THE EFFECTIVENESS OF THE TEAM GAMES TOURNAMENT LEARNING MODEL BASED ON VIRUS MATERIAL EXPLORATION ON STUDENT LEARNING OUTCOMES

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ABSTRACT

Some indicators of the emergence of learning motivation include the desire to succeed, encouragement and need in learning, future hopes and aspirations, appreciation in learning, interesting activities in learning and a conducive learning environment that allows students to learn well, the learning outcomes of class X students have not yet reached with a completion limit value of 70. One of the lessons learned to overcome this problem is to apply the exploration-based Team Games Tournament (TGT) learning model.The research was conducted using an experimental method with a one shot case study design. The population of the study was grade X students of SMAN. The research sample was taken by using convenience sampling technique. While the data analysis is quantitative and descriptive qualitative. The results showed that the level of student activity in the three meetings were 96.76%, 96.77% and 100% of X MIPA 1 class students in the high and very high activity categories. In class XMIPA2 the percentage of activity in three meetings was 68.75%, 78.15% and 97.25% in the high and very high activity categories. Meanwhile, in the XMIPA3 class the percentages of activity were 62.27%, 76.03% and 97% in the high and very high activity categories. The results of the analysis of learning outcomes showed the average value of learning outcomes in class X MIPA1 reached 84.2; class X MIPA 2 reached 78.08 and class X MIPA 3 reached 79.15.Based on the results of the study, it was concluded that the application of the exploration-based TGT learning model on Virus material on the learning outcomes of class X students at SMAN 1 Tanggul was effective in optimizing student learning outcomes and activities..

Keywords: Team Games Tournament, Virus, learning outcomes, effectiveness

INTRODUCTION

Learning is a process that is intentionally designed to create learning activities within the individual. In other words, learning is something that is external and is intentionally designed to support the internal learning process within the individual. Learning science, especially biology, requires interaction between students and their environment, because learning biology is not just a collection of facts and concepts, but there are various processes and values that can be applied in the environment of human life. The learning process has a goal so that students can achieve competencies as expected. Smith and Ragan (2003) suggested three indicators used to determine the success of the learning process, namely affective, efficient, and attractive. Learning needs to be created into an interesting event in order to increase students' interest and motivation to learn.

Some indicators of the emergence of learning motivation include the desire and desire to succeed, encouragement and need in learning, future hopes and aspirations, appreciation in learning, interesting activities in learning and a conducive learning environment that allows students to learn well (Uno , 2010). Increased student motivation will have an impact on improving learning outcomes. In addition, through a quality learning process that is conceptual and applicable, it is hoped that it can improve better learning outcomes. Teachers need to apply appropriate learning models or

strategies and utilize appropriate learning resources in biology learning.

Based on observations made at SMA 1 Tanggul, the learning outcomes of odd semester students for the 2019/2020 school year class X, namely classes X.1 to X.4 have not reached the minimum completeness criteria with a completion limit value of 70 and generally speaking.classical class completeness has not reached 75%, that is, it has only reached 60%. When compared again with student learning outcomes in the previous school year, namely all students of class X have achieved 80% classical completeness with a completion limit value of 75. In this case it can be seen that there is an increase in student learning outcomes for the 2019/2020 school year, but specifically on material Virus does not increase learning outcomes. The results of studying Virus material on two daily tests showed that approximately 40% of the 35 students had not finished. The results of interviews with subject teachers, data obtained that only about 10% of students have sufficient readiness to learn in class. This can be seen from the students' activities in the questions and answers held by the teacher. The availability of learning resources makes it easier for students to understand the material taught in the learning process. The availability of teaching and learning facilities for SMA 1 Tanggul is very limited. Learning facilities and resources rely solely on subject teachers in the form of school worksheets and Power Point. Students just passively wait for the teacher to teach them. The learning process still tends to be passive, even though the teaching methods used so far are demonstrations, lectures, presentation slides and discussions equipped with worksheets. Students do not give a positive response, when the teacher asks questions or gives an opportunity to ask questions. In addition, the lack of student motivation in learning affects incomplete learning outcomes. The application of exploration-based Team Games Tournament (TGT) learning is expected to be effectively used in learning the biology of Virus material.

Slavin (2008) stated that the cooperative class showed significantly higher academic learning outcomes than the control group. TGT is a learning model that places students in study groups consisting of four to six students who have different abilities, gender and ethnicity or race. Students will work on the questions as a team, then games or games between students will be held Htim. TGT is not only a fun activity, but can improve student learning outcomes and activities because it can assist students in reviewing what they learn in each chapter. The TGT method can also make it easier for students to do evaluation tests.

The concept of a virus is considered difficult by most high school students to understand, this is also experienced by class X SMA 1 Tanggul students with the reasons, the many uses of scientific terms and names that are considered difficult to understand, the material is quite dense and a lot of memorization. One of the indicators that must be achieved by students on Virus material is that students are able to explain the classification in the Virus Kingdom.

Based on the indicators that must be achieved, a method is needed to facilitate students in the process of understanding the material. In this regard, exploration-based learning is carried out. Students immediately look for sources of practicum materials around the student's living environment, and the next activity is planning activities, analyzing activity plans, looking for source books, conducting experiments, submitting data and analyzing data and drawing conclusions. In the learning process, students will be given a kind of academic game, namely TGT, students compete in class to get awards. The purpose of holding TGT on Virus learning is to measure how far students understand the material that has been studied and increase student activity in class. Based on the background stated above, a research was conducted on "The Effectiveness of the Team Games Tournament Learning Model Based on Virus Material Exploration on the Learning Outcomes of SMA 1 Tanggul High School Students in Odd Semesters for the Academic Year 2019/2020"

Theoretical Framework

According to the Big Indonesian Dictionary (KBBI), exploration is field exploration with the aim of gaining more knowledge (about the situation) especially the natural resources found in that place

(Poerwadarminta, 2002). In accordance with the object of biology, which is a real phenomenon, the most appropriate ways to study it are currently developing an approach to learning biology based on exploratory principles.

According to Cavin and Sund in Haryono (2007) different approaches to science learning are based on the level of dominance of the teacher's role and student involvement, namely expository, the teacher's role is very dominant and students are relatively passive, only transferring knowledge from teachers to students. Exploration or free discovery, where students are very active and the teacher only acts as a facilitator. Guided discovery (Guided discovery), where there is no dominance on one side, teachers and students are both active in the learning process. Experiencing and exploring means involving the senses of seeing, hearing, smelling, touching, and tasting. This will increase the teacher's understanding of a concept and increase the persistence of that understanding (information) in students' thinking. Maher (2004) in his research on the implications of curriculum design states that good teaching and learning is the creation of complex interactions between students, teachers and the setting of learning activities. It is characterized by a degree of ambiguity in the classroom between input and output and good teachers are those who seek to motivate students who respond to questions and stimulate discussion.

Team Games Tournament (TGT) Learning Model is one of cooperative learning by forming small groups in classes consisting of three to five heterogeneous both in academic achievement and gender. The learning activities used academic quiz tournaments and individual progress scores, where students competed as representatives of their teams against team members whose previous academic performance was equivalent to them (Slavin, 2008). According to Slavin (2008), the TGT learning model has the following steps (syntax):

A. Stage presentation class (class presentation)

Teaching materials in TGT learning will first be introduced through class presentations. Class presentations will be made by students who have been grouped by the teacher. In this activity students work first to find information or learn concepts on their own efforts. In this way, students realize that they have to be serious pay attention to class presentation, because then it will help them in the tournament/match well and their tournament score determines the team score

A change in the subject's behavior which includes cognitive, affective and psychomotor abilities in certain situations thanks to repeated experiences (Hamalik, 1995). The acquisition of these aspects of behavior change depends on what is learned by the learner. In learning, changes in behavior that must be achieved by learners after carrying out learning activities are formulated in learning objectives. Bloom and Krathwohl (1964) in Pribadi (2010), three domains or domains that can be used as a basis for formulating learning objectives which include the cognitive, affective, and psychomotor domains.

a. The purpose of learning in the cognitive domain is to train students' intellectual abilities. The goal in this domain is to make students able to complete intellectual tasks. Bloom suggests six abilities hierarchical in nature contained in the cognitive domain, namely: knowledge, understanding, application, analysis, synthesis, and evaluation.

b. The affective domain is closely related to attitudes, emotions, appreciation and appreciation or appreciation of values, norms, and something being studied. Krathwohl and colleagues suggest five hierarchies in the affective domain, namely receiving, responding, giving values, organizing, and characterizing a value.

c. The psychomotor domain is closely related to the ability to carry out physical activities in various subjects. For example, in practical subjects, sports and drama. The psychomotor domain consists of four hierarchies of abilities, namely imitation, manipulation, precision and articulation. Imitation is the ability to practice the observed skill. While manipulation is closely related to the ability to modify a skill. Precision is an ability that shows skills in carrying out activities with a

high level of accuracy. Articulation is the ability to perform activities in a coordinated and efficient manner.

B. Characteristics of Virus Material

Virus concept in the K13 curriculum for class X The basic competence is to analyze the structure, replication, and role of viruses in life. Conduct a campaign about the dangers of viruses in life, especially the dangers of AIDS based on its virulence. Viruses are microscopic (super small) organisms that are spread all over the world and tend to be parasitic. Almost all ecosystems in the world contain viruses and are considered to be the most abundant organisms on planet earth. The main structure of viruses is nucleic acid which can be either RNA or DNA or not both. The nucleic acid is surrounded by protein subunits called capsomeres.

METHODS

A. Location and Time of Research

This research was carried out in class X SMA 1 Tanggul on Virus material in the odd semester of the 2019/2020 school year. When the research was conducted from August to October 2019, class X odd semester at SMA 1 Tanggul consisted of 3 (three) MIPA classes.

B. Population and Sample

1. Population

The population used in this study were all class X SMA 1 Tanggul which consisted of 4 (four) classes.

2. Sample

The sample in this study was 3 (three) MIPA classes. The class was taken as the treatment class. Sampling was carried out using the Convineant Sampling technique, namely taking samples based on the objectives in the form of school conditions and considerations (Arikunto, 2006).

E. Research Procedure

The main steps carried out in this research are:

1. Preparation stage

Activities carried out in this stage are:

a. Carry out initial observations through interviews with teachers and conduct observations of teaching and learning activities in the classroom.

b. Carrying out observations in the school environment that supports learning Virus material.

c. Develop research instruments in the form of:

1. Syllabus
2. Learning Implementation Plan (RPP),
3. Student Discussion Sheet (LDS)

Student discussion sheets are prepared to complete the lesson plans. Student discussion sheets are arranged based on the existing material. With the LDS, students are invited to find out for themselves the concepts being studied.

1. Student Worksheet (LKS)

This student worksheet is prepared to complete the lesson plans. Student worksheets are arranged based on the existing material. Student worksheets were prepared as a guide for students in designing experiments. d. Make an evaluation tool, which will be tested on students and then analyzed.

The steps for preparing the evaluation instrument are as follows:

a. The material provided is in accordance with the concept of Virus.

b. Determine the type of questions to test students' ability in the form of multiple choice questions.

c. Arrange a grid of questions according to aspects of knowledge (C1), aspects of understanding (C2), aspects of application (C3), aspects of analysis and synthesis (C4), aspects of evaluation (C5) and creativity (C6).

d. Arrange the questions according to the grid that has been determined.
   The evaluation tool in the form of a written test in the form of multiple choice as many as 45 items will be tested and determined the level of difficulty, distinguishing power, validity and reliability. The evaluation tool test is carried out empirically as follows:

1) Validity Test
Validity is a measure that shows the level of validity of an instrument. According to Arikunto (2006), a data is said to be valid if it is in accordance with the circumstances. Item validity can be achieved if there is an alignment between the item scores and the total score.
After that, it was consulted with the price of r product moment. If the rxy value is greater than the rtable price with a significance level of = 5%, then the item is valid. Valid items will be used as an evaluation tool, while invalid items will be discarded.

Data and Data Collection Methods
a. Data
1. Quantitative data in the form of student learning outcomes are taken from cognitive, affective and psychomotor values and teacher performance
2. Qualitative data in the form of:
   a. Student responses about exploration-based learning are accompanied by TGT.
   b. The teacher's response to exploration-based learning is accompanied by TGT.

b. Method of collecting data
   Data collection methods used to obtain data on student learning outcomes include the cognitive aspects obtained by written tests, data on the affective aspects of students obtained by affective assessment rubrics, and psychomotor aspect data taken by student observation sheets during practicum activities. As for additional data, the data collection method is as follows:
a) Data on teacher performance in implementing learning are obtained by Teacher performance observation sheet. Data collection was carried out during the learning process.
b) Data on student responses to the application of exploration-based learning accompanied by TGT using a student response questionnaire.
c) Data on teacher responses to the application of exploration-based learning accompanied by TGT using teacher response questionnaires and interviews.

RESULT AND DISCUSSION
A. Research Results
This research was conducted at SMA 1 Tanggul from August to October 2019, in 3 (three) classes, namely XMIPA1, XMIPA2 and XMIPA3 classes. The results of the study consisted of student activity data, student learning outcomes, teacher performance during the learning process, student and teacher responses to the effectiveness of the exploration-based TGT learning model. The data obtained are as follows:

1. Student activities
Student activity data was obtained from observations made at meetings I, II and III using student activity observation sheets. This data is used to determine the active role of students during the learning process. After analyzing the data, it was found that the students of class XMIPA1 were more active than the other two classes in each meeting. This can be seen from the percentage of activity in the three meetings, namely 96.76%; 96.77% and 100% of XMIPA1 class students are in the high and very high activity categories. Class XMIPA2 the percentage of activity in three meetings is 68.75%;

78.15 and 97.25%. While in class XMIPA3 the percentage of activeness is 62.27; 76.03 and 97% (Table 5). The results of the recapitulation of student activity data at the first and second meetings show that the XMIPA2 and XMIPA3 classes have not yet reached the indicator of success, namely >85%. Furthermore, at the third meeting, the activities in the three MIPA classes were >85% of the success indicators. This shows an increase in each meeting on student activity. The results also show that there are still classes whose students have moderate and low activity. The lowest percentage of student activity for the medium and low categories is in the XMIPA1 class, which is 3%. The highest percentage for the low activity category was in the XMIPA3 class at the first meeting, which was 21%. The highest percentage for the moderate activity category was in the XMIPA2 class at the first meeting, which was 19 %.

2. Learning Outcomes

The learning outcomes of XMIPA1, XMIPA2 and XMIPA3 students on Virus material using the exploration-based TGT learning model in the odd semester of the odd semester of the 2019/2020 academic year, were obtained from two cognitive domains and psychomotor domains.

a. Cognitive domain learning outcomes

The measurement of cognitive learning outcomes was obtained by written tests, assignment scores in the form of student discussion sheets (LDS), values for making Virus identification cards, practicum design scores, student worksheet scores (LKS) and tournament scores. Assessment of the cognitive domain is carried out to determine the quality of students' understanding of the material being taught, namely the Virus material. Recapitulation of learning outcomes data shows that the average value of learning outcomes in XMIPA1 class is higher, namely 84.2 than the X MIPA2 class with an average of 78.08 and the XMIPA3 class with an average learning outcome of 79.15

b. Psychomotor domain learning outcomes

The psychomotor domain is obtained through direct observation of students during the learning process during the practicum. Aspects assessed include the readiness of tools and materials, using a microscope, making observations, making reports, drawing conclusions and collecting and communicating reports on time. The measurement results are written on the student's psychomotor aspect observation sheet The results of the recapitulation of the psychomotor domain data show that the average learning outcomes for XMIPA1 class are 86.78 higher than XMIPA2 and XMIPA3 classes, although the comparison of the average values is not too far, namely 82.59 and 86.37. During the assessment of the process of practicum activities to making reports, it turns out that there are still students who have not finished. Class XMIPA2 and XMIPA3 had 12.5% and 3.45% incomplete students. The results of the assessment of the seven aspects observed, there are three aspects that get the least score in XMIPA1 and XMIPA2 classes. These aspects include "doing observations correctly" with a score of 79% in the XMIPA1 class and a score of 64% in the XMIPA2 class. Aspect of "making a final practicum report", class XMIPA2 got the lowest score of 78%. The aspect of "collecting and communicating reports on time" with a score of 79% in XMIPA1 and XMIPA2 classes, a score of 87% in XMIPA3 classes 3. Teacher Performance During the Learning Process

Data from observations of teacher performance during the learning process is used as a supporting aspect in discussing student learning outcomes. The data from the observation of teacher performance aims to determine the extent to which teachers carry out learning in accordance with the Learning Implementation Plan (RPP) that has been prepared. Aspects observed in obtaining teacher performance data consists of three activities, namely the introduction consists of three aspects, the core activity consists of ten aspects and the closing activity consists of two aspects.

The results of the teacher's performance research show that during the learning process both XMIPA1, XMIPA2 and XMIPA3 classes have different criteria depending on the aspects assessed. There are several aspects that get the lowest score. These aspects include "motivating students" with a score of 75% in each class, aspects of giving awards or flattery to students with a score of 75% in

class XMIPA1. Overall the teacher's performance assessment during the learning process is in the high and very high categories each aspect.

DISCUSSION

78.15%; 97.25% and XMIPA3 class 62.27%; 76.03%; 97% (Table 5). The results of data acquisition at the first meeting, students in class XMIPA2 and XMIPA3 have not reached the expected percentage of activity (>85%) respectively, the percentages are 68.75% and 62.27%. On the other hand, in the XMIPA1 class, the percentage of activity has reached >85%, which is 96.76. The high activity of students in class XMIPA1 is because students in that class have high enthusiasm in participating in learning. This shows that exploration-based TGT learning is able to activate XMIPA1 class students in learning. The low activity in XMIPA2 and XMIPA3 classes is due to the lack of maximum motivation to ask questions and give opinions to students on TGT activities and material presentations. Motivation is the most important factor in achieving student achievement, this is supported by research by I Chao Lee (2010) which states that learning motivation in students, both intrinsic and extrinsic, is the most important factor in learning achievement. The second meeting of each class showed an increase in activity, especially in XMIPA2 and XMIPA3 classes, although the increase was Based on the results of the recapitulation of student activity data in classroom learning, it is known that the XMIPA1 class has an activity percentage of 96.76%; 96.77%; 100%; XMIPA2 class is not very significant, namely 78.15 and 76.03, respectively. The improvement in the two classes was because at the second meeting there was a practicum, so they had to be active in asking questions in order to do the practicum properly and correctly, besides that during TGT activities they no longer looked stiff in answering or refuting the opinions of other friends. Although there has been improvement, the two classes have not yet reached the indicator

success in research. On the other hand, in class XMIPA1 the percentage of activity during the learning process tends to be stable, which is 96.77. There is a stable percentage of activity in the XMIPA1 class, because the class has more high motivation in learning which can be seen in the activities of asking and answering questions from the teacher as well as activities in discussion activities. compared to the other two MIPA classes. Furthermore, for the percentage of the third meeting, the three classes have achieved the expected results, namely activity > 85% of the success indicators by having high and very high activity. The reason for the increase in the percentage at the meeting was because, at the third meeting, students would present the results of the practicum report and it was also the last day of the TGT implementation. Previously, the teacher had announced the results of the temporary score for the implementation of the TGT during the previous two meetings. For groups that have not achieved the maximum score, it is hoped that they will make the best use of the TGT implementation at this third meeting. Analysis of each aspect of student activity assessment at the first meeting there are still some aspects that have a low percentage (<75%) both in XMIPA1, XMIPA2 and XMIPA3 classes. These aspects include submitting opinions, preparing to study, asking and answering questions from teachers and friends, making charts or pictures, responding to teachers in providing motivation and apperception, reading textbooks, worksheets, etc. and scientific attitudes. Class XMIPA3 got the lowest percentage on the activity of "asking and asking questions, answering questions and responding to teachers in providing motivation and apperception" which were 58% and 65%, respectively. In group work activities and tournament activities get the highest percentage (>75%). Class XMIPA1 got the highest percentage on the activity aspect of "working in groups and listening to the teacher's explanation" at 100% and 98%, respectively. The XMIPA3 class gets the highest percentage in tournament activities, which is 100%, while the XMIPA2 class from the three aspects above each gets a percentage of 78%, 96% and 89% (Appendix 15). There are aspects that still have percentages low in the XMIPA1, XMIPA2 and XMIPA3 classes and the lack of enthusiasm in asking questions and opinions because the learning model applied is different from usual so that students are not familiar

with the new learning model. In the previous lesson, they just came, wrote and listened. With the application of the TGT learning model accompanied by exploration activities, students are required to be active in exploring learning resources independently without depending on learning resources from the teacher. At the second meeting, the assessment of student activities during learning was the same as in the previous meeting. There are some aspects that increase and there are also aspects that decrease. Class XMIPA2 and XMIPA3 experienced a decrease in the aspect of "listening to the teacher's explanation with a percentage of 86% and

88%. In contrast, the X MIPA1 class experienced an increase in almost all aspects assessed. The decrease occurred in the XMIPA3 class in the aspect of "asking activities to teachers and friends" which was 56% (appendix 15). There was a decrease in this aspect, this was because at the second meeting the students worked in groups to do practicum, focused on the tools and materials that had been prepared, discussed with their groups about the water samples they had brought and ultimately resulted in students not listening too much to the teacher's explanation. Meanwhile, in class XIPA1 in terms of listening to the teacher's explanation, the class has a stable percentage, and it shows that students in class XMIPA1 have a desire to know more about how the practicum works by listening to the explanation first. In the aspect of "scientific attitude" in XMIPA1, XMIPA2 and XMIPA3 classes, there has been a fairly high increase of 84% each, 85% and 91%.

At the third meeting, almost all three MIPA classes in every aspect experienced an increase. Seen in the XMIPA1 class in the aspect of "responding to the teacher in providing motivation and apperception" an increase of 93%, as well as in XMIPA2 and XMIPA3 classes an increase of

81% and 67%. Aspects of "asking activities to teachers and friends, answering questions, asking opinions, making charts, patterns and pictures, working in groups and concluding learning activities" experienced a fairly high increase in XMIPA1 and XMIPA2 classes. However, the aspect of "asking the teacher and friends", answering questions and asking opinions" in the XMIPA3 class tends to be still low at 56%, 67% and 65%, respectively (appendix 15). Overall students in all three classes MIPA, there were some students who did not experience an increase in activity from one meeting to the next. The overall cause of the lack of improvement in this aspect is due to internal student factors, namely student characteristics. Students with a quiet character, it is difficult to turn into an active student in a short time. The existence of students who have a quiet character, the author has a solution that is to give a responsibility to the student by making him the chairman in discussion groups, presentations and practicum groups. This can make students who are quiet can become active, because they carry out responsibilities both for themselves and their group friends in terms of subject assignments and the value of activeness in class.

Exploration-based TGT learning model is able to optimize student activities, because the TGT learning component is dominated by activities student. Through a series of presentations, discussions, games and exploration activities students can understand the concept of Virus material. Based on the results of the analysis, it can be seen that the activity of students participating in the games tournament is very high. Student activity in games tournament activities for three meetings has an average of 98% (XMIPA1 class); 96% (XMIPA2 class) and 98% (XMIPA3 class) (appendix 15). The activeness of students playing games is influenced by students' interest in learning. Combined learning

With games providing a pleasant atmosphere, students are directly involved in learning and unconsciously students can understand and understand the concepts of the material being taught. This is supported by research by Hyungsung (2012) which states that learning using games is proven to increase student interest and motivate participants to explore and engage in learning activities. In general, the use of an exploration-based TGT learning model is effective in improving cognitive learning outcomes. This can be seen from the achievement of learning outcomes which are already greater than 75 of the success indicators. This achievement is due to the teaching and learning atmosphere that is different from usual. The existence of games in learning is something new for XMIPA class students. Exploration activities that require students are more independent and active,

both in finding learning resources and active in the learning process. The existence of a kind of award for the best group who submits assignments on time and solid teamwork is a separate influence for students to be more active and enthusiastic from normal learning

A. Conclusion

Based on the research and discussion, it can be concluded that the application of the Exploration-based Team Games Tournament (TGT) learning model is effectively applied to learning the virus material at SMA 1 Tanggul. This is indicated by the average classical completeness of the learning outcomes of the three classes, namely XMIPA1, XMIPA2 and XMIPA3 which is 84%, while for activities during the learning process 85% of students have high and very high activity.

B. Suggestion

Based on the results of research and discussion, there are several suggestions that can be submitted by the author, including:

1. Exploration-based TGT learning can be used as an alternative learning that can optimize learning outcomes and student learning activities in discovering their own concepts and can be applied to other biological materials related to the use of the natural environment.

2. There needs to be proper time management so that when understanding the material and other learning activities can run effectively and efficiently.

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