert	90/100	90.00	Very Valid
Average	-	91.14	Very Valid

Table 4 shows that the developed video-based image media achieved an overall validation score of 91.14%, categorized as Very Valid, indicating that the product was highly suitable for educational use. The material and learning expert awarded 91.43%, confirming the accuracy of the Pancasila history content, alignment with learning objectives, and appropriateness of the Problem-Based Learning (PBL) integration. The language expert provided the highest score of 92.00%, indicating that the language, instructions, and communication were appropriate for fourth-grade students, although vocabulary simplification and narration intonation could still be improved. Meanwhile, the media expert gave 90.00%, reflecting good visual quality, readability, systematic presentation, technical functionality, and educational appeal, with recommendations to strengthen nationalist visual elements. Overall, the findings demonstrate that the media met the required standards of content, language, and technical quality and was feasible for implementation after minor revisions.

Learning Outcomes Analysis

Descriptive Statistics

Table 5. Descriptive Statistics of Pretest and Posttest Scores

Statistic	Pretest	Posstest
N	30	30
Minimum	53	73
Maximum	77	98
Mean	69.07	90.13
Standard Deviation	5.97	6.22

Table 5 shows a substantial improvement in students' learning outcomes after implementing the developed video-based image media integrated with Problem-Based Learning (PBL). The mean score increased from 69.07 (SD = 5.97) in the pretest to 90.13 (SD = 6.22) in the posttest, representing a 21.06-point increase. The minimum score also improved considerably, from 53 to 73, while the maximum score increased from 77 to 98, demonstrating overall progress across the 30 students. Before the intervention, most students had moderate knowledge of Pancasila history, suggesting that their initial understanding was still limited. After the intervention, the score distribution shifted positively, with 83.3% of students achieving scores above 85, indicating strong mastery of the learning material. Only one student remained at a relatively low achievement level, with a score of 73. These findings suggest that the developed media effectively supported students' understanding of Pancasila history through engaging visual content and

problem-based learning activities.

Normality Test

Prior to hypothesis testing, normality of data distribution was assessed using the ShapiroWilk test, appropriate for the sample size (n = 30). Results are presented in Table 6.

Table 6. Shapiro-Wilk Normality Test Results

Data	Statistic	Sig (p)	Conclusion
Pretest	0.933	0.058	Normally distributed
Posttest	0.914	0.018	Not Normally distributed

Table 6 presents the results of the Shapiro–Wilk normality test for the pretest and posttest scores. The pretest data obtained a significance value of 0.058, which is greater than 0.05, indicating that the pretest scores were normally distributed. In contrast, the posttest data produced a significance value of 0.018, which is below 0.05, indicating that the posttest scores were not normally distributed. These findings show that the normality assumption was not fully satisfied because the two datasets had different distribution characteristics. Therefore, a non-parametric statistical test was considered more appropriate for further hypothesis testing, ensuring the analysis remained consistent with the characteristics of the collected data.

Hypothesis Testing

The Wilcoxon Signed-Rank Test was conducted to determine whether significant differences existed between pretest and posttest scores. Results are presented in Table 7.

Table 7. Wilcoxon Signed-Rank Test Results

Statistic	Value
Negative Ranks (n)	0
Positive Ranks (n)	30
Ties (n)	0
Mean Rank	15.50
Sum of Rank	465.00
Z	-4.782
Asymp. Sig. (2-tailed)	0.000

Table 7 shows that the Wilcoxon Signed-Rank Test revealed a statistically significant difference between students' pretest and posttest scores ($Z = -4.782$, $p < 0.001$). The rank results indicate that all 30 students experienced improvement, as reflected by 30 positive ranks, while there were no negative ranks or ties. The mean rank of 15.50 and sum of ranks of 465.00 further demonstrate a consistent increase in students' learning outcomes following the intervention. The effect size of $r = 0.87$ indicates a very large effect, suggesting that the improvement was not only statistically significant but also educationally substantial. These findings provide strong empirical evidence that the developed video-based image media integrated with Problem-Based Learning (PBL) effectively improved students' learning outcomes in Pancasila history. Thus, Hypothesis 1 is supported, confirming that the intervention produced a significant positive change in students' achievement compared with their baseline performance.

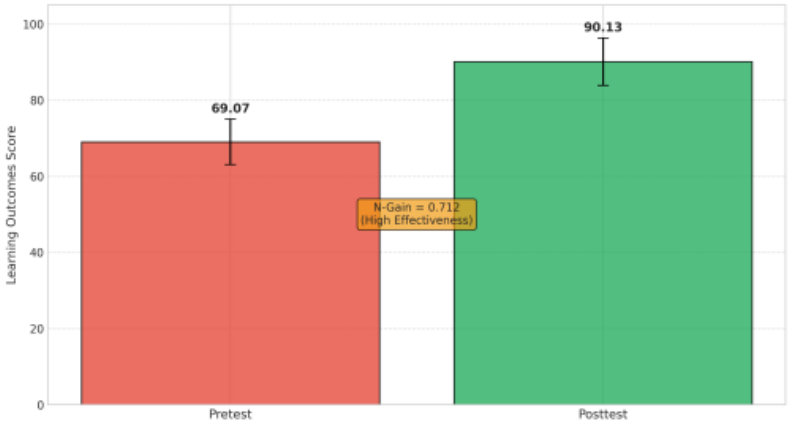

Figure 3. Comparison of Pretest and Posttest Scores

Figure 3 shows a substantial improvement in students' learning outcomes from pretest to posttest, with an N-Gain score of 0.712 indicating high effectiveness. The improvement can be attributed to the integration of video-based visual media and Problem-Based Learning (PBL). The video media presented historical documents, photographs, and animated sequences that transformed abstract historical events into concrete visual representations, thereby supporting students' cognitive processing through dual coding. Meanwhile, the PBL approach encouraged students to actively analyze problems, investigate historical information, discuss findings, and develop solutions collaboratively, resulting in deeper learning than passive information reception. Thus, combining visual representation with active problem-based learning contributed substantially to the observed improvement in students' understanding of Pancasila history.

Effectiveness Analysis (N-Gain)

To determine the magnitude of learning improvement, Normalized Gain analysis was conducted. Results are presented in Table 8.

Table 8. Normalized Gain (N-Gain) Analysis Result

Statistic	Value
N	30
Mean N-Gain	0.712
SD	0.14
Minimum	0.43
Maximum	0.98
Category	High

Table 8 demonstrates that the developed video-based image media integrated with Problem-Based Learning (PBL) achieved a mean N-Gain of 0.712 (SD = 0.14), which falls into the high effectiveness category. The N-Gain scores ranged from 0.43 to 0.98, indicating that all 30 students experienced meaningful improvement in learning outcomes. Specifically, 80% of students (24 students) achieved high N-Gain scores (≥0.70), while 20% (6 students) reached the medium category (0.30–0.70), with none

classified as having low gains. These results indicate that the intervention substantially improved students' learning outcomes relative to their initial abilities. The relatively high N-Gain may be attributed to the complementary integration of video-based visual representations and PBL, where multimedia supported students in understanding historical contexts while problem-based activities encouraged analysis, collaboration, and application of knowledge. Thus, the findings support Hypothesis 2, confirming the high effectiveness of the developed media in improving students' learning outcomes in Pancasila history.

Patriotic Attitude Results

Beyond cognitive outcomes, the study assessed the development of patriotic attitudes among students. Table 9 presents the descriptive statistics for the patriotic attitude questionnaire.

Table 9. Patriotic Attitude Questionnaire Results

Statistic	Value
N (students)	30
Total Items	40
Maximum Possible Score	160
Mean Score	147.70
Percentage Achievement	92.31%
Category	Very Good

Table 9 shows that students demonstrated a very good level of patriotic attitude after participating in learning using the developed video-based image media integrated with Problem-Based Learning (PBL). Among the 30 students, the questionnaire consisted of 40 items with a maximum possible score of 160, while the students achieved a mean score of 147.70, corresponding to a 92.31% achievement level. This result indicates that most students demonstrated strong patriotic attitudes after the intervention, suggesting that the learning media was effective not only in supporting cognitive achievement but also in fostering affective development. Integrating historical visualizations with problem-based activities gave students opportunities to understand the meaning of Pancasila history, discuss national values, and connect historical events to their responsibilities as citizens. Therefore, the findings support Hypothesis 3, confirming that the developed media contributed positively to the development of students' patriotic attitudes.

Table 10. Patriotic Attitude Achievement by Indicator

No	Indicator	Percentage (%)	Category
1	Pride as Indonesian citizen	96.25	Very Good
2	Appreciation for Pancasila formulators	95.00	Very Good
3	Interest in learning Pancasila history	90.83	Very Good
4	Respect for national symbols	97.08	Very Good
5	Respectful behavior during flag ceremonies	95.42	Very Good
6	Maintaining harmony in group learning	93.75	Very Good
7	Respecting diverse opinions in discussion	88.33	Very Good
8	Tolerance toward friends' differences	95.83	Very Good
9	Maintaining classroom cleanliness and order	94.17	Very Good
10	Concern for school environment	87.50	Very Good
11	Obeying school rules	94.85	Very Good
12	Caring for peers during PBL activities	92.92	Very Good

13	Upholding unity and togetherness values	87.92	Very Good
14	Cooperating for group success	93.33	Very Good
15	Responsibility in learning tasks	95.00	Very Good
16	Practicing Pancasila values at school	94.17	Very Good
17	Appreciating cultural diversity	89.17	Very Good
18	Sense of ownership toward school	93.75	Very Good
19	Maintaining good behavior as Pancasila students	96.67	Very Good
20	Readiness to maintain unity at school	88.75	Very Good
	Average	**92.31**	**Very Good**

Table 10 indicates that all 20 indicators of students' patriotic attitudes were categorized as Very Good, with an overall average of 92.31%. The highest achievement was found in respect for national symbols (97.08%), followed by maintaining good behavior as Pancasila students (96.67%) and pride as Indonesian citizens (96.25%). Meanwhile, the lowest scores appeared in concern for the school environment (87.50%), upholding unity and togetherness values (87.92%), and respecting diverse opinions (88.33%), although these remained within the Very Good category. Overall, the findings demonstrate that the developed media effectively supported the development of students' patriotic attitudes.

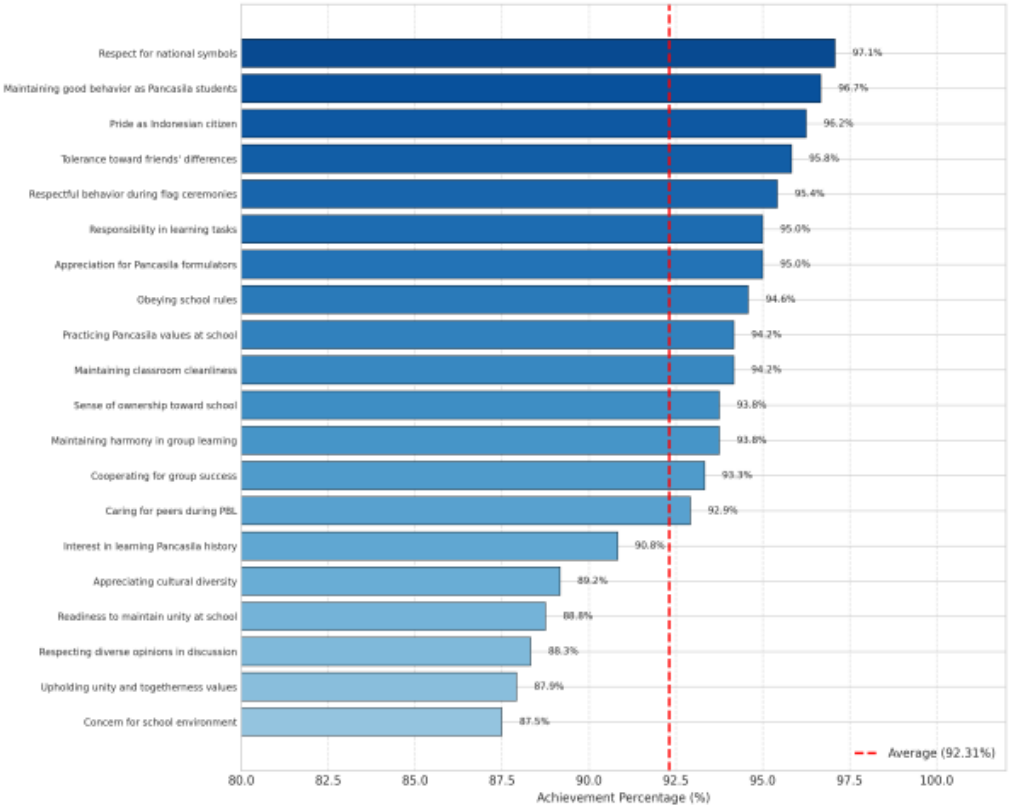

Figure 4. Patriotic Attitude Achievement by Indicator

Figure 4 shows that all 20 patriotic attitude indicators fell within the **Very Good** category, with scores ranging from 87.50% to 97.08% and an overall average of 92.31%. The highest achievement was found in respect for national symbols (97.08%), followed by maintaining good behavior as Pancasila students (96.67%) and pride as Indonesian citizens (96.25%), indicating strong development of national identity and Pancasila-based character. Although concern for the school environment (87.50%), upholding unity and

togetherness (87.92%), and respecting diverse opinions (88.33%) recorded relatively lower scores, they remained within the Very Good category. Overall, the findings suggest that integrating historical video content with PBL effectively fostered patriotic attitudes by combining knowledge, reflection, collaboration, and authentic civic problem-solving.

Discussion

The findings demonstrate that video-based image media integrated with Problem-Based Learning (PBL) significantly improved students' cognitive outcomes and patriotic attitudes (Al-Shaikh et al., 2024; Mayer, 2024). The mean score increased from 69.07 to 90.13, while the Wilcoxon test confirmed a significant difference ($Z = -4.782$, $p < 0.001$), with N-Gain = 0.712 categorized as high. These results are consistent with previous multimedia studies reporting gains of 0.58–0.65 and PBL studies reporting approximately 0.62. Thus, integrating both approaches may generate stronger learning effects than either approach independently in similar settings (Asaadi et al., 2024; Bali et al., 2026; Immanuel & A, 2023).

The stronger learning improvement can be explained through Mayer's (2009) Cognitive Theory of Multimedia Learning, which proposes that meaningful learning occurs when students actively select, organize, and integrate verbal and visual information with prior knowledge (Leng et al., 2023; Mayer, 2024). The developed media translated abstract Pancasila history into concrete images, historical documents, photographs, narration, and animated sequences, potentially reducing conceptual difficulty (Kadafi et al., 2026; Supentri et al., 2026). This interpretation is consistent with Suliantini et al., (2024), who emphasize multimedia visualization for cognitive processing. The study therefore extends multimedia learning theory by demonstrating its relevance when visual processing is combined with PBL, where students interpret and apply information through structured classroom inquiry .

The findings also support constructivist learning theory, particularly Jonassen's (1999) view that knowledge develops through authentic problems, active participation, and social interaction (Sreelohor et al., 2025). In this study, PBL scenarios connected Pancasila history with civic problems, while group investigation encouraged discussion, collaboration, and solution development (Suwandi et al., 2025; Za et al., 2024). The 92.31% Very Good patriotic attitude achievement indicates that the intervention affected not only knowledge but also affective learning. This extends prior technology-enhanced learning research that often emphasizes cognitive outcomes. The results suggest that multimedia becomes more pedagogically powerful when embedded within problem-centered learning environments, providing a basis for integrating cognitive, affective, and collaborative dimensions in citizenship education (Bali et al., 2026; Leng et al., 2023; Shahnabati et al., 2025).

The study provides several practical implications for elementary education. First, the ADDIE development process produced a product rated 91.14% Very Valid by material, language, and media experts, indicating feasibility for classroom implementation after minor revisions. Second, teachers can use video-based PBL to make abstract historical content more accessible while encouraging inquiry, cooperation, tolerance, and responsibility (Suliantini et al., 2024; Wijnia et al., 2024). However, lower patriotic-attitude scores for concern for the school environment (87.50%), unity (87.92%), and respect for diverse opinions (88.33%) indicate that these competencies require sustained practice beyond one instructional unit. Therefore, teachers should reinforce these values through repeated collaboration, reflection, and authentic school-based civic actions.

The contribution of this study lies in demonstrating a complementary model that connects multimedia visualization, PBL inquiry, and patriotic character development

within Pancasila history learning. Unlike approaches that primarily target achievement, the intervention produced simultaneous cognitive gains and affective development, suggesting a more holistic contribution to citizenship education (Bali et al., 2026; Liu, 2024; Shahnabati et al., 2025). The N-Gain of 0.712, compared with previously reported moderate gains, strengthens the argument for synergy between multimedia and PBL, although comparative experiments are needed to establish causality. Future research should use larger multi-school samples, experimental comparisons, longitudinal designs, and multiple assessment methods to examine the intervention's sustainability and broader applicability (Asaadi et al., 2024; Barz et al., 2023).

CONCLUSION

This study concludes that video-based image media integrated with Problem-Based Learning (PBL) provides a promising approach for strengthening both cognitive learning outcomes and patriotic attitudes in fourth-grade Pancasila history education. The developed media achieved a 91.14% Very Valid rating, while student achievement increased substantially from a mean of 69.07 to 90.13, with a high N-Gain of 0.712 and significant Wilcoxon results ($p < 0.001$). Patriotic attitudes also reached 92.31% (Very Good) across 20 indicators. The key lesson is that combining visual historical representation with authentic problem-based inquiry can connect knowledge acquisition with value formation. The study contributes theoretically by extending multimedia and constructivist perspectives into integrated cognitive-affective learning and contributes practically through an ADDIE-based development model. However, the single-school sample, absence of a control group, and reliance on questionnaire-based attitude measurement limit generalizability. Future research should employ larger multi-school samples, experimental comparisons, longitudinal designs, and multiple assessment methods to examine the sustainability and broader applicability of the intervention.

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