

## Animated Videos-Supported Problem-Based Learning: An Innovative Strategy to Foster Students' Critical Thinking Skills

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**ABSTRACT.** The shift in 21st-century educational paradigms demands that elementary school students develop high-level competencies, particularly critical thinking skills, which are often underutilized in traditional teacher-centered classrooms. This study aims to improve students' critical thinking skills through the implementation of the Problem-Based Learning (PBL) model assisted by animated video in Pancasila Education learning in grade IV. This study used a Classroom Action Research (CAR) approach based on the Kemmis and McTaggart model, which consists of four stages: planning, acting, observing, and reflecting. The subjects were 28 students of class IV.B at SD Negeri Jongkang, Sleman Regency, Yogyakarta, in the 2025/2026 academic year. Data were collected through observation, critical thinking tests, and documentation, then analyzed using qualitative and quantitative descriptive techniques. The results showed a significant improvement in students' critical thinking skills from cycle I to cycle II. In cycle I, the mastery percentage was only 18% (5 out of 28 students) with an average score of 64.4. This increased substantially in cycle II to 75% (21 out of 28 students) with an average score of 82.7. These findings reinforce the effectiveness of the PBL model assisted by animated video in improving elementary school students' critical thinking. Implicatively, this research contributes to the development of active learning strategies aligned with modern competency demands in the context of Pancasila Education.

**Keywords:** Animated Video, Critical Thinking, Pancasila Education, Problem Based Learning (PBL)



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## INTRODUCTION

Education is one of the crucial factors in national development as it plays a direct role in enlightening the nation and sustainably improving the quality of human resources (Djononiarjo, 2019). However, a real challenge in educational practice in Indonesia, particularly at primary school levels, is the dominance of the learning process tend to be monotonous, less capable of engaging pupils, and fails to provide sufficient space for the improvement of critical thinking skills (Ayu et al., 2025; Harahap, 2024; Ramadhan et al., 2023; Ridlo et al., 2026; Sutrisno & Pratiwi, 2023). This phenomenon is particularly evident in the subject of Pancasila Education, which should serve as the foundation for character building and the instilling of national values from an early age (Adindo & Sutoyo, 2026; N. K. Dewi et al., 2025; Fajri et al., 2025; Ibrahim et al., 2026; Nurgiansah, 2021; Tahir, 2021), yet in practice it is still generally conducted in a static manner with minimal meaningful interaction (Aisah et al., 2025; Pebriyanti & Badillah, 2023; Septiani et al., 2022; Srinio et al., 2025).

Various previous studies have attempted to enhance the standard of Pancasila education and students' critical thinking skills. These studies among other things, highlight the importance of contextual learning models (Meilasari et al., 2020), the application of Problem-Based Learning (PBL) as a model proven to encourage students to seek solutions to real-world problems, and the use of video-based media, which can improve learning outcomes when accompanied by active strategies such as prompting questions and reflection (Amirulloh et al., 2025; Mahendra et al., 2024; Mumtahana et al., 2026; Sitepu et al., 2025). Furthermore, (Mayer, 2024) emphasises that learning is more effective when information is conveyed through a combination of words and images designed to suit the needs of the class. Nevertheless, these studies generally examine PBL or animated video media separately, and few have integrated the two synergistically within the context of Pancasila Education in Primary School (SD).

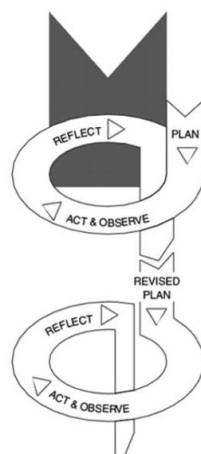
It is this gap that forms the basis for the urgency of the research. Based on the findings of preliminary observations conducted in Class IV.B at SD Negeri Jongkang, it was found that teachers are not yet accustomed to applying learning models oriented towards critical thinking, the learning media used are still limited and lack variety, and pupils tend to receive information passively without conducting further analysis. This has resulted in students' low ability to analyze problems, evaluate information, and draw conclusions critically skills that are highly sought after in today's era.

Based on this gap, this study aims to: (1) describe the implementation of the PBL model supported by animated videos in Pancasila Education lessons in Class IV.B at SD Negeri Jongkang and (2) explain the improvement in students' critical thinking skills through the implementation of the PBL model supported by animated videos. This study addresses the shortcomings of previous research by presenting the integration of the PBL model and animated video media as a single, comprehensive and planned learning strategy, rather than as separate elements.

This study discusses the application of the PBL model supported by animated videos to improve students' critical thinking skills in Pancasila Education lesson. Animated videos are believed to be capable of concretising abstract concepts in Pancasila Education, whilst the PBL model encourages students to think actively, discuss, and solve real-world problems relevant to daily life (S. Dewi et al., 2019; Ryanda & Khoiri, 2026). The combination of the two is expected to create a more meaningful and interactive learning experience, capable of optimally developing students' higher-order thinking skills.

## METHOD

This research adopts a Classroom Action Research (CAR) approach based on the cyclical model proposed by Kemmis and McTanggart (Arikunto, 2013). The selection of this method is based on its sustainability for the research objectives, namely to systematically and continuously improve the learning process and outcomes within the classroom. This model is considered reliable and valid as it enables the researcher to evaluate the adjusted actions directly based on data obtained from each cycle. Each cycle in this study comprises four interrelated stages: planning, implementation (acting), observation, and reflection.



**Figure 1** Stages of Classroom Action Research (CAR)

This diagram illustrates the four stages of Classroom Action Research (CAR) cycle developed by Kemmis & McTaggart, which forms the basis of this research methodology. In the planning stage, the researcher identifies learning problems and formulates an action plan involving the implementation of the PBL model supported by animated videos. The implementation stage involves putting this plan into practice during classroom learning activities. Observations are carried out concurrently with the implementation to monitor pupils' responses and the progress of the intervention. Furthermore, the reflection stage is conducted to assess the outcomes of the implemented action, identify existing limitations, and determine improvements for the subsequent cycle. This procedure is repeated until the predetermined indicators of research success are attained.

This research was implemented in Class IV.B of SD Negeri Jongkang, located in Sedan, Sari Harjo, Ngaglik, Sleman Regency, Special Region of Yogyakarta. The selection of this location was based on initial findings indicating issues in Pancasila Education, particularly the low level of students' critical thinking skills. The research was carried out from February to March 2026, with February used for initial observation activities to identify learning problems, whilst the action cycles were implemented in March. The research subject were all 28 pupils in Class IV.B for the 2025/2026 academic year, comprising 16 boys and 12 girls.

Data in this study were collected through three techniques. Observation was used to obtain data on the process of implementing the PBL model aided by animated videos by teachers during lessons, using essay-type test questions developed based on the six indicators of critical thinking according to the .. namely interpretation, analysis, evaluation, inference, explanation, and self regulation. Documentation was used as supporting data in the form of photographs, field notes, and learning documents to reinforce the data from observations and tests.

Data analysis was conducted using two techniques. Firstly, qualitative descriptive analysis was used to interpret the results of observations of the learning process. Secondly, quantitative descriptive analysis was used to measure improvements in pupils' critical thinking skills across the cycles. The research success indicator was set at minimum of 75% of pupils achieving the established Minimum Passing Grade, namely 75.

## RESULTS AND DISCUSSION

### Results

Prior to the study, preliminary observations and interviews with the classroom teacher revealed critical issues in the Pancasila Education learning process. The pre-cycle data indicated that students' critical thinking skills were considerably low. This deficit was characterized by a strong tendency among students to passively receive information without critical analysis, a noticeable hesitation or inability to express independent opinions, and profound difficulty in solving problems that required logical reasoning. To address these pedagogical gaps, a Classroom Action Research

(CAR) project was initiated by implementing the Problem Based Learning (PBL) model integrated with animated videos.

The instruction design was realized through a Detailed Lesson Plan (DLP), collaboratively developed by the researcher and the fourth grade teacher. Structured for two full cycles, each cycle comprised two sessions (2 x 35 minutes per session). The instructional content utilized the Pancasila Education textbook for Primary School under the Merdeka Curriculum, enhanced with Deep Learning principles. The operationalization of the PBL model strictly adhered to the established syntax, which includes (Irnawati et al., 2021): (a) orienting students to the authentic problem, (b) organizing students for targeted learning, (c) guiding individual or group investigations, and (d) developing and presenting the final product.

### Assesment of Students' Critical Thinking in Cycle I

The implementation of the first cycle generally followed the predetermined DLP; however, its execution fell short of its maximum potential. Several operational constraints emerged during the sessions. First, poor time management resulted in a discrepancy between the planned schedule and actual classroom activities. Second, because students were unaccustomed to a problem based learning environment, many remained passive and hesitant during collaborative group discussions. The quantitative reflection of students critical thinking skills at the end of Cycle I is detailed in table 1.

**Table 1** Results of the Critical Thinking Skills Test for Students in Cycle I

| No. | Description                 | Passed | Not Passed |
|-----|-----------------------------|--------|------------|
| 1.  | Number of students (N = 28) | 5      | 23         |
| 2.  | Percentage                  | 18%    | 82%        |
| 3.  | Average Value               | 64.4   |            |

An illustrated in table 1, student learning mastery in cycle I reached only 18% (5 out 28 student), yielding a class average 64.4. This outcome fell substantially below the predefined succes indicator of 75% mastery. Diagnostic reflections indicated that the low performance was tied to insufficient time for students to process the assesment tasks and a lack of structured scaffolding from the teacher. Consenquently, strategic adjustments were formulated for cycle II, focusing on optimizing time allocation, managing classroom dynamics more rigidly, and providing intensive, targeted guidance for less active students groups.

### Assesment of Students' Critical Thinking in Cycle II

Cycle II integrated coreective measures derived from the Cycle I reflections. The teacher systematically managed the transtition between PBL syntax steps to respect the time constraints, provided adequate periods for the final assessment, and cultivated a more conducive, low anxiety learning enviroentment.

Crucially, the animated videos served as an effective cognitive anchor, transforming abstract Pancasila concepts into relatable visual narratives that stimulated students inquiry. Thus modification resulted in a dramatic behavioral shift; the majority of students became highly engaged in peer dialogue, demonstrated sharper reasoninng, and proactively offered solutions during group investigations. The quantitative leap in critical thinking proficiency during this cycle is structued in table 2.

**Table 2** Results of Students' Critical Thinking Skills in Cycle II

| No. | Description                 | Passed | Not Passed |
|-----|-----------------------------|--------|------------|
| 1.  | Number of students (n = 28) | 21     | 8          |
| 2.  | Percentage                  | 75%    | 25%        |
| 3.  | Average Value               | 82.7   |            |

The data in table 2 indicates a major breakthrough, with the mastery percentage rising sharply to 75% (21 out of 28 students) and the class average expanding to 82.7. By meeting the exact 75% success threshold, the intervention successfully demonstrated that marrying the structured inquiry of Problem Based Learning with the sensory simulation of animated videos effectively mitigates cognitive passivity. Accordingly, the action research objectives were fulfilled, and the study was concluded without requiring a third cycle.

## **Discussion**

### **Theoretical Interrogation of Problem-Based Learning in Cultivating Critical Thinking Skills**

The empirical evidence generated from this two-cycle classroom action research demonstrates a profound and systematic shift in students' critical thinking skills within Pancasila Education. The quantitative leap moving from a baseline mastery of 18% in Cycle I to 75% in Cycle II, accompanied by a substantial shift in the class average from 64.4 to 82.7 cannot be viewed merely as a surface-level pedagogical success. Instead, this trajectory demands a rigorous, critical interrogation against the backdrop of contemporary instructional design theories and cognitive psychology.

The core mechanics of Problem-Based Learning (PBL) function as a catalyst for cognitive restructuring. In traditional, teacher-centered paradigms, knowledge acquisition in Pancasila Education is frequently reduced to rote memorization of civic duties and structural frameworks. This classic approach creates what cognitive theorists define as inert knowledge—information that is stored in the mind but cannot be mobilized for real-world problem-solving. By reversing this sequence and presenting students with an authentic, ill-structured problem at the absolute beginning of the instructional cycle, PBL disrupts this passivity.

This structural disruption directly explains the low baseline scores in Cycle I. When students were first integrated into the PBL environment, they experienced severe cognitive dissonance. This friction is highly consistent with Cognitive Load Theory (Surbakti et al., 2024), which posits that when learners accustomed to low-level retrieval are suddenly tasked with high-level analytical synthesis, their working memory faces an immediate overload. The passivity, hesitation, and poor time management documented in Cycle I were not behavioral failures; they were systemic expressions of students navigating a complex, unscaffolded epistemic environment.

However, as the teacher refined the scaffolding parameters in Cycle II optimizing transitions, explicitly defining collaborative boundaries, and pacing the inquiry stages the cognitive architecture of PBL began to bear fruit. This aligns with the foundational assertions of constructivism, particularly Vygotsky's Zone of Proximal Development (ZPD). The structured nature of the PBL syntax (Irnawati et al., 2021) acts as a collaborative scaffold that allows elementary school students to perform advanced cognitive operations such as evaluation, critique, and structural synthesis that they would otherwise be incapable of achieving individually.

Furthermore, the significant increase in critical thinking indicators observed in Cycle II validates the claim that problem-solving proficiency is deeply intertwined with context-dependent motivation. According to self-determination theory, human learners require three basic psychological needs to achieve deep intrinsic motivation: autonomy, competence, and relatedness (Ryan & Deci, 2000). The PBL model satisfies these needs by repositioning fourth-grade students from passive consumers of political theory to active civic investigators. By forcing students to confront real, contextual problems within the Merdeka Curriculum, the learning experience moves beyond textbook limits and enters the realm of lived experience.

This finding heavily reinforces the work of recent empirical studies in primary education. For instance, global syntheses on active learning paradigms (Ghani et al., 2021) demonstrate that when problem-solving protocols are consistently sustained across multiple action research cycles, the superficial barriers of student confusion dissolve, leaving behind highly resilient pathways of logical reasoning. The empirical reality of this study proves that fourth-grade students, despite their

early developmental stage, possess a latent capacity for complex analytical thought. However, this capacity can only be unlocked if the underlying pedagogical framework systematically rejects the banking model of education and instead commits entirely to a philosophy of structured, problem-based inquiry.

### **The Cognitive Dynamics of Animated Videos as Multimodal Instructional Scaffolding**

The second crucial dimension of this study's success lies in the strategic integration of animated videos as a supporting medium for the PBL model. Within the domain of primary education, particularly in subjects laden with abstract conceptual frameworks like Pancasila Education, the choice of instructional media determines whether a problem is genuinely understood or merely observed. The data shows that the introduction of dynamic animation transformed the classroom environment from a state of disengagement in Cycle I to high-intensity collaboration in Cycle II. To understand why this transformation occurred, we must interrogate the results through the lens of Mayer's Cognitive Theory of Multimedia Learning (Mayer, 2024; Mayer & Fiorella, 2022)

Mayer's framework posits that the human mind processes information through two separate channels: auditory and visual. When these channels are engaged simultaneously and harmoniously, the total capacity of working memory is expanded rather than overloaded. Static text and traditional lectures rely almost exclusively on the linguistic channel, forcing fourth-grade students to expend vast amounts of cognitive energy just to construct an internal mental image of abstract civic concepts, such as justice, human rights, or cultural diversity. Animated videos resolve this limitation by delivering a pre-structured, highly engaging dual-coding system. The visual movement of the animation provides immediate context, while the accompanying narration shapes the conceptual understanding.

This multi-sensory stimulation is particularly vital for learners in the concrete operational stage of cognitive development (Piaget's taxonomy). Students aged 9 to 10 require concrete anchors to grasp structural social relationships. Animated videos serve as a bridge between the concrete world and abstract sociopolitical realities. As demonstrated in recent empirical scholarship by (Utaminingsih & Kassymova, 2024), dynamic animation is systematically superior to static imagery when students are required to interpret and resolve complex, multi-layered real-life scenarios. The moving image captures and holds selective attention, which acts as the initial gatekeeper for all subsequent working memory processing.

Moreover, the integration of animated videos into the PBL framework creates a unique cognitive phenomenon known as situational interest, which rapidly evolves into sustained individual interest (Shao et al., 2024). In Cycle I, the videos were used but their potential was undermined by poor time allocation, leaving students insufficient time to process the media's deeper meanings. In Cycle II, when the video screening was carefully timed to align with the "orienting students to the problem" stage, the animation functioned as an immediate cognitive hook. The animated narrative presented a vivid moral or civic dilemma that students could see and feel, creating an urgent need for answers that drove the subsequent group investigations.

This dynamic addresses a critical gap identified in contemporary primary school media research. While scholars like (Ryanda & Khoiri, 2026) have established that animated media broadens student engagement, there has been a distinct lack of research exploring how such media directly reshapes critical thinking pathways during collaborative problem-solving. This study fills that gap by demonstrating that animation does not merely entertain; it structures the problem space. By presenting multi-dimensional civic challenges through relatable animated characters and scenarios, the media strips away irrelevant cognitive noise. This allows young learners to direct their limited cognitive resources toward the highest levels of Bloom's Taxonomy: analyzing systemic flaws, evaluating alternative solutions, and creating group products that represent authentic civic engagement.

### **Critical Synergies: Merging Inquiry and Multimodal Media in Civic Education**

The core scholarly contribution of this research does not lie in the individual virtues of the PBL model or the isolated benefits of digital animation. Rather, it resides in the critical synergy generated when these two pedagogical components are deliberately synthesized within the specific context of Pancasila Education. This synthesis represents a direct response to the instructional demands of the 21st century, which prioritize the 4Cs: Critical thinking, Creativity, Collaboration, and Communication (Labisig & Baluyos, 2023). The empirical reality of this study proves that when the structural rigor of PBL is paired with the vivid narrative power of animated videos, a unique learning ecology emerges one that is uniquely suited for elementary school civic development.

In the context of the Merdeka Curriculum, Pancasila Education is no longer treated as a collection of static doctrines to be memorized for standardized assessments. Instead, it is conceptualized as a living, breathing framework for ethical decision-making and democratic participation. This curricular shift requires a pedagogy that can transform abstract moral imperatives such as national unity (*Persatuan Indonesia*) or social justice (*Keadilan Sosial*) into practical, actionable dilemmas. The integration of PBL and animated videos achieves exactly this. The video acts as the initial medium of representation, translating complex societal issues into an accessible format. Once the problem is visualized and emotionally understood, the PBL syntax provides the collaborative engine needed to dissect, debate, and resolve that problem (Nurhalisa et al., 2025; Pradana et al., 2025; Ulya & Siswanto, 2024).

This dual layer approach systematically neutralizes the historical weaknesses of each separate method. When implemented in isolation, PBL can occasionally fail in primary classrooms because young students lack the foundational vocabulary or background knowledge needed to begin a self-directed investigation. This often leads to severe frustration and classroom management challenges. Conversely, when educational videos are used in isolation, they can easily degenerate into passive entertainment, where students sit back and absorb content without engaging in deeper intellectual processing. By marrying the two, this intervention uses the video to eliminate the initial barrier to inquiry, while using the strict accountability of the PBL steps (group work, product development, peer defense) to eliminate the risk of media-induced passivity.

This integrated approach is strongly validated by the latest literature on active learning dynamics in Southeast Asia. Recent studies by digital education researchers (Astuti et al., 2021; Barbara & Wahyu, 2021; Winata et al., 2026) indicate that the cross-fertilization of digital narratives with inquiry-based learning structures produces a highly significant increase in long-term concept retention and transfer of learning. When students reason their way through an animated problem, they are practicing the exact cognitive strategies required for active citizenship. They learn to separate bias from evidence, evaluate the ethical implications of different choices, and build consensus within a diverse peer group.

Consequently, the synergy documented in this study provides a highly replicable blueprint for modernizing primary school civics. It proves that the development of deep, analytical critical thinking skills is not an exclusive privilege reserved for older or more advanced academic cohorts. When supported by the right combination of structural scaffolding and multimodal representation, fourth-grade students can confidently step into the role of critical thinkers and active problem solvers.

### **Methodological Reflexivity and the Strategic Value of Cyclical Intervention**

A rigorous discussion of classroom action research must look past the final success metrics and critically analyze the cyclical evolutionary process that made those numbers possible. The operational core of CAR, as established by the Kemmis and McTaggart model, relies entirely on the quality of inter-cycle reflection. This research design assumes that the first attempt at a complex pedagogical intervention will inevitably reveal unexpected institutional and behavioral points of

friction. The value of this methodology lies in its ability to transform these operational failures into precise, data-driven adjustments for the next phase of action.

The transition from Cycle I to Cycle II in this study offers an excellent case study in methodological reflexivity. In Cycle I, the researcher and the classroom teacher maintained an overly idealistic expectation of student autonomy. They assumed that presenting an animated video and assigning a problem would naturally result in highly organized, democratic group discussions. The actual classroom reality, however, revealed significant behavioral hurdles: severe time inflation during the early stages of the PBL syntax left students with almost no time for the final testing phase, and a few dominant students hijacked the group discussions while less confident peers withdrew into silence. This exact phenomenon is thoroughly explored in modern action research literature (Al-Gaseem & Khasawneh, 2022), which warns that unguided inquiry in the primary grades almost always replicates existing classroom hierarchies and increases cognitive frustration.

The adjustments made in Cycle II represent a highly sophisticated shift from unguided inquiry to heavily scaffolded, structured inquiry. The teacher did not alter the core curriculum or change the underlying model; instead, they re-engineered the operational environment. First, the teacher introduced rigid, transparent visual timers for each stage of the PBL syntax, eliminating the problem of time drift. Second, the teacher abandoned the role of a detached observer and actively assumed the position of an epistemic guide moving from group to group, prompting quieter students with targeted questions, and breaking down complex problem tasks into manageable cognitive steps. Third, the classroom layout was physically optimized to minimize acoustic distraction and maximize cooperative proximity.

These tactical adjustments directly caused the dramatic statistical turnaround seen in Table 2. This operational evolution confirms a fundamental principle championed by modern educational systems researchers (Wuryandani & Herwin, 2021): the effectiveness of an innovative learning model is entirely dependent on the quality of its contextual execution. A learning model is not a rigid, plug-and-play script; it is a dynamic pedagogical ecosystem that must be continually tuned to the specific psychological and behavioral needs of the classroom.

By documenting the precise failures of Cycle I and explicitly matching them with the structural solutions of Cycle II, this study transcends the level of a simple classroom report. It stands as an empirical defense of cyclical action research as a premier tool for professional teacher development and systemic classroom optimization.

## CONCLUSION

Based on the empirical evidence and rigorous action cycles, this study concludes that the strategic synthesis of the Problem-Based Learning (PBL) model and dynamic animated videos significantly and effectively enhances the critical thinking skills of fourth-grade students in Pancasila Education. This is quantitatively verified by the dramatic trajectory of learning mastery, which surged from a baseline of 18% in Cycle I to 75% in Cycle II, alongside a substantial increase in the class average score from 64.4 to 82.7.

Beyond these expected metrics, a vital and unexpected finding emerged regarding student behavioral dynamics: the initial implementation of PBL in Cycle I caused an immediate wave of cognitive friction and passivity due to students' unfamiliarity with open-ended problem-solving. However, once animated videos were precisely timed to act as an immediate cognitive anchor during the problem-orientation stage in Cycle II, they did not merely engage student attention; they systematically lowered the students' cognitive load. This allowed young learners to rapidly transition from passive media viewers into analytical, highly collaborative problem solvers who could successfully navigate complex civic dilemmas.

From a theoretical perspective, this study moves beyond mere descriptive reporting and offers a distinct contribution to primary civic education pedagogy. It firmly confirms foundational constructivist frameworks and multimedia learning theories, explicitly proving that fourth-grade



students possess a sophisticated, latent capacity for 21st-century critical thinking competencies when provided with structured scaffolding.

More importantly, this research offers a fresh perspective that challenges the traditional dependency on static, text-heavy instructional methods within Pancasila Education under the Merdeka Curriculum. Rather than treating civic values as abstract doctrines to be memorized, this study introduces a highly replicable pedagogical matrix showing how digital animation and structured inquiry can be merged. It proves that the accountability of the PBL syntax effectively neutralizes the risk of digital media becoming passive entertainment, while the visual narrative of the animation simultaneously prevents the frustration typically associated with unguided primary school inquiry.

Despite its success in meeting the 75% success threshold, several inherent limitations must be acknowledged. First, as a Classroom Action Research (CAR) project conducted within a single classroom (N = 28) at SD Negeri Jongkang, the sample size and localized geographic context restrict the immediate statistical generalization of the data to broader primary school populations. Second, the study focused primarily on short-term performance gains across two intervention cycles, leaving the long-term cognitive retention of these critical thinking pathways unexamined.

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