THE EFFECT OF GENERATIVE LEARNING MODEL TO THE CREATIVE THINKING ABILITY OF HIGH SCHOOL STUDENT IN STANDING WAVES AND STATIONARY WAVES

UNDERGRADUATE THESIS

Submitted As One of The Requirements for Obtaining A Bachelor of Education Degree

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STATEMENT LETTER

With this I declare:

1. My writing, the final project is in the firm if a thesis with the title "The Effect of Generative Learning Model to The Creative Thinking Ability In High School Students on Standing Waves and Stationary Waves", which is my original work.
2. This paper is purely my ideas, judgments, and formulations, without any unauthorized assistance from other parties, except for the direction of the supervisor.
3. In this paper there are no works or opinions that have been written or published by others, unless quoted and included as a reference in me manuscript by mentioning the name of the author and listed in the bibliography.
4. I make this statement truthfully and if in the future there are irregulates and untruths in this statement, I am willing to accept academic sanction in the form of revocation of the degree that I have obtained because of this paper, as well as other sanctions by applicable legal norms and provisions.

Padang, 18 Agustus 2022

ang membuat pernyataan

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THE EFFECT OF GENERATIVE LEARNING MODEL TO THE CREATIVE THINKING ABILITY OF HIGH SCHOOL STUDENTS IN STANDING WAVES AND STATIONARY WAVES

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ABSTRAK

Nabila Indah Kemara : Pengaruh Penerapan Model Pembelajaran Generatif terhadap Kemampuan Berpikir Kreatif pada Peserta Didik SMA Materi Gelombang Berjalan dan Gelombang Stasioner

Pendidikan adalah suatu proses interaksi manusiawi antara pendidik dengan peserta didik untuk mencapai tujuan pendidikan. Permasalahan yang dihadapi dalam mencapai tujuan pendidikan tersebut adalah kemampuan berpikir kreatif peserta didik yang masih rendah. Hal ini dibuktikan dengan hasil belajar peserta didik yang masih rendah. Kemampuan berpikir kreatif peserta didik yang rendah akan berdampak kepada kemampuan peserta didik dalam proses pembelajaran. Penerapan model pembelajaran generatif dalam proses pembelajaran diperkirakan mampu meningkatkan kemampuan berpikir kreatif peserta didik. Tujuan penelitian ini adalah untuk mengetahui dampak penerapan model pembelajaran generatif terhadap kemampuan berpikir kreatif pada peserta didik SMA materi gelombang berjalan dan geombang stasioner.

Jenis penelitian ini adalah quasi eksperimen dengan *pretest-postest control group design*. Populasi penelitian ini adalah seluruh peserta didik kelas XI IPA yang ada di SMAN 1 Payakumbuh. Pengambilan sampel dilakukan dengan teknik *cluster sampling*. Sampel yang diambil pada penelitian ini adalah kelas XI IPA 3 dan XI IPA 5.

Data didapatkan dari kemampuan berpikir kreatif peserta didik yang mengadopsi *torrance test of creative thinking*. Analisis data dilakukan dengan uji statistik-t. Hasil penelitian menunjukkan kemampuan berpikir kreatif peserta didik pada kelas eksperimen adalah 82 dan rata-rata kemampuan berpikir kreatif peserta didik pada kelas kontrol adalah 75. Berdasarkan tabel distribusi-t diperoleh t_{tabel} adalah 1,99 dan t_{hitung} adalah 2,78. Syarat H_0 ditolak adalah jika $t_{tabel} < t_{hitung}$. Nilai t_{hitung} berada dalam penolakan H_0, sehingga H_1 diterima. Hal ini menyatakan bahwa terdapat pengaruh penerapan model pembelajaran generatif terhadap kemampuan berpikir kreatif pada peserta didik.

Kata Kunci: Model Pembelajaran Generatif, Kemampuan Berpikir Kreatif, Peserta Didik SMA, Materi Gelombang Berjalan dan Gelombang Stasioner

ABSTRACT

Nabila Indah Kemara : The Effect of Generative Learning Model to the Creative Thinking Ability of Senior High School Students in Standing Waves and Stationary Waves

Education is a human interaction process between teachers and students to achieve the purposes of education. Problems in achieving education purposes is the creative thinking ability of students is still weak. This can be seen from the learning outcomes of students are still low. The creative thinking ability of students that are still weak will impact the ability of students in learning process. The appilacation of generative learning model in learning process requires the students ability to think creatively. The purpose of this research is to determine the effect of generative learning model to the creative thinking ability of high school students grade XI in standing waves and stationary waves.

The type of this research is quasi experimen with pretest-postest control group design. The population in this research is all of the XI IPA students in SMAN 1 Payakumbuh with cluster sampling technique. The samples used in this research are XI IPA 3 and XI IPA 5.

The data is obtained from the creative thinking ability of students which is adopting torrance test of creative thinking. Data analysis is done by using t-test statistic. The result of this research shows that the creative thinking ability of students in experimental class is 82 and the creative thinking ability of students in control class is 75. Based on the table of t-distribution, t_{table} is 1,99 and t_{count} is 2,78. The requirement of H_0 is denied is when $t_{table} < t_{count}$. The score of t_{count} is in H_0 denial, so H_1 is accepted which means that there is there is an effect of generative learning model towards the creative thinking ability of students.

Key Words: Generative Learning Model, Creative Thinking Ability, Students Grade XI, Standing Waves and Stationary Waves

FOREWORD

Alhamdulillah, the authors say the presence of Allah SWT, who has bestowed His grace and gifts as well as salawat and greetings to the Prophet Muhammad SAW so that the author can complete the undergraduate thesis entitled "The Effect of Generative Learning Models to The Creative Thinking Ability of High School Students In Standing Waves and Stationary Waves". This undergraduate thesis was prepared as one of the requirements to work on getting a bachelor's degree in education in the Strata-1 program at the Department of Physics, Faculty of Mathematics and Natural Science, Universitas Negeri Padang. The author realizes that the preparation of this undergraduate thesis would not have been completed without the help of various parties. Therefore, on this occasion, I would like to thank:

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Hopefully all the guidance, help, and attention that has been given to the author will be a good deed and get a reply from Allah SWT. The author realizes that in writing this undergraduate thesis there are still shortcomings and weaknesses. Therefore, the writer expects suggestions to improve this undergraduate thesis. Hopefully this undergraduate thesis is useful for readers.

Padang, 18 Agustus 2022

Writer

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CHAPTER I

PRELIMINARY

A. Background of the problem

Education is a process of human interaction between educators and students to achieve educational goals (Amirudin, et al., 2021). Formally, education is held in schools. Schools where education takes place must be organized systematically and directed in order to achieve the functions and goals of education. Law Number 20 of 2003 Article 3 states that national education functions to develop capabilities and shape the character and civilization of a dignified nation in the context of educating the nation's life, aiming to develop the potential of students to become human beings who believe and fear God Almighty, have good character. noble, healthy, knowledgeable, capable, creative, independent, and become a democratic and responsible citizen.

The learning process is an activity that has educational value. This educational value colors the interactions that occur between educators and students (Asrori, 2020). The learning process contains a series of events that are designed and structured in such a way as to influence and support the learning process of students (Djamaluddin & Wardana, et al., 2019). This is supported by Permendikbud Number 22 of 2016 concerning the standard of the educational process that the learning process in units is held interactively, inspiring, fun, challenging, motivating students to participate actively, and providing sufficient space for initiative, creativity, and independence

according to talent. , interests and physical and psychological development of students. One of the subjects in the learning process is Physics.

Physics is one of the important subject areas. Physics develops curiosity through direct experience discovery through scientific work, utilizing facts, building concepts, principles, theories, and scientific methodologies (Maison, et al., 2022). So, Physics develops with the advancement of science and technology.

The development of science and technology as a whole has influenced various aspects of human life. Humans can increase their basic potential including physical, intellectual, emotional, mental, social, and ethical potential. Humans in improving aspects of their lives require higher-order thinking skills (Ritter & Mostert, 2017). One of the higher order thinking skills needed is the ability to think creatively.

The ability to think creatively is to think consistently and continuously to produce something original (Nurlaela, et al., 2019). Creative thinking is useful in the problem solving process. Someone will generate many ideas in problem solving (Ritter & Mostert 2017). Students are required to have high creative thinking skills to produce many alternative problem solving.

The ability to think creatively for students aims to produce unique ideas. The creative thinking ability of students is divided into three indicators of creative thinking ability, namely fluency, flexibility, and originality (Torrance, 2018). Fluency allows students to generate ideas. Flexibility allows students to generate many ideas. Originality allows students to

generate different and original ideas. However, students have low creative thinking skills.

Based on interviews conducted by researchers with educators at SMA Negeri 1 Payakumbuh and SMA Negeri 2 Payakumbuh, students have low creative thinking skills. The low creative thinking ability of students is evidenced by research conducted (Suardana, et al., 2019) that students' abilities are still low on fluency, flexibility, and originality. Research conducted (Fauziah, et al., 2019) states that students still have low abilities in producing many alternative answers. Low creative thinking skills will have an impact on low student learning outcomes.

Creative thinking skills have a very important role to improve student learning outcomes (Farhan, et al., 2021). Research conducted by (Fadhil, et al., 2021) states that students who have high creative thinking skills will have high learning outcomes. Creative thinking abilities and student learning outcomes have a very close relationship (Fatmawati, et al., 2019). Based on several studies that have been done previously, the high creative thinking ability of students will make students' learning outcomes high and vice versa. Student learning outcomes can be seen in Table 1.

Table 1. Average Final Semester Assessment (PAS) Physics for Class XI Science Students Semester 2 Academic Year 2021/2022 SMA Negeri 1 Payakumbuh

No	Class	Average value PASS	KKM
1	XI IPA 1	73	78
2	XI IPA 2	72	78
3	XI IPA 3	78	78
4	XI IPA 4	69	78
5	XI IPA 5	66	78
6	XI IPA 6	67	78
7	XI IPA 7	62	78
8	XI IPA 8	66	78

Source: (Physics teacher at SMA Negeri 1 Payakumbuh)

Based on Table 1 the average value of the Physics Final Semester Assessment (PAS) of students in class XI IPA semester 1 of the 2021/2022 academic year at SMA Negeri 1 Payakumbuh, it can be concluded that of the eight classes of students in class XI science at SMA Negeri 1 Payakumbuh, seven classes showed that student learning outcomes are still low. Based on the results of interviews, students have low learning outcomes on the material of traveling waves and stationary waves.

The material of traveling waves and stationary waves is a Physics material that is in class XI. Based on Permendikbud Number 69 of 2013 concerning the basic framework and curriculum structure of high school/madrasah aliyah that in class XI even semester there is one material, namely traveling waves and stationary waves. The material of traveling waves and stationary waves requires students to be able to analyze the physical quantities of traveling waves and stationary waves in various real cases and conduct experiments on traveling waves and stationary waves along with presentations of experimental results and their physical meaning.

Therefore, the material of traveling waves and stationary waves was chosen to see the creative thinking abilities of students.

The creative thinking ability of students in schools is still low due to the use of learning models that are not appropriate in the learning process (Wulandari, et al., 2021). Based on the results of interviews, the learning model applied in schools is still not able to improve students' creative thinking skills. So, an appropriate learning model is needed to improve students' creative thinking skills.

The solution offered is to apply a learning model to improve students' creative thinking skills. The learning model applied is a generative learning model. The generative learning model is a learning model that explains how data is generated in several possibilities (Foster, 2019). The generative learning model applies a learning pattern that makes students actively explore information in the learning being carried out. The generative learning model helps students to think creatively.

One of the effects of applying the generative learning model is helping students to have creative thinking skills (Akmam, et al., 2022). Students will get used to thinking creatively and producing unique and different thoughts. However, there has been no previous research that discusses the effect of applying generative learning models on students' creative thinking abilities. Previous research used different variables. Based on the background that has been presented, a study was conducted with the title "The Influence of the

Application of Generative Learning Models on Creative Thinking Ability in High School Students on Walking Waves and Stationary Waves".

B. Identification of problems

1. The learning process carried out in schools is still not in accordance with the demands of high school physics competence.
2. The applied learning model has not been able to improve students' creative thinking skills.
3. The creative thinking ability of students is still low as evidenced by the low learning outcomes of students' physics.
4. No previous research has examined the impact of applying generative learning models on creative thinking skills.

C. Scope of problem

1. The generative learning model applied is the Creative Thinking Oriented Cognitive Conflict-Based Generative Learning Model (PGOC3ARE).
2. The theory of creative thinking ability used is Torrance's theory of creative thinking ability.
3. The indicators of creative thinking ability that are measured are indicators of fluency, flexibility, and originality.

D. Formulation of the problem

Based on the background of the problem that has been described, it can be formulated the problem in this study. As the formulation of the problem of this research, how is the influence of the application of the

Generative learning model on the ability to think creatively in high school students with the material of Walking Waves and Stationary Waves?

E. Research purposes

Research conducted needs to be directed to achieve a goal as desired. The purpose of this study was to determine the effect of the application of the Generative learning model on the ability to think creatively in high school students with the material of Walking Waves and Stationary Waves.

F. Benefits of research

1. Educators, as a teaching guide using a generative learning model on the material of traveling waves and stationary waves.
2. Students, as learning resources and helping students to better understand the physics of traveling waves and stationary waves.
3. Researchers, as experience and provision of knowledge in teaching physics in the future and as a requirement for thesis courses.
4. Other researchers, as a source of ideas in the development of educational research in the process of increasing creative thinking skills.