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Effect of the guided inquiry model on students' creative thinking skills

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ABSTRACT

Creative thinking has become a fundamental competency for 21st-century learners and needs to be cultivated through meaningful classroom practices. This study analyzes the impact of the guided inquiry learning model, applied through a case study, on the creative thinking abilities of eighth-grade students at SMP Negeri 1 Pakis. The research employed a quasi-experimental design with a non-equivalent control group, with class VIII D (34 students) as the experimental group and class VIII B (34 students) as the control group. Data were obtained from essay tests on creative thinking administered before and after learning, complemented by observation sheets and documentation. The data analysis included descriptive statistics, normality and homogeneity tests, paired-samples t-tests, and independent-samples t-tests. The findings revealed that although both groups started with comparable initial abilities, students in the experimental group demonstrated significantly greater improvement after treatment, especially in fluency, flexibility, originality, and elaboration. These results suggest that guided inquiry learning is effective in enhancing creative thinking and can be implemented as an alternative strategy to promote higher-order thinking in Civics Education.

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ABSTRAK

Kemampuan berpikir kreatif merupakan kompetensi penting abad ke-21 yang perlu ditumbuhkan melalui pembelajaran yang bermakna di sekolah. Penelitian ini bertujuan untuk menganalisis pengaruh model pembelajaran inkuiri terbimbing dengan pendekatan studi kasus terhadap kemampuan berpikir kreatif murid kelas VIII SMP Negeri 1 Pakis. Penelitian ini menggunakan metode kuasi-eksperimen dengan desain non-equivalent control group, melibatkan kelas VIII D (34 murid) sebagai kelompok eksperimen dan kelas VIII B (34 murid) sebagai kelompok kontrol. Data penelitian diperoleh melalui tes esai berpikir kreatif yang diberikan sebelum dan setelah pembelajaran, serta diperkuat dengan lembar observasi dan dokumentasi. Analisis data dilakukan menggunakan statistik deskriptif, uji normalitas, uji homogenitas, uji t berpasangan, dan uji t independen. Hasil penelitian menunjukkan bahwa meskipun kedua kelompok memiliki kemampuan awal yang relatif seimbang, peningkatan yang lebih signifikan ditunjukkan oleh kelompok eksperimen setelah perlakuan, terutama pada aspek kelancaran, keluwesan, orisinalitas, dan elaborasi. Temuan ini membuktikan bahwa model pembelajaran inkuiri terbimbing efektif dalam mengembangkan kemampuan berpikir kreatif dan dapat dijadikan strategi alternatif untuk menumbuhkan keterampilan berpikir tingkat tinggi dalam pembelajaran PPKn.

***Kata Kunci**: berpikir kreatif; inkuiri terbimbing; model pembelajaran; Pendidikan Pancasila dan Kewarganegaraan*

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INTRODUCTION

Education in Indonesia continues to face significant challenges in preparing young generations who are adaptive, competitive, and globally competent. As science and technology advance rapidly, schools are increasingly expected to implement student-centered learning strategies that equip learners with essential 21st-century skills, namely critical thinking, creative thinking, communication, and collaboration (Purwanto *et al*., 2023; Syahriani & Yufriadi, 2023). Despite these expectations, preliminary observations indicate that classroom practices at SMP Negeri 1 Pakis remain teacher-centered, with an emphasis on memorization for short-term purposes. This condition limits students' opportunities to develop higher-order thinking, particularly creative thinking. National studies further confirm this concern by indicating that students' creative thinking skills remain underdeveloped across many Indonesian schools (Pratama *et al*., 2025).

Creative thinking is a foundational ability that enables students to understand concepts, solve authentic problems, and generate innovative and original ideas (Aflah *et al*., 2023; Nilimaa, 2023). One approach considered effective for addressing this challenge is the inquiry learning model, particularly the guided inquiry type (Santoso & Widodo, 2023; Sun *et al*., 2022). This model provides students with opportunities to explore and investigate while still receiving structured guidance from the teacher, thereby creating active, contextual, and systematic learning experiences. Furthermore, students are trained to collaborate, think critically, solve problems, and process information more effectively, which in turn encourages creative and independent learning (Gericke *et al*., 2023; Sarifah & Nurita, 2023).

Previous studies consistently demonstrate that guided inquiry learning enhances students' creative thinking and conceptual understanding across various disciplines. Improvements in students' conceptual understanding and creative thinking have been identified in Civics Education, particularly through active knowledge construction through exploration and inquiry (Biringan *et al*., 2025). Similarly, guided inquiry has been shown to improve students' ability to search for information and solve problems systematically, thereby fostering creative thinking in mathematics learning contexts (Lethulur *et al*., 2025). Furthermore, guided inquiry learning has been found to strengthen students' mathematical representation skills by encouraging them to express ideas in various forms, such as symbols, diagrams, and verbal explanations (Istikomah *et al*., 2022).

In addition, guided inquiry is considered more effective than conventional or non-inquiry approaches in fostering creative thinking, as it actively engages students in problem-solving processes and critical exploration of concepts (Istiana *et al*., 2023). The integration of guided inquiry with strategies such as mind mapping has also been shown to support students' conceptual mastery and enhance their creative abilities, particularly by helping them organize and connect ideas more systematically (Shi *et al*., 2023). Moreover, the role of guided inquiry in developing creativity has also been emphasized at the elementary school level, where students are encouraged to explore ideas more freely and develop original thinking patterns from an early age (Wahyuni & Witaras, 2023). However, most of these studies have focused primarily on science and mathematics contexts, leaving a significant gap in the application of guided inquiry in Civics Education, particularly at the junior high school level.

This study offers a novel contribution by integrating the guided inquiry learning model with the case study method in Civics Education. This context has received limited attention in prior research, particularly in relation to the development of creative thinking skills. The theme of National Identity and Culture is selected as the focus because it integrates cultural values as both markers of identity and unifying elements of the nation, while remaining relevant to contemporary challenges posed by globalization. By situating guided inquiry within a humanities-oriented discipline, this study addresses an underexplored area in the existing literature. Based on the identified gap, this study addresses the influence of the guided inquiry learning model on students' creative thinking skills in Civics Education. This study aims to examine

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the effect of the guided inquiry learning model on the creative thinking skills of eighth-grade students at SMP Negeri 1 Pakis. It is expected that the findings will contribute theoretically by enriching the discourse on inquiry-based learning in social studies education and practically by providing an evidence-based instructional model aligned with the demands of 21st-century education.

LITERATURE REVIEW

Constructivism Theory and Inquiry Learning Model

The inquiry learning model is rooted in constructivist theory, which emphasizes students' active involvement in constructing knowledge through experience and interaction. Knowledge is not merely transferred from teacher to students but is actively constructed through individual cognitive processes. This perspective highlights that learning becomes more meaningful when students are directly engaged in exploring, questioning, and reflecting on the material they encounter. Through such processes, students are encouraged to connect new information with prior knowledge, thereby fostering deeper conceptual understanding (Al Abri *et al*., 2024; Mishra, 2023; Rahayu & Yuliana, 2025). In this approach, the teacher serves as a facilitator, providing learning tools, posing guiding questions, and directing students to construct knowledge systematically. Rather than serving as the sole source of information, the teacher creates a learning environment that supports inquiry, exploration, and discussion. This principle aligns with the inquiry model, which positions students at the center of learning and emphasizes cognitive processes rather than merely learning outcomes.

As a result, students are not only expected to understand concepts but also to develop the ability to investigate problems, analyze information, and draw conclusions independently (Guo *et al*., 2021; Yao, 2023; Zhang & Zhang, 2024). Recent studies further confirm that guided inquiry contributes positively to the development of higher-order thinking skills. The implementation of guided inquiry has been shown to enhance students' critical thinking and collaboration skills, reflecting the relevance of constructivist principles in contemporary learning practices (Sarifah & Nurita, 2023). In addition, the structured guidance provided in this model helps students navigate complex learning tasks without limiting their autonomy, allowing them to gradually build confidence in their own thinking processes (Paethrangsi *et al*., 2024). Therefore, guided inquiry serves as an effective bridge between theoretical constructivist principles and practical classroom implementation, particularly in fostering active, reflective, and meaningful learning experiences (Kotsis, 2024).

Guided Inquiry Learning Model

The guided inquiry model is a form of inquiry-based learning that positions students as active participants while teachers serve as facilitators to ensure the investigation remains structured. In this model, the teacher formulates problems and provides guiding questions, while students are encouraged to design procedures and conduct investigations independently (Hikmah *et al*., 2023). This balance between guidance and independence enables students to explore concepts more systematically while still developing their own understanding. The implementation of guided inquiry has been widely recognized as effective in improving learning quality across various subjects. The inquiry model is more effective than mind mapping in enhancing students' creative thinking, particularly at the elementary school level (Kristiyan *et al*., 2023). In addition, integrating guided inquiry with digital learning tools, such as PhET simulations, has been shown to improve students' problem-solving skills in science learning at the junior high school level (Santoso & Widodo, 2023). These findings indicate that guided inquiry not only strengthens higher-order thinking skills but also promotes more interactive and engaging learning environments.

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Creative Thinking Skills

Creative thinking is considered one of the essential higher-order thinking skills that students need to develop in the 21st century. It is defined as a cognitive process that enables individuals to solve problems by utilizing imagination, insight, and novel ideas (Utari & Gustiningsi, 2021; Zaiyar & Rusmar, 2020). Creative thinking can be identified through several key indicators, including fluency, flexibility, originality, and elaboration, which reflect an individual's ability to generate, develop, and refine ideas systematically (Nurakenova & Nagymzhanova, 2024; Suyundikova *et al*., 2021). Recent studies highlight the importance of innovative learning strategies in fostering students' creative thinking. The application of guided inquiry has been shown to improve students' creative thinking through active engagement in the learning process (Wahyuni & Witaras, 2023). Furthermore, guided inquiry has also been found to significantly enhance students' critical thinking skills, which serve as a foundation for the development of creative thinking (Salsabila *et al*., 2025). These findings suggest that creative thinking is not only relevant in science-related disciplines but also essential in social sciences and humanities, including Civics Education.

The Relationship between Guided Inquiry and Creative Thinking Skills

The application of guided inquiry is particularly effective in fostering students' creative thinking skills. This approach encourages learners to actively explore, formulate hypotheses, and develop solutions through investigation and data interpretation, thereby promoting deeper, more creative thinking. Inquiry-based learning provides opportunities for students to function as problem solvers and knowledge discoverers, enabling them to generate and evaluate various alternative solutions (Marianingsih, 2025; Revenko *et al*., 2024). Empirical evidence further supports this relationship, indicating that guided inquiry is more effective than conventional approaches in developing critical thinking skills, which form a strong foundation for creative thinking (Istiana *et al*., 2023). Therefore, guided inquiry can be an appropriate strategy to enhance students' creative thinking skills in Civics Education, particularly in the topic of National Identity and Culture.

METHODS

This study employed a quasi-experimental design with a non-equivalent control group. According to Sugiyono in "*Metode Penelitian Kuantitatif, Kualitatif, dan R&D*", this design allows researchers to assign participants into groups without random selection. This approach is considered appropriate for educational settings where intact classroom groups cannot be randomly reassigned. The research was conducted at SMP Negeri 1 Pakis during the second semester of the academic year. The participants were two intact eighth-grade classes. One class was designated as the experimental group (class VIII D, consisting of 34 students), receiving guided inquiry learning combined with the case study method, while the other class served as the control group (class VIII B, consisting of 34 students), receiving cooperative learning with the example non-example technique.

The selection of both groups was carried out through purposive non-random sampling. Despite the absence of random assignment, the initial academic abilities of students in both groups were examined and found to be relatively equivalent, indicating a comparable baseline prior to the intervention. The primary instrument used in this study was an essay test designed to assess students' creative thinking skills based on four indicators: fluency, flexibility, originality, and elaboration. The instrument was administered before and after the intervention using equivalent forms to minimize testing bias. The validity analysis indicated that all test items met the required criteria, and the reliability testing showed that the instrument demonstrated acceptable consistency, confirming its suitability for measuring students' creative

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thinking skills. In addition, observation sheets based on the guided inquiry learning syntax were used to capture classroom activities. This was supported by documentation that enriched and validated the data.

The research procedure consisted of three main stages. In the initial stage, both groups were given a pre-test to determine their baseline creative thinking abilities, and all instructional materials and instruments were prepared. During the implementation stage, the experimental group engaged in guided inquiry learning integrated with the case study method, following a structured inquiry framework. In contrast, the control group received cooperative learning using the example-non-example technique within the same instructional timeframe. In the final stage, both groups completed a post-test using equivalent questions to measure changes in their creative thinking skills. Observational data and documentation were also collected during this stage to support the overall findings.

Table 1. Categories of Creative Thinking

Achievement Percentage (%)	Category of Creative Thinking Level
81-100	Very Creative
61-80	Creative
41-60	Fairly Creative
21-40	Less Creative
0-20	Very Less Creative

Source: Suryani et al. (2020)

All data were analyzed using statistical software. The analysis began with descriptive statistics to provide an overview of students' performance before and after the intervention. Prerequisite tests were then conducted to ensure that the data met the assumptions required for further analysis. Differences within each group were examined to identify changes in students' creative thinking skills, while comparisons between groups were conducted to determine the effectiveness of the implemented learning model. To facilitate interpretation, students' scores were converted to percentage-based categories and classified into levels of creative thinking ability according to established criteria. To facilitate interpretation, students' scores were converted into percentage-based categories and classified into levels of creative thinking ability according to established criteria. The classification criteria are presented in **Table 1**.

RESULTS AND DISCUSSION

This section presents the study's findings on the effect of the guided inquiry learning model on students' creative thinking skills in Civics Education. Data were collected before and after the treatment in both the control and experimental classes, and hypothesis testing was performed using paired-samples and independent-samples t-tests. Before treatment, students' creative thinking skills were measured to identify the initial conditions of both classes. The descriptive statistics of the preliminary measurement are presented in **Table 2**.

Table 2. Creative Thinking Skills Before Learning

Class	N	Minimum	Maximum	Mean	Std. Deviation
Before Treatment – Control Class	34	10	20	14,79	2,672
Before Treatment – Experimental Class	34	11	23	15,03	3,040

Source: Researcher Processed Data, 2025

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Based on **Table 2**, the average creative thinking score of the control class before treatment was 14.79, while the experimental class obtained a mean score of 15.03. The difference of only 0.24 points indicates that both classes had relatively equivalent initial abilities, confirming the suitability of these groups as comparison subjects in the study. To examine the distribution of creative thinking skills across specific indicators before the learning process, the data are further presented in **Table 3**.

Table 3. Creative Thinking Skills Before Learning by Aspect

Indicator	Control Class	Category	Experimental Class	Category
Fluency	63,97%	Creative	63,60%	Creative
Flexibility	42,27%	Fairly Creative	44,11%	Fairly Creative
Originality	34,92%	Less Creative	36,76%	Less Creative
Elaboration	43,75%	Fairly Creative	43,38%	Fairly Creative

Source: Researcher Processed Data, 2025

Table 3 shows that prior to learning, both the control and experimental classes demonstrated similar performance across all four indicators. Fluency was already categorized as creative in both groups (63.97% and 63.60%, respectively), while flexibility and elaboration fell into the fairly creative category. Originality was the weakest indicator for both classes, with the control class showing the lowest level (34.92%) and the experimental class showing the highest (36.76%). These results confirm that there were no significant differences between the two groups prior to the intervention, thereby ensuring the validity of subsequent comparisons. After the learning process was completed, students' creative thinking skills were re-measured in both classes. The descriptive statistics of the post-treatment results are presented in **Table 4**.

Table 4. Creative Thinking Skills After Learning

Class	N	Minimum	Maximum	Mean	Std. Deviatior
After Treatment – Control Class	34	12	24	18,26	3,088
After Treatment – Experimental	34	15	28	21,18	3,770

Source: Researcher Processed Data, 2025

Table 4 shows that the average creative thinking score of the control class increased from 14.79 to 18.26, whereas the experimental class showed a greater improvement, from 15.03 to 21.18. The mean difference of 2.92 points between the two classes after the treatment suggests that the guided inquiry learning model had a more substantial effect on students' creative thinking. A detailed breakdown of improvements across each indicator following the treatment is presented in **Table 5**.

Table 5. Creative Thinking Skills After Learning by Aspect

Indicator	Control Class	Category	Experimental Class	Category
Fluency	59,19%	Fairly Creative	74,63%	Creative
Flexibility	65,07%	Creative	61,76%	Creative
Originality	49,6%	Fairly Creative	61,02%	Creative
Elaboration	54,77%	Fairly Creative	67,27%	Creative

Source: Researcher Processed Data, 2025

Table 5 reveals that the experimental class achieved the creative category in all four indicators after the treatment. Notably, fluency improved to 74.63% and originality to 61.02%, both of which were categorized

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as creative. In contrast, the control class showed improvement only in flexibility, which reached the creative category (65.07%), while fluency declined slightly to the fairly creative category (59.19%). Elaboration remained the weakest indicator in both groups, although the experimental class (67.27%) outperformed the control class (54.77%). To further examine whether these differences were statistically significant, hypothesis testing was conducted using paired-samples and independent-samples t-tests, as presented in **Table 6.**

Table 6. Results of the Creative Thinking Ability t Test

Test	Class	Mean Difference	t	Sig. (2-tailed)	Information
Paired Sample t-test	Control	-3,471	-8,170	0,000	Significant
	Experimental	-6,147	-8,959	0,000	Significant
Independent Sample t-test	Control & Experimental	-2,912	-3,484	0,001	Significant

Source: Researcher Processed Data, 2025

Based on **Table 6**, the paired sample t-test results indicate that the mean score of the control class increased by 3.471 points ($t = -8.170$, $p = 0.000 < 0.05$) and the experimental class increased by 6.147 points ($t = -8.959$, $p = 0.000 < 0.05$), both of which are statistically significant. Furthermore, the independent sample t-test revealed a mean difference of 2.912 points between the two classes ($t = -3.484$, $p = 0.001 < 0.05$), confirming that the guided inquiry learning model had a significantly greater positive effect on students' creative thinking skills compared to the cooperative learning model with the example non-example method.

Discussion

Creative Thinking Skills Before Learning

The findings of this study revealed that both the control and experimental classes demonstrated relatively equal creative thinking skills prior to the learning treatment, as evidenced by overall scores and specific indicators. This initial equivalence is essential to ensure that post-treatment differences can be attributed to the learning intervention rather than pre-existing disparities between groups. These results are consistent with previous studies that similarly reported comparable initial conditions between experimental and control groups as a prerequisite for valid quasi-experimental designs (Algiani *et al*., 2023; Marfilinda *et al*., 2025). The relatively lower performance on the originality indicator across both groups prior to the treatment suggests that students had limited exposure to tasks that demanded novel thinking and unique idea generation, a common finding in instructional contexts that rely on teacher-centered approaches (Nurakenova & Nagymzhanova, 2024).

Creative Thinking Skills After Learning

Following the learning treatment, the experimental class demonstrated substantially greater improvement in creative thinking skills compared to the control class. This finding can be attributed to the guided inquiry learning model implemented through the case study method, which involved seven structured stages: problem observation, hypothesis formulation, planning, case analysis, data analysis, and conclusion. This process provided students with broad opportunities to explore ideas, formulate arguments, and develop solutions to real-world problems, thereby stimulating all dimensions of creative thinking, including fluency, flexibility, originality, and elaboration. The improvement in the experimental class aligns with constructivist theory, which emphasizes that knowledge is most meaningfully constructed when students engage

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actively in the learning process through exploration and interaction (Al Abri *et al*., 2024; Mishra, 2023). In this framework, the teacher acts not as the sole provider of information but as a facilitator who guides students in constructing their own understanding (Guo *et al*., 2021; Yao, 2023).

The guided inquiry model operationalizes these constructivist principles by encouraging students to investigate problems, analyze information, and reach independent conclusions, thereby fostering deeper, more creative thinking (Marianingsih, 2025; Revenko *et al*., 2024). By contrast, the control class was taught using the cooperative learning model with the example-non-example method, which, although involving group discussion, was more structured and teacher-directed, thereby providing fewer opportunities for independent idea exploration. The more limited improvement in creative thinking skills in the control class reflects the relatively passive role of students in this instructional approach. These differences in outcomes are consistent with previous studies demonstrating that guided inquiry produces greater improvements across all aspects of creative thinking than conventional instructional methods (Asriani *et al*., 2021).

The Effect of Guided Inquiry Learning on Creative Thinking Skills

The results of hypothesis testing confirmed that the guided inquiry learning model had a statistically significant positive effect on students' creative thinking skills. This finding is consistent with Bruner's discovery learning theory, which posits that learning becomes more meaningful when students actively discover knowledge rather than passively receive it. Similarly, the constructivist perspective advanced by Slavin supports the view that active engagement in learning fosters deeper conceptual understanding and higher-order thinking skills (Gradini *et al*., 2025; Salim & Ridlo, 2023). These findings are further corroborated by empirical research demonstrating the effectiveness of guided inquiry in enhancing students' creative thinking across various educational levels and contexts. Improvements in students' conceptual understanding and creative thinking have been identified in Civics Education, particularly through active knowledge construction through exploration and inquiry (Biringan *et al*., 2025).

Guided inquiry has also been shown to improve students' ability to search for information and solve problems systematically, thereby fostering creative thinking in mathematics learning contexts (Salsabila *et al*., 2025). Furthermore, guided inquiry learning has been found to strengthen students' mathematical representation skills by encouraging them to express ideas in various forms, such as symbols, diagrams, and verbal explanations (Istikomah *et al*., 2022). Additionally, guided inquiry is considered more effective than conventional or non-inquiry approaches in fostering creative thinking, as it actively engages students in problem-solving processes and critical exploration of concepts (Istiana *et al*., 2023). The integration of guided inquiry with strategies such as mind mapping has also been shown to support students' conceptual mastery and enhance their creative abilities by helping them organize and connect ideas more systematically (Shi *et al*., 2023). At the elementary school level, guided inquiry has been found to encourage students to explore ideas more freely and develop original thinking patterns from an early age (Wahyuni & Witaras, 2023).

The present study extends these findings to the context of junior high school Civics Education, an area in which previous research remains limited, thereby addressing a notable gap in the existing literature. However, it is important to note that not all findings point in the same direction. Studies have shown that other instructional models, such as STAD cooperative learning and multimedia-supported problem-based learning, can be equally or comparably effective in certain contexts (Basri, 2020; Lubis, 2021). These variations indicate that no single learning model can be considered universally superior. Such contrasting findings suggest that the effectiveness of guided inquiry is not absolute but is influenced by contextual factors, including subject matter, student characteristics, and the level of teacher facilitation. In learning environments where students require more structured guidance or collaborative reinforcement, alternative models may yield similar outcomes. In the context of Civics Education using the case study method, guided

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inquiry appears particularly relevant because it encourages students to actively explore social issues, construct arguments, and evaluate alternative solutions. These processes are closely aligned with the development of creative thinking, making guided inquiry a suitable approach for fostering higher-order thinking skills in this subject area.

From a practical standpoint, these findings imply that the guided inquiry learning model represents an appropriate and effective instructional strategy for developing students' creative thinking skills in Civics Education at the junior high school level. Teachers are encouraged to apply this model systematically, particularly for topics that demand critical analysis and creative problem-solving, such as National Identity and Culture. Nonetheless, the relatively lower scores on the elaboration indicator in both classes highlight the need for additional instructional strategies specifically designed to develop detailed, elaborative thinking, such as structured writing tasks, argumentation exercises, or reflective journaling. This study is not without limitations. The research was conducted within a single school and focused on a single topic in Civics Education, which may limit the generalizability of the findings to other schools, subjects, or grade levels. In addition, the intervention duration may not have been sufficient to fully maximize the development of all creative thinking indicators, particularly elaboration. Future research is encouraged to examine the application of guided inquiry across different subjects, school contexts, and student populations, as well as to explore complementary strategies that may further enhance the elaboration dimension of creative thinking.

CONCLUSION

This study concludes that the guided inquiry learning model has a significant positive effect on the creative thinking skills of eighth-grade students at SMP Negeri 1 Pakis in Civics Education on the topic of National Identity and Culture. Prior to the treatment, both the control and experimental classes demonstrated relatively equivalent creative thinking ability across all four indicators, namely fluency, flexibility, originality, and elaboration, ensuring that post-treatment differences could be attributed to the learning intervention. Following the implementation, students in the experimental class showed considerably greater improvement than those in the control class, reaching the creative category across all indicators. The most substantial gains were observed in fluency and originality, reflecting students' increased ability to generate diverse ideas and produce novel responses. Statistical testing confirmed that the improvement in the experimental class was significantly greater than in the control class, affirming that guided inquiry, by engaging students as active investigators who explore, hypothesize, analyze, and draw conclusions, is an effective instructional strategy for fostering creative thinking. These findings contribute theoretically to the discourse on inquiry-based learning in social studies education and offer practical implications as an evidence-based model aligned with the demands of twenty-first-century learning competencies. Future research is recommended to replicate this study across broader school contexts and subject areas to strengthen generalizability. Additionally, complementary strategies that specifically target the elaboration dimension of creative thinking should be explored, as this indicator showed the least improvement across both classes.

AUTHOR'S NOTE

The author affirms that there is no conflict of interest in relation to the publication of this article. Furthermore, it is confirmed that all data, analyses, and content presented in this article are free of plagiarism and prepared in accordance with academic writing standards.

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