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# The Impact of Problem-Based Learning Assisted by Cultural Visualisation on Student Engagement and Achievement in Civic Education

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**Abstract:** This study investigates the effect of Problem-Based Learning (PBL) assisted by visualisation of the archipelagic insight (Wawasan Nusantara) on the learning activities and outcomes of fourth-grade students in Pancasila Education at the Ahmad Yani Cluster, Kudus, Indonesia. The research is driven by the low student engagement and suboptimal academic performance in Pancasila Education, often taught using conventional methods. Using a quasi-experimental design with a nonequivalent control group, data were collected from three elementary schools, with one serving as the experimental group and two as control groups. Data collection employed validated observation sheets and multiple-choice tests. The findings demonstrate that the PBL model, when integrated with culturally contextualised visual media, significantly enhances both student engagement and learning achievement. Statistical tests (t-test, ANOVA, and N-Gain analysis) confirmed the model's effectiveness. This study highlights the potential of combining problem-solving approaches with visual pedagogy to revitalize civic education at the primary level.

**Keywords:** problem-based learning, visual media, learning activity, learning outcome, Pancasila Education

## 1. Introductions

Pancasila Education plays a crucial role in shaping civic values and national identity in Indonesia. Despite its importance, elementary-level instruction often lacks student engagement and fails to yield satisfactory outcomes. This is especially evident in the Ahmad Yani Cluster, where both classroom activity and student achievement in Pancasila Education remain below the national standards.

Conventional teaching models, characterised by teacher-centred delivery, do not align with the demands of the new *Kurikulum Merdeka*, which emphasises student-centred, contextual, and critical thinking approaches (Fathurrohman, 2022). This misalignment results in passive learners and ineffective knowledge transfer. To address these shortcomings, educational reforms must consider pedagogical innovation. One promising strategy is Problem-Based Learning (PBL), which promotes active, critical, and collaborative learning (Yew & Goh, 2016; Fitriyah & Ramadani, 2021). The integration of culturally relevant visual media into the PBL framework could enhance student motivation and comprehension, especially in value-based subjects like Pancasila Education (Tafonao, 2018; Saputri et al., 2019).

Previous studies have independently confirmed the effectiveness of PBL and visual media in increasing student outcomes and classroom participation (Fitriyah & Ramadani, 2021; Tafonao, 2018). However, few have explored their combined effect in the context of civic education for younger learners. This study aims to bridge that gap by examining the influence of a PBL model augmented by archipelagic visualisation on the learning process and outcomes among fourth-grade students.

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## 1.1 Conceptual framework

The conceptual foundation of this study is grounded in constructivist learning theory, particularly the social constructivist perspective that emphasises active knowledge construction through problem-solving and interaction. The key components include: (1) Problem-Based Learning (PBL): a student-centred model encouraging exploration, collaboration, and problem-solving around real-life issues (Yew & Goh, 2016). (2) Visual Media (*Wawasan Nusantara*): culturally relevant images and illustrations that contextualise abstract concepts, making them more tangible and relatable (Mayer, 2001; Tafonao, 2018). (3) Learning Activity: observable student behaviours reflecting engagement and participation, including discussion, collaboration, and inquiry (Sardiman, 2020). (4) Learning Outcomes: cognitive mastery measured through validated assessment tools, reflecting students' understanding and application of knowledge. The integration of visual media into PBL is expected to enhance cognitive, affective, and psychomotor domains of learning, particularly in subjects with strong contextual and moral components.

## 1.2 Research objectives

The objective of this research is to explore how the integration of Problem-Based Learning (PBL) with archipelagic visualisation media can enhance the quality of learning in Pancasila Education for fourth-grade students. This study aims to examine whether this instructional model can effectively increase students' active participation during the learning process and improve their academic achievement in understanding civic values and national identity.

The research seeks to determine not only the individual effects of this method on student engagement and learning outcomes but also its simultaneous impact when applied holistically in classroom instruction. By doing so, this study aspires to provide empirical evidence that supports the adoption of innovative, contextually relevant teaching approaches to revitalise civic education in primary schools, especially in the post-pandemic era of curriculum transformation in Indonesia.

## 2. Methodology

This research employed a quantitative approach with a quasi-experimental design, specifically the Nonequivalent Control Group Design (Sugiyono, 2022; Creswell, 2014). This design involved both experimental and control groups without the use of randomisation, which is suitable for educational settings where full experimental control is not feasible.

The study was conducted in Ahmad Yani Cluster, located in Kudus District, Indonesia. The experimental group consisted of fourth-grade students from SDN 01 Purwosari, who were taught using the Problem-Based Learning Problem-Based Learning (PBL) model assisted by archipelagic visualisation media. Meanwhile, students from SDN 02 and SDN 03 Purwosari served as the control groups and were taught using conventional learning methods. Additionally, SDN Demangan was involved for instrument validation purposes.

Data collection involved two primary instruments: (1) Observation sheets to measure student learning activity, which were developed based on defined indicators and validated by experts (Sardiman, 2020). (2) Learning outcome tests, consisting of 20 multiple-choice items that were statistically validated for reliability, difficulty level, and discrimination index (Sudjana, 2017; Arikunto, 2021).

The research was conducted over multiple learning sessions focused on the theme "Kerja Sama di Lingkunganku" (Cooperation in Our Environment), which is part of the Pancasila Education curriculum for fourth-grade students.

Data analysis was conducted in several stages using SPSS version 26, starting with statistical prerequisite tests such as the Kolmogorov–Smirnov test for normality and Levene's Test for homogeneity. Subsequently, independent t-tests were employed to compare the means of the experimental and control groups, while one-way ANOVA was used to assess the simultaneous effect of the intervention on learning activities and outcomes.

This methodological framework was designed to ensure the validity, reliability, and applicability of the findings in a real-world educational context.

## 3. Findings and Discussion

This study was conducted in three elementary schools in the Ahmad Yani Cluster, Kudus City Subdistrict, including SDN 01 Purwosari, SDN 02 Purwosari, and SDN 03 Purwosari. The sample comprised 42 students in the experimental class and 29 students in the control class. The goal of this study was to investigate the influence of Problem-Based Learning Problem-Based Learning (PBL) assisted by visual media on students' learning outcomes and learning activities in Pancasila Education. Previous studies have shown that the integration of visual learning media within the PBL approach can improve students' engagement and learning achievement in civic education at the elementary school level (Safitri et al., 2024).

## 3.1 Pretest and Posttest Results

Descriptive statistical data of pretest and posttest scores are as follows:

**Table 1.** Descriptive statistics

| Group | N | Min | Max | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Pretest (Experimental) | 42 | 40 | 90 | 64.17 | 12.093 |
| Posttest (Experimental) | 42 | 60 | 95 | 79.64 | 8.144 |
| Pretest (Control) | 29 | 30 | 80 | 60.00 | 13.758 |
| Posttest (Control) | 29 | 60 | 95 | 79.14 | 9.265 |

These findings show a notable increase in mean scores, especially in the experimental group, indicating the potential effectiveness of the PBL model.

## 3.2 Normality and Homogeneity Test

The Shapiro-Wilk normality test revealed that all data sets (pretest and posttest in both experimental and control groups) were normally distributed (Sig > 0.05). Furthermore, Levene's Test for Equality of Variances confirmed data homogeneity with significance levels of 0.334 (pretest) and 0.249 (posttest), both above 0.05.

## 3.3 Hypothesis Testing Using ANOVA

The results of the One-Way ANOVA test showed significant differences in student achievement and learning activities:

**Table 2. Student learning Achievement**

| Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|
| Between Groups | 9881.883 | 3 | 3293.961 | 27.607 |
| Within Groups | 16465.476 | 138 | 119.315 | |
| Total | 26347.359 | 141 | | |

**Table 3. Student Learning Activity**

| Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|
| Between Groups | 270.323 | 3 | 90.108 | 49.938 |
| Within Groups | 249.008 | 138 | 1.804 | |
| Total | 519.331 | 141 | | |

Since the significance value is 0.000 < 0.05, it can be concluded that the PBL model had a statistically significant effect on student learning outcomes. The result also shows a significant effect of PBL on student activity in class, with Sig. = 0.000 < 0.05.

## 3.4 N-Gain Analysis

The N-Gain test was conducted to measure the effectiveness of learning based on the increase from pretest to posttest. These results highlight the effectiveness of PBL with visual media in enhancing both cognitive and participatory aspects of learning.

**Table 4. Learning Outcomes N-Gain**

| Group | N-Gain | Category | N-Gain % | Interpretation |
|---|---|---|---|---|
| Experimental | 0.6097 | Medium | 78.99% | Effective |
| Control | 0.3981 | Low | 67.65% | Moderately Effective |

**Table 5. Learning Activity N-Gain**

| Group | N-Gain | Category | N-Gain % | Interpretation |
|---|---|---|---|---|
| Experimental | 0.5364 | Medium | 56.34% | Effective |
| Control | 0.0231 | Low | 2.31% | Ineffective |

The findings strongly support the hypothesis that the implementation of Problem-Based Learning (PBL) assisted by visualizations significantly improves student outcomes and learning engagement. The experimental group demonstrated higher gains in both test scores and activity levels compared to the control group.

This aligns with Trianto (2020) who stated that PBL encourages critical thinking and student collaboration. Additionally, visual media enhances comprehension and retention, especially in abstract or value-laden subjects like Pancasila Education. The increase in learning activity—from passive listening to active discussion and problem-solving—further proves the pedagogical value of integrating PBL in elementary civic education contexts.

## 4. Conclusions and recommendations

This study concludes that the integration of Problem-Based Learning with archipelagic visualisation significantly improves student activity and academic performance in Pancasila Education. The approach fosters meaningful engagement through contextual problem-solving and visual aids. These findings underscore the model's relevance in implementing the Kurikulum Merdeka and offer practical insights for educators aiming to revitalise civic education. The combined strategy proves not only pedagogically effective but also culturally responsive.

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## Conflict of Interest

The authors declare there is no conflict of interest.

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