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# The Oppemei Model on Creative Thinking Skills Reviewing From Self-Efficacy of Students in Science Learning

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***ABSTRAK***

*Permasalahan saat ini yaitu masih sangat sulit menumbuhkan keterampilan berpikir kreatif dan self-efficacy dalam diri anak. Hal ini dikarenakan masih tingginya rasa ingin menang sendiri dan keterbatasan waktu pembelajaran di sekolah. Tujuan utama penelitian ini untuk menganalisis model OPPEMEI terhadap keterampilan berpikir kreatif ditinjau dari self-efficacy siswa kelas IV SD dalam pembelajaran IPA. Populasi penelitian ini adalah seluruh siswa kelas IV yang berjumlah 186. Jenis penelitian ini adalah eksperimen semu dengan rancangan Non-Randomized Posttest Only Control Group Design dan faktorial 2x2 sebagai desain analisisnya. Kelas yang digunakan sebagai sampel ditentukan dengan teknik random sampling. Metode pengumpulan data menggunakan kuesioner dan tes. Instrument menggunakan angket dan lembar soal. Teknik analisis data secara deskriptif kualitatif dan deskriptif kuantitatif menggunakan menggunakan analisis varians (ANAVA) dua jalur. Hasil penelitian menunjukkan terdapat perbedaan keterampilan berpikir kreatif antara siswa yang mengikuti model pembelajaran OPPEMEI dan siswa yang mengikuti model pembelajaran konvensional. Terdapat perbedaan keterampilan berpikir kreatif, pada kelompok siswa yang memiliki self-efficacy tinggi yang mengikuti model pembelajaran OPPEMEI dan siswa yang mengikuti model pembelajaran konvensional, Terdapat perbedaan keterampilan berpikir kreatif, pada kelompok siswa yang memiliki self-efficacy rendah yang mengikuti model pembelajaran OPPEMEI dan siswa yang mengikuti model pembelajaran konvensional. Disimpulkan bahwa adanya pengaruh interaksi antara model pembelajaran dan self-efficacy terhadap keterampilan berpikir kreatif siswa pada mata pelajaran IPA.*

**ABSTRACT**

The The current problem is that it is still very difficult to develop creative thinking skills and self-efficacy in children. This is because there is still a high sense of wanting to win alone and limited learning time at school. The main aim of this research is to analyze the OPPEMEI model for creative thinking skills in terms of the self-efficacy of fourth grade elementary school students in learning science. The population of this research is all 186 grade IV students. This type of research is a quasi-experiment with a non-randomized design.PosttestOnly Control GroupDesignand 2x2 factorial as the analysis design. The classes used as samples were determined using random sampling techniques. Data collection methods use questionnaires and tests. The instrument uses questionnaires and question sheets. Data analysis techniques are descriptive qualitative and descriptive quantitative using two-way analysis of variance (ANOVA). The research results show that there are differences in creative thinking skills between students who follow the OPPEMEI learning model and students who follow the conventional learning model. There are differences in creative thinking skills, in groups of students who have high self-efficacy who follow the OPPEMEI learning model and students who follow conventional learning models. There are differences in creative thinking skills, in the group of students who have low self-efficacy who follow the OPPEMEI learning model and students who follow the conventional learning model. It was concluded that there was an interaction effect between the learning model and self-efficacy on students' creative thinking skills in science subjects.

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## 1. INTRODUCTION

Self-efficacy has become an important issue for several decades, especially in the conditions of the COVID-19 pandemic, so that various new breakthroughs are needed in various fields. The ability to make breakthroughs is closely related to self-efficacy actions so as to produce creative products(Botha et al., 2020; Wilde & Hsu, 2019). It is predicted that creative products will emerge if they have personal conditions and a supportive environment (press), or an environment that provides the opportunity to be busy creatively..Environmental factors are an important dimension to support children's self-efficacy, in accordance with the theory of intersection creativity(Chen et al., 2021; Safithri et al., 2021). The theory of intersection creativity, namely a form of creative success, is the intersection between children's skills in certain fields (domain skills), creative thinking and working skills, and intrinsic motivation, which can also be called inner motivation. Inner motivation in terms of self-efficacy is hampered by stereotypical thinking, stereotypical thinking is currently a new phenomenon in social media(Goudsouzian et al., 2018; Mireles-Rios & Becchio, 2018). Stereotypes are an intuitive way of thinking to simplify complex things and help in quick decision making. However, stereotypes can be both positive and negative prejudices, and are sometimes used as an excuse for discriminatory actions. Some think that all forms of stereotypes are negative. This condition often greatly undermines students' creative thinking.

A less than optimal learning process causes students' skills in developing creativity to be hampered and students' self-efficacy is also less able to be developed. This is proven based on the value of students' creative thinking skills in class IV in science subjects which is still below the KKM. The results of data analysis at SD Gugus 1 Buleleng District show that the number of 186 students is still 130 students who are below the KKM, this is a problem that must be overcome. The KKM value is obtained from the mid-semester test, which is carried out by the teacher. This value is to see the results of the student's KKM so that it needs to be improved to be able to increase the KKM in the next mid-semester. Therefore, if we look at the class average score of 66, 19 if converted into the Benchmark Reference Assessment (PAP) conversion table it can be categorized as low, this is also a problem that must be overcome. Based on the results of these observations, one of the reasons for the low value of students' creative thinking skills in science subjects is the lack of innovative learning models to be used. Creative thinking skills can be better adapted in the early grades, namely in the phase of children's knowledge development(I Gusti Ayu Tri Agustiana et al., 2020a; Dilla et al., 2018; Rahmadani et al., 2021). Interventions to trigger good creative thinking skills can start from science learning in elementary school(I Gusti Ayu Tri Agustiana et al., 2020b).As well as the results of research on the creative responsibility-based learning (OPPEMEI) model on creative thinking skills in terms of student self-efficacy, it is good, but still classified as moderate, still needs to be improved(I Gusti Ayu Tri Agustiana et al., 2020b).

Observation results found that it is still very difficult to develop students' creative thinking skills and self-efficacy in children, this is because children still have a high sense of wanting to win for themselves and limited learning time at school. This has resulted in the learning process not taking place as expected, resulting in the application of creative thinking skills and instilling self-efficacy in elementary school students not being optimal. On the other hand, the results of interviews with homeroom teachers regarding developing students' creative ideas, teachers tend to limit them due to lack of learning time so that it is difficult to accept ideas or ideas given by students for new things, so students feel limited in developing the ideas they want to express. This incident resulted in students not wanting to develop the ability to think creatively about learning and tending to follow the learning path determined by the teacher. These findings confirm that elementary school students' creative thinking skills in science are relatively low, caused by several factors, namely first, the teacher's use of inappropriate teaching methods, so that students only memorize rather than understand the material.(Ningrum, 2016; Rohana & Wahyudin, 2017). Second, teachers' ability to motivate children is still low, so new approaches need to be initiated for elementary school students' learning(Hagger & Chatzisarantis, 2016).*Third,*misconceptions occur, because they cannot think abstractly (Sadler & Sonnert 2016). Creative thinking skills are positively correlated with science creative thinking skills(Schmidt, 2010).

Natural sciences are starting to be improved, but various problems in science learning are emerging, one of which is misconceptions. Various problems need to be challenged to students(Adnyani et al., 2020; Qistina et al., 2019). Science teaching to elementary school students is packaged thematically, so it requires creative thinking skills and self-efficacy in accordance with the characteristics of that science(Blass et al., 2016).Various intervention efforts by education experts to facilitate science learning have been carried out to build creative thinking skills in elementary school students, namely, interventions include: using inquiry teaching models, storytelling, crossword puzzles, case-based learning instruction, green chemistry approaches(Akkuzu & Uyulgan, 2016; Çam & Geban, 2017; Haack & Hutchison, 2016; Peleg, 2009; Yuriev, 2016).The use of various models and approaches still shows that students have obstacles in understanding science content. Apart from that, interventions that have been

used to train scientific self-efficacy include using Conventional (PBL) to develop students' self-efficacy, improving problem finding and OPPEMEI with their own ideas and abilities, evaluating events from various points of view, adapting to changing circumstances. , and succeed in finding information by thinking at a higher level. Other findings also develop the OPPEMEI model to improve students' creative thinking skills(Agustiana, et al., 2020).

The learning model using the OPPEMEI learning model has been able to improve the creative thinking skills of PGSD students(Agustiana, et al., 2020).The OPPEMEI model isThe learning model is extracted from three innovative student-centered learning models such as Problem based learning, Brain Based learning and inquiry. The extraction starts from the weaknesses and strengths of the three models, both studied theoretically and empirically. by referring to the theoretical dimensions supporting model development(Agustiana, et al., 2020).The OPPEMEI model has aspects namely First, focus orientation on the initial stages of learning. Second, there is the exploration of ideas that challenge students' cognitive abilities. Third, investigation for creative problem solving. Fourth, elaboration. Fifth, present the results of the work. Sixth, evaluation or reflection. Seventh, implementation aspect. Validation and, has very good efficiency and readability and can improve creative thinking of PGSD students,(Agustiana, et al., 2020). However, this has not been done at elementary school level. This applied research aims to formulate several variables needed in implementing the OPPEMEI model in elementary schools. This research aims to analyze the differences between students' thinking skills due to the influence of the learning model used in terms of students' self-efficacy.

## 2. METHOD

This research is experimental research. The experimental design used in this research was Non-Randomized Posttest Only Control Group Design. In this design, subject selection is not carried out randomly. This design was chosen because the experiment was carried out in certain classes with existing or existing students and during the experiment it was not possible to change existing classes. The research analysis design is a 2x2 factorial design. The separating factor is the moderator variable self-efficacy. The sorters were divided into two levels, namely self-efficacy above the group average (27% from the top) and below the group average (27% from the bottom), after the data was sorted from largest to smallest. With this sorter, it is hoped that it can increase research accuracy. The population in this study were all fourth grade students at Gugus I Elementary School, Buleleng District, Singaraja Regency, totaling 8 elementary schools. The total population is 184 students, the following is the composition of class IV students in Cluster I, Buleleng District, Singaraja Regency. Data collection in this research includes: students' creative thinking skills in science content using tests and self-efficacy using questionnaires. Creative thinking skills have five indicators, namely: fluency, flexibility, originality, elaboration, and evaluation. The instrument grid is presented in Table 1. The data analysis technique uses inferential statistical analysis.

**Table 1.**Creative Thinking Skills Grid

| No | Dimensions of Creative Thinking | Indicator |
|---|---|---|
| 1 | Fluency | 1. Spark various ideas, answers, solutions to problems or questions<br>2. Provides many strategies, ways or suggestions for doing various things<br>3. Always think of more than one answer or solution |
| 2 | Flexibility | 1. Generate ideas, varied answers or varied questions<br>2. Can see a problem from different views<br>3. Look for many alternatives or different directions<br>4. Able to change the way of approach or way of thinking |
| 3 | Authenticity | 1. Able to give birth to new and unique expressions<br>2. Provides an unconventional way to express oneself<br>3. Able to create unusual combinations of parts or elements |
| 4 | Detailed Thinking (elaboration) | 1. Able to enrich and develop an idea or product<br>2. Adding or detailing details of an object, idea or situation so that it is more interesting |
| | Evaluation | 1. The ability to consider/judge objects, behavior or situations based on certain criteria |

(Agustiana, et al., 2020).

## 3. RESULT AND DISCUSSION

### Result

Research subjects from SDN 1 Banyuning as the experimental school group and SDN 5 Banyuning as the control school group. The research samples were taken from both high classes who had the same level of self-efficacy measurement. High Self Efficacy (B1), namely OPPEMEI (A1) totaling 31 and Conventional (A2) totaling 31. Low Self Efficacy (B2) OPPEMEI (A1) totaling 31 and Conventional (A2) totaling 31. Statistical Description Data Results of Creative Thinking Skills are presented in Table 2.

**Table 2.**Statistics Description of Data Results of Creative Thinking Skills

| *Self-Efficacy* | Treatment | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | OPPEMEI | | | | | Conventional | | | | |
| | N | Min | Max | Average | elementary school | N | Min | Max | Average | elementary school |
| High (B1) | 31 | 65 | 93 | 78.27 | 8.58 | 31 | 44 | 80 | 62.66 | 10.94 |
| Low (B2) | 31 | 45 | 70 | 63.28 | 9.23 | 31 | 52 | 76 | 58.14 | 6.55 |
| Amount | 62 | 45 | 93 | 69.88 | 11.12 | 62 | 44 | 80 | 61 | 8.95 |

The results of Table 2 show the analysis of creative thinking skill scores that the OPPEMEI model with high self-efficacy gets an average score of 78.27 higher than the conventional model with high self-efficacy gets an average score of 62.66. Meanwhile, the OPPEMEI model with low self-efficacy gets an average score of 63.28, which is higher than the conventional model with low self-efficacy which gets an average score of 58.14. Conclusions from data resulting from creative thinking skills show that the application of the OPPEMEI model has better average scores compared to the conventional model, all of which are viewed from student self-efficacy. The normality test results obtained in the research show that the significance value of the data resulting from creative thinking skills in the OPPEMEI model is 0.502 > 0.05, this is show that the value of creative thinking skills from 62 samples distribute normal. Then the significance value of creative thinking skills using the conventional model is 0.096 > 0.05, this shows that the value of the skills think creative of 44 sample normally distributed. Then, the results of the homogeneity test of creative thinking skills from 62 research samples using the brain based modellearningand the conventional model meets the significance value of 0.0288 > 0.05, this shows that the data on the value of complex thinking skills mathematical students have homogeneous variance values.

The normality test results obtained in the research show that the significance value of the data resulting from creative thinking skills in the OPPEMEI model with high self-efficacy is 0.389 > 0.05, this is show that the value of creative thinking skills from 31 samples distribute normal. Then the significance value of creative thinking skills using the conventional model with high self-efficacy is 0.217 > 0.05, this shows that the value of the skill think creative from 31sample normally distributed. Then, the results of the homogeneity test of creative thinking skills from 31 research samples using the brain based modellearningand the Conventional model which both have high self-efficacy values meet the significance value of 0.281 > 0.05, this shows that the data on the value of complex thinking skills mathematical students have homogeneous variance values. The normality test results obtained in the research show that the significance value of the data resulting from creative thinking skills in the OPPEMEI model with low self-efficacy is 0.465 > 0.05, this is show that the value of creative thinking skills from 22 samples distribute normal. Then the significance value of creative thinking skills using the conventional model with low self-efficacy is 0.169 > 0.05, this shows that the value of creative thinking skills is 22 sample normally distributed. Then, the results of the homogeneity test of creative thinking skills from 22 research samples using the brain based model learning and the Conventional model which both have low self-efficacy values meet the significance value of 0.386 > 0.05, this shows that the data on the value of complex thinking skills mathematical students have homogeneous variance values.

The results of analysis using two-way ANOVA show that students who were treated using the OPPEMEI model obtained gradesF Countamounting to 28.341, with a significance level of 0.05 and df1 = 1 and df2 = 2, then the valueF Table= 4.3512. Thus it is concluded that Fcount 27.334 >F Table4.467 so that H0 is rejected, meaning there is a difference in the value of creative thinking skills from the two different learning models. Furthermore, the acceptance of H1 means that the value of creative thinking skills given the OPPEMEI model treatment is higher compared to the conventional model treatment. There is an interaction between the two learning models and students' self-efficacy towards the value of creative thinking skills, p the proven by a significance value of 0.003 <0.05 with a significance level of 0.05. This

data shows that there is a significant interaction between the models learning which reviewed rom students' self-efficacy to the value of creative thinking skills. Results interaction too shows that there is a relationship between learning models and self-efficacy that does not form a line parallel means crossed lines. This proves that the OPPEMEI model in improving creative thinking skills is more suitable than the conventional model.

The results of the analysis using the t-test show that students who were given the OPPEMEI model treatment with high self-efficacy obtained grades count as big as5.894 with a significance level of 0.05 and degrees of freedom 60, then for ttable2, 018. So it can be concluded that the t-count value of 5.894 > t-table value of 2.318 indicates that H0 was rejected, which means there is a difference in the value of creative thinking skills between students who were given treatment both learning models with high self-efficacy. Apart from that, the acceptance of H1 means that the value of the student's creative thinking skills is given treatment. The OPPEMEI model is higher than the conventional model which is both viewed from high self-efficacy. The results of the analysis using the t-test show that students who were given the OPPEMEI model treatment with high self-efficacy obtained a calculated t value of 1.894 with a significance level of 0.05 and degrees of freedom of 60, then for the t table it was 2.318. So it can be concluded that the tcount value is 1.894 > t table value 2.318, indicating that there is acceptance of H0, which means there is a difference in the value of creative thinking skills between students who were given treatment both learning models with high self-efficacy. Apart from that, the acceptance of H1 means that the value of the student's creative thinking skills is given treatment. The OPPEMEI model is no different from the conventional model which is both viewed from low self-efficacy

**Discussion**

In testing the first hypothesis, it was proven that there was a difference between the creative thinking skills of students who were given the OPPEMEI Model and students who were given the Conventional Model. The results of descriptive analysis and using the t-test show that there is a significant difference in the value of creative thinking skills between the group of students given the OPPEMEI Model and the group of students given the Conventional Model. In fact, based on data processing and analysis tests, students given the OPPEMEI Model tend to have higher creative thinking skills than students with the Conventional Model. Applying the OPPEMEI Model, it can be seen that this learning really supports improving students' creative thinking skills. Each syntax contained in the OPPEMEI Model supports improving students' creative thinking skills. Previous findings reveal that the OPPEMEI model has a very important role in improving students' creative thinking skills(Agustiana et al., 2020; Agustiana et al., 2020b). Students who participate in learning well will be able to develop creative thinking abilities(Febriani & Ratu, 2018; Nuranggraeni et al., 2020). By looking at the results of the analysis and discussion above, it can be concluded that the OPPEMEI Model plays a very important role and supports improving students' creative thinking skills. In other words, the OPPEMEI Model has a positive influence on improving creative thinking skills when compared to the Conventional Model.

The results of data analysis show that there is an interaction between the learning used and self-efficacy in influencing students' creative thinking skills. This means that the learning applied in class and students' self-efficacy together have a significant influence on students' creative thinking skills(Alfaiz et al., 2021; Redifer et al., 2021; Safithri et al., 2021). The OPPEMEI model is thought to have a better influence than the conventional model when viewed from student self-efficacy. Through interaction, it can be seen which learning group has a higher average value of creative thinking skills(Sa'pang & Purbojo, 2020; Wangid et al., 2020). In this case, the group of students with the OPPEMEI Model has a higher average value of creative thinking skills. This is different from the Conventional Model where students do not play an active role in learning, so it is difficult for their creative thinking skills to improve(Putri et al., 2019; Suparmi, 2018). A learning process that does not involve students understanding the material in their own way and only accepting explanations from the teacher is less suitable for developing creative thinking skills(Amalia et al., 2015; Marliani, 2015). However, for some students with a certain level of self-efficacy, passive learning conditions and following what the teacher says will be easier to follow than when they have to understand the material themselves through reading and summarizing. This is what causes the interaction between learning and student self-efficacy to appear more significant. In testing the third hypothesis, Ho was rejected, which means there is a significant difference between the OPPEMEI Model and the Conventional Model in the group of students who have high self-efficacy. Testing the fourth hypothesis shows that Ho is accepted, which means there is no significant difference between the OPPEMEI Model and the Conventional Model in the group of students who have low self-efficacy. The results of descriptive statistical analysis and t-test show that there is no difference between the creative thinking skills of students who were given the OPPEMEI Model and the Conventional Model in terms of students who have low self-efficacy. Apart from that, it can also be interpreted that the creative thinking

skills of students who have low self-efficacy using the OPPEMEI Model can be higher than the creative thinking skills of students with low self-efficacy who are given the Conventional Model. Based on the explanation, it was concluded that the learning provided by the teacher did not have a significant influence on the abilities of students who had low self-efficacy. The creative thinking skills of students in two groups with different learning are not significantly different when viewed from low self-efficacy.

## 4. CONCLUSION

The results of data analysis show that first, there are differences in creative thinking skills between students who follow the OPPEMEI learning model and students who follow the conventional learning model. Second, there are differences in creative thinking skills, between groups of students who have high self-efficacy who follow the OPPEMEI learning model and students who follow the conventional learning model. Third, there are differences in creative thinking skills, between groups of students who have low self-efficacy who follow the OPPEMEI learning model and students who follow the conventional learning model. Fourth, there is an interaction effect between learning models and self-efficacy on students' creative thinking skills in science subjects.

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