



Problem-based learning and *mind mapping*: their impact on students' conceptual understanding and creativity in history material

Muhammad Syaepudin*, Yuyun Elizabeth Patras, Mira Mirnawati

Pakuan University

Corresponding author: asepsupriadi34b1@gmail.com

Received 14 Maret 2026; First Revised 9 May 2026; Accepted 19 May 2026
First Available Online 1 June 2026; Publication Date 1 June 2026

Abstract

This research is motivated by the importance of mastering 21st century competencies, especially the conceptual understanding and creativity of elementary school students on historical material which is often considered abstract and difficult. This study aims to analyze the effectiveness of the problem - based learning model (PBL) with the help of the Mind Mapping strategy in improving students' conceptual understanding and creativity on the material of the Narrative Text of the History of Indonesian Independence. The research method used is a quasi-experimental design with a Non-equivalent Control Group Design . The research subjects consisted of 48 fifth-grade students of Muhammadiyah Bojonggede Elementary School which were divided into an experimental class (VA) and a control class (VB). Data were collected through conceptual understanding test instruments (pretest-posttest), creativity questionnaires, observation sheets, and student response journals. The results showed a significant increase in conceptual understanding in the experimental class with an N-Gain value of 0.56 (medium category), compared to the control class which only obtained 0.25 (low category). The t-test showed a significance value of $0.000 < 0.05$, which means there was a real difference in effectiveness. Furthermore, the experimental class's creativity competency averaged 85% (high category), surpassing the control class's score (74%). Students' responses to the learning implementation were very positive, with a percentage of 99.5%. It can be concluded that problem-based learning supported by the Mind Mapping strategy is effective in improving students' conceptual understanding and creativity in elementary schools.

Keywords: : Mind Mapping , Problem Based Learning, Concept Understanding, Creativity, History of Indonesian Independence.

INTRODUCTION

Primary education is the main foundation in developing students' knowledge and skills to face 21st-century competencies. (Muliastirini, 2020) One of the essential contents in elementary school is history learning, which plays a crucial role in building national awareness through understanding important events such as the Proclamation of Indonesian Independence (Arodani, 2025) The main goal is not simply to transfer information, but to train students' analytical skills regarding the meaning of the nation's struggle in shaping self-identity. History education at the elementary school level plays a strategic role in shaping the collective memory and national awareness of the younger generation (Nirwasita et al., 2026) (Patras et al., 2023) offers *Problem-Based Learning* contextualized with students'

culture. Students are facilitated to solve real problems originating from their cultural environment, so that learning becomes more relevant and contextual. Furthermore (Patras et al., 2025) stated that this learning challenges students to work in groups to find solutions to real problems, which in turn can increase students' curiosity, critical thinking, and analytical skills. Learning historical narrative texts, especially the material on the Proclamation of Indonesian Independence, is not merely a transfer of factual information, but an effort to instill an understanding of the meaning of struggle, national identity, and train students' critical analysis skills regarding past events. Learning historical narrative texts requires a paradigm shift from *rote learning* (memorization) methods to analytical constructivism (Rustiyani & Mardiana, 2025). History learning must be able to train students

to think like historians (*thinking historically*), namely the ability to question cause and effect, analyze the perspectives of figures, and draw the relevance of past values to the present context (Achmadin, 2022). If this process only stops at the factual aspects (who, when, where), then the potential of history to hone critical reasoning will be lost. (Setyawan et al., 2026). On the other hand, by practicing analytical skills regarding the meaning of struggle, students will automatically develop creative competencies in presenting their ideas and understanding, which ultimately forms an intelligent and characterful self-identity (Wibowo, 2026).

Then Patras et al., (2023) explained that teacher competence in differentiated learning encourages teachers to be creative in designing a variety of materials, activities, and assessments that suit the diverse learning needs of students. The transformation of history learning from mere memorization activities to analytical thinking processes requires the support of instructional strategies that are able to visualize students' ideas in a structured manner explained that teacher competence in differentiated learning encourages teachers to be creative in designing a variety of materials, activities, and assessments that suit the diverse learning needs of students. The transformation of history learning from mere memorization activities to analytical thinking processes requires the support of instructional strategies that are able to visualize students' ideas in a structured manner (Pengestu et al., 2026). Theoretically, when students are given space to map the causes and effects and roles of national figures through their own visual designs, they are not only deepening their conceptual understanding but also simultaneously activating their spatial and cognitive intelligence. This synergy ensures that the collective memory of the nation's struggle is more firmly embedded because it is built through an independent construction process, not simply a passive transmission of information from teacher to student. Furthermore, the integration of critical analysis skills and creativity in learning historical narrative texts is a concrete

manifestation of the profile of adaptive future learners (Syah et al., 2025). Furthermore, (Patras et al., 2022) developed a metal story model that integrates the CRT approach, local wisdom, and gamification. Through this model, students are encouraged to think creatively in linking Pancasila values with local cultural contexts and producing innovative learning products. Creativity that emerges in the form of presenting original ideas such as reformulating historical narratives into creative concept maps indicates that students have reached the highest level of understanding, namely the ability to recreate knowledge (*to create*) (Supriatna, 2023). By accustoming students to facing contextual problems rooted in the nation's history, elementary schools not only produce academically intelligent graduates, but also individuals who possess historical empathy and creative thinking acumen in finding solutions to contemporary problems. This balance is an absolute prerequisite in preparing a golden generation that possesses national integrity as well as competitive competence on the global stage (Hidayat, 2021).

However, in its implementation, history learning is often viewed as a static and boring discipline, which results in low quality learning outcomes in both cognitive and psychomotor aspects. The gap between ideal goals and classroom reality is clearly visible in the results of observations in grade V of Muhammadiyah Bojonggede Elementary School. Based on initial identification, the average understanding of historical narrative texts of students only reached a score of 60, which means it is still below the Learning Objective Completion Criteria (KKTP) of 70. This low understanding is exacerbated by the weak aspect of student creativity, which only reached 42.86%. The main problem is rooted in the dominance of conventional methods that are verbalistic and *teacher-centered*. Teachers tend to rely on lectures and textbook reading assignments without the support of visual media, so that students are trapped in a pattern of memorization without understanding the essence of why and how a historical event occurred. As a result, students

become passive, lack enthusiasm, and have difficulty expressing their understanding creatively.

To bridge these problems, a transformation of learning strategies is needed that can trigger active engagement and visualization of concepts (Mahbubah, 2026). *Problem-Based Learning* (PBL) emerged as a methodological solution that places authentic problems as the axis of learning, thereby encouraging students to think critically, collaborate, and conduct independent investigations (Azahary et al., 2026). The effectiveness of PBL will be even more optimal if integrated with the *Mind Mapping strategy* (Nopen, 2026). *Mind mapping* functions as a visual-graphic tool that helps the brain organize complex information hierarchically through the use of keywords, colors, and symbols (Hotimah & Ramadani, 2025). The synergy between PBL and *Mind Mapping* is expected to be able to transform abstract historical material into concrete and easy-to-understand concept maps, while providing space for students to be creative in constructing the flow of historical narratives.

Previous research has confirmed the potential of these two strategies that *Mind Mapping* significantly improves students' understanding of historical texts and creativity (Ummahiroh et al., 2026). The urgency of this research lies in the specific integration of PBL and *Mind Mapping strategies* on the History of Indonesian Independence material in Muhammadiyah elementary schools, which have their own student characteristics and local challenges. Based on this background, this study aims to analyze the implementation process, improving understanding of historical narratives, and developing students' creativity through the application of *Mind Mapping- assisted PBL strategies*. The results of this study are expected to provide theoretical contributions to innovative history learning models and provide practical references for teachers in creating a meaningful, interactive, and adaptive learning atmosphere in the digital era.

RESEARCH METHODS

This study used a quantitative, quasi-experimental design. The quantitative approach was chosen because this study aimed to measure changes in students' conceptual understanding before and after treatment and to compare learning outcomes between the experimental and control classes. The quasi-experimental method was used because the research subjects were members of naturally formed class groups; therefore, the researcher did not conduct complete individual randomization as in a true experiment. Quasi-experimental designs are commonly used in educational contexts because they allow researchers to test the effects of a treatment in a real classroom situation without disrupting the existing learning structure (Muhdar, 2025).

The research design used was a pre-posttest control group design. This design involved two groups: an experimental class and a control class. Both groups were given a pre-test to determine their initial conceptual understanding. The experimental class then received treatment in the form of history material using a Problem-Based Learning model with Mind Mapping, while the control class received discovery learning. After the treatment, both groups were given a post-test to determine improvements in students' conceptual understanding. The pre-post-test design with a control group allows researchers to compare changes in learning outcomes between the treatment and comparison groups (Abraham & Supriyati, 2022).

The research design is presented in the following table.

Table 1
Research Design

Group	Pretest	Treatment	Posttest
Class Control	O ₁	X ₁	O ₂
Class Experiment	O ₁	X ₂	O ₂

(Borg & Gall (1984) on (Gustina et al., 2024) Information:

O₁ : Pretest of conceptual understanding

O₂ : Posttest of conceptual understanding

X₁ : Discovery learning model

X₂: Problem-based learning model and Mind Mapping

The research was conducted in the even semester of the 2024/2025 academic year at an elementary school in Bojonggede District, Bogor Regency. The research subjects consisted of 48 fifth-grade students divided into two groups, namely the experimental class (24 students) and the control class (24 students). The selection of subjects was based on the existence of two study groups with similar problem characteristics related to low understanding of historical narrative texts and creativity. Both groups received material on historical narrative texts of the independence of the Republic of Indonesia, but with different interventions. The experimental class implemented the *Problem-Based Learning* (PBL) model integrated with the *Mind Mapping strategy*, while the control class implemented the conventional PBL model. The learning syntax in the experimental class includes: (1) Problem orientation through historical events; (2) Organizing students for learning; (3) Guidance on investigations by organizing information into *mind maps* using elements of keywords, branches, and colors; (4) Development and presentation of work results in the form of mind maps; and (5) Analysis and evaluation of the problem-solving process. As a conclusion, a *posttest* and a creativity questionnaire were administered.

The research instruments included a historical narrative text comprehension test, a creativity questionnaire, and an observation sheet. The research instruments were validated before being used in the study. Content validity was examined through expert assessment involving elementary education experts and experts. The experts reviewed the suitability of the conceptual understanding test items, the creativity questionnaire, and the learning implementation observation sheet based on the research objectives, indicators, language clarity, and relevance to the PBL-Mind Mapping learning syntax. Revisions were made based on expert suggestions to improve item clarity and indicator alignment. In addition, a limited trial was conducted with students with similar characteristics to the

research subjects to ensure that the instructions, items, and questionnaire statements were understandable to elementary school students. The test questions were designed to measure conceptual understanding indicators with 15 descriptive questions consisting of four indicators in the following table:

Table 2
Concept Understanding Assessment Tools

N o	Indicat or	Sub Indicators	Aspect
1	Apply	Using text information	Students are able to use data from text (characters, time, place) to systematically complete the <i>mind mapping framework</i> .
2	Analyze	Organizing and connecting	Students are able to describe cause-effect relationships (e.g.: the Rengasdengklok Incident and the Proclamation) and differentiate the roles of various figures in historical texts.
3	Evaluate	Providing assessment/criticism	Students are able to assess the relevance of the values of the heroes' struggles to the context of current life and check the accuracy of the sequence of historical events.
4	Create	Produce original work	Students are able to reformulate historical narratives in the form of creative mind maps or written works (poetry/slogans/new narratives) that reflect in-depth understanding.

Descriptive statistics are specifically used to describe the average score values of the variables studied.

Table 3
Concept Understanding Assessment Criteria

Score	Category
90-100	Very high
80-89	Tall
70-79	Currently
50-69	Bad
0-49	Very

The creativity questionnaire used a Likert scale to measure four main aspects: fluency, flexibility, originality, and elaboration. Before use, the test instrument underwent validity, reliability, difficulty level, and discrimination tests to ensure data quality. Meanwhile, observational data was used to illustrate the implementation of the PBL-Mind Mapping learning syntax.

The research data were analyzed quantitatively using descriptive and inferential analysis. Descriptive analysis was used to determine the average pretest and posttest scores, the percentage of learning implementation, and the percentage of creativity. Inferential analysis was used to determine the difference in conceptual understanding improvement between the experimental and control classes. Conceptual understanding improvement was analyzed using the Normalized Gain (N-Gain) formula. N-Gain analysis was used to determine the effectiveness of score improvement from pretest to posttest.

$$N - Gain = \frac{Posttest\ score - Pretest\ score}{Maximum\ score - Pretest\ score}$$

Table 4
N-Gain Score Categories

N-Gain Value	Category
$g > 0.70$	Tall
$0.30 < g < 0.70$	Currently
$g < 0.30$	Low

Sundayana (2020)

Next, the pretest and posttest data were analyzed using statistical tests in IBM SPSS Statistics 25. Before the difference test was conducted, the data were first tested for

normality and homogeneity. The normality test was used to assess whether the data were normally distributed, and the homogeneity test was used to assess whether the variances of the two groups were homogeneous. If the data met the assumptions of normality and homogeneity, the analysis continued with a t-test to determine the difference between the experimental and control classes. IBM provides an official citation format for the use of SPSS software in research, including SPSS Statistics version 25 (Ramdani et al., 2025). Creativity data were analyzed using percentages with the following formula:

$$Percentage = \frac{obtain\ score}{Maximum\ score} \times 100\%$$

The percentage results were then interpreted based on the category of students' creativity levels. The higher the percentage, the stronger the students' creativity after participating in PBL-Mind Mapping learning. The creativity questionnaire was tested using Cronbach's alpha. The reliability test showed that the questionnaire had acceptable internal consistency, indicating that the instrument was reliable for measuring students' creativity. Before conducting inferential statistical analysis, assumption testing was conducted. The intervention was carried out during several learning sessions on the topic of Narrative Text Material on the History of the Independence of the Republic of Indonesia. In the experimental class, learning activities followed PBL-Mind Mapping.

The normality test was used to assess whether the pretest, posttest, and N-Gain data were normally distributed, and the homogeneity test was used to determine whether the variance between the experimental and control groups was homogeneous. The results showed that the data met the assumptions of normality and homogeneity, so the analysis was continued using an independent sample t-test to compare the improvement in creative thinking skills between the experimental and control classes.

RESULT AND DISCUSSION

Result

3.1 Implementation of PBL-Mind Mapping

The implementation of the Problem-Based Learning (PBL) model combined with the *mind mapping strategy* on the narrative text of the history of the proclamation has been carried out very well and achieved a 100% implementation percentage. This success is evident in the consistent fulfillment of all 17 observation aspects, covering the introduction, core, and closing activities in each meeting. In the process, the teacher began the lesson by presenting an educational video and triggering questions as contextual stimuli to spark curiosity and help students identify historical facts in depth. This approach has proven effective in changing students' perceptions of history, which was initially considered mere memorization, into a series of meaningful events relevant to the values of everyday life. (Arista et al., 2023). Furthermore, the use of *mind mapping strategies* plays a crucial role in helping students organize complex information about the dynamics of independence, including analyzing the cause-and-effect relationships and conflicts between the younger and older generations. Through heterogeneous grouping and teacher guidance, students are able to organize main ideas into systematic visual branches, making the material easier to understand and remember. This collaborative activity not only improves problem-solving skills and creativity but also provides a space for students to present their work and reflect critically and logically on the values of the nation's struggle (Mona et al., 2023). The implementation is explained in Table 5.

Table 5
Implementation of PBL-Mind Mapping

No	PBL-Mind Mapping Syntax	Learning Activities	Implementation
1	Student orientation to problems	Material and Discussion Presenting problems through videos and Mind Mapping strategies related to the anatomy of historical narrative texts. Give students the opportunity to ask questions regarding the video being shown.	100%
2	Organizing students for learning	Group Organization Divide students into heterogeneous groups. Agree on the time for completing the Student Worksheet (LKPD).	100%
3	Guiding individual or group investigations	Investigation Guiding students (individuals/groups) in completing LKPD related to understanding historical narrative texts. Encourage students to be active in group discussions.	100%
4	Develop and present work results	Presentation Develop and evaluate problem solving through presentations.	100%
5	Analyze and evaluate the problem solving process	Evaluation and Reflection Each group provides feedback on the presentations of other groups. The teacher provides reinforcement of the presentation results. The teacher concludes the lesson.	100%

In the next stage, students were organized into heterogeneous groups to solve problems using a *mind mapping strategy*, supported by the teacher as a communicative facilitator. By providing provocative questions and positive responses, the teacher successfully created a supportive learning atmosphere, encouraging students to explore and analyze the historical dynamics of the proclamation critically and systematically. This investigative process not only honed contextual problem-solving skills but also guided students to understand the cause-and-effect relationships of historical events in depth, rather than simply focusing on the final outcome (Elita et al., 2026).

Next, students integrate their understanding and creativity by composing and presenting original works, such as narrative writing, poetry, or drawings that reflect the values of the struggle. The learning series concludes with a collaborative evaluation and comprehensive reflection to connect the meaning of independence to everyday life and plan for future improvements. With a 100% implementation rate, the implementation of this *mind mapping-based PBL model* has proven effective in creating active, meaningful learning experiences and significantly enhancing student creativity (Saputri et al., 2025).

3.2 Improving Concept Understanding

Problem-based learning (PBL) with the *Mind Mapping strategy* on the narrative text material of the history of Indonesian independence in grade V showed very effective implementation. All stages of learning, starting from the preparation of teaching modules oriented to the Independent Curriculum to the evaluation stage, were fully implemented with a percentage of 100% based on observer observations. The teacher succeeded in creating a supportive and conducive classroom atmosphere through differentiated methods, students were actively involved in exploring the process of Indonesian independence through video shows, group discussions, and the preparation of mind maps (Putri et al., 2025). Student activities that reached the excellent category

proved that the integration of contextual problems with visual strategies was able to create a fun and meaningful learning experience for elementary school students (Agustina & Efendi, 2025).

The success of this process significantly impacted students' conceptual understanding. Based on quantitative data, the experimental class began the study with an average *pretest score* of 62 and increased substantially to 81 in the *posttest*. The *N-Gain test results* confirmed that the experimental class achieved a score of 0.56 (medium category), significantly higher than the control class, which only achieved 0.25 (low category). The experimental class's dominance was evident across all competency indicators, from the ability to apply to create, all of which were in the moderate improvement category. In contrast, the control class using the *Discovery Learning model* tended to stagnate, particularly in the evaluation and creation indicators. This was reinforced by the t-test results, which showed a significance value of 0.000, thus concluding that the implementation of the *Mind Mapping strategy* in the PBL model was significantly more effective in improving conceptual understanding than conventional methods (Yuniar & Hadi, 2023).

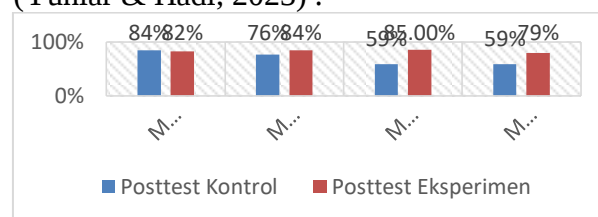


Figure 1
Percentage of Learning Outcomes for Each Concept Understanding Indicator

Based on the results of the analysis of learning outcomes on conceptual understanding in learning historical narrative texts, the average results for the conceptual understanding indicator for the control class were 25% and the experimental class 56%. *N-gain* for both classes when compared between pretest and posttest scores, the experimental class was in the medium criteria. In the control class it was in the low category. It was seen that students had appeared to generate

many ideas within the agreed time. Both the control and experimental classes were actively involved in conveying ideas both verbally and in writing during the learning process and in the final test. The effectiveness of the use of problem-based learning with *mind mapping strategies* on the material of the historical narrative text of the independence of the Republic of Indonesia in the experimental class was quite effective with an n-gain percentage of 56%. On the other hand, the control class that used learning with the *discovery learning model* obtained an n-gain percentage of 25% with a category that is less effective. The experimental class was better at 31% for the n-gain percentage obtained. Thus, it can be concluded that, the class that used problem-based learning with *mind mapping strategies* on the material of the historical narrative text of the independence of the Republic of Indonesia was more effective than the class that used the *discovery learning model*. During the learning process, students are able to generate alternative answers or solutions to the problems presented. After obtaining pretest and posttest data, prerequisite tests are conducted before hypothesis testing. The requirements for the t-test are normality and homogeneity.

Hypothesis Testing

Normality Test and Homogeneity Test

Before conducting an inferential test, a normality test was carried out to check the normal distribution of data, as well as a homogeneity test which aims to confirm that the level of diversity (variance) among the samples used is the same.

Table 6
Normality and Homogeneity Test

Class	N	Test Normality		Test Homogeneity	
		Sig.	Note:	Sig.	Note:
Control	24	0.194	Normal	0.322	Homogeneous
Experiment	24	0.203	Normal		

The statistical prerequisites have been met: the data of both classes are normally distributed (Significance of control 0.194, experiment 0.203 > 0.05), and the

homogeneity of data variance is also confirmed (Significance 0.751 > 0.05).

T-test

Hypothesis testing provides answers to research questions.

Table 7
T-test Results

Class	N	Hypothesis Testing	
		Sig .	Vali Note
Control	24	0,000	Significant
Experiment	24		

The results of the *t-test* (*paired samples test*) showed a significant effect on students' conceptual understanding in both classes (control and experimental). A significance value of 0.000 (<0.05) clearly proves that there is a difference in the mean before and after the treatment.

N-Gain Test

The N-Gain test is used to measure the extent to which students' scores improve between the pretest and posttest conditions. The *N-Gain value* indicates that students have a better ability to understand or master concepts after receiving appropriate instruction.

Table 8
Test Results N-Gain of Student Understanding

Class	Statistical Parameter	N	Mark		N-Gain	% Category
			Pretest	Posttt		
Control	Average	24	60	70	0.25	25 Low
Experiment	Average	24	62	81	0.56	56 Currently

The data proves the effectiveness of the PBL- *Mind Mapping treatment* in the experimental class, which shows an increase in *pretest scores* (62) to *posttest* (81) with an average N-Gain of 0.56 (medium category). In contrast, the control class which started with a higher initial score (60) and ended at 70, only achieved an average N-Gain of 0.25 (low category).

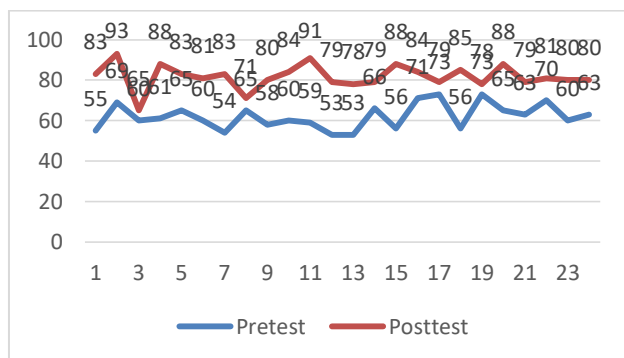


Figure 2

Improved Concept Understanding

the *PBL-Mind Mapping* model was confirmed by a very significant increase in the average conceptual understanding score in the experimental class, from 62 to 81.

3.3 Student Creativity Competence After Learning

Measuring students' creativity competencies is one of the main focuses of this study to see the impact of implementing problem-based learning with a *mind mapping strategy*. Based on the results of the questionnaire data analysis, there was a significant difference in percentage between the control class and the experimental class. Overall, the experimental class obtained an average percentage of 85%, 11% higher than the control class which reached 74%. The superiority of the experimental class was reflected in all elements of creativity tested, with the highest achievement in the aspect of flexibility of ideas at 89% and fluency of ideas at 88%. This shows that the use of visual concept maps in solving historical problems allows students to generate ideas quickly, diversely, and are able to see the Proclamation event from various different perspectives.

In addition, the aspects of originality and contextual appropriateness in the experimental class also showed high figures, at 88% and 87%, respectively. This data indicates that students in the experimental class did not simply memorize historical facts, but were able to reinterpret the information

into original works that remained chronologically accurate. The *mind mapping strategy* provided space for students to connect characters, time, and events logically, so that the resulting narrative was more structured. Although in terms of clarity of delivery the difference between the two classes was not too large (75% compared to 70%), overall this learning model proved effective in improving students' creative thinking skills and communication abilities in historical narrative text material.

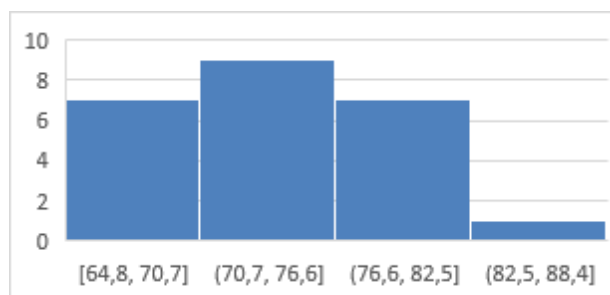


Figure 3

Student Creativity Competence After Learning

3.4 Student Responses to Learning Implementation

Analysis of student responses showed very positive results regarding the implementation of problem-based learning assisted by *mind mapping strategies*. Based on the recapitulation of questionnaires distributed after four meetings, student responses reached a cumulative percentage of 99.5%, which falls into the very positive criteria. As many as 96% of students stated that the teacher always presented learning that was in accordance with their interests and needs, and actively involved them in group discussions. Students felt that the examples given were very close to their daily environment, so that the complex material of the history of independence became easier to understand and more meaningful.

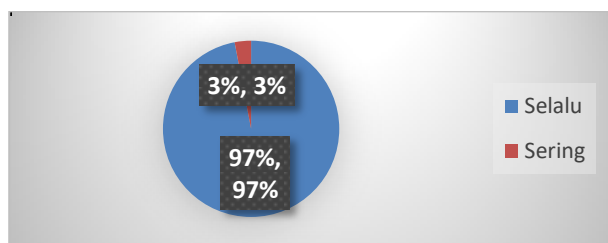


Figure 4

Diagram of Student Response Results to Learning Implementation

This positive impact is further reinforced by notes in students' daily journals that indicate increased self-confidence and adaptability. Through teacher guidance, students learn to be flexible in collaborating, open to differing opinions, and creative in addressing technical obstacles during project work. In line with the findings of Sigalingging et al., (2026) , this learning model has been shown to improve logical reasoning and 21st-century competencies through contextual engagement. Thus, the integration of *mind mapping* in problem-based learning not only improves cognitive understanding of concepts but also builds students' character to be active, collaborative, and appreciative of the values of the heroes' struggles.

Discussion

The results of the study showed that the implementation of the problem - based learning model (PBL) with the *Mind Mapping strategy* had a significant positive impact on students' conceptual understanding and creativity in the narrative text material on the history of Indonesian independence. The superiority of the experimental class compared to the control class was clearly seen from the *N-Gain achievement*. conceptual understanding (0.56 vs. 0.25) and average creativity competency (85% vs. 74%). This phenomenon proves that combining problem solving with idea visualization can convert rote historical material into active and contextual learning. The increase in

conceptual understanding in the experimental class is theoretically driven by the ability of the *Mind Mapping strategy* to organize complex information. In line with Buzan's (2018) view , *Mind Mapping* works in accordance with the brain's natural way of working, namely through associative thinking and idea radiation. In historical narrative texts full of figures, dates, and locations, this strategy helps students map causal relationships between events visually. This is supported by research by Nurhasanah et al. (2025) which states that the strategy of implementing mind maps significantly improves students' understanding of explanatory and narrative texts because it facilitates the storage of information in long-term memory.

However, some experts have criticized this strategy. Sweller (1988) , through *Cognitive Load Theory*, provides a counter-perspective that needs to be considered. He argues that if the mind map structure is too complex for elementary school students, it can actually cause excessive cognitive load (*cognitive overload*) that hinders understanding. However, in this study, this risk was successfully mitigated by the teacher's role as a facilitator who provided gradual guidance (scaffolding), so that students were still able to analyze historical information without feeling burdened. The experimental class's superiority in the element of creativity, especially in the aspects of *flexibility* (89%) and *fluency* (88%), indicates that the PBL model provides space for students to think outside the box. Uznurhadi (2024) supports this finding by stating that the problem-based model encourages flexibility and originality, which are crucial components of 21st-century competencies. In the context of the Rengasdengklok incident, for example, students were invited to analyze the conflict between the older and younger groups, which

forced them to come up with various alternative solutions and perspectives.

On the other hand, experts who are skeptical of PBL, such as Tesalonika (2025), argue that *unguided* discovery or problem-based learning is often less effective for novice *learners*. They argue that direct instruction is more efficient in instilling basic concepts. However, this study data refutes these concerns; the results of student responses reaching 99.5% prove that with fun directions and the use of appropriate media, elementary school students are actually more motivated to learn through discovery problems than simply listening to one-way lectures. The integration of PBL and *Mind Mapping* creates a synergy where PBL acts as a framework for practicing logical reasoning and *problem-solving skills*, while *Mind Mapping* serves as a tool for expressing these thoughts creatively (Budiwaluyo & Muhid, 2021). The very positive response from students shows that this learning has succeeded in eliminating the stigma that Indonesian language history subjects are boring (Purnomo et al., 2024). Overall, these findings confirm that to simultaneously enhance cognitive competence and creativity, teachers must shift from traditional models toward pedagogies that give students autonomy to construct their own knowledge visually and collaboratively.

The application of *Mind Mapping* in the PBL model is also in line with Vygotsky's social constructivism theory, which emphasizes the importance of social interaction and cognitive tools in intellectual development. In this study, *mind maps* function as a *scaffold* or cognitive support that helps students reach *the Zone of Proximal Development* (ZPD), namely the area where students can solve complex historical problems with the help of visuals and group discussions (Siska et al., 2026). Through collaboration when compiling mind maps, a

process of negotiation of meaning occurs between students, so that understanding of the narrative of the history of independence is no longer individualistic but rather the result of a more meaningful joint construction (Ariyani & Harimurti, 2018).

In addition, Gardner Through the theory of *Multiple Intelligences*, it is emphasized that each individual has different intelligence tendencies, including spatial-visual intelligence (Syarifah, 2019). *The Mind Mapping strategy* in PBL accommodates this diversity by providing opportunities for students who have visual strengths to process historical information through colors, symbols, and images, not just linear text. The success of the experimental class in achieving an average creativity of 85% proves that when the learning environment facilitates various dimensions of intelligence, students tend to be more enthusiastic and able to demonstrate creative performance that far exceeds conventional teaching methods that tend to only focus on linguistic intelligence.

On the other hand, it is important to consider Dewey's perspective. regarding progressive education, which emphasizes that learning must be rooted in real-life experiences (Joanne & Situmorang, 2025). Dewey argued that education is not merely preparation for life, but life itself. In this context, *Mind Mapping -assisted PBL* provides students with a real-life experience to relive the historical drama of Indonesian independence through problem-solving. Despite criticism from adherents of direct instruction regarding time efficiency, Dewey's view reminds us that the deep understanding gained through active exploration and independent visualization has a far more lasting pedagogical value and impact on student character formation than simply the efficiency of material delivery.

CONCLUSION

This study shows that the implementation of the Problem-Based Learning (PBL) model with the *Mind Mapping strategy* achieved optimal success. This is evident from the activities of teachers and students who achieved a 100% implementation percentage, and received high appreciation from *observers* for the implementation of the learning process which was considered straightforward, supportive, and accommodating to the diversity of student needs. The success of the implementation is directly correlated with the results of the study, students' conceptual understanding increased significantly as evidenced by the *N-Gain test* of the experimental class of 0.56 (moderate category), significantly outperforming the control class. In addition, students' creativity competency reached an average achievement of 85% with the main advantage in the aspect of flexibility of ideas. The results of the student response questionnaire reached 99.5% which is in the very positive category. These findings present an ideal pedagogical model, where the integration of visual strategies (*mind mapping*) effectively strengthens the advantages of the problem-based method, resulting in not only better academic achievement but also active engagement and high creativity. This model successfully facilitates students to actively explore historical events contextually and meaningfully through the systematic organization of ideas. This learning model has great potential for implementation in various core materials in Indonesian and other subjects, with the key caveat being adapting to the characteristics of similar materials. This research has limitations, namely its focus on the sub-material of historical narrative texts at the elementary school level. Overall, this research is highly relevant to the world of education because its results can provide an

alternative solution for educators in balancing academic abilities (conceptual understanding) with 21st-century competencies, particularly student creativity.

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