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Application of Learning Model Search, Solve, Create, Share and (SSCS) with Brain Quiz Game Learning Towards Creative Thinking Skills Student of Physics

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ABSTRACT

The purpose of this research is to obtain a description of the application from learning model the Search, Solve, Create, and Share (SSCS) with game Brain Quiz learning on the creative thinking skills of high school students of physics in the impulse momentum material. The research method used was a quasi-experimental design of the "pretest-posttest control group design" which was carried out in class X at one of the high schools in East Jakarta for 2019/2020 Academic Year. Data collection is done by using the pretest and posttest for students' creative thinking skills. Based on the results of data analysis, the average N-gain of creative thinking skills of students is 0.84 and the standard deviation is 0.07, with 92% in the high category. So it can be concluded that the application of learning model Search, Solve, Create, and Share (SSCS) with game Brain Quiz learning can significantly improve students' creative thinking skills.

Keywords: SSCS learning model, brand quiz game learning, creative thinking skills.

INTRODUCTION

Physics is a part of science whose scope is related to natural phenomena experienced by humans. In general, physics is a forerunner to technological advances that develop in the era of globalization like today. It is undeniable that the current technological development is very rapid, technological development is also penetrated in the field of education in order to support and improve the quality of education that leads to modern education.

But in reality, there is still very little use of digital and cellular technology in the field of education, especially in the physics learning process in the classroom. Physics learning is still considered to be stiff and monotonous, learning is still considered to be conventional. This is certainly a problem in the learning process that affects the internal and external motivation of students in learning, so that it can linearly lead to underdevelopment of students' creative thinking skills. Therefore, there needs to be innovation in the physics learning process that supports the growth of students' creative thinking skills, one of which is the use of technology-based learning media. The use of technology-based learning media is in line with the Regulation of the Minister of Education and Culture of the Republic of Indonesia No.68 of 2014, which states that educators are required to be able to realize the learning situation that supports the potential of students, it is necessary to have support through the use of information and communication technology that can explore resources learn effectively and efficiently by maximizing the role of technology and communication and computer skills [1]. Responding to this, it is necessary to have innovation in learning media especially by utilizing technological advancements to support ideal learning.

In the process of learning physics using technology, one of them can use physics learning media based on Android with a brain quiz game. This learning media combines the concept of the game with the concept of learning that is designed according to the needs of students and responds to various student complaints about the difficulty of understanding abstract physics material. The incorporation of these concepts becomes very important in the process of learning physics because it is an attraction and learning motivation that can affect the development of students' creative thinking skills in solving problems in the form of games, especially in the material of momentum and impulses. Anwar et al think creatively is a new way of seeing and doing something that includes 4 aspects including, fluency (fluency), flexybility (originality), originality (authenticity), and elaboration (detail) [2]. One learning model that can develop students' creative thinking skills is the Search, Solve, Create and Share (SSCS)

learning model. The Search, Solve, Create and Share (SSCS) learning model refers to the four steps of problem solving, namely the search (investigate), solve (plan solving), create (construct solving), and share (communicate) phases [3]. The Solve stage can be linked to problem solving by completing games at each level in the use of physics media learning quiz brands, while create serves to develop students' creative thinking skills according to indicators of creative thinking skills.

THEORY OF STUDY

Creative Thinking Skills

The creative thinking skills to think creatively is an skill that should be possessed by every student. Creative thinking, is a mental process by focusing on the search for many ideas, the emergence of various abilities and many correct answers to a problem. According to Lawson [5] creative thinking is interpreted as a creative process, namely feeling the difficulties, problems, information gaps, missing elements, and disharmony, defining the problem clearly, making guesses or formulating hypotheses about deficiencies, testing these allegations and the possibility of improvement, retesting or even redefining the problem, and finally communicating the results [4]. To measure creative thinking skills, it can be used to test creative thinking skills that contain six indicators, namely: asking questions, guessing causes, guessing the effects of an event, improving the outputs, expressing the usefulness of objects and predicting. The aspects of creative thinking skills according to Hendra are as follows:

1. Fluency
   - The skills to generate many ideas / answers
   - The skills to have broad ideas

2. Details (elaboration)
   - The skills to detail certain details

3. Flexibility
   - The skills to produce ideas, answers or questions from different points of view
   - The skills to give a different direction of thinking

4. Originality (originality)
   - Many variations on the skills to give unusual answers, other than others that are rarely given
   - Many variations of ability give different directions of thinking [5].

Search, Solve, Create and Share (SSCS) Learning Models.

The stages of the SSCS learning model consist of search (students ask inquiry questions about topics they like to investigate), the Solve stage (students create designs for designs that will be used in inquiry to find answers to their inquiry questions, the create phase (students determine ways to be used to communicate their findings, the share stage (students share or provide results and evaluation of the investigation conducted by Pizzini [6].

Brain Quiz Game Learning

Brain quiz is a physics learning media in the form of a game in which there is physics material, in this study physics material is related to impulse momentum. This brain quiz can be accessed via an android device. Benny A. Pribadi explained that in conducting the learning process using the game method, students need to follow certain rules to achieve goals that are competitive or competent and challenging [7].

RESEARCH METHOD

The method used in this research is the experimental method. "According to Campbell and Stanley. Experimental research is a form of research in which variables are manipulated so that it can be ascertained the influence and effect of these variables on other variables investigated or observable. So based on the opinion of experimental research experts is a research conducted by manipulating so that the resulting effect is minimal. Pre-Experimental Designs with One-Group Pretest-Posttest Designs. The design of this study consisted of only one group (there was no control group), while the research process

was carried out in three stages, namely: (1) conducting a pretest to measure the initial conditions of the respondent before being given treatment, (2) giving X treatment, (3) do a post-test to determine the state of the dependent variable after being given treatment. The design of this study can be seen in the table below:

Table 1. Research Design

O1	X	O2
Pretest	treatment	*Posttest*

Information:
X: The treatment given using the SSCS Learning Model with media assisted with brain quiz games.
O1: Pretest value (before treatment)
O2: Prosttest value (after treatment)
Source: Sugiono [8].

RESULTS AND DISCUSSION

The indicators of creative thinking skills developed in this study consisted of five indicators, namely: (1) asking questions, (2) guessing causes, (3) guessing effects, (4) improving outputs, and (5) predicting. The indicator details are as follows:

1. Ask. Students are asked to develop as many questions as possible about things that occur in the picture given impulse momentum material about collisions or vehicle crashes;
2. Guess the causes. Students are asked to guess the sources of the cause of an event, especially in the material impulse momentum about collisions or vehicle crashes;
3. Guess the consequences of an event. Students are asked to predict the consequences that will occur caused by an event, especially in the material momentum impulse about collisions or vehicle crashes;
4. Improve the output. Students are asked to reveal the best and extraordinary ways to improve the information provided to be more precise and easily understood information;
5. Forecasting. Students are asked to write down other things that will also occur as a result of the occurrence of material events of impulse momentum about collisions or vehicle crashes;

The five indicators are outlined in a learning media in the form of a brain quiz game that can stimulate and challenge students in completing each level of the game related to physics impulse momentum learning material. In addition, the application of the SSCS learning model has an important role in practicing this creative thinking skills.

Improving students' creative thinking skills with the application of the Search, Solve, Create and Share (SSCS) learning model with the media brain quiz on the impulse momentum material is explored based on the pretest answers before learning and posttest after learning. The results of the assessment of creative thinking skills in the form of scores are then calculated on average. The average value of pretest, posttest and N-gain creative thinking skills can be seen in Figure 1 below:

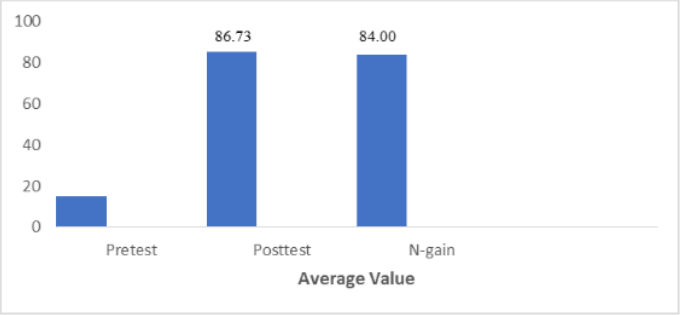

Figure 1. Average pretest, posttest and N-gain creative thinking skills

The picture above shows that prior to the holding of the SSCS model using the media brain quiz, the average score of students' creative thinking pretest was 15.19, while for the posttest value was 86.73 and the average value of N-gain was 84.00 with 92% in the category high, with a standard deviation of 0.07. This shows that the application of the Search, Solve, Create and Share (SSCS) learning model with brain quiz media can improve students' creative thinking skills.

While the acquisition of N-gain on each indicator of students' creative thinking skills is shown in Figure 2 below.

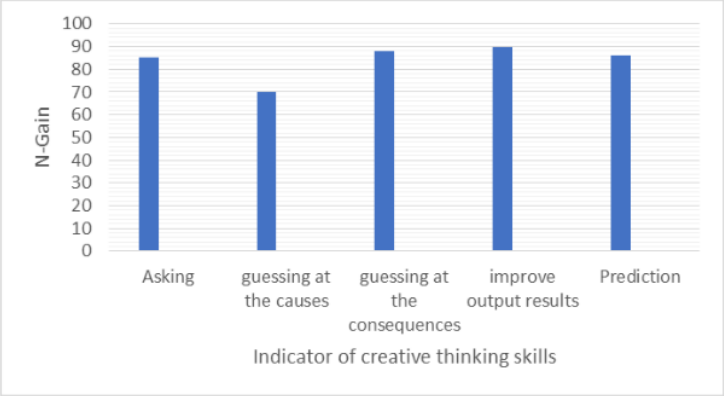

Figure 2. Acquisition of N-gain creative thinking skills for each indicator

Based on Figure 2, it can be seen that the highest N-gain acquisition occurs in the indicator of improving the output which is 90.0 with the high category and the lowest occurs in the guessing indicator of causes of 70.0 with the medium category.

Exposure to impulse momentum material by applying the SSCS learning model using physics learning media in the form of brain quiz is described sequentially equipped with simulations and game animations of several levels, sample questions, exercises, and evaluations at each meeting proven to be able to improve students' ability to ask, guess the causes, guessing the effects and improving the output of impulse momentum material.

Creative thinking skills are among the higher order thinking skills. According to [10] Creative thinking skills mean thinking effort by using various mental operations namely fluency, flexibility, authenticity and decomposition of ideas to produce something original, new and valuable [9]. Creative thinking skills need to be developed in students because through creative thinking skills students are able to solve one problem with different solutions.

Based on the results obtained it can be concluded that the increase in the creative thinking skills of the impulse momentum of students who take part in learning using the SSCS learning model with brai quiz media significantly increases compared to before the learning process.

CONCLUSIONS

Based on the results of the study it can be concluded that the students' creative thinking skills on the subject of significant impulse momentum have increased with the application of the SSCS learning model using the media of physics learning brain game quiz.

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