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Analysis of Creative Thinking Skills Science in Elementary Schools

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Abstract
This research aims to measure students' creative thinking abilities in science subjects. This research uses a literature review research design with a qualitative descriptive approach. Data collection techniques are carried out by studying literature related to national journals and international journals that are in accordance with the research focus. This research analyzes search results from various databases. Based on research results from several national and international articles, it can be said that students' creative thinking skills in elementary schools can improve when learning science. So it can be concluded that creative thinking skills can improve in science subjects in elementary schools.
Keywords: *Science, Creative Thinking, Elementary School*

Abstrak
Penelitian ini bertujuan guna mengukur kemampuan berpikir kreatif peserta didik pada mata Pelajaran IPA. Penelitian ini menggunakan desain penelitian literatur review dengan pendekatan deskriptif kualitatif. Teknik pengumpulan data yang dilakukan dengan studi literatur terkait jurnal nasional dan jurnal internasional yang sesuai dengan fokus penelitian. Penelitian ini menganalisis hasil pencarian berasal dari berbagai database, berdasarkan hasil penelitian dari beberapa artikel nasional maupun internasional dapat dikatakan bahwa keterampilan berpikir kreatif peserta didik di sekolah dasar dapat meningkat pada pembelajara IPA . Jadi dapat disimpulkan bahwa keterampilan berpikir kreatif mampu meningkat pada mata Pelajaran IPA di sekolah dasar.
Kata kunci: *IPA, Berpikir Kreatif, Sekolah Dasar*

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INTRODUCTION

21st-century skills are critical for students to solve logical problems and provide appropriate solutions (Makhrus et al., 2018). To face the 21st century, several skills need to be developed and mastered by students, including (1) critical thinking, (2) problem-solving, (3) creative thinking, (4) metacognition, (5) communication, (6) collaboration, and (7) literacy. Creative thinking skills are essential and are not only needed in the learning process but are also helpful in everyday life (Dalilan & Sofyan, 2022). Creative thinking is a person's skill in analyzing information, and this creative thinking skill is critical (Qomariah, 2021). Another opinion says that creative thinking is a competence to be involved in activities to generate, evaluate, and improve original and diverse ideas to prepare students to think outside the box with different tasks (PISA, 2022). Based on several opinions, creative thinking means solving problems logically, which is helpful for everyday life and requires skills in analyzing, evaluating, producing, evaluating and exploring creative ideas.

By thinking creatively, students are expected to be able to understand, manage, and solve a problem. Students must be creative based on the 2015 Global Creativity Index (GCI) study results. This is because out of 139 countries with low creative thinking skills, Indonesia is ranked 115th (Fatuchah, 2021; Sagala, 2020). Creative thinking skills are critical to develop, especially in science learning in elementary schools. This is because students can explore their knowledge and creativity in answering questions that require analysis. Science is learning that systematically finds out about nature to master a collection of knowledge in the form of facts, concepts, principles, and scientific discoveries (Permana, 2023). Science can direct students to be able to carry out creative thinking activities, understand natural phenomena and fundamental problems of human life, and understand the surrounding environment (Yuliyono & Radia, 2020). Research related to creative thinking skills has been widely conducted. However, there is still a lack of references in elementary schools, especially in science subjects, which are the background of this research.

Ratna Dila et al. (2023) said that students in Indonesia still have low creative thinking skills; these low scores for each indicator of creative thinking skills evidence this. Titik Kusumawati et al. (2019) said that students in Indonesia still have less than satisfactory creative thinking skills. Students must solve problems given by teachers by emphasizing the correctness of the answers. Based on previous research, it is known that there are still several indicators that are low, so it is necessary to know the causes of the low number of indicators in creative thinking and creative thinking skills in the field of science or science, which still need more attention. Based on the facts in the field, it was found that the current tendency in science learning is that teachers only deliver material and students are not used to developing their thinking skills. This is evidenced by the fact that there are still many lazy students to think independently. Based on the interview results, several underlying factors were identified, including limited time and learning environment. Based on the results of initial observations and interviews with grade V teachers at SDN Baseran, it was found that students' creative thinking skills were still low and difficult to apply to science learning. In addition, based on the test results show that students' creative thinking skills are still low and need to be improved. The results of the mid-semester science subject scores are a reference for determining students' initial abilities.

Based on the problems that have been explained, it is necessary to analyze the ability to think creatively in science in elementary schools. Compared to the previous one, the novelty of this study lies in the level of creative thinking, which is usually in junior high school (SMP) and, in this study, in elementary school (SD). This study aims

to analyze the ability to think creatively in science in elementary schools. This study uses literature studies from previous studies.

METHOD

The type of research used in this study is a literature review or literature study with a descriptive qualitative approach with SLR. Systematic Literature Review (SLR) is a term for identifying, evaluating, and interpreting all available research relevant to the formulation of the problem or topic area being studied. (Calderon and Ruiz 2015). Systematic Literature Review (SLR) is the process of identifying, assessing and interpreting all available research evidence to provide answers to specific research questions. A literature review is a method that identifies, examines, evaluates, and interprets all existing research (Afsari et al., 2021). This literature review aims to find previous research related to the research. The purpose of this SLR or Systematic Literature Review research is to find strategies that will help overcome the problems faced, identify different perspectives related to the problem being studied, and reveal theories that are relevant to the case in this study, which examines more deeply the analysis of creative thinking skills in science in elementary schools. This research was conducted in November 2024. This research was conducted by analyzing international and national journals from databases such as Google Scholar, DOAJ, Erisc, etc. From various articles, researchers selected 20 articles that were closely related to the keywords used. The journals used as sources in this study discuss several Creative Thinking Skills and Science.

RESULTS AND DISCUSSION

Literature review research explores theories based on expert opinions obtained from various sources, including books, journals, and scientific publications related to the topic discussed. A literature review is not only part of the theoretical basis but also a reference to explore information that produces new research that provides different information from previous research. In this study, the researcher discusses the results of research conducted by previous researchers. In this study, the researcher discusses analysing creative thinking skills in science in elementary schools. The researcher uses several related journals related to the keywords in this study, so several related journals were found, including:

Table 1. Literature Review of Creative Thinking

Researcher and Year	Journal	Research result
Sabila Idzni Suryana, 2021	Creative Thinking Ability of Elementary School Student in Science Learning Using the RADEC Learning Model	The results showed that the students' initial creative thinking ability was in the medium category. during the learning process, students discuss with groups to exchange opinions, provide objections, ask questions, and provide more varied answers.
Nirma Laila Fakhirah, 2023	Analysis of Students' Creative Thinking Abilities in Science Subjects of	Based on the research results, it can be concluded that students have different

	Grade IV at SDN 36 Cakranegara	creative thinking abilities in science subjects in grade IV of SDN 36 Cakranegara.
Nova Jayanti Harahap, 2023	The Education in Era Society 5.0	To deal with the complexity of the living conditions of society in the Society 5.0 era, students are not sufficiently equipped with the ability to read, write and count or better known as "Tree R" (reading, writing, arithmetic), but also need to be equipped with global community competencies or also called social skills. 21st century, namely the ability to communicate, be creative, think critically, and collaborate or known as the "Four Cs", namely communicators, creators, critical thinkers, and collaborators
Nyi Mas Ayu Ratna Gumilar, 2022	Ethno-STEM Research Trends Throught Bibliometric Analysis on Science Learning in Elementary School	The implications of Ethno-STEM learning in elementary school science learning are to improve students' creative thinking skills by integrating HOTS (Higher Order Thinking Skill) learning models such as inquiry learning models, project-based learning, and problem-based learning that can support students' skills in the 21st century.
Nur Syifa Putri Agustin, 2023	Creative thinking skills in science learning using the RADEC Learning Model	The results showed that fifth grade students had difficulties in improving creative thinking skills on indicators of fluent thinking and elaboration skills,

Ely Sarantika Sukma, 2022	Critical & Creative Thinking Ability given the Inquiry Component in Elementary School Science Lessons	The results of the analysis of critical and creative thinking skills on the control class inquiry model were 45.3% and 54.7%, while for the experimental class it was 65.5%. So the influence of the inquiry model on experimental class students is higher than the control class. The Inquiry Model has a positive effect on critical and creative thinking skills
Ryzal Perdana, 2024	Developing Worksheet-based 7E learning cycle to foster elementary school student critical and creative thinking skills	The study was conducted within a limited geographical area and focused on a specific grade level, which may limit the generalizability of the results.
Savas Varlik, 2024	Critical and Creative Thinking in Science Teachers: The Moderating Role of Epistemology	The study found that the science teachers who participated in the research had high levels of epistemological beliefs, critical thinking, and creative thinking perceptions. Furthermore, epistemological beliefs, critical thinking, and creative thinking are interconnected concepts, and the presence of one of these variables in science teachers positively influences the other variables
Isnaeni Aprilia Kartikasari, 2022	The Effectiveness Open-Ended learning and Creative Problem Solving Models to Teach Creative Thinking Skills	The conclusion of this research is that the OEL and CPS learning models are effectively used to teach students' creative thinking skills. In detail, the

		OEL model is more effective than the CPS model to teach students' creative thinking skills, while the CPS model is more effective than the DI model to teach students' creative thinking skills
Tas, H & Minaz, M.B (2022)	Analysis of the Activities in the Primary School Turkish Textbooks in Term of Creative Thinking Skills. Education Quarterly Reviews	For this purpose, a "creative thinking skill activity form" was developed by the researchers. In the research, it was determined that there are 905 activities in primary school Turkish textbooks, only 120 of these activities are related to creative thinking skills.It has been determined that they are not sufficient for gaining and developing creative thinking skills.
Nanda Eska Anugrah Nasution, 2023	Relationship between Critical and Creative Thinking Skills and Learning Achievement in Biology with Reference to Educational Level and Gender	The results show that senior high school and university students' critical thinking skills correlated positively with both creative thinking skills and learning achievement for both genders. Furthermore, senior high school and university students' creative thinking skills show significantly positive relationships with learning achievement in both sexes.
Ahmad Syawaludin, 2024	Profile of Pre-service Elementary Teacher Creativity in Developing Higher Order Thinking Skills-oriented Science	The results showed that the aspects of fluency, flexibility, and elaboration were obtained in the sufficient category. While the aspect of originality

	Worksheets	obtained unfavorable results. The results of the study concluded that creative thinking skills in developing HOTS-oriented science worksheets were still not good
Dagyeom LEE, 2024	Productive Failure-based Programming Course to Develop Computational Thinking and Creative Problem-Solving Skill in a Korean Elementary School	The results showed that the computational thinking (CT) and creative problemsolving (CPS) skills of the experimental group were significantly greater than those of the control group, with a medium effect size for CT and a high effect size for CPS skills.
Ni Putu Sillvia Sari Dewi, 2023	Savi Approach to Students' Creative Thinking Abilities in Class VI Elementary School Science Content	SAVI approach can improve students' creative thinking skills. The implication of this study is that the application of the SAVI approach can improve students' activeness, solve problems, and develop students' creative thinking skills.
Vega Bintang Rizky, 2023	Pemanfaatan Aplikasi *Youtube* Berbasis Model Simulasi untuk Meningkatkan Kreativitas Pembelajaran IPA di Sekolah Dasar	The results of the study show that using YouTube as a medium in simulation-based science learning can help students think more creatively.
Nur Hidayah, 2024	Elementary School Students' Learning Styles: Perspective of Creative Thinking Skills	Based on the findings of this study, children with visual learning styles have a high level of creative thinking. As a result, this study revealed that every child can ideally develop creative thinking skills with

		learning that can adapt to individual learning styles.
Arnelia Dwi Yasa,2023	Evaluation of Creative Thinking Skills in Development of Elementary Science Learning in Elementary Schools: Mix Method Study	The results of the study showed that of the four indicators of creative thinking, students were categorized as sufficient in the aspect of fluency. However, the other three indicators, namely flexibility, originality, and elaboration, were in the poor category.
Devi Mariam Apriliani, 2024	Effect of Animated Video Media on Creative Thinking in Elemantary School IPAS (Natural an d Social Sciences) Learning	By comparing the results of the pretest and posttest, the study aims to evaluate the effectiveness of animated video media in fostering creativity in students' social studies education.
Ratna Dila Cahyaningsih, 2023	Analysis of Students Creative Thinking in Science Learning	The results of the study show that the average score associated with students' creative thinking is only about 34%. In addition, based on the results of interviews and tests, it shows that students' creative thinking is still low. The conclusion in this study is that students still have low creative thinking skills because scores on each indicator of creative thinking skills are still low.

Based on the literature review, several learning models are applied in elementary schools to explore students' creative thinking skills. The literature review shows that the RADEC model is one of the models that can be used to improve students' creative thinking skills. The research results by Sabila Idzni Suryana (2021) and Nur Syifa Putri Agustin (2023) show that RADEC effectively improves creative thinking skills. However, students still face obstacles in terms of fluency and elaboration. This supports Guilford's theory (1967), which states that creative thinking includes fluency, flexibility,

originality, and elaboration, but some aspects require intensive practice and directed learning strategies. However, there are still some obstacles in thinking fluency and elaboration skills. The Ethno-STEM learning model can also improve creative thinking skills integrated with HOTS. The OEL and CPS models can be used to teach creative thinking skills to students because they provide space for students to explore. Ethno-STEM combined with HOTS learning, such as inquiry and project-based learning, has improved creative thinking skills (Nyi Mas Ayu Ratna Gumilar, 2022). This aligns with Piaget's theory, emphasising that exploration and hands-on experience help students develop higher-order thinking skills. In addition, integrating local culture (ethno) also helps students better understand concepts through real-life contexts. Approaches that can be used to improve creative thinking skills, such as the SAVI approach and animated video media, can encourage students to be more active, motivated, and think creatively when solving problems.

The use of various appropriate learning models can affect students' creative thinking skills in elementary schools, and the use of various models can positively impact students. Various students can actively participate in learning, exploring, and improving communication. However, of course, there are still obstacles to students' creative thinking skills, so unique strategies are still needed to encourage students to be more able to think creatively. From the analysis, it is known that the RADEC learning model can improve students' creative thinking skills; in addition, the use of media-based technology can help students be more active and creative in learning activities; this is following Mayer's theory related to multimedia learning which can present information visually and interactively can improve students' understanding and creativity. From the teacher's perspective, various pieces of literature show the importance of teachers' epistemological knowledge because it is positively related to their creative and critical thinking skills, affecting students' development. Therefore, coaching and training for teachers to understand learning models that focus on developing creative thinking skills is fundamental. Although several learning models have been proven compelling, various challenges in developing students' creative thinking skills, especially flexibility, originality, and elaboration indicators, show that a more integrated and varied approach is still needed. An approach that combines direct interaction, technology, and understanding of students' learning styles can provide more optimal results in improving students' creative thinking skills in elementary schools.

CONCLUSION

This study aims to analyze students' creative thinking skills in science learning in elementary schools. Based on the background and literature review, it was found that creative thinking skills are important skills that students must have to face the challenges of the 21st century. Creative thinking skills include fluency, flexibility, originality, and elaboration, relevant to solving logical problems in learning and everyday life. However, based on the data, Indonesian students still show low creative thinking skills, especially in science learning in elementary schools. Various learning models, such as RADEC, Ethno-STEM, Open-Ended Learning (OEL), Creative Problem Solving (CPS), and the SAVI approach, have been applied to improve creative thinking skills. Research shows that learning models such as RADEC and Ethno-STEM effectively improve aspects of creative thinking skills, although there are still obstacles in the fluency and elaboration indicators. In addition, using media-based technology, such as animated videos and simulation-based applications, can also increase student motivation and creativity.

However, improving students' creative thinking skills, especially in the areas of flexibility, originality, and decomposition, still presents challenges. Therefore, a more integrated learning approach, which combines direct experience, the use of technology, and an understanding of students' learning styles, is needed. In addition, teacher training and mentoring in understanding learning models that support the development of creative thinking skills are crucial.This study emphasizes that improving students' creative thinking skills in science learning in elementary schools requires a focused and innovative strategy. This strategy involves a contextual approach, collaboration, and the use of technology to achieve optimal results.

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