



Analysis Of Fifth Grade Students' Creative Thinking Skills Through The Implementation Of Radec Learning

Nury Yuniasih*

* Program Studi Pendidikan Dasar, Fakultas Sekolah Pascasarjana,
Universitas Pendidikan Indonesia
nuryyuniasih@upi.edu

Wahyu Sopandi**

**Program Studi Pendidikan Dasar, Fakultas Sekolah Pascasarjana,
Universitas Pendidikan Indonesia
wsopandi@upi.edu

Andi Suhandi **

**Program Studi Pendidikan Fisika, Fakultas Matematika dan Ilmu Pengetahuan Alam,
Universitas Pendidikan Indonesia
andi_sh@upi.edu

Ernawulan Syaodih **

**Program Studi Pendidikan Dasar, Fakultas Sekolah Pascasarjana,
Universitas Pendidikan Indonesia
ernawulansy@upi.edu

Wiwi Pratiwi**

** SD Laboratorium Percontohan UPI
wiwipratiwi17@guru.sd.belajar.id

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ABSTRACT

Students feel less comfortable or confident in using their creativity, this could be due to a lack of motivation or not knowing how to develop their creative ideas. The aim of this research is to provide a comprehensive picture of students' creative thinking skills during the learning process by applying the RADEC model. This research uses qualitative research with a descriptive design. Research participants were fifth grade elementary school students. Data collection techniques include participant observation carried out during the learning process, structured interviews with teachers, and field notes. Data analysis in this research uses the Spradley model where the data reflects the big picture of the phenomenon being studied and the relationships between the themes that emerge. The results of this research show students' activities in developing ideas. There are students who have fluency and provide in-depth explanations in generating new ideas. Although there are obstacles experienced by students during learning in the section on synthesizing concepts because it requires sufficient time. The efforts made by students during learning included working on pre-learning questions after reading the reading material and trying to analyze the material with the group, until finally they made simple teaching aids. Their creative thinking ability in generating ideas is visible, but their originality is still lacking. Based on the research results, it can be concluded that students' creative thinking abilities can develop through learning that applies the RADEC learning model.

Keywords: *Creative Thinking Skills; RADEC; Elementary School Students.*

ABSTRAK

Siswa merasa kurang nyaman atau percaya diri dalam menggunakan kreativitas mereka, hal ini bisa disebabkan kurang motivasi atau tidak tahu bagaimana mengembangkan ide kreatif mereka. Tujuan penelitian ini adalah untuk memberikan gambaran yang komprehensif tentang keterampilan berpikir kreatif siswa selama proses pembelajaran dengan menerapkan model RADEC. Penelitian ini menggunakan jenis penelitian kualitatif dengan desain deskriptif. Partisipan penelitian adalah siswa kelas V SD. Teknik pengumpulan data berupa observasi partisipan yang dilakukan selama proses pembelajaran, wawancara terstruktur pada guru, dan catatan lapangan. Analisis data pada penelitian ini menggunakan model Spradley dimana data mencerminkan gambaran besar dari fenomena yang diteliti dan hubungan antara tema-tema yang muncul. Hasil penelitian ini menunjukkan kegiatan siswa dalam membangun ide. Terdapat siswa yang memiliki kelancaran dan memberi penjelasan mendalam dalam memunculkan ide baru. Walaupun terdapat kendala yang dialami siswa selama pembelajaran pada bagian mensintesa konsep karena membutuhkan waktu yang cukup. Adapun upaya yang dilakukan siswa selama pembelajaran antara lain mengerjakan soal-soal prapembelajaran setelah membaca bahan bacaan dan mencoba menganalisis materi bersama kelompok, hingga akhirnya mereka membuat alat peraga sederhana. Kemampuan berpikir kreatif mereka dalam memunculkan ide sudah terlihat, akan tetapi orisinalitasnya masih kurang. Berdasarkan hasil penelitian dapat disimpulkan kemampuan berpikir kreatif siswa dapat berkembang melalui pembelajaran yang menerapkan model pembelajaran RADEC.

Kata Kunci: Keterampilan Berpikir Kreatif; RADEC; Siswa Sekolah Dasar.

INTRODUCTION

The competencies of elementary school students are designed in the curriculum and developed during the learning process. One of the competencies that determines the success in achieving learning objectives is cognitive competence or knowledge. Bloom's taxonomy explains that cognitive competence has six levels, with the highest level being "create." Create refers to the ability to integrate elements into a new form or to produce something original (Ibragimova & Kulmominov, 2024). The highest level of cognitive competence implies that students are expected to produce works using their creativity. Creativity is also one of the essential learning skills in 21st-century education (Jalinus, 2020).

Twenty-first-century learning demands the 4C skills, one of which is creative thinking skills. Creative thinking skills are a personal activity that results in something new and unpredictable (Sriwongchai et al., 2015). Each student has different creative thinking skills. Every activity students engage in during learning is also an application of their creative thinking skills (Lemmetty, 2020). So far, the creative thinking process carried out by students has not been fully observed, as students are deemed creative only based on the works they produce. Student involvement in the learning process is one indicator that can be analyzed to understand how students engage in creative thinking.

Learning plays an important role in developing students' creative thinking skills (Madyani et al., 2020). Quality learning enhances students' creative thinking skills because students' awareness of their potential can be tapped through effective learning (Wilson & Conyers, 2014). Thus, learning can change students' thought patterns to be confident in their abilities (Ichsan et al., 2020). Good learning is learning that uses appropriate planning to achieve learning objectives. One way to plan effective learning is to apply innovative learning models (Darling-Hammond et al., 2020).

The selection of a learning model determines the success of education, especially in enhancing students' creative thinking skills. Several researchers have demonstrated improvements in critical thinking skills after using appropriate learning models (Kurino & Herman, 2023). Research conducted by Yonwong et al., (2024) proves that the use of the inquiry model can enhance students' creative thinking abilities. Furthermore, research by Islamiati et al., (2024) shows that the Problem-Based Learning model is more effective in influencing students' creative thinking levels compared to the Problem Solving model. In addition to these studies, research by Anwar et al., (2024) shows that students learning with the Project-Based Learning (PjBL) model have higher creative thinking skills than those in conventional learning. Based on these studies, it can be explained that the learning model plays a crucial role in enhancing students' creative thinking skills.

A teaching model that also has the characteristic of developing creative thinking skills is the RADEC learning model. The RADEC learning model consists of Reading (Read), Answering (Answer), Discussing (Discuss), Explaining (Explain), and Creating (Create) (Satria & Sopandi, 2019; Sopandi, 2017; Sopandi & Hany, 2018). This learning model can assist teachers in creating effective learning to develop students' skills, especially all 21st-century skills (critical, communicative, collaborative, and creative). This is also supported by a study conducted by Septinaningrum et al. (2020) which proved that the RADEC learning model can enhance creative thinking skills.

Previous research has demonstrated the importance of students' creative thinking skills in learning. A study showed that creative thinking results contribute to improving students' understanding of a basic concept (Jankowska et al., 2019). This research highlights the significance of students' creative thinking skills in learning, prompting the researcher to conduct a study aimed at providing a comprehensive overview of students' creative thinking skills during the learning process using the RADEC model. What differentiates this research from previous research is that it relates to a more detailed description of creative thinking abilities, not only looking at the increase but the impact on students' ability to create new ideas. This research aims to provide a comprehensive picture of elementary school students' creative thinking abilities after receiving RADEC-based learning.

METHODS

Type and Design

This research uses a qualitative research methodology with a descriptive design. This descriptive design is used to provide an in-depth and detailed description of the phenomenon being studied. In this design the researcher focuses on describing the phenomenon as it is, without changing or manipulating the variables (Moleong, 2021). Through a descriptive approach, researchers can present findings in the form of in-depth descriptions that provide a more comprehensive understanding of the research subject.

Data and Data Sources

The data in this research is the result of an assessment of participants' creative thinking skills. This research involved fifth grade elementary school students as participants. Other data sources are obtained from student observations during learning, interviews with educators, and documents on student learning outcome.

Data collection technique

Data collection techniques used in this research include participant observation, where the researcher is directly involved in the observation process, namely observing the emergence of indicators of fluency, flexibility, originality, elaboration of structured interviews with questions that have been prepared by the researcher including: student activity and curiosity, ability provide arguments from a stimulus, able to find new ideas, willing to study a stimulus more deeply and field notes to help the researcher obtain more complete data (Creswell & Clark, 2018). These three techniques are directed at the research subjects to collect data on students' creative thinking skills.

Data analysis

The data analysis technique in this research uses the Spradley model (Moleong, 2011) with the following stages: Descriptive observation to collect data; Domain analysis to discover semantic relationships; Focused observations to deepen the data found; Taxonomic analysis to find similarities based on semantic relationships; Selected observations to determine the chosen taxonomy; Component analysis to identify all found differences; Thematic analysis to visualize domain relationships by organizing data from the main theme, namely creative thinking skills in RADEC learning. These findings are used to describe how students interact during learning. This method helps researchers collect, analyze, and interpret data to understand specific cultural or social phenomena.

RESULTS AND DISCUSSION

Student activities during RADEC learning require creative thinking skills. especially at the create stage, students are asked to determine ideas for creating a product. During the learning process, observations are made to find out how far they have created. Each student has different creative thinking abilities. The following are the results of students' creative thinking abilities during RADEC learning.

Table 1. Creative thinking skills of students during RADEC learning

Indicator	Characteristic	Results
<i>Fluency</i>	Asking questions about the material being studied	There are 8 students who have a curiosity about the material being learned, thus they are enthusiastic in asking questions. The questions raised focus on how blood can serve as a transportation tool within the body
	Answering questions posed by both teachers and other students	There are 3 students who took the initiative to answer questions first regarding the atria and ventricles of the heart
	Expressing opinions during discussions and presentations	During the discussion process, each student provides their opinions to complete the given assignment. Although there are 2 groups still experiencing difficulty in understanding the assigned task, hence requiring an extension of the discussion time.
	Capable of quickly identifying errors and weaknesses in an object or situation	During the learning process, students have not yet shown responses regarding errors and weaknesses in an object or situation..

Flexibility	Utilizing the surrounding environment to generate ideas	The entire students have utilized the surrounding environment, especially in creating works about blood circulation using various diverse materials..
	Providing various interpretations of a picture, story, or issue.	During the group discussion, each student attempted to interpret the circulatory system through observation of pictures. However, their interpretations have not yet varied
	When faced with a problem, they usually think of various different ways to solve it.	When discussing, each student provides various responses regarding issues related to the circulatory system, such as food for anemia patients
	Classifying things according to different divisions (categories).	The classification of blood circulation assigned can be completed by students during the discussion,
Originality	After reading or hearing ideas, strive to discover something new	During the discussion process, each student endeavors to discover something new, and what they discovered was new insights into the workings of the circulatory system.
	Having different thoughts or interpretations compared to other students.	There are 2 students who show different thoughts during the explain activity. When responding to ways to prevent hypertension?
	Prefer synthesis over analysis	During the learning process, students engage more in analysis than synthesis
Elaboration	Seeking a deeper meaning of the answer or solution to a problem by undertaking detailed steps.	Every group member has a response to the given problem, but only 4 individuals provided more in-depth insights.
	Exploring the underlying significance of an answer or solution to a problem through meticulous steps.	In the question and answer process, six students provided responses that helped to develop other students' ideas.
	Trying/testing in detail to see the direction to be taken	Each student attempts to learn the process of blood circulation correctly and endeavors to create a visual aid depicting the circulatory system with their own creativity

Based on the research results in table 1, it is shown that each student possesses creative thinking skills, and 50% of the students demonstrate fluency and provide in-depth explanations in generating new ideas. There are 8 students (25% of the number of students) with fluency in generating ideas, 2 students who generate new ideas, and 2 students (6% of the number of students) who provide in-depth explanations. Students are enthusiastic in participating in learning activities and strive to understand the material so they can complete every given task, but only 2 students are capable of generating new ideas or concepts (6% of the number of students). Thus, it can be understood that each student has creative thinking

skills, especially in generating ideas, but only 2 students produce ideas that are different from others (6% of the number of students).

There are 8 students who have a curiosity about the material being studied, leading to enthusiasm in asking questions. The questions asked focus on how blood can act as a transportation tool in the body. During the questions session, the teacher poses questions that align with the reading material previously assigned to the students. Students are well-prepared during the learning process because they have already studied the mandatory readings before class begins. This also results in 3 students taking the initiative to answer questions first regarding the atria and ventricles of the heart. Therefore, preparing students for learning before they enter the classroom is crucial for reinforcing their knowledge (Hsia et al., 2021; Unga et al., 2023).

During the discussion process, each student exchanged opinions to complete the given assignment. Despite two groups facing difficulties understanding the task, requiring an extension of the discussion time. Time allocation during discussions is indeed necessary, yet how students utilize the provided time also affects their concentration during discussions. Some students tend to delegate responsibilities to others within their group. However, in this study, the issue relates to students' difficulties in understanding and integrating their respective answers. Hence, the discussion process took longer. Overall, students managed to resolve the assigned task during discussions; each group attempted to interpret the circulatory system through observation of diagrams. However, interpretations were not diverse, with varied responses only concerning circulatory system issues such as food for anemia patients. Therefore, guided by teachers, discussions need direction to assist students' difficulties during discussions (Crisianita & Mandasari, 2022).

There were 2 students who showed different thoughts during the explain activity. When responding to ways to prevent hypertension?, 6 students provided responses that could develop other students' ideas, and among these 6 students, 4 gave deeper responses. This can encourage other students to be more active in providing responses and to try to study the material more deeply (Carpenter et al., 2024; Reilly & Reeves, 2024).

During the learning process, there hasn't been any indication of students responding to errors or weaknesses in an object or situation. Critiquing a discovery is still beyond the students' capabilities, as they are still in elementary school and are more enthusiastic about new things rather than critiquing them. All students have utilized their surroundings, especially in creating works related to the circulatory system using various materials. This is evidenced by each student creating a model of the circulatory system apparatus with their own creativity. This demonstrates that creative learning can be nurtured from an early age (Breti, 2024).

The students' obstacles during learning lie in the synthesis process because this stage requires sufficient interaction, whereas online learning is constrained by time. The ability to synthesize or connect learned material to generate new ideas necessitates interaction among students to share ideas until they can discover concepts. Additionally, more effective student interactions can help minimize conceptual errors. Therefore, students' ability to identify errors and weaknesses in an object or situation, as well as their synthesis skills, have not been apparent during online learning. Other research strengthens the assumption by explaining that

good interaction between students can help students understand the concepts being studied (Strasser Katherine et al., 2024)

The efforts made by students to learn the material include: at the reading stage, students answer pre-learning questions so that when learning takes place, students have already studied the material, although there are still students who do not understand the process of blood circulation; at the answering stage, students attempt to express answers based on their understanding even though there are still errors in explaining parts of the heart; during the discussion stage, time constraints hindered the depth of discussion; during the explanation stage, group representatives provide explanations related to the circulatory system, but responses from other groups are still insufficient; at the creating stage, each student creates a circulatory system model using materials around them.

Implementation of RADEC learning online can be conducted despite encountering several challenges, especially during the discussion process. During the reading stage, when students can correctly answer pre-learning questions, they demonstrate fluency in generating ideas. Hence, initial abilities have an impact during the learning process (Jennings & DiPrete, 2010). In the answering stage, students actively strive to respond with their respective understandings; at this stage, open-ended questions lead to varied responses and showcase students' fluency in generating ideas (Zolfaghari et al., 2011). In the discussion stage, online learning faces challenges, particularly with the limited discussion time. Discussion is an activity that helps students share ideas and provides opportunities to develop new ones (Glazer & Hannafin, 2006). In the explaining stage, students attempt to express opinions based on understanding and discussion outcomes. Students who do not grasp the material at this stage will find it challenging to respond. In the creating stage, students produce simple props related to the circulatory system based on their understanding and creativity.

The creative thinking abilities of students can be observed from the research findings where two students were able to generate new ideas. During the explanation phase, a student responded regarding the necessity to cultivate creative thinking abilities early on so that students can develop their thinking and creativity in any context (Kartikasari & Yurniwati, 2024; Pantaleo, 2024; Suryaningsih et al., 2024). The RADEC model stages facilitate students to think creatively; through this continuous process, students become accustomed to thinking creatively about various matters (Jumanto et al., 2024; Latif et al., 2022)

The creation stage in RADEC is a phase that can train students to think creatively in their own ways. Creative forms emerge after going through the read process where students learn the concepts, followed by the answer stage where they demonstrate their understanding. Subsequently, in the discuss stage, students can enhance their communication skills by agreeing on their understanding of the concepts with their peers, and in the explain stage, they learn to evaluate and critique these concepts (Chairunnisa et al., 2022; Maspiroh & Eddy Sartono, 2022; Ngadirejo et al., 2019) Armed with strong concepts, they generate new creative ideas that are expected to solve future problems (Sopandi, 2017; Sopandi & Hany, 2018). This research proves that the RADEC learning model can be chosen to enhance students' critical thinking skills, which are currently crucial (Anggraeni et al., 2021; Putri & Zulfadewina, 2023; Suhendra et al., 2023).

CONCLUSION

Students' activities reflecting creative thinking skills are when students are able to generate ideas, but only 50% of them demonstrate fluency and provide in-depth explanations when generating new ideas. The challenges students face during learning include synthesizing or connecting learned materials to generate new ideas, primarily due to limited interaction time among students. Efforts made by students during online learning with the RADEC model include working on pre-learning questions and attempting to analyze materials through group tasks, ultimately creating simple teaching aids. Therefore, it can be concluded that students' creative thinking skills can develop through various activities such as reading materials, analyzing them through tasks, engaging in discussions to share ideas, and creating works based on generating new ideas. All these activities are part of the RADEC learning model, but when implemented online, they require sufficient time for students to develop new ideas.

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