

The Brain Game Ranking One to Increase Learning Interest in Physics: A Case Study

Pujianti Bejahida Donuata
Physics Education
 IKIP Muhammadiyah Maumere
 Sikka, Indonesia
 pujianti@ikipmumaumere.ac.id

Erwin Prasetyo
Physics Education
 IKIP Muhammadiyah Maumere
 Sikka, Indonesia
 wintyo212@gmail.com

Dwi Sulisworo
Physics Education
 Ahmad Dahlan University
 Yogyakarta, Indonesia
 sulisworo@gmail.com

Abstract—Learning physics in the school often become the scourge of frightening and avoided by the students because it is considered difficult to understand. This case caused the student's interest in learning physics becomes reduced. The way to overcome this case is to create an atmosphere of learning physics through various teaching styles, for example, using brain games ranking one. Brain games Ranking One was a form of the game to improve and test students' ability, whether cognitive, affective, and psychomotor. Brain games ranking one is a way of answering questions with writing down answers on the board answers that had been provided with a limited time of each item, after a written response on the board, the teacher asked students to lift the whiteboard to show answers. A student with the wrong answer will be disqualified until only one student left will be the Ranking one's winner. This research aims to find out a relationship between brain games ranking one and increased interest in learning physics. Sample of this research is 180 students from tenth-grade and eleventh-grade. This study uses a qualitative descriptive and questionnaire instrument at the beginning of class and the end of course. At the beginning of class, there are 41 students (34% respondents) not interest in study physics and 62 students (34% respondents) not interest in study physics. After the class with Ranking One games, there are 93 students (51% respondents) became interested in studying physics, 68 students (38% respondents) interest to study physics and only seven students (4% respondents) not interest to study physics. This matter points out that brain games Ranking One can increase student's physics learning the importance.

Keywords—*learning interest, brain game, learning innovation, learning strategy*

I. INTRODUCTION

Physics lessons are one of the science subjects whose essence is a collection of ways of thinking, and scientific inquiry as a collection of facts, concepts, theories and models [1]. Physics learning is seen as a product which in its implementation must consider effective and efficient learning strategies such as practicum. Physics is a basic science which is the backbone of the development of science and technology [2].

Educators realize that building a conducive learning environment is important. A comfortable and innovative learning environment will encourage students who are active in learning. Various factors need to be considered in developing this learning environment [3]. In addition to the characteristics of the material being taught, the teacher needs to consider also the characteristics of students, the availability

of learning resources, and appropriate learning strategies. A good combination of these factors will make learning fun and motivating students; game is one of this activity [4], [5].

Efforts to choose the right learning strategy will determine student learning outcomes. Good learning performance is the goal of implementing the learning strategies implemented by the teacher. A strategy that can be used in learning that gives rise to competition is by applying the game [6], [7]. This game is certainly chosen which can be in accordance with the competencies to be achieved.

One game that is quite famous in Indonesia is Ranking One. This game is broadcast on a television station with a high rating. On the other hand, national examinations on physics subjects in many students in schools in Nusa Tenggara Timur tend to be low. To improve this learning performance, innovation in learning is needed. Many non-game learning strategies that have been implemented by the teacher, however, it is still rare to apply games in learning that adopt from games that are already known to the public through television. This study aims to see how the impact of the application of improved Ranking One on student's physics learning outcomes.

II. THEORETICAL BACKGROUND

A. Interest in Learning

At the high school level, physics lessons must be studied deeper. Physics subjects are identical to formulas and natural events that are difficult to remember and apply in everyday life which makes these subjects less attractive to students than other science subjects [8]. This has an impact on the choice of students who will enter higher education towards the department they will choose. The Ruang Guru Digital Bootcamp survey of 423 of twelfth-grade students stated that the favorite subject in the 2017 higher education exam was general medical doctor, while the physics department was not included in the ideal departments. Although unconsciously a lot of physics concept is used in everyday life in various fields because physics is a science that studies natural phenomena and the interaction of natural wonders. Through physics, we consider the events of physical objects, both those that occur in observable objects (material) and objects that cannot be observed (micro) [8]. It's just that the introduction of physics learning to the public, especially students, is still very minimal.

The lack of introduction to physics learning is caused by several things, one of which is the low interest in learning physics. If a student is less interested in a lesson, then he tends to be reluctant to learn the lesson [9]. Several steps to increase learning interest include uploading students' desire to realize the importance of learning [10]. There are several strategies for uploading students' desire to learn, including building dialogue and personal approaches, developing conducive communication with students. The student's interest can increase if the student can understand and solve questions easily so that students get better grades [11]. This will have an impact on students' interest in learning.

From the definitions above, it can be concluded that interest in learning is an impulse that arises from the inner students to increase their learning desires. The benefit will occur if students have the desire to achieve the best value or win the competition in the teaching and learning process in class with other students.

B. Brain Game Ranking One

Game-based learning can contribute to stimulation and increase student motivation in education and there is a positive correlation between the application of game-based knowledge to learning outcomes after evaluation [12], [13]. Game-based learning has a positive effect on learning outcomes, learning habits, and student interest in education [14], [15].

Brain game Ranking One adopts a game from one of Indonesia's national television stations with some changes as needed and adjustments to the material and conditions of the students. Learning with a brain game model ranking one is carried out privately, and the content is arranged based on the subject matter in the class. The brain games has possibilities to improve and test students' abilities cognitive, affective and psychomotor [16], [17]. The cognitive side of this game can add and strengthen the knowledge that students have gained. The efficient team can educate students to increase self-confidence to answer questions.

The psychomotor side of this brain game ranks the skill of speed of answering and writing down the answers on the paper provided with the period that has been limited to each question. The teacher will assess the responses of each student if the answer is correct, students can proceed to the next issue but vice versa if the student's answer is wrong then the student will be disqualified from the game and not allowed to answer questions afterward. And so on until one student is left who can answer questions correctly and will come out as the winner of this brain game.

The tools and materials needed in this game are paper, markers/pens for answering and opaque paper to count if in brain teasers one rank is a matter of the count. A carried out pure research in a science learning obtained results shows success in terms of enthusiasm and enthusiasm of students to take part in education. So the authors conclude brain teasers are ranking one can increase students' interest in learning physics [18], [19]. The purpose of this study was to determine whether or not there was an increase in student interest in physics before and after the treatment of brain games in ranking one. With the characteristics of games that can foster student learning motivation, it is expected that physics learning will be better and the achievement of competency is also good [4], [13]. These results can also provide direction in managing learning [20].

III. METHOD

A. Research Context

The method used in this study was descriptive qualitative with independent variables namely brain game Ranking One, and the dependent variable was student learning interest. The instrument used was a questionnaire of interest in learning physics that was given to students at the beginning and end of treatment to find out students' interest in physics lessons.

This research was conducted in December 2018 with the research subjects being students of tenth-grade and eleventh-grade at a certain high school in Larantuka as many as 180 students. Questions prepared in the form of short answers taken from the National Exam Questions physics subjects from 2014 to 2017.

B. Game Activity

The Ranking I game activity adopted the Ranking 1 game from one of the national television stations with several changes and adjustments to the conditions of learning at school. The application of PE, learning using the game model is carried out in groups of 3-4 people. In this aspect that is different from what is on television. Question material is arranged based on physics material studied by students.

This Ranking One game is a game to improve and test students' abilities on existing domains (cognitive, affective, and psychomotor). In the cognitive domain, this game aims to add and strengthen the physical knowledge that students have acquired. In the affective domain, the ranking of game I educates and instills togetherness in groups. In the psychomotor domain, this game provides skills in acting quickly and precisely to make decisions.

Rating Game I is done by answering questions by writing answers on the answer board that has been provided with limited time for each question. After writing the answers on the answer board provided, student representatives lift the blackboard to show answers. The teacher evaluates the answers of each group and writes on the board provided. And so on until all questions taken from the national exam questions have been given. The key to this game is at speed answering with a short duration.

IV. RESULT

A. Before Applied Game Based Learning

Before learning by applying the Ranking One game, students fill out a questionnaire that measures the level of interest in learning. The score from the results of this questionnaire is a reference value for comparison after the game is applied. The initial questionnaire results in students' interest in learning physics can be presented in Fig. 1.

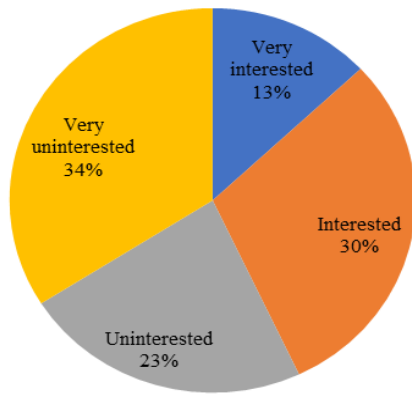


Fig. 1. Students' interest in physics before treatment

From 180 research subjects, it was concluded that only 13% (23 students) were very interested in physics, 30% (50 students) expressed interest while there were 23% (41 students) who were not interest and 34% (63 students) states that he is not interested in studying physics.

Fig. 1 shows the pattern of interest in physics learning perceived by students so far. More than half (55 percent) of students stated "not interested" or "very uninterested" in physics learning. A high enough number to say that there needs to be a breakthrough in physics learning. This low interest is one of the reasons why student graduation rates on national examinations, especially physics lessons, are low.

B. After Applied Game Based Learning

In the implementation of the first rank brain teaser treatment, students began to be enthusiastic because brain games ranked the first time they were held in their school, and the students looked enthusiastic in answering questions and were disappointed when they answered incorrectly and were disqualified.

This activity was ended by distributing questionnaires to students to find out the extent of students' interest in learning physics after treatment. Based on the results of the survey it was known that there was an increase in interest in physics compared to the beginning before this fun and enjoyable physics counseling activity was held. The increasing importance of respondents in physics lessons can be seen in Fig. 2.

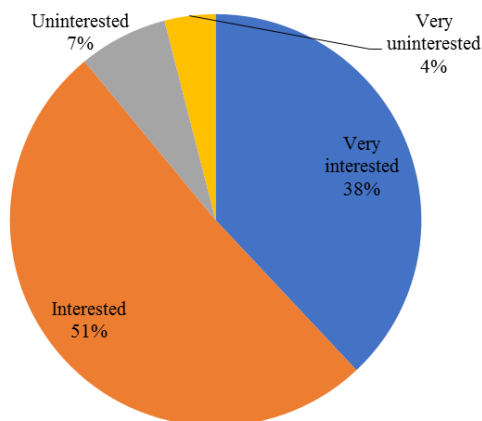


Fig. 2. Students' interest in physics lessons after treatment

Based on the picture above it can be concluded that brain teaser ranking one can increase students' learning interest following Figure 2. It can be found that there is an increase in interest in learning physics after being given a brain ranking game of 38% (68 students) expressed very interest, 51% (93 students) expressed interest in learning physics while those who said they were not interested were only 7% (12 students) and the remaining 4% (7 students) were not interested in learning physics.

V. DISCUSSION

A. Cognitive Domain

In accordance with the purpose of implementing this game, after participating in this game students are expected to have an increase in mastery of physics material, especially related to national exam questions. From the results of observations during the implementation, on the questions that are lower order thinking (remembering or understanding), students tend to be able to quickly give answers. In this type of problem, the time available for each question tends to be sufficient and the results also tend to be good. It's just that on the type of question that demands a higher order thinking (analysis, synthesis, or evaluation) there is a tendency that not all groups can solve the questions given well with the time available. These results indicate that this game does not automatically improve thinking skills in the cognitive domain. Need a different session or activity that is more focused on improving thinking skills.

B. Cognitive Domain

Similar to other cooperative learning, this game-based learning also tends to increase interest in physics (according to the data obtained; see Fig. 2). In addition, the challenges in this game make all students in the group more active when agreeing on answers. Overflowing joy can be seen during the learning process. Collaboration and communication in groups can grow well through this game. Good results on the ability of cooperation and communication even though it is an accompanying impact on learning, is very important as a new competency that determines the sustainability of student learning interests. With high interest, the teacher hopes that students realize that learning physics can also be done in an exciting way.

C. Psychomotor Domain

In the psychomotor domain, students can learn in decision making at a limited time. When deciding on an answer, between students in the group negotiate to choose the most appropriate answer. This process is very visible in the types of questions that require high-level thinking skills. In this type of problem, there are opportunities for answers to be obtained in several ways. It's just that this process is not always successful for certain groups because of limited basic knowledge that supports the resolution of the problem. However, in general this game has been well encouraged in the ability to decide quickly in groups.

VI. CONCLUSION

Based on the results of the questionnaire, the level of interest of students was increased towards learning physics after being given a brain game Ranking One. It is known that 41 students (23% of respondents) were not interested in learning physics and 62 people (34% of respondents) were not

very interested in learning physics. After this extension program was carried out 93 people (51% of respondents) stated that they were interested in learning physics, 68 people (38% of respondents) indicated that they were very interested in learning physics and only seven people (4% of respondents) said they were not interested in learning physics. Based on these results, brain teaser ranking one is considered valid because it can increase students' interest in physics learning.

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