The perspective on monopoly as media in physics learning by using teams games tournament

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Abstract. This research aims to describe: 1) the use of Teams Games Tournament (TGT) cooperative learning model with the help of board-based gaming media, namely monopoly, on physics learning; 2) the advantages and disadvantages of using TGT-type cooperative learning models assisted by monopoly media. This research method uses a library research approach. The technique to collect data is by reviewing the literature such as books, journals and documents that are considered in accordance with the study conducted. From the results obtained, it is concluded that 1) the use of cooperative learning model type TGT with the help of monopoly media gives influence to the quality of student learning, 2) the use of cooperative learning model type TGT assisted by monopoly media makes students' attention focused so as to make it easier for students to digest materials, students are trained to think systematically and analytically and export their learning skills without having to rely on others. The monopoly media can improve students' learning outcomes. However, the cooperative model of monopoly media assisted TGT type takes a while to learn for considerable.

1. Introduction

Physics learning is an interaction between teacher and students in understanding science that learns nature and its conditions. There are several things to note to establish students' understanding of nature and their condition, among others: the strategy of applied learning, the learning media used, and the psychological condition of students and teachers. Physics learning is difficult and not many people like it, so it will ultimately decrease the interest of students that will impact the learning results especially at the junior high or high school level [1]. Therefore, learning strategies both integrated from learning models and learning methods must be chosen appropriately to achieve the goals of learning, namely students' understanding of the materials taught.

Cooperative Learning is a popular learning model and its application is always increasing due to the need in its implementation, namely cooperation to obtain information [2][3]. The difficulty that occurs in cooperative learning is the preparation and social ability[4]. Regardless of preparation, exercise is also indispensable to fully understand the concepts taught to students. In training, students' focus is differentiated into 5 levels, those are: (Level I) Respect for the rights and feelings of others; (Level II) Efforts and cooperation; (Level III) Self-direction; (Level IV) Helping others and leadership; (Level V) Transfers outside the gym [5]. However, writing or copying exercises can decrease students' interest in
the subjects taught. To reach Level V, which is Transfers outside the gym skill. Learning must be supported by constructive factors considered to students to achieve maximum understanding. Right selection of learning media is one of the solutions.

Learning media is usually interpreted as a tool that can be used to convey the content of the lesson materials to students [6]. The word media comes from Latin, which means medium, the word medium is interpreted as a channel or intermediary [7]. Meanwhile, learning is an action in the form of teaching by a teacher who uses teaching materials in the school [8]. According to the previous understanding, it can be concluded that learning media is a tool used by teachers or educators to channel or as an intermediary in the delivery of the content of the subject matter to students in the learning process. One of the most used resource media in schools is MS. Powerpoint. However, MS. Powerpoint as learning media has not been able to help students in improving their learning outcomes. This can be seen from the results of research conducted by Noprianti (2015), which the results of the study stated that there was no significant difference between the results of the experiment class and the results of the control class study. Based on the results of the study, it can be seen that the average student's learning results are not able to reach the number 70.0 so it can be categorized as low[9]. This is due to several factors that have not been able to be overcome by MS. Powerpoint-based learning media which is one of the results of student learning. In addition, there is a fairly close relationship between the motivation and learning outcomes of students. The results of the research conducted by Fajriani shows that there is a fairly close relationship between interest and student learning outcomes where the results of the study show that motivation influences the student's learning outcomes with a correlation coefficient of 0.72 and a coefficient of determination of 52.20%, so to get better learning results it is necessary to grow the student's learning interest [10] [11]. Student interest is an effect that is attempted with the selection of learning media that makes the learning atmosphere interactive and flexible.

One of the learning media that can foster the motivation of learning students is the learning media in the form of games[12] students will be interested and their learning interests will appear. One of the media to the great direction of play is monopoly. Based on previous research obtained results that the use of monopoly learning media games has attentional, affective, cognitive and comensatorial functions [13]. The system of using monopoly as a learning media, i.e. students have to answer various questions, which is similar to the Cooperative Learning Model of TGT where students in groups have to answer various questions [14]. TGT is a type of cooperative learning model involving groups, in which there is a game/tournament. Learning using this type allows students to learn with a relaxed and growing responsibility, cooperation, healthy competition and learning engagement [15][16] [17].

Physics as one of the lessons that has a low quality of learning results has some obstacles in physics learning, among which is the use of methods and models of learning that do not suit the atmosphere of a particular class, learning media used is not appropriate, and sometimes teachers have low attention to students' motivation to study physics. The use of learning models assisted with the right learning media such as the Type of TGT Cooperative Learning Model assisted by monopoly learning media is expected to be an option in devising learning strategies.

TGT is one type of cooperative learning. The activities in the TGT are about the same as the Student Team Achievement Division (STAD), TGT in learning is the STAD with the game addition. The characteristic feature of the TGT is a competition game [18]. This TGT type cooperative learning model is a method of learning that emphasizes on student activity which also has games in it, so that students are not surprised when learning during the transition period can also reduce students' boredom in following the learning process [19] [20].

Monopoly is one of the most famous games in the world. The characteristic of the game, introducing something that is around by using cards such as land cards, general funds, opportunity cards and others [21]. With these cards, indirectly making the game has a substantial contribution to the discipline of students [22]. The monopoly game of physics is one alternative that can reduce students' boredom in participating in physics learning so that it will attract students' learning interest which will also affect the student's learning outcomes[23]. In the perspective of Schwartz, the more play, the more positive emotions will appear which will change the game easier and help bring about more positive emotions
Although, there are references stating that smartphone-based interactive games can improve students' knowledge and understanding especially for the blind children [25]. However, there is an unavoidable feedback due to smartphone-based learning, namely the lack of social recognition skills of students due to the reliance on ease obtained using smartphones [26].

Learning media is an intermediary used by an educator to channel the content of lessons to students, as known, as student learning advice [27]. In the perspective of Mardia, monopoly games can be used as a learning media, in which monopoly learning media has several advantages including being able to provide a fun learning experience and being able to create active participation from students through games in the monopoly game [28].

It is important not to discrete between mathematics and physics in learning because basic mathematics is crucial in physics learning [29]. Physics learning is constructive learning with graphics and regularity [30]. In the perspective of Ainsworth, 2006; (Rosengrant at al., 2007), representation of a process with diagrams, tables, questions, text, graphics, animations, sounds, and videos or more referred to as multiple representations [31]. A physics teaching material is called constructive if it has an easy-to-understand concept map. In order to demonstrate the teaching materials conceptualized in a mapping, the cards for monopoly (board-based games) must be created based on learning objectives that have been gradually arranged according to their cognitive realm so that students' understanding can be categorized based on questions inserted on monopoly cards (board-based games).

2. Research Method
The method used in this study is to use a library research approach. The library research is commonly interpreted as a series of activities related to the method of collecting library data, reading and recording and processing research materials [32].

In the library study research method, there are several main characteristics that need to be considered, those are: First, the author is directly confronted with the text/number data. Second, library material is defined as the second source which means the author obtains information from the second party instead of the original from the first author's research in the field. Third, the information obtained is ready-made. Fourth, the library material obtained is not relative to space and time [32]. The data collection technique performed by the author is by reviewing some literature such as books, journals and other documents that are considered in accordance with the study conducted.

3. Result and Discussion
The use of monopoly learning media using the TGT cooperative learning model is outlined into stages in the form of learning cycles conducted in the learning process of teaching in the classroom [33]. Learning is carried out in two cycles, as seen in Figure 1.
In the second cycle this is an activity that is essentially the same as the first cycle, but in this cycle refers or is guided to the reflection of the first cycle with the aim that researchers can improve the actions and implementation of learning in the second cycle, as well as the indicators of success that are expected to be achieved.

Model of cooperative learning with TGT type is where the students study in their groups in order to answer questions in academic tournaments. This is similar in the use of monopoly learning media where the students are required to answer various questions [21]. The use of monopoly learning media as a board-based game affects the quality of students' learning. This learning medium requires students to prepare to learn the materials that will be presented in the game and students are motivated to solve more questions on the material contained in the game. Student attention to this learning medium can make it easier for students to digest materials, students are also trained to think systematically and analytically, and can also export their learning skills without having to rely on others. Therefore, the use of monopoly learning media can improve students' learning outcomes [34] [35].

In the perspective of Yunika, the advantages of monopoly games when used as a learning medium are learning will be a fun game; by the game allows active participation of students in the learning process; the game can provide feedback directly so that it is more effective for the learning process; the game can be associated with concepts or roles into an actual role in the community; the game is flexible; the game can be easily created and reproduced [36]. Such effectiveness is not separated from the concept of cooperative learning as the individual learning of group members and on the overall performance achieved by the group [37][38][39].

Students grouping to increase student interactivity can increase students' interest in Physics [40]. However, if it is said that cooperative learning is wrong in the grouping of students so that there is an imbalance of ability between one group and another group, whether reviewed by gender or other variables, then it cannot be true. There were no significant differences in performance and integrating skills between male and female students in studying subjects requiring math operating skills. This is influenced by the use of cooperative learning [41] [42]. Inherent collaboration is required in the game and the nature of the content provides students with the opportunity to participate [43]. In other words, there will be an equalization of understanding because of the interaction between students in their
collaboration to collect more awards for the group compared to other groups. The success of the student group will only be achieved if each member focuses on it and complements each other [44].

The preparation of questions into the card is included in preparations that take a long time. This relates to the accuracy of question adjustment with the Cognitive Domain in Blooms’ Taxonomy [45] and pedagogical insertion of knowledge [46]. The importance of drafting questions transferred to monopoly cards (board-based games) related to strategic thinking [47]. Monopoly-assisted Cooperative Learning which is a learning process that is conditioned as a game, in performing the action will take 15 minutes to 40 minutes in one round [48]. The higher the Blooms’ Taxonomy level applied in the questions inserted on the monopoly card (board-based game), it will take longer to complete one of its learning activities.

In the perspective of Ika advantages of the use of monopoly learning media are as follows [27] [49].

Advantages of Monopoly as Learning Media
- The use of monopoly learning media can increase students' learning motivation.
- Easier to use learning media.
- Using monopoly learning media can make students more active.
- Can relieve students' boredom during the learning process.

Disadvantages of Monopoly as Learning Media
- Monopoly learning media cannot be played individually, at least 3 people.
- It takes a while to start a monopoly game.
- Requires a flat table/place/floor to play the game.

The average evaluation score of the experiment class is better than the control class because the experiment class uses monopoly learning media in its learning process which can improve the student's understanding and memory of the materials submitted. The use of monopoly learning media in experimental classes makes students' learning activities such as discussion, asking questions, answering questions and responding to other group presentations is becoming increased. It's not just students who are good at cognitive skills who play an active role in learning. Also, students who lack cognitive abilities will also be encouraged to be active in learning. Students' understanding towards learning materials is also seen from the average post-student, average post grades-test students in the experiment class were higher than the control class with a post-test at the experiment class test was 80.23 and the control class was 75.62. This difference also further proves that monopoly learning media can improve students' learning outcomes [50]. Cooperative learning by monopoly game on hydrocarbon subjects is able to provide a qualitative picture of students' learning outcomes to learning physics with a basic language where verbs are equally level in Bloom's Electable Domain.

4. Conclusion and Implication
According to the results, it can be concluded that:1) The use of a cooperative learning model of TGT with the help of monopoly media gives influence on the quality of students' learning. 2) The use of cooperative learning models of monopoly media-assisted TGT makes students' attention focused so as to make it easier for students to digest materials, students are also trained to think systematically and analytically, and can also export their learning skills without having to rely on others. So that the use of monopoly media can improve students' learning outcomes. However, the cooperative model of monopoly media assisted TGT takes a long time to learn for considerable.

Learning using the TGT Type Cooperative Learning Model can be recommended to be applied to Physics learning to improve student instructiveness and foster student interest, especially in Physics subjects with subject matter related to Fundamentals/Theories. By the limited allocation of time provided in learning hours according to curriculum, researchers are then advised to add variables that can reduce the impact rather than time constraints faced for physics learning using TGT-type cooperative learning models, especially with the help of monopoly learning media (board-based games).
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