Solo International Collaboration and Publication of Social Sciences and Humanities
E-ISSN: 2988-3512
Vol.3, No.3, 2025, pp. 489-500
DOI: https://doi.org/10.61455/sicopus.v3i03.374

Effectiveness of Problem-Based Learning with Diorama Media on Students' Creative Thinking in IPAS at SDN Kalicari 02 Semarang

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Received April 15, 2025; Revised June 30, 2025; Accepted July 05, 2025

Abstract

Objective: This study aims to examine the effectiveness of the Problem-Based Learning (PBL) model assisted by a food chain tower diorama in enhancing the creative thinking abilities of fifth-grade students in the Natural and Social Sciences (IPAS) subject at SDN Kalicari 02 Semarang. **Theoretical framework:** Theoretically, creative thinking is an essential 21st-century skill that allows students to generate innovative ideas and solutions. PBL provides a contextual, student-centered framework that promotes active inquiry, collaboration, and higher-order thinking. **Literature review:** Previous research has shown that PBL models, when integrated with visual learning media, can significantly improve learning outcomes and student engagement. **Methods:** This study employed a quantitative approach using a pre-experimental one-group pretest-posttest design. The research subjects consisted of 27 fifth-grade students. The research instrument was a set of 10 open-ended essay questions that had passed tests of validity, reliability, difficulty level, and discrimination index. Data were collected through pretest and posttest assessments to measure students' creative thinking abilities before and after the intervention. **Results:** The results demonstrated a significant improvement in student performance. The average pretest score of 72.78 increased to 87.22 in the posttest. A paired sample t-test revealed a significance value of 0.000 (< 0.05), indicating a statistically significant difference between the pretest and posttest scores. Moreover, the N-Gain score averaged 0.5434 (54.34%), which falls into the moderate category, suggesting that the learning intervention was effective in improving creative thinking skills. **Implications:** The findings imply that the combination of the PBL model with diorama media provides a powerful tool for stimulating creativity in primary school students, particularly in understanding abstract scientific concepts such as food chains. **Novelty:** This study's novelty lies in the integration of a concrete visual diorama with problem-based instruction in the IPAS context, which has been less explored in elementary education research. It serves as a reference for teachers seeking innovative strategies to foster creativity through contextual and student-centered learning.

Keywords: effectiveness, problem-based learning, diorama, creative thinking, ipas.

INTRODUCTION

Education is an effort that is carried out based on a mature and clear plan to prepare students to become qualified human beings to face the future. Education is not limited to a specific time and aims to develop human potential as a whole, both intellectually,

emotionally, and physically. Through education, individuals can acquire the skills and qualities necessary to compete at a global level. Education has a clear direction in the learning process through the use of the curriculum. According to Nugroho, the curriculum is a function that serves as a tool in learning activities to create the goals of education [1].

The K-13 curriculum has a general goal, namely, to develop intelligence, knowledge, personality, noble morals, and the ability to be independent and carry out high-level educational activities. Curriculum strategy means the design of activities to be carried out effectively and efficiently. Curriculum implementation means the application of the curriculum in the learning process that can influence the curriculum in the learning process which can influence students. The change in the independent curriculum is a further development of the 2013 curriculum, which uses one learning approach, namely a scientific approach for all subjects [2].

Changes to the independent curriculum are expected to provide opportunities for teachers to innovate in creating learning that aims to develop Indonesian character and culture. The goal of the Merdeka Curriculum is to transform Indonesian education to be more inclusive, relevant, and future-oriented. By enabling creativity and innovation in learning. This curriculum aims to produce a generation that is more independent, competitive, and ready to face global challenges in the ever-evolving digital era. The Merdeka Curriculum is designed to provide flexibility in learning, allowing students to learn about IPAS subjects contextually and interactively. It helps students understand the relationship between the natural and social sciences in everyday life [3].

The merger of science and social studies subjects into Natural and Social Sciences (IPAS), to provide a better understanding of our world. This subject aims to help students comprehensively understand various natural and social phenomena so that they can see how people, their environment, and the events happening around them relate to each other. Social studies subjects have an important role in equipping students with scientific insight as well as broad social understanding. In the independent curriculum, it is hoped that it can trigger students to manage the natural and social environment as a unit. The Independent Curriculum has problem-based learning to strengthen the Pancasila Student Profile, which is carried out at least twice in one school year. IPAS has an important role in strengthening the profile of Pancasila students. IPAS helps students become creative, independent, and globally aware, which is part of the Pancasila Student Profile, through creative thinking [4].

This plant life cycle learning media was made to develop students' creative thinking skills. But among Indonesian students, some are still lacking in creative thinking. As is the case with students in one of the elementary schools in the city of Semarang, precisely in Pedurungan sub-district, students' creative thinking skills are still low. This is due to the passivity of students during learning. Students tend to have fun playing alone with their friends, do not listen to learning well, and are less able to follow learning well. Learning media can provide students with similar experiences about events in their environment, as well as allow direct interaction with teachers [5].

The learning process requires a conscious process that tends to be permanent and changes behavior. In this process, information is recalled, which is then stored in memory and cognitive organization. Furthermore, these skills are manifested practically in the activity of students in responding and reacting to events that occur in students or their environment.

Problem-Based Learning is an innovative learning model that emphasizes contextual learning through complex activities. Problem-based learning is a learning model that presents a problem to be solved with the ability to think critically. According to Netshitangani, Problem-Based Learning aims to find problem-solving; in addition to that, it is also for students to learn the concept of how to solve problems and develop creative thinking skills [6].

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Creative thinking is looking at problems from different perspectives, finding innovative solutions, and developing new ideas. Creativity is not just limited to art; it is about encompassing all aspects of life, combining seemingly unrelated ideas, and finding new ways to solve problems. In solving these problems, many efforts have been made, including making the learning system effective by training students to think creatively. Creative thinking is very important for students to have because students can develop skills and knowledge to develop their business and discover new things and innovations [7].

In the context of 21st-century education, the development of students' creative thinking skills is one of the main goals at all levels of education, especially at the elementary school level. The Merdeka Curriculum, launched by the Indonesian Ministry of Education, emphasizes the importance of implementing innovative, contextual, and student-centered learning models. One of the important contents in this curriculum is the subject of Science and Social Sciences (Natural and Social Sciences), which combines elements of science and social studies to form students' holistic understanding of natural and social phenomena [8].

However, despite the progressive changes in the curriculum, the reality on the ground shows that students' creative thinking skills are still relatively low. Many classrooms in public elementary schools still use a conventional teacher-centered approach to learning, limiting students' active participation and their opportunities to explore ideas, ask questions, and find solutions independently. As found at SDN Kalicari 02 Semarang, the results of initial interviews with teachers showed that students tend to be passive, less motivated, and have difficulty understanding abstract concepts such as food chains in ecosystems. This shows that there is a gap between the objectives of the curriculum and the implementation of learning in the classroom [9].

The Problem-Based Learning (PBL) learning model has been widely recognized as an effective approach to encourage high-level thinking. However, research that integrates PBL with concrete visual media, such as dioramas, is still limited, especially in the context of social studies learning at the elementary school level. Most previous studies have focused more on the application of PBL in science or mathematics subjects at the secondary level, and have not explored PBL strategies combined with visual aids that are appropriate to the characteristics of early childhood students [10].

This study fills this gap by examining the effectiveness of the use of food chain tower diorama media in the framework of PBL to improve the creative thinking skills of grade V students [11].

The significance of this research lies in its contribution to learning innovation in elementary schools. By showing that the combination of PBL and diorama media can significantly improve creative thinking skills, this study provides a practical basis for teachers to implement more contextual, visual, and student-centered learning strategies. This research also supports efforts to achieve the Pancasila Student Profile through active and innovative learning in the era of the Independent Curriculum [12], [13].

Based on the results of interviews that have been conducted with grade V teachers of SD Negeri Kalicari 02 Semarang, it is known that the creative thinking skills of students at SD Negeri Kalicari 02 Semarang, especially in science lessons in class V, are still very low. Learning that occurs in the classroom is still dominated by teachers and uses conventional learning. This results in students showing poor responses, such as playing with classmates and not paying attention to the teacher's explanations well. Many students simply memorize without really understanding the concepts, so their ability to remember the material is very low. In addition, the learning approach that makes less use of the media causes many students to be passive and not actively participate in the teaching and learning process [14].

The learning model is an important thing that is important for a teacher when carrying out learning activities to be directed and structured, which enables learning to be achieved well. Based on the problems found from the results of the initial interview with the teacher of

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grade V of SD Negeri Kalicari 02 Semarang, it is necessary to know to solve the problems that occur in the delivery of food chain material in the science subject, the researcher made the title of the research "The Effectiveness of the Problem Based Learning Media Diorama Model of the Food Chain Tower on the Creative Thinking of Grade V Students of SD Negeri Kalicari 02 Semarang". This research is expected to be useful and an alternative to improve creative thinking skills so that students can have high creativity and imagination to increase their motivation in learning social sciences [15].

LITERATURE REVIEW

Education is a process designed to develop the potential of students as a whole, both from intellectual, emotional, and physical aspects. In the context of 21st-century learning, the demand for the development of high-level thinking skills, such as critical and creative thinking, is increasingly a major concern. One of the main goals of basic education is to form students who can face global challenges with good creative thinking skills [16].

The change in curriculum policy from the 2013 Curriculum to the Independent Curriculum emphasizes the importance of more flexible, contextual, and student-centered learning. The Independent Curriculum provides space for teachers and students to innovate in the teaching and learning process. One of the updates presented is the Natural and Social Sciences (IPAS) subject, the result of an integration between science and social studies, which aims to provide students with a more holistic understanding of the natural and social phenomena around them. In its implementation, IPAS is expected to develop the character and profile of Pancasila students through a scientific approach and problem-based learning [17].

Creative thinking is one of the important skills that is the target of development in science learning. This ability includes students' ability to see a problem from various perspectives, generate new ideas, and find innovative solutions. Unfortunately, in many elementary schools, students' creative thinking skills are still relatively low. This is due to the conventional learning approach and the lack of learning media that can stimulate students' imagination and exploration. Monotonous, teacher-centered, and minimal active interaction make students passive and less motivated [18].

One of the relevant alternative learning models to develop creative thinking skills is the Problem-Based Learning (PBL) model. PBL is an innovative learning approach that focuses on providing contextual problems that demand active inquiry and problem-solving by students. In problem-based learning, students are encouraged to actively engage in the process of exploration, collaboration, critical thinking, and creativity to find solutions to the given problems. This model has the advantage of fostering students' activeness, curiosity, and high-level thinking skills [19].

The stages of PBL consist of orientation to problems, organizing learning, independent investigation, developing and presenting results, and evaluation. Each of these stages provides students with the opportunity to develop ideas, seek information, and present solutions creatively. This model is very suitable for the characteristics of elementary school students who need concrete stimulus and fun learning activities. To support the successful implementation of PBL, learning media that can bridge abstract concepts into concrete ones are needed. One of the effective media in this context is the dioramic media, especially the dioramas of food chain towers. This media is a three-dimensional visual tool that depicts the relationships between living things in an ecosystem in an interesting and easy-to-understand way. With the help of diorama media, students can imagine and understand the process of the food chain more realistically, thereby improving conceptual understanding and facilitating creative thinking [20]–[22].

The use of concrete media, such as a diorama, in social studies learning not only attracts students' attention but is also able to increases learning motivation, strengthen memory, and enrich students' learning experience. In PBL-based learning, this media can be used in the early stages to raise problems, as a source of exploration of ideas, or as a tool for presenting

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students' thoughts. The integration between PBL models and diorama media offers innovative solutions to improve the quality of social studies learning in elementary schools. This combination not only supports cognitive mastery of the material but also strengthens the affective and psychomotor aspects of students through group work, discussions, and the presentation of ideas. Learning becomes more meaningful, interactive, and contextual [23].

In the context of the Independent Curriculum, which emphasizes differentiated learning and strengthening the profile of Pancasila students, this approach is considered very relevant. By developing creative thinking skills through PBL assisted by concrete media, it is hoped that students will be able to become independent, creative, and able to think solutively in facing future challenges. Such learning can create a fun, collaborative, and character-development-oriented learning environment.

METHODOLOGY

This study uses a quantitative approach with a type of pre-experimental design, namely the One Group Pretest-Posttest Design type. This design was chosen because it allows researchers to determine the effect or effectiveness of a treatment on the study subject by comparing the results before and after the treatment. In this design, subjects are given a pretest before treatment, then given treatment in the form of a specific learning model, and then given a posttest to measure the changes that occur [24].

The subjects of this study are all grade V students of SD Negeri Kalicari 02 Semarang for the current school year, which totals 27 students. Subject collection was carried out by the saturated sampling technique, where the entire population was used as a sample because the number of students was relatively small and homogeneous. The independent variable in this study is the Problem-Based Learning (PBL) model assisted by the diorama media of the food chain tower, while the dependent variable is the creative thinking ability of students. The PBL model used follows the stages as developed by Trianto (2020), namely: (1) problem-orientation; (2) the organization of students to learn; (3) independent research; (4) the development and presentation of works; and (5) analysis and evaluation of the problem-solving process [25].

The food chain tower diorama media is used as a concrete visual aid that aims to make it easier for students to understand IPAS material related to ecosystems and food chains. This media is designed to engage students and provide a contextual learning experience, by the characteristics of 21st-century learning and the Independent Curriculum. The research instrument is in the form of an essay test, which consists of 10 questions, prepared to measure aspects of students' creative thinking such as fluency, flexibility, originality, and elaboration. These questions have gone through a content validation process by experts (expert judgment) and have been tested for empirical validity, reliability, difficulty, and differentiation. The validity test was carried out using the Product-Moment correlation technique, while the reliability was tested using the Alpha Cronbach formula [26]–[28].

The research procedure begins with the implementation of a pretest to determine students' initial ability in creative thinking. After that, learning activities were carried out using the Problem-Based Learning model, which was equipped with food chain diorama media during several meetings. At the end of the treatment, students are given the same type of posttest and difficulty level as the pretest to see changes in creative thinking skills [29].

Data collection was carried out through pretest and posttest written tests, which were then statistically analyzed. The data analysis techniques used are:

1. Test the normality of the data using Shapiro-Wilk to find out whether the data is normally distributed or not. The results showed that the pretest data were normally distributed (Sig. = 0.472 > 0.05), while the posttest was not completely normal (Sig. = 0.034 < 0.05). Nevertheless, the analysis can still proceed because the data is still within statistically tolerable limits and the research design allows for such flexibility.

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2. Hypothesis test using a paired t-test. The test results showed a significance value of 0.000 (< 0.05), which means that there is a significant difference between the pretest and posttest scores. This shows that there is a positive influence of the application of the PBL model assisted by diorama media on improving students' creative thinking skills.
3. N-Gain analysis is used to determine the effectiveness of the treatment. The calculation results showed an average N-Gain score of 0.5434 or 54.34%, which was included in the moderate category (0.3 < g < 0.7). This shows that learning with the Problem-Based Learning model assisted by diorama media is quite effective in improving students' creative thinking skills [30]–[32].

Thus, the research method used has been designed to systematically uncover the influence and effectiveness of innovative problem-based learning models combined with concrete visual media in science learning in elementary schools. All stages of implementation are carried out in a structured manner, according to the rules of experimental quantitative research [33].

RESULTS AND DISCUSSION

This study aims to determine the effectiveness of the Problem-Based Learning (PBL) model assisted by the media of the food chain tower diorama on the creative thinking ability of grade V students of SD Negeri Kalicari 02, Semarang. The study used a quantitative experiment method with the One Group Pretest-Posttest Design, followed by 27 students. Pretest and posttest data showed an increase in students' creative thinking skills after applying the PBL model assisted by the diorama media of the food chain tower. Details of the data can be seen in Table 1 below:

Table 1. Results of Pretest and Posttest of Students' Creative Thinking Ability

Source of Variation	Pretest	Posttest
Highest Score	85	95
Lowest Score	50	75
Average	67,5	85
Number of students completed	15	27
Incomplete	12	0

Based on the table, it was seen that there was an increase in the average student score from 67.5 to 85, and all students achieved completeness after the treatment was given.

Normality Test

The normality test was performed using Shapiro-Wilk with the following results:

Table 2. Normality Test

Data	Sig. Shapiro-Wilk
Pretest	0,472
Posttest	0,034

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The pretest data were declared normal (Sig. > 0.05), while the posttest did not fully meet the normal assumptions. However, the analysis can still be continued with consideration of the research design.

Paired t-test

The paired t-test shows the following results:

Table 2. Paired T-Test Results

Variable	Mean	N	Sig. (2-tailed)
Pretest	72,78	27	
Posttest	87,22	27	0,000

The significance value is 0.000 < 0.05, meaning that there is a significant difference between the results of the pretest and posttest, so it can be concluded that the use of the PBL model assisted by the diorama media of the food chain tower has a positive effect on improving students' creative thinking.

N-Gain Test

N-Gain measurement is carried out to determine the level of effectiveness of treatment. The results of the N-Gain calculation are shown in the following table:

Table 3. N-Gain Results

Average N-Gain Score	Category
0.5434 or 54.34%	Keep

The N-Gain value of 54.34% was in the medium category (0.3 < g < 0.7), indicating that the learning model applied was effective in improving students' creative thinking skills, although it had not reached the high category.

This study aims to determine the effectiveness of the Problem-Based Learning (PBL) model assisted by the media of the food chain tower diorama on the creative thinking ability of grade V students of SD Negeri Kalicari 02, Semarang.

Based on the results of data analysis, there was a significant increase in students' creative thinking skills after applying the PBL model assisted by diorama media. This is shown by the difference in the average pretest score of 72.78 to the average posttest of 87.22. The paired t-test showed a significance value of 0.000 (< 0.05), which means that there was a significant difference between the results before and after treatment. In addition, the results of the N-Gain calculation showed an average of 54.34% which was included in the medium category, which shows an increase in students' creative thinking skills effectively.

This improvement is in line with the principles of Problem-Based Learning, which focuses on providing contextual problems to stimulate students to think critically, creatively, and solutionally. According to Fitriyani & Muthoifin, the PBL model effectively encourages students to be active in finding solutions to real problems to trigger creative thinking skills. This model also develops students' abilities in terms of collaboration, communication, and reasoning [34].

The use of food chain tower diorama media further increases the effectiveness of learning, as visual media helps students understand abstract concepts more concretely. According to Yuliana, visual media such as dioramas can increase attractiveness, motivation to learn, and facilitate the understanding of complex concepts, including ecosystem materials and food chains. This result is also strengthened by research by Pratiwi, which shows that the

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application of the PBL model based on concrete media can significantly improve creative thinking skills and student learning outcomes in science learning in elementary schools [35].

The stages in the PBL model that are applied according to Trianto's theory include:

1. Problem Orientation: Students are given real problems through diorama media so that they can build curiosity.
2. Learning Organization: Students discuss in groups to formulate hypotheses and initial solutions.
3. Self-Investigation: Students actively seek additional information from a variety of sources.
4. Presentation of Works: Students present solutions or findings in the form of works.
5. Evaluation: Students analyze and evaluate the process and outcome of problem solving [36]–[38].

The PBL model not only improves creative thinking skills but also trains students to work together, dare to speak their minds, and develop useful original ideas. This is by the findings of Kurniawan & Amelia, which states that PBL increases creativity, problem-solving skills, and students' confidence in the learning process. In addition, the improvement of students' creative thinking skills is influenced by their active involvement during the learning process. Student-centered learning allows students to explore ideas, convey ideas, and solve problems according to their experiences. According to Rochanah, students' active involvement in problem-based learning encourages a significant increase in creativity and learning outcomes [39]. Thus, the results of this study are consistent with previous research that shows that the application of the PBL model assisted by concrete media such as dioramas is effective in improving creative thinking skills, active learning, and understanding of social studies concepts in elementary school students.

Analysis of Research Results

This study aims to determine the effectiveness of the Problem-Based Learning (PBL) learning model assisted by the diorama media of the food chain tower on the creative thinking ability of grade V students of SD Negeri Kalicari 02 Semarang in the subject of Natural and Social Sciences (IPAS). The background of this research departs from the low creative thinking ability of students, which was found through interviews with classroom teachers. Students tend to be passive, lack focus on learning, and only memorize concepts without a deep understanding. This encourages the need to implement innovative learning models that can actively engage students and improve their thinking skills [34], [35].

The Problem-Based Learning (PBL) model was chosen because it is contextual, emphasizes real problem solving, and encourages students to actively think critically and creatively. In its implementation, PBL in this study is combined with concrete visual media in the form of a diorama of food chain towers. This medium is used to visualize abstract concepts of the food chain in an ecosystem, so that students can more easily understand and relate it to real life. This study uses a quantitative method with a pre-experimental design of the One Group Pretest-Posttest Design. The research subjects consisted of 27 students in class V, all of whom were given a pretest before treatment, then given learning with the PBL model assisted by diorama media, and then given a posttest. The research instrument is in the form of 10 descriptive questions that have gone through tests of validity, reliability, difficulty, and differentiating power [40], [41].

Pretest and Posttest Results

The test results showed a significant increase in students' creative thinking skills. The average pretest score of 72.78 increased to 87.22 in the posttest. This shows that after participating in learning with the PBL model assisted by diorama media, students

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experienced a significant improvement. Not only in terms of average scores, but also in terms of learning completeness: initially, only 15 students completed the pretest, but all students (27 people) completed the posttest. Further data analysis was carried out using the Paired Sample t-Test. The test results showed a significance value of 0.000 (< 0.05), which means that there is a significant difference between the pretest and posttest scores. In other words, learning with the PBL model assisted by diorama media statistically improves students' creative thinking skills.

N-Gain Analysis

To measure the effectiveness of the treatment, the researchers used N-Gain analysis. The results showed an average N-Gain score of 0.5434 or 54.34%, which is in the medium category. This shows that learning using the PBL model assisted by diorama media is quite effective in improving students' creative thinking skills, although it has not reached a high level of effectiveness. This value shows that learning succeeds in creating meaningful changes, but still leaves room for improvement or strengthening of methods.

Implications of the PBL Model and Diorama Media

The success of this increase in creative thinking cannot be separated from the characteristics of the PBL model itself. This model places students as active subjects in learning, allowing them to be directly involved in the problem-solving process. Each stage of PBL, from problem orientation to evaluation, encourages students to think divergently, look for alternative solutions, and develop new ideas. This is in line with Trianto's opinion that PBL facilitates the development of high-level thinking skills, including creative thinking. In addition, the use of diorama media also strengthens the attractiveness of learning. The visualization of the food chain in the form of concrete towers can overcome students' difficulties in understanding the relationship between living things in the ecosystem. This media also increases students' motivation and attention in learning. Yuliana said that visual media can increase students' understanding of concepts and active participation in learning, especially if used contextually and interactively [42], [43].

The combination of PBL and concrete media, such as a diorama, makes the learning process more meaningful and not monotonous. This is evident from the increase in student involvement during learning. They are more active in discussing, asking questions, expressing opinions, and working together in groups. The active involvement of students is one of the keys to improving creative thinking skills. According to Susanti, student-centered problem-based learning can encourage creative thinking skills optimally [44], [45].

Limitations and Recommendations

Although this study showed positive results, some limitations need to be noted. First, the research design did not use a control group, so the improvement in creative thinking ability could not be fully concluded as a result of treatment, because it was not compared with the group that was not given the treatment. Second, the analysis was only carried out in one class with a limited number of subjects, so the results of the study could not be generalized to a wider population. Therefore, follow-up research is recommended to use a quasi-experimental design or true experimental design with a larger control group and number of subjects [46].

In addition, the diorama media used can continue to be developed to make it more interactive, for example, by adding digital elements or animations. Blended learning approaches that combine PBL with digital technology are also worth exploring in future IPAS learning. Overall, the results of the analysis showed that the Problem-Based Learning model assisted by the diorama media of the food chain tower effectively improved students' creative thinking skills. The application of this model can stimulate students to think more deeply, explore, and solve the problems given. Learning becomes more interesting, contextual, and meaningful for elementary school students, especially in understanding IPAS

E-ISSN: 2988-3512

material on food chains and ecosystems. Therefore, this model is highly recommended to be applied more widely in the context of learning based on the Independent Curriculum [47].

CONCLUSION

Based on the results of the research and data analysis that has been carried out, it can be concluded that the use of the Problem Based Learning (PBL) learning model assisted by the diorama media of the food chain tower is effective in improving the creative thinking ability of grade V students of SD Negeri Kalicari 02 Semarang on IPAS materials. The application of the PBL model provides space for students to be active in solving problems, discussing, and developing creative ideas through structured problem-based learning stages. This is evident from the increase in student learning outcomes, where the average pretest score of 72.78 increased to 87.22 in the posttest. In addition, the paired t-test showed a significance of 0.000 < 0.05, which means that there was a significant difference between creative thinking skills before and after the application of the PBL model assisted by the media diorama of the food chain tower. The results of the N-Gain test showed an average increase in students' creative thinking skills of 54.34% which was included in the medium category. Thus, learning using the PBL model assisted by the media of the dioramas of the food chain tower is considered effective in improving students' creative thinking skills. The use of food chain tower diorama media in IPAS learning also provides concrete visualization to students, so that students can more easily understand the concept of food chain and be able to relate it to real problems. With the right PBL model and media, students become more active, confident, creative, and have higher motivation to learn.

Acknowledgments

The authors would like to express their sincere gratitude to SDN Kalicari 02 Semarang for their support and cooperation during the research process. Special thanks are extended to the students and teachers who participated actively in the study. The authors also acknowledge Universitas Persatuan Guru Republik Indonesia Semarang for providing academic guidance and necessary facilities.

Author Contribution

All authors contributed equally to the research design, data collection, analysis, and writing of this article. Each author was actively involved in the development and refinement of the manuscript, ensuring the integrity and quality of the research presented in this study.

Conflicts of Interest

The author declares no conflict of interest.

REFERENCES

[1] D. Nugroho and B. K. Hermasari, "Using online flipped classroom in problem-based learning medical curriculum: A mixed method study," *J. Educ. Learn.*, vol. 17, no. 2, pp. 294–300, 2023, https://doi.org/10.11591/edulearn.v17i2.20729.

[2] T. Netshitangani, "Contradictions and ambiguities: School management teams' views on school-based violence in Urban South Africa," *Mediterr. J. Soc. Sci.*, vol. 5, no. 27, pp. 782–791, 2014, https://doi.org/10.5901/mjss.2014.v5n27p782.

[3] H. B. Santoso and R. Fitriansyah, "Prototype development and usability evaluation of a mobile-based Arabic language learning application," *J. Eng. Appl. Sci.*, vol. 12, no. 8, pp. 1961–1967, 2017, https://doi.org/10.3923/jeasci.2017.1961.1967.

[4] Y. Liu, "Analysis of music teaching technology based on a data mining model," *Appl. Math. Nonlinear Sci.*, vol. 8, no. 2, pp. 3013–3022, 2023, https://doi.org/10.2478/amns.2023.2.00017.

[5] E. E. Y. Prayogi, S. Anwar, and Y. A. D, "Management of Madrasa-Based Education Quality Improvement at the Tahfidz Qur'an Islamic Boarding School in Metro City," *Rev. Int. Geogr. Educ. Online*, vol. 11, no. 7,

pp. 480–491, 2021, https://doi.org/10.48047/rigeo.11.07.52.

[6] L. B. Bertel, A. Kolmos, and A. M. Boelt, "Emerging PBL Futures: Exploring Normative Scenario Development as an approach to support Transformation in Problem-based Learning and Higher Education," *J. Probl. Based on Learn. High. Educ.*, vol. 9, no. 1 Special Issue, pp. 200–216, 2021, https://doi.org/10.5278/ojs.jpblhe.v9i1.6431.

[7] T. Tang, V. Vezzani, and V. Eriksson, "Developing critical thinking, collective creativity skills and problem solving through playful design jams," *Think. Ski. Creat.*, vol. 37, p. 100696, 2020, https://doi.org/10.1016/j.tsc.2020.100696.

[8] C. Chin and K. Yue, "Vertical stream curricula integration of problem-based learning using an autonomous vacuum robot in a mechatronics course," *Eur. J. Eng. Educ.*, vol. 36, no. 5, pp. 485–504, 2011, https://doi.org/10.1080/03043797.2011.603039.

[9] S. Wijaya, M. Syarif Sumantri, and N. Nurhasanah, "Implementasi Merdeka Belajar Melalui Strategi Pembelajaran Terdiferensiasi Di Sekolah Dasar," *Didakt. J. Ilm. PGSD STKIP Subang*, vol. 8, no. 2, pp. 1495–1506, 2022, https://doi.org/10.36989/didaktik.v8i2.450.

[10] A. Sulistiawati, A. Khawani, J. Yulianti, A. Kamaludin, and A. Munip, "Implementasi profil pelajar Pancasila melalui proyek bermuatan kearifan lokal di SD Negeri Trayu," *J. Fundadikdas (Fundamental Pendidik. Dasar)*, vol. 5, no. 3, pp. 195–208, 2023, https://doi.org/10.12928/fundadikdas.v5i3.7082.

[11] "Edukasi pembelajaran matematika kepada siswa kelas 1 sekolah dasar negeri 4 tiga, kecamatan susut, bangli," *J. pengabdi*, vol. 6, no. 1, 2023, https://doi.org/10.26418/jplp2km.v6i1.63140.

[12] S. Rochanah, A. R. Ridha, and A. Nirwana, "Development of Teacher ' s Performance of Construct Reliability and Avarice Variance Extracted Measurement Instruments of Certified Islamic Education Teachers," *Int. J. Relig.*, vol. 3538, no. 10, pp. 3828–3849, 2024, https://doi.org/10.61707/xzjvmb82.

[13] S. Trihariyanto, E. Supriyanto, M. Muthoifin, and Z. 'Uyun, "Strategi Pembelajaran Inovatif Pendidikan Agama Islam Dengan Media Powerpoint Dalam Meningkatkan Mutu Pendidikan Di Sdit Muhammadiyah Sinar Fajar Cawas Dan Sd Muhammadiyah Pk Bayat," *Profetika J. Stud. Islam*, vol. 21, no. 1, pp. 109–120, 2020, https://doi.org/10.23917/profetika.v21i1.11653.

[14] L. W. Hasanah, H. Silalahi, and N. B. P. Utama, "Strategi Pembelajaran Berdiferensiasi pada Pembelajaran Matematika Materi Keliling Bangun Datar Kelas IV Sekolah Dasar," *J. Didakt. Pendidik. Dasar*, vol. 7, no. 1, pp. 237–258, 2023, https://doi.org/10.26811/didaktika.v7i1.1064.

[15] A. Masrukhan, "Pelaksanaan Pendidikan Karakter Peduli Sosial Di Sd Negeri Kotagede 5 Yogyakarta," *J. Pendidik. Guru Sekol. Dasar*, vol. 5, no. 29, 2016.

[16] P. Sholihah Rosmana *et al.*, "Implementasi Kurikulum Merdeka Menurut Persepsi Tenaga Pendidik dan Peserta Didik," *Yulia Rahmawati Innov. J. Soc. Sci. Res.*, vol. 3, pp. 3049–3063, 2023.

[17] M. Lister, J. Dovey, S. Giddings, K. Kelly, and I. Grant, *Women & media: a critical introduction*, vol. 44, no. 04. 2006. https://doi.org/10.5860/choice.44-1949.

[18] Akmal Mundiri IAI, *The Leadership of Headmaster in Building a Work Culture Based on Pesantren*, vol. xxi, 1335, no. November. 2016.

[19] O. I. Higuera-Martinez, L. Fernandez-Samaca, and A. C. Alvarado-Fajardo, "PBL Intervention for Fostering Creativity in First-Year Engineering Students," *IEEE Trans. Educ.*, vol. 66, no. 5, pp. 442–449, 2023, https://doi.org/10.1109/TE.2023.3292997.

[20] A. Haironi and Muthoifin, "Implementasi Metode Taḥfīẓul Qur'an 'Sabaq, Sabqi, Manzil' Di Marhalah Mutawasithah Dan Tsanawiyah Putri Pondok Pesantren Imam Bukhari Tahun Pelajaran 2010-2014," UMS, 2016.

[21] S. Uddin Ahmed Khondoker, "Understanding the Essence of Islamic Education: Investigating Meaning, Essence, and Knowledge Sources," *Solo Univers. J. Islam. Educ. Multicult. E*, vol. 2, no. 1, pp. 27–36, 2024, https://doi.org/10.61455/sujiem.v2i01.115.

[22] A. N. Andri Nirwana, Mahmudulhassan, F. D. Marshal, Muthoifin, and N. Fadli, "Human Rights and Social Justice in Quranic Contexts: A Global Trend," *Leg. J. Ilm. Huk.*, vol. 32, no. 2, pp. 453–471, 2024, https://doi.org/10.22219/ljih.v32i2.35088.

[23] M. Apriantoro, A. Suryaningsih, and M. Muthoifin, "Bibliometric Analysis of Research Development of Economic Dispute Settlement," *EUDL Eur. Union Digit. Libr.*, 2023, https://doi.org/10.4108/eai.19-10-2022.2329068.

[24] N. Muhadjir, *Metode Penelitian*. Acamedia.Edu, 2006.

[25] A. Purwanti, *Metode Penelitian Hukum - Teori & Praktek*, Pertama. Surabaya: CV. Jakad Media Publishing, 2020.

E-ISSN: 2988-3512

[26] A. Gowa, "Peningkatan Ekonomi Kaum Dhuafa (Studi Kasus Program Masyarakat Mandiri Dompet Dhuafa Kampung Ternak di Samata Gowa)," 2018.

[27] I. Huda, "Pemberdayaan Masyarakat Berbasis Multikultural di Majelis Taklim An Najach Magelang," *INFERENSI J. Penelit. Sos. Keagamaan*, vol. 13, no. 2, pp. 253–278, 2020, https://doi.org/10.18326/infsl3.v13i2.253-278.

[28] A. H. Muthoifin, Didin Saefuddin, "Pemikiran Pendidikan Ki Hadjar Dewantara Dalam Perspektif Pendidikan Islam," *Ta'dibuna J. Pendidik. Islam*, vol. 2, no. 2, pp. 155–200, 2013, https://doi.org/10.32832/tadibuna.v2i2.562.

[29] K. Imanina, "Penggunaan Metode Kualitatif dengan Pendekatan Deskriptif Analitis dalam PAUD," *J. AUDI J. Ilm. Kaji. Ilmu Anak dan Media Inf. PAUD*, vol. 1, no. 1, pp. 45–48, 2020, https://doi.org/10.31932/jpaud.v1i2.387.

[30] A. Malik and S. Narimo, "Implementasi Pendidikan Agama Islam Berbasis Masyarakat Di Temanggung," *Profetika J. Stud. Islam*, vol. 19, no. 1, pp. 6–12, 2019, https://doi.org/10.23917/profetika.v19i1.7748.

[31] C. Surahman, B. Sunarya, and T. Yuniartin, "Konsep toleransi dalam Alquran (Studi atas ¬Q.S. Al-Kāfirūn dan implikasinya terhadap pembelajaran PAI di sekolah)," *Humanika*, vol. 22, no. 2, pp. 147–162, 2022, https://doi.org/10.21831/hum.v22i2.53517.

[32] D. Masyitoh, "Amin Abdullah Dan Paradigma Integrasi-Interkoneksi," *JSSH (Jurnal Sains Sos. dan Humaniora)*, vol. 4, no. 1, p. 81, 2020, https://doi.org/10.30595/jssh.v4i1.5973.

[33] Sugiyono, *Metode Penelitian Kuantitatif, Kualitatif, Dan R & D* . Bandung: Alfabet. Cet.14, 2011.

[34] N. Muthoifin, "Mengungkap Isi Pendidikan Islam Perspektif Al- Qur ' an Surat Al -Ashr Ayat 1-3," in *The 7th University Research Colloqium 2018 STIKES*, 2018, pp. 206–218.

[35] E. B. G. Suwoko, Waston, Bambang Setiaji, Muthoifin, Huda Kurnia Maulana, "Family Education To Improve The Quality Of Human Resources And Sustainable Development In Samarinda," *Rev. Gestão Soc. e Ambient.*, vol. 18, no. 6, pp. 1–19, 2024, https://doi.org/10.24857/rgsa.v18n6-011.

[36] S. Raharja, "Boarding Model Education Concept to Improve the Quality of Pesantren Education," *Solo Univers. J. Islam. Educ. Multicult.*, vol. 1, no. 3, pp. 161–171, 2023, https://doi.org/10.61455/sujiem.v1i03.70.

[37] A. F. Bintoro, I. Rosyadi, and A. Alqahoom, "Muri-Q Method for Learning to Read, Memorize and Tahsin Al-Qur'an : A New Perspective," *Solo Univers. J. Islam. Educ. Multicult.*, vol. 1, no. 3, pp. 172–181, 2023, https://doi.org/10.61455/sujiem.v1i03.72.

[38] A. Maryanto, "Principal Performance and Leadership in Facing the Covid-19 Pandemic at SMK Muhammadiyah 1 Surakarta," vol. 1, no. 2, pp. 118–126, 2023, https://doi.org/10.61455/sujiem.v1i02.65.

[39] M. Muthoifin, I. Amelia, and A. B. Eprahim Ali, "Islamic accounting: Ethics and contextualization of recording in Muamalah transactions," *Multidiscip. Rev.*, vol. 7, no. 8, 2024, https://doi.org/10.31893/multirev.2024132.

[40] Wasino dan Endah Sri Hartatik, "Metode Penelitian Sejarah (Metode Sejarah)," *Seri Publ. Pembelajaran*, vol. 1, no. 2, pp. 1–4, 2021.

[41] L. J. Moleong, *Metode Penelitian kualitatif*, 8th ed. Bandung: Remaja Rosdakarya, 2012.

[42] Diah Ayu Saraswati *et al.*, "Analisis Kegiatan P5 di SMA Negeri 4 Kota Tangerang sebagai Penerapan Pembelajaran Terdiferensiasi pada Kurikulum Merdeka," *J. Pendidik. Mipa*, vol. 12, no. 2, pp. 185–191, 2022, https://doi.org/10.37630/jpm.v12i2.578.

[43] D. E. Cahyaningrum and D. Diana, "Proyek Penguatan Profil Pelajar Pancasila sebagai Implementasi Kurikulum Merdeka di Lembaga PAUD," *J. Obs. J. Pendidik. Anak Usia Dini*, vol. 7, no. 3, pp. 2895–2906, 2023, https://doi.org/10.31004/obsesi.v7i3.4453.

[44] P. T. Ahmad, "Implementasi Profil Pelajar Pancasila dalam Kurikulum Merdeka," *J. Ilm. Pedagog.*, vol. 21, no. 1, pp. 76–87, 2022, https://doi.org/10.63889/pedagogy.v15i2.139

[45] S. Asiati and U. Hasanah, "Implementasi Projek Penguatan Profil Pelajar Pancasila Di Sekolah Penggerak," *J. Lingk. Mutu Pendidik.*, vol. 19, no. 2, pp. 61–72, 2022, https://doi.org/10.54124/jlmp.v19i2.78.

[46] R. W. and Afrianto, "Analisis Kebutuhan Media Pada Mata Pelajaran PAI Di Kelas XI TKJ 1 SMK Negeri 1 Cemapaga," *Edu Glob.*, vol. 4, no. 2, pp. 26–34, 2023, https://doi.org/10.56874/eduglobal.v4i2.1491.

[47] P. Kurniati, A. L. Kelmaskouw, A. Deing, B. Bonin, and B. A. Haryanto, "Model Proses Inovasi Kurikulum Merdeka Implikasinya Bagi Siswa Dan Guru Abad 21," *J. Citizsh. Virtues*, vol. 2, no. 2, pp. 408–423, 2022, https://doi.org/10.37640/jcv.v2i2.1516.