# The Effect of Differentiated Learning on Creative Thinking Skills of Elementary School Students

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**Abstract.** The world of education is a place for students to learn and improve competencies. Schools as an inseparable part of education have the challenge of preparing their students to face life in the real world. The industrial era 4.0 requires them to have 21st century skills. One of the 21st century skills that students must have is the ability to think creatively. The purpose of this study was to analyze the effect of differentiated learning on students' creative thinking skills. The research subjects were 6th grade students of SD Negeri 1 Sanggreman in the 2022/2023 academic year, totaling 31 students. The method used in this research is descriptive qualitative. Based on the results of research using the product differentiation method in science learning, students' creative thinking skills are greater when compared to the use of homogeneous methods both in indicators of fluency, flexibility, originality and elaboration.

**Keywords:** differentiated learning, product differentiation, creative thinking

## 1 Introduction

The Ministry of Education has issued a number of policies that support the development of students' skills in facing competition during the industrial revolution 4.0. Law number 20 of 2003 concerning the National Education System explains that elementary school education is the basis for students in developing their potential in order to find creativity and skills in themselves. This law mandates us as educators to pay attention to the ability to think creatively in children as part of the 21st century skills that students must master.

Globalized learning is characterized by the increasing development of increasingly sophisticated technology. Life in the 21st century also shows an increase in increasingly complex problems in everyday life. Competition during the industrial revolution 4.0 requires the world of education to be able to create graduates who are competent, competitive and adaptive to changing times. The output of education must be able to answer the challenges of the needs of the creative work sector in the future.

The government has long placed teachers at the center of learning. The habit in learning in general is that teachers teach theories or definitions, give examples, and students do practice problems [1]. This condition will have a negative impact on students' creative abilities. As a

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developing country, we need human resources who are able to think and act creatively for the development and progress of the Indonesian nation. This makes education in Indonesia must emphasize the creativity sector of students.

The ability to think creatively potentially already exists in every individual. However, a person's level of creativity can be honed and developed optimally. Teachers have a very important role in developing students' creative thinking skills. Creative thinking is very important to be developed by teachers because creative thinking is not just obtained, creative thinking skills are higher order thinking skills [2].

One evidence of students' lack of creativity can be seen in science learning in grade 6 of SD Negeri 1 Sanggreman in the 2022/2023 academic year. This behavior can be seen from the products that students produce as assignments in science subjects. In the Solar System material, students make products that show their understanding of the Solar System. The products produced still illustrate the lack of students' creative thinking skills in terms of aspects of fluency and originality or originality because all students make drawings of the Solar System on paper as the final product.

Based on the results of product observation, grade 6 students at SD Negeri 1 Sanggreman have not been fluent in describing the learning products they have made. The product design and results still imitate or follow products that have been made before. Students prefer to adapt what they see without making modifications to the products they make.

Homogeneous assignments and assignment instructions that do not provide space for students to develop creativity are one of the causes of the lack of development of creative thinking skills in students. Teachers have been playing a dominant role in determining the type of product that students make as a form of actualization of the skills they have mastered.

In learning and assignments, teachers pay less attention to student heterogeneity. We as teachers often assume that our students are human beings at almost the same age range so that learning is also given in the same portion. Human nature as a social and personal being is often ignored by teachers. We need to remember that humans are basically individual beings and also social beings. The individual means inseparable, namely between physical (physical) and spiritual (psychological). Humans as social beings can be interpreted that humans are creatures whose lives are socialized. Humans cannot live without the presence of others [3].

As a unity formed between body and soul, each person grows and develops with unique characteristics and is different from one another. Physical differences can be observed from external characteristics such as hair color, skin color, height, face shape, etc. Psychological differences include the unique character of a person. Psychological differences include the unique character of each individual.

Students, especially in elementary school, are an inseparable part of their nature as individual beings as well as social beings. They socialize in class to learn together to find new information that will add insight and knowledge. With different character backgrounds, cultures, families, and community environments, they are faced with the same essence of material.

Teachers as educators in the classroom have an obligation to provide optimal learning services to all students. Given that our students are diverse individuals, teachers must be able to accommodate this diversity and design a learning activity that leads to the essence of the same material but is still able to provide freedom and independence to students to learn according to their respective characters and learning styles.

Now learning no longer makes the teacher the center of learning, but learning must be centered on students as objects as well as subjects of learning. Good learning will optimize student development towards success in social life. One of the student centered learning

models is using differentiated learning. The differentiated learning model prioritizes the fulfillment of student needs in terms of learning styles, talents, interests, and learning readiness [4].

Differentiation it self has been conveyed by Ki Hajar Dewantara in Puspitasari stated that things that do not need or cannot be uniformed should not be forced to be uniform[5]. Ki Hajar Dewantara's thoughts remind us as educators to be able to develop students' potential based on their talents and interests without coercion. Differentiated learning views every individual as having the same right to develop their potential. The differentiation of learning carried out by teachers can be based on content, learning process, and learning products [5].

Tomlinson describes differentiated learning as a teaching process that is effective in delivering new information to a diverse classroom community [6]. This diversity includes in the way of getting content or materials. Processing information, building or constructing ideas, or developing learning products. The goal of differentiated learning is for all students to learn effectively despite their diverse backgrounds.

Differentiated learning is necessary in the face of pluralism in society. This is also due to the different tendencies of each person in how to absorb and construct information or what is commonly called learning style. Learning styles are categorized into three types: visual learning style, auditory learning style, and kinesthetic learning style [7]. Differentiated learning can provide opportunities for students to learn and be creative according to their talents and interests in a field of science.

The purpose of this study is to analyze the effect of differentiated learning on students' creative thinking skills. With the application of differentiated learning, the author hopes to provide motivation and help students in order to develop their potential and talents and interests in order to improve their creative thinking skills optimally. Differentiated learning is also expected to be able to accommodate the needs of students so as to provide learning that favors students.

Research on differentiated learning conducted by Hadi, W. [8] with the title "Differentiated Learning Design with Problem Based Learning (PBL) Supporting Students' Critical Thinking Skills in the New Normal Era after the Covid 19 pandemic" shows that differentiated learning has an effect on student learning outcomes and can provide a balance in managing and developing different student interests and talents. Noer [1] with her research in title "Mathematical Creative Thinking Ability and Open-Ended Problem-Based Mathematics Learning", concluded that students who follow PBMO learning have higher creative thinking abilities than those who do not follow PBMO learning.

## 2 Text formatting

### 2.1 Research Desain

This research uses descriptive qualitative methods. In qualitative research, the problems to be studied are still temporary and can develop after the research is carried out [9].

### 2.2 Subject of the Study

Subject selection uses a purposeful sampling technique where the researcher can select and determine individuals and places of research [10]. The subjects of this study were 6th grade students of SD Negeri 1 Sanggreman. Grade 6 students at SD Negeri 1 Sanggreman totaled 31 students consisting of 17 boys and 14 girls. SD Negeri 1 Sanggreman is located in the Rawalo

District, Banyumas Regency. This research was conducted in semester 2 of the 2022/2023 academic year.

### 2.3 Instrument of the Study

Data obtained through non-test techniques in the form of questionnaires and assessment sheets. Before learning, students fill out a questionnaire to analyze students' learning styles. The questionnaire contains 24 questions that represent three types of learning styles, namely visual. Auditory, and kinesthetic. After learning, the teacher assesses the products produced by students using an assessment sheet.

### 2.4 Research Procedure

Data collection techniques are done through triangulation, namely through questionnaires, documentation, and observation. The instruments used in data collection include questionnaires or questionnaires, observation sheets and documentation.

## 3 Research Results

### 3.1 Learning Style Profile

Before the implementation of learning, teachers conduct initial diagnostic tests at the preparation stage. The diagnostic test conducted is a non-cognitive diagnostic test to determine the learning style, talent, interest and character of students. The diagnostic test is conducted through a number of questions that are done in writing by all students through a questionnaire. The results of the diagnostic test grouped the 6th grade students of SD Negeri 1 Sanggreman into three groups, namely visual, auditory, and kinesthetic students.

Based of diagnostic test, the learning styles of students in grade VI of SD Negeri 1 Sanggreman are diverse. They do not only rely on reading skills in learning, but also through hearing as well as kinesthetically. After mapping the learning styles, the percentage of learning styles is obtained as in Figure 1.

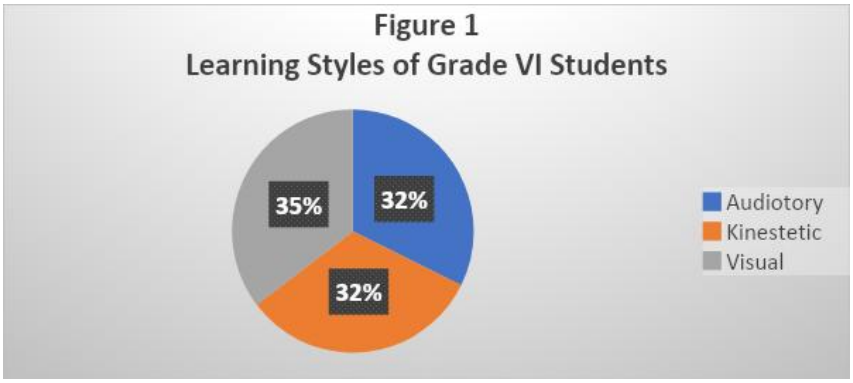


**Fig. 1.** Learning Styles of Sixth Graders

Based on the results of the diagnostic test, data on the learning styles of students in grade VI of SD Negeri 1 Sanggreman were obtained. Of the 31 students, 36% or 11 students have a visual learning style, as many as 10 students or 32% have an auditory learning style or the same as the percentage who have a kinesthetic learning style. From the results above, it can be seen that there is a tendency for students with visual learning styles to be more than other learning styles. Meanwhile, auditory and kinesthetic learning styles have the same number.

Learning style as the preferred way for students to learn. The preferred factor can be influenced by the student's special character, level of intelligence, gender, background, etc. With a differentiated classroom, students will better understand the strengths and advantages they have so that there is no more labeling of students based on their abilities in certain fields [6].

### 3.2 Differentiated Learning

Differentiated learning is a form of learning freedom for students. Teachers can provide excellent service by meeting the needs of students based on their individual characters. Differentiated learning implemented by researchers uses the syntax: 1) Preparation by mapping students' needs through diagnostic tests and making plans; 2) Creating a differentiated learning plan; 3) Implementing learning; 4) Conducting evaluation and reflection.

According to Aprima and Sari [4], learning with a differentiation approach includes three things, namely: 1) Differentiation in content or material content; 2) Differentiation in the learning process; 3) Differentiation in the results or products.

The researcher conducted a study on the effect of differentiated learning especially on learning products. The research was conducted on 31 6th grade students of SD Negeri 1 Sanggreman, Banyumas Regency, consisting of 17 male students and 14 female students.

In the previous science learning, namely Theme 8 My Earth, Sub Theme 3 about the Earth, Sun and Moon, students received the same task to summarize the concepts they had learned. The understanding of the material that they have understood, they write down in the form of a summary of the material. From the results of the assignment, it can be seen that there is a similarity in the type of product, namely in the form of writing, it is not uncommon to just copy the assignment from another friend.

Homogeneous assignments make it easy for teachers to take measurements and assessments. However, the same task for all students is considered to be less accommodating to the needs of students because they cannot show the maximum level of creativity. In Theme 9 Exploring Outer Space, Subtheme 1 Amazing Regularity, the teacher applies differentiation to the task of making the final product, namely the concept of the solar system that has been understood by students.

Each student gets the task to represent the concept of the solar system that they understand based on their respective interests and learning styles. Students with visual learning styles can create products in the form of pictures, animated videos, posters, paintings or graphic designs. Auditory groups can make products in the form of video or sound recordings that explain the concept of the solar system. Kinesthetic groups make solar system model products. Students who enjoy writing can also make poems, short stories, or rhymes.

Based on the observations made by the teacher of the products made by students, it shows increased creativity. The explanation of the concept of the Solar System made by students is very diverse. Students no longer imitate or copy the products of other friends. In this case, students have been able to show creative thinking behavior. This creativity can be seen through the fluency in explaining the material based on the products made. Students are also more free to develop products according to their ideas. In terms of originality, they can come up with new ideas by making modifications that do not yet exist even though they still have a tendency to imitate the initial ideas that already exist. Elaboration skills have also developed, students can combine ideas from the understanding of concepts that have been owned into the products made.

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