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The Implementation of the Project Based Learning Model based on GRASPS in Fostering Students Creativity at SMP Negeri 3 Gunung Jati

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Abstract

This research aims to examine the feasibility of implementing the Project Based Learning (PBL) model based on Goal, Role, Audience, Situation, Product, and Standard (GRASPS) in fostering naturalistic intelligence and creativity among 7th-grade students at SMP Negeri 3 Gunung Jati. The research was conducted at SMP Negeri 3 Gunung Jati from October to December 2022. The research was carried out using an experimental method with a Non-Equivalent Control Group Design. The variable in this research is creativity. The research population consisted of 124 students. The research sample included 21 students from class VII C and 21 students from class VII D. The researcher used cluster sampling technique for sampling. The data collection instruments used were rubrics and student response questionnaires. Based on the results of the research conducted on "The Implementation of the Project Based Learning (PBL) Model Based on Goal, Role, Audience, Situation, Product, and Standard (GRASPS) in Fostering Creativity of 7th-grade Students at SMP Negeri 3 Gunung Jati," the following conclusions can be drawn: 1) the implementation of the Project Based Learning (PBL) model based on Goal, Role, Audience, Situation, Product, and Standard (GRASPS) fosters creativity among 7th-grade students at SMP Negeri 3 Gunung Jati, 2) there is a positive response from students regarding the implementation of the Project Based Learning (PBL) model based on Goal, Role, Audience, Situation, Product, and Standard (GRASPS).

Keywords: *Project Based Learning (PBL) model, Goal, Role, Audience, Situation, Product and Standard (GRASPS), Creativity.*

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INTRODUCTION

Science plays a very important role, this is because our lives are highly dependent on nature, substances contained in nature, and the types of everything that happens in nature. IPA is a branch of science, it has special characteristics namely studying factual natural phenomena, whether they are realities or events and their cause-and-effect relationships (Hamdani, 2011).

Science fundamentally involves learning with an approach that encompasses four main elements. These four elements are attitudes, processes, products, and applications. (1) Attitudes, which include a curiosity about the investigated nature, investigated diligently, thoroughly, honestly, skeptically, yet open to new possibilities, and responsible. (2) Processes, which entail investigative procedures covering natural phenomena. (3) Products, which comprise facts, concepts, principles/laws, and theories that explain and/or predict natural phenomena. (4) Applications, which involve the application of scientific methods

and scientific knowledge in everyday life. These four main elements of science should emerge in science learning (Widodo, 2017).

Waste is a problem experienced in almost all places in Indonesia. Similarly, the issue is experienced in this area, namely the village of Sambeng. This village is located near the northern coast of Cirebon Regency. There is a problem that has become inherent due to waste, namely floods. Floods have become a regular occurrence every year. And those affected are not only in this village, but also in surrounding villages. In this village, there is a school called SMP Negeri 3 Gunung Jati. Based on what the researcher found during 5 years of teaching at this school, it is very easy to find waste out of place every day, such as in the river stream, along the riverbank, in the drainage, in rice fields, and even along the roadside. And this has become a common sight that the researcher encounters throughout the journey to the school. Apparently, this is also one of the factors causing floods every year in this area. The easily found waste is inseparable from the habit of local residents who easily dispose of waste wherever they are.

The habit of not disposing of trash properly apparently unconsciously influences students at their school as well. It is very easy to find students littering wherever they are, even though trash bins are nearby. It seems that because students' daily experiences with trash are deeply ingrained, they consider littering to be a normal thing to do. Moreover, many students are reluctant to dispose of trash properly; instead, they prefer to throw it and pile it up on their desks or in drawers. The students' lack of awareness about the causes of flooding and inadequate waste management is also the background that motivates the author to conduct research at this school. The author believes that contextual science learning can bridge these issues, thereby at least enhancing self-awareness regarding waste management from different perspectives.

Based on the definition of science learning and the phenomenon of waste causing floods in the school environment earlier, the researcher decided to utilize science learning as a means for students to understand the cause-and-effect relationships and come up with solutions to these problems. The researcher believes that the suitable model for this is project-based learning, as according to Komalasari (2012), Project-Based Learning (PBL) is a comprehensive learning approach where the student learning environment (classroom) is designed for students to investigate authentic problems, including deepening the material of a subject, and carrying out other meaningful tasks. According to Ball & Forzani (2009), Project-Based Learning (PjBL) is referred to as learning that focuses on students' experiences as well as how teachers and students prepare and follow instructions and rules that are established.

To ensure that the science learning with PBL mentioned earlier becomes structured and systematic, the author employs GRASPS as a framework within the PBL model. GRASPS serves as the framework for PBL, which is a method of designing Authentic Assessment (authentic assessment taken from the ideas of Wiggins and McTighe called "backward planning" or "backward design" in their book "Understanding by Design"). GRASPS is an acronym for Goals, Role, Audience, Situation, Product, and Standards. This concept consists of three main parts for curriculum planning, namely identifying desired outcomes, analyzing various sources of data, and determining appropriate action plans (Wiggins, 1999).

METHODS

The approach utilized in this study is quantitative in nature. Meanwhile, the design employed is the Non-Equivalent Control Group Design. According to Creswell (2019), the Non-Equivalent Control Group Design is a form of quasi-experimental design, where only the experimental group receives the treatment. The research variable is creativity, with its operational definition according to Gardner in Indra (2019) being the ability or mental process to generate new ideas, concepts, or solutions that are useful or valuable, both individually and collectively. Simply put, creativity is the ability to think outside the box, to perceive new relationships between existing elements, and to create something new and original. From this, the indicators are then formed, namely the ability to reflect fluency, flexibility, elaboration, and originality.

This study utilizes both primary and secondary data. Primary data are gathered through observations and questionnaires distributed to students. Meanwhile, secondary data sources are obtained from books, journals, and other researchers' theses, serving as literature review or references in this study. The population in this study consists of all seventh-grade students at SMPN 3 Gunung Jati, totaling 124 students. The sample selected is from class VII C, comprising 21 students as the experimental group, and class VII D, also with 21 students, serving as the control group. Sampling is conducted through cluster random sampling, which involves randomizing groups rather than individual subjects (Badriah, 2012). Based on the expert's opinion, the first step is to determine the classes. In doing so, the researcher conducts a random draw from the pool of students in classes VII A through VII F. Each student is assigned a sequential number beforehand, ranging from 1 to 6. Through the random draw, class VII C is selected as the experimental group and class VII D as the control group, corresponding to the numbers drawn, 3 and 4, respectively.

The student creativity observation sheet is used to assess students' creativity during the learning process. This observation sheet is filled out by the researcher themselves, focusing on the following aspects of creativity: flexibility, fluency, elaboration, and originality, scored from 1 to 4 based on the observation sheet.

RESULTS & DISCUSSION

Results

No	Aspects of creativity	Average creativity value	
		Early	Last
1	Flexibility	71,4	78,5
2	Fluency	66,7	76,1

3	Elaboration	73,8	80,9
4	Originality	63,09	78,5
Average		**68,66**	**78,5**

Tabel 1. Average creativity value

The table above presents the results of observations at the beginning and end of the learning process to ascertain any growth in creativity among students in the experimental class. The control class was also observed but did not utilize the GRASPS-based PBL model. It can be observed that the average scores of the experimental class increased in creativity following the implementation of the GRASPS-based PBL compared to the beginning of the learning process. The aspect of creativity that showed the highest improvement among students was elaboration, from the start to the end of the learning period. For student responses, the implementation of the GRASPS-based PBL model received positive feedback based on the survey results obtained.

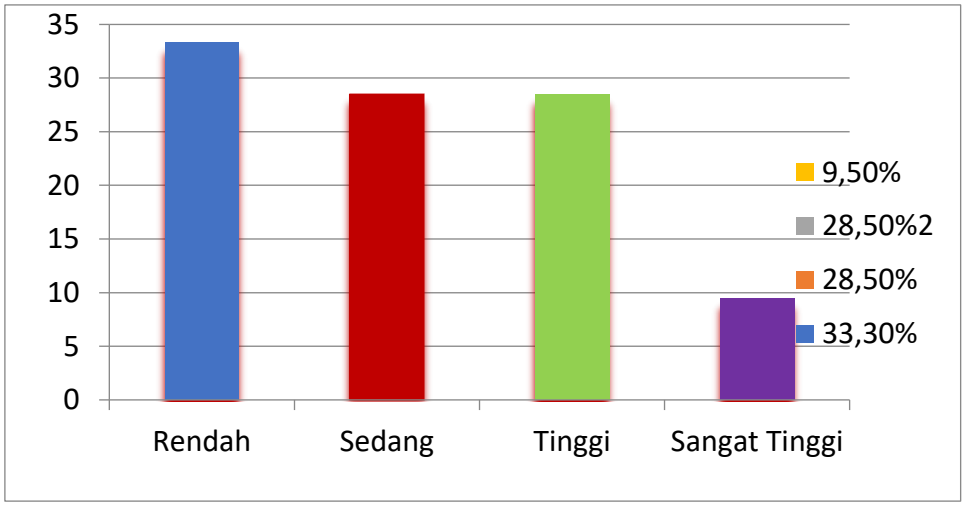

Figure 1. *Respon result before PBL based on GRASPS*

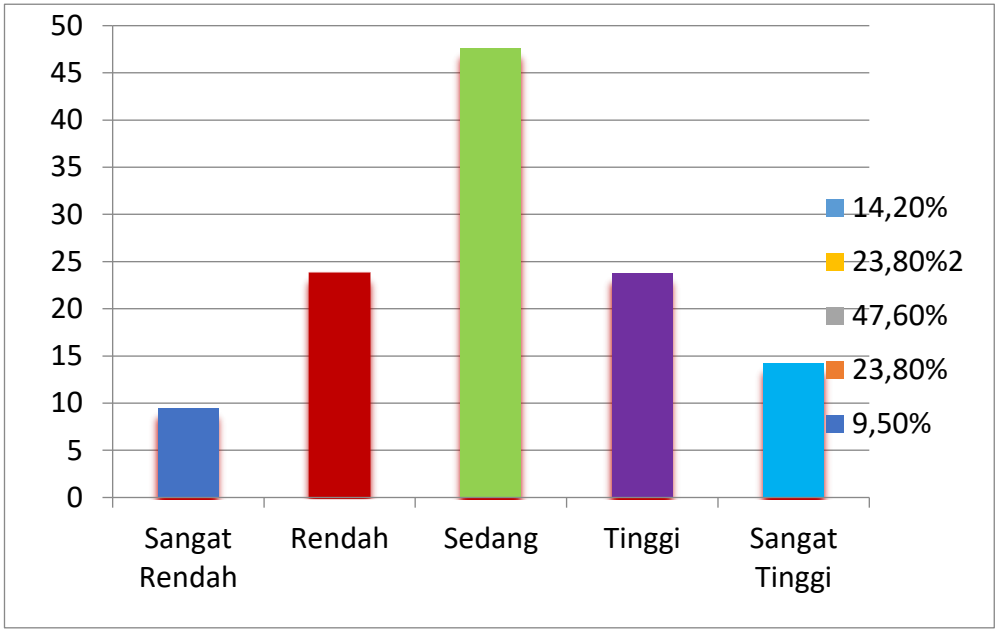

***Figure 2**. Respon Result After PBL based on GRASPS*

Before the implementation of the GRASPS-based PBL, students' responses fell within the low category, with the highest percentage being 33.30%. However, after the implementation of the GRASPS-based PBL, student responses increased to the moderate category, comprising 47.60%.

Discussion

According to Lucas (2005), the syntax of PBL consists of six stages. These are Start with the essential question, design a plan for the project, create a schedule, monitor the progress of the project, assess the outcome, and evaluate the experience. The first syntax is to begin with the essential question or questions that guide students to engage in project activities. The researcher provides essential questions with the ultimate goal of engaging students in project activities. These questions relate to phenomena commonly experienced by students, such as discussing floods that students often encounter. Questions like, "Have you ever experienced flooding at home? How often have you experienced it? In your opinion, what are the causes of frequent flooding in your area?" The researcher collects as many responses as possible from students regarding the causes of floods from the students' perspectives without intervening in whether their answers are right or wrong. After that, the researcher presents other essential questions that direct students to propose projects, such as, "In your opinion, can these floods be managed and prevented? If so, how?"

The second syntax involves the stage of designing project activities. In this stage, GRASPS serves as a guide for students to create their project designs. This activity involves not only the student groups but also the researcher collaborating with the students, providing assistance if students encounter difficulties. To ensure systematic project activities, the researcher directs students to first establish the objectives of each group in creating the project, specifying its purpose, primarily for the processing of non-organic waste. To enhance students' focus on reducing non-organic waste, after setting the objectives, students in each group allocate their

roles based on group consensus. These roles include those responsible for scavenging organic waste, sourcing relevant materials/sources for non-organic waste processing, waste cleaning, group leader, secretary, and treasurer. The next syntax involves creating a schedule of activities. The researcher sets deadlines for task completion and outlines the timeline/sequence of actions that need to be taken first. Once the students' roles have been established, in this stage, students determine the project's target audience to provide a clearer picture of the project. For example, if the target audience is students, what are their needs? What makes the most sense to be created according to the agreed-upon schedule? Making sense also implies that challenges, obstacles, and other project-related factors have been considered beforehand in this phase (Situation).

The overview formed in the previous phase is actualized in the syntax of monitoring project progress. At this stage, students begin to create a product/performance while being continuously monitored and guided by the researcher to ensure smooth project implementation. Monitoring activities are conducted both at school and outside; for external monitoring, the researcher utilizes a WhatsApp group to monitor students' progress, facilitate question and answer sessions, and share project progress updates, among other activities. During the project creation process, it is evident that students collaborate with each other within their group and even with other groups. This collaboration, as assessed by the researcher, stems from the fact that at the beginning of the learning activity, students were assigned their respective tasks, fostering a sense of responsibility towards their assignments. With each student having their own tasks or roles, those with similar roles in different groups decide to collaborate to facilitate the project activities.

The fifth syntax involves assessment. Once students have completed their projects on waste management, the researcher conducts assessment along with the standards phase. The researcher's assessment is based on an observation sheet used to evaluate students' creativity. This observation sheet serves as the standard assessment for every project created by the students.

Technically, each group will present their product outcomes. The presentation activity is also included in the creativity aspect being evaluated. The aspects assessed include elaboration, which encompasses neatness, product aesthetics, coherence, and so on. The next aspect is smoothness, related to the fluency of student product presentations from language usage, product explanations to the clarity of explanations. Another aspect is flexibility, related to students' selection of waste materials, how they develop ideas into products. The last aspect is authenticity, assessing the originality of the product, its uniqueness, and its practical value. Below are the outcomes of the products created by student groups. Below are the results of the utilization of non-organic waste created by students.

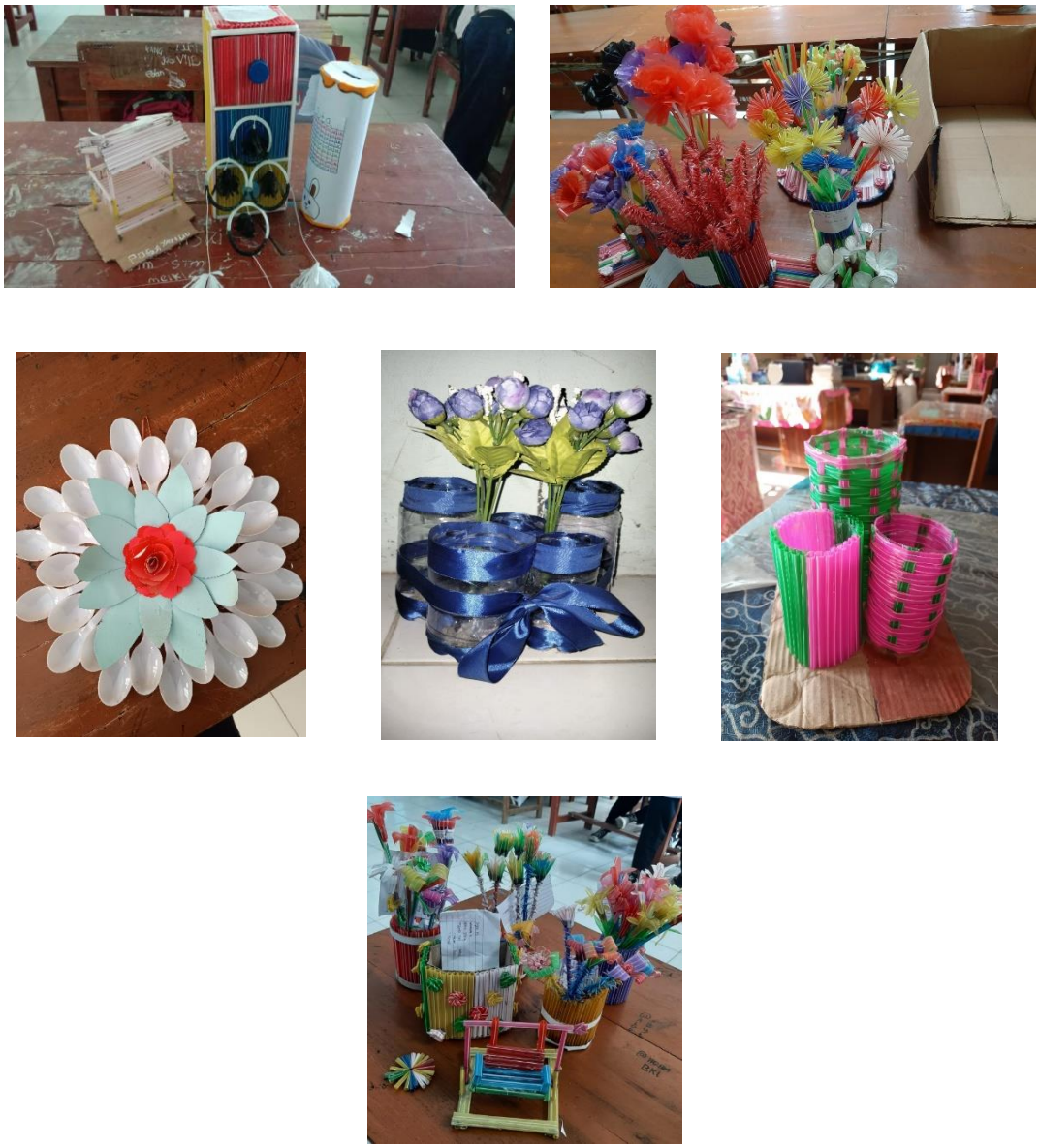

***Figure 3**. The works of Group 1 to 5 in the experimental class*

The implementation of GRASPS-based PBL emphasizes clear task understanding for students. Some key findings during the implementation of GRASPS-based PBL include increased student understanding of their natural environment, developing observation and research skills over time, enhanced creativity in solving existing problems, and most importantly, increased environmental awareness among students. The increase in creativity is also related to observation skills. When students become aware of issues in their surroundings, such as poorly organized waste, lack of awareness in proper waste disposal, and the abundance of scattered waste, the implementation of the GRASPS-based PBL model engages students directly in solving these environmental problems. They create decorations and other solutions, enhancing not only their problem-solving skills but also their creativity. Beyond the utility value, students also improve the

aesthetic value of their creations. This model demands creative thinking from students, encouraging them to design the best solutions based on their understanding of environmental issues.

Essentially, GRASPS-based PBL is a model that facilitates activities related to students' creativity. Therefore, findings such as these are also a result of implementing GRASPS-based PBL. The findings of the research are further supported by the results of Dian Novita Sari's study (2018). The research on the creativity of students in class X IPA2 at MAN 1 Kota Subulussalam through the implementation of Project Based Learning (PBL) model on waste recycling in environmental pollution materials is categorized as creative and highly creative. Additionally, student learning outcomes experienced improvement, with pre-test scores at 21.25 and an average post-test score of 74.75, proving that the calculated t-value is greater than the t-table (t-calculated = 13.75 and t-table = 1.73). The implementation of the Project Based Learning (PBL) model on waste recycling in environmental pollution materials resulted in improved student learning outcomes, and student creativity was categorized as creative and highly creative.

Students' responses to learning activities before using GRASPS-based PBL tend to be low. This can be attributed to several factors, including student boredom due to repetitive learning activities. Consequently, it affects students' motivation, leading to decreased interest in learning. Lack of student engagement in learning activities is also a contributing factor to the low response from students.

It is evident that after the implementation of GRASPS-based PBL, which actively involves students, their responses become high, indicating increased enthusiasm and motivation in their learning activities. Student involvement in learning activities is also nearly uniform, with the assistance of GRASPS assigning each student a specific role, thus minimizing passive involvement during learning. The execution of assigned roles by each group member also indicates excellent student response to this implementation of GRASPS-based PBL. There are no students who do not fulfill their roles, and many even help each other, despite not having designated roles within their respective groups.

This is consistent with the findings of Rhamayanti's research (2019). The conclusions drawn from this research are as follows:

1) There is an increase in mathematics learning outcomes through the implementation of Goal, Role, Audience, Situation, Product And Standard (GRASPS)-based Project Based Learning (PBL) model with guided discovery method, with a moderate criterion of 0.65.
2) There is an increase in student learning activities through the implementation of GRASPS-based PBL model with a moderate criterion of 0.46.
3) There is also an increase in students' responses to the Project Based Learning (PBL) model based on GRASPS, with a significant increase in teachers' ability to manage learning activities, with a high criterion of 0.78.

CONCLUSION

The creativity outcomes at the beginning and end of the learning process, by implementing the Project Based Learning (PBL) model based on Goal, Role, Audience, Situation, Product And Standart (GRASPS), experienced an average increase. This means that students' creativity grows with the implementation of

GRASPS-based PBL. The improvement is due to the active involvement of students in this learning activity, and each point of GRASPS also serves as a key to enhancing creativity among students in class VII of SMP Negeri 3 Gunung Jati. Students' responses after the use of the Goal, Role, Audience, Situation, Product And Standard (GRASPS)-based Project Based Learning (PBL) model fall into the moderate category. Student responses increased after the implementation of GRASPS-based PBL because students actively engaged in it, and also due to the assignment of tasks/roles to each student. From these results, it can be concluded that this research successfully fosters students' creativity while also enhancing their concern for the surrounding environment. Additionally, the implementation of the GRASPS-based PBL model receives positive responses from students.

CONFLICT OF INTEREST

Concerning the research, authorship, and publication of this paper, the author(s) reported no potential conflicts of interest.

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