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The Effect of Teams Games Tournament Assisted by TTS on Students Interests and Learning Outcomes

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Abstract: The purpose of this study was to determine the effect of learning the Teams Games Tournament type assisted by crossword puzzles (TTS) media on the interests and learning outcomes of Class XI MIA SMA Terpadu Hati Tersuci Maria Halilulik Academic Year 2021/2022. This research was conducted in a control class, colloidal system material was taught using a conventional model, while in the experimental class using the Teams Games Tournament type learning model assisted by crossword puzzles (TTS) for 4 meetings. For students' interest in learning, both classes were given questionnaires before and after learning activities. The results of the research hypothesis test showed that there were significant differences in interest and learning outcomes between students who were taught using the Teams Games Tournament type learning model in the form of crossword puzzles (TTS) and students who were taught using conventional learning models. The *t*-test results obtained sig.2-tailed value <5% significant level, namely $0.02 < 0.05$ so that H_0 was rejected and H_1 was accepted.

Keywords: Teams Games Tournament; Crossword Puzzles; Interest in Learning; Learning Outcomes

INTRODUCTION

Learning is an activity that is inseparable from everyday life that involves the individual as a whole both psychologically and physically to achieve a goal. Learning is a process carried out by individuals to obtain a new change in behavior as a whole as a result of the individual's own experience in interaction with his environment. The learning process plays an important role in producing the quality of student learning. The learning process does not always go well and smoothly according to the goals set. Learning problems can arise from anywhere. One of them comes

from the student dimension, learning problems that can arise before learning activities can be related to student characteristics both in terms of interests, skills and experience. As educators, teachers must be able to overcome learning problems in students. This is because the success of a teacher is when students can understand the material and have good learning achievement. From this it can be understood that the success of the learning process is the estuary of all activities carried out by teachers and students.

The inactivity of students involved in the learning process can occur because the learning model used does not involve students

directly. Classroom learning is still mostly dominated by teachers, so it doesn't build better student perceptions, interest/motivation and attitudes. Most students experience boredom due to the teacher-centered learning model so that this lack of attention has an impact on learning achievement which is generally unsatisfactory. According to Hamdu and Agustina (2011) it is known that one of the factors that influence student achievement is student interest. With interest, students will learn more actively, tenaciously, diligently and have full concentration in the learning and learning process. Encouragement of interest in learning is one thing that needs to be raised in learning efforts at school.

According to Sudjana (2010), states that learning outcomes are abilities possessed by students after they receive their learning experience. Meanwhile, Dimiyanti and Moedjiono (2006) state that learning outcomes are the result of an act of interaction of teaching or learning. Hamalik (2007), states that learning outcomes are when someone has learned there will be a change in behavior in that person, for example from not knowing to knowing and from not understanding to understanding. In general, student learning outcomes at school are expressed in letters, numbers, or sentences and are contained in a certain period. Learning outcomes can be seen from the daily test scores (formative), midterm test scores (summative) and semester test scores (subsmatic). High and low learning outcomes are influenced by two factors, namely internal factors and external factors. Internal factors are factors that come from within the learner. Included in the internal factors are biological and psychological factors such as intelligence, achievement motivation and cognitive abilities, while external factors are factors that come from outside the students themselves. External factors are environmental factors and instrumental factors such as teachers, curriculum and learning models. The higher the quality of each of these factors, the higher the student learning outcomes. Vice versa, the lower the quality of these factors, the lower the student learning outcomes.

In the teaching and learning process, the minimum completeness criteria (KKM) for chemistry subjects in the 2020/2021 school year are 75. Judging from the average grade in Chemistry at SMAK Terpadu Hati Tersuci Maria Halilulik for the 2020 academic year/ 2021, the following results were obtained: the average colloid value in XI IPA was 65.40 with a completeness of 37.50%. From the results of interviews conducted by researchers with chemistry teachers at Maria Halilulik Hati Tersuci High School, information was obtained that the interaction between teachers and students during chemistry teaching and learning activities in class only went in one direction, namely from the student teacher. The methods used in chemistry learning activities are lectures and assignments. This method is still not effective enough to increase student learning interest in learning activities, so that the impact on learning outcomes is still very low. Based on the information that was asked by the researchers to the chemistry teacher, it was found that student learning outcomes in the colloidal system material were very low, namely the graduation rate was still below 50%.

Many students in high school (SMA) think that chemistry is a relatively difficult subject. In order for students to be successful in learning, a high level of understanding is needed in the learning material provided to understand chemistry which is abstract in nature easier so that it can have an impact on improving learning outcomes, efforts are needed to reform in the field of education, namely updating methods. The existence of the application of methods with the help of innovative learning media, which can increase the motivation of students to learn actively to understand the material.

As for one of the innovations that have been made, namely by implementing the cooperative learning model of the Teams Games Tournaments (TGT) type. The TGT type cooperative learning model is an active learning strategy for creating situations in such a way that the success of the group can

be determined by the success of the members in the group itself. In cooperative learning of the TGT type there are five main components namely class presentations, team learning (groups), games, tournaments and team recognition (team awards).

The TGT type of cooperative learning model in its application can be developed by utilizing various media including using crossword puzzles (TTS). TTS is a game with a rectangular template consisting of a collection of black and white boxes and equipped with two lanes, namely horizontal (a collection of boxes that form one row and several columns) and descending (a collection of boxes that form one column and several rows). This is in accordance with research according to Davis, Shepherd and Zwiefelhofer who concluded that games used as learning media can directly stimulate student interest and can be a good motivating technique.

Research related to the TGT type cooperative learning model gives many positive results, which has been done by Gunarta (2017), the influence of the Team Games Tournament learning model assisted by question card media with students who are taught using conventional media with $t_{\text{count}} = 3.69 > t_{\text{table}} = 0.021$ with 42 db and 5% significance level. With the average value of the experimental group and the control group, namely: $22.29 > 19.9$. Furthermore, Rakhmadhani (2012), the effect of using the Teams Games Tournaments method assisted by crosswords and snakes and ladders media with student learning motivation on student learning achievement in colloid material for class XI SMA Negeri 1 SIMO in the 2011/2012 academic year gave positive results, namely that there was an influence significantly in the application of the TGT and snakes and ladders methods in learning colloidal material on chemistry learning achievement as evidenced by the significance value and the difference in cognitive scores in experimental class 1 is better than in experimental class 2 and there is a significant effect on learning motivation students in

learning colloid material. Yuliana, et al., (2014) revealed that the application of the TGT type of cooperative learning model could increase high learning activity in cycle I by 74.75% to 82.72% and increase learning achievement in terms of cognitive and affective aspects. On the cognitive aspect of student completeness in cycle I by 34.38% to 86.21% while the affective aspect increased the presentation of 77.11% in cycle I and 81.92% in cycle II. The advantages of crossword puzzle media (TTS) are that TTS can be made by the teacher so that it can be adapted to the learning needs of students and the level of thinking of students, TTS can be made with a relatively affordable budget, learning becomes more interesting and fun because students are involved in games that are educational, learning becomes more interactive because the percentage of students' involvement in learning activities is very high, trains students to learn independently, because students have to find information themselves as a source and train students' thinking skills, because carefulness is needed in solving problems. the TTS. The use of the TGT type learning model assisted by TTS media is expected to assist teachers in improving the quality of learning as a result of increasing learning outcomes and student learning interest.

LITERATURE REVIEW

The term learning is more influenced by the development of technological results that can be used for learning needs, students are positioned as learning subjects who play a major role, so that in the setting of the teaching and learning process students are required to be fully active, even individually studying the subject matter. Thus, the term "learning and teaching" or teaching places the teacher as the main actor in providing information, so in learning the teacher acts more as a facilitator, organizing various resources and facilities for students to learn. So in essence learning is a process of interaction between students and their

environment, resulting in a change in behavior for the better.

TGT type cooperative learning is a type of cooperative learning that involves all students without any status differences, involves the role of students as peer tutors and contains elements of play and reinforcement. Learning activities with games designed in cooperative learning type TGT allow students to learn more relaxed, besides finding responsibility, working together, healthy competition and learning involvement. In this model students are placed in study teams consisting of 4-6 people who are a mixture according to different academic levels, performance, gender and ethnicity or race. With the heterogeneity of group members, it is hoped that it can motivate students to help each other in mastering the subject matter.

Crossword puzzles (TTS) is a form of game for entertainment and sharpens brain skills, this game reaches all types of ages, both children, teenagers, adults and the elderly like this type of game a lot. Since ancient times there have been squares of crossword words made in a black and white checkerboard pattern, with different words crossed over one another. So, crosswords added something new. According to Websters New World Dictionary (1998), states that: "Crossword puzzles an arrangement of numbered squares to be filled in with word. A letter to each square, so that the letter appearing in a word placed horizontally is usually also part of a word placed vertically, numbered synonyms and definitions are given as clues for the word".

According to Bloom quoted by Agus (2009), learning outcomes include cognitive, affective and psychomotor abilities. The three psychological domains are interrelated and should not even be ignored in the learning process. This is because the estuary of the three competencies leads to life skills. These three domains must be assessed to find out how much competence is achieved operationally from basic competencies and competency standards. Meanwhile, according to Witherington (Purwanto, 2002) interest is a

person's awareness, that a person's object is a thing or situation that contains or has something to do with him. He also thought that the interest was a basic welcome. Therefore, it can be said that a person's experience precedes the emergence of interest. In other words, it can be described that there is an experience that creates interest, because the presence of interest will lead to learning activities, with the existence of learning activities, it will cause changes in behavior.

METHODS

This type of research is quasi-experimental research. This study aims to see significant differences in student learning outcomes and students' learning interest in learning chemistry in the experimental class that applies the Teams Games Tournaments (TGT) learning method assisted by crosswords media. and the control class did not apply the Teams Games Tournaments (TGT) learning method and Crossword Puzzle media. The design in this study was Quasi-Experimental with the Non-equivalent Group Pretest-Posttest Design, namely an experiment that recognizes two groups, both of which are given experimental treatment. The population in this study were all class XI students of the MIA Department, Even Semester, SMA Terpadu Hati Tersuci Maria Halilulik for the 2020/2021 academic year. To determine the sample, a student's initial ability test was carried out. The initial ability test was carried out to determine students who had high abilities were designated as the control class and the class with moderate abilities as the experimental class. In this study, the samples were taken as many as two classes.

RESULT AND DISCUSSION

This research is an experimental research conducted to measure students' interest and learning outcomes in chemistry class XI MIA SMA Terpadu Hati Tersuci Maria Halilulik on the subject matter of the colloid system in odd semesters. In this study,

researchers compared the two learning models in different sample classes. In class XI MIA 2 as the experimental class the learning process takes place by applying the TGT type cooperative learning model assisted by crossword media while in class XI MIA 1 as the control class, learning takes place by applying the conventional model.

The results of the research mean values of the pretest and posttest of the experimental class and the control class can be seen briefly in Table 1.

Table 1. Comparison of Pre-test and Post-test Values for the Experimental Class and the Control Class

Class	Pre test	Post test
	Average	Average
Experiment	40.32	73.92
Control	47.61	65.20

Based on the results of data analysis, the different treatment models and learning methods in the two sample classes had an impact on student learning outcomes in the colloidal material system. In the experimental class, the average value of learning outcomes is higher than the control class, which is taught by applying conventional learning models. The average value of student learning outcomes in the experimental class after the final test was 73.92 with a comparison of the average value in the initial test of 40.32. Meanwhile, when compared with the control class, the average value of learning outcomes in the initial test was 47.61 and the increase in the average value in the final test was 65.20.

The occurrence of differences in the average learning outcomes of the two sample classes is caused by the use of different learning models and media and differences in the ability of individual students to understand material, especially colloidal system material. The use of conventional learning models in the control class shows that students are less active and less interested in the learning process. The lack of student participation in the learning process causes students to not maximize their abilities so that learning outcomes are reduced. Based on the results of

observations on the attitudes and activities of students in the control class, it was observed that there were students who were less active in working on student worksheets (LKS). Students are more relaxed and only expect answers from friends. This causes a low understanding of the colloidal system material and results in low learning outcomes. This is supported by Gulo (2002) who states that lectures are one of the methods of conventional learning models which are very simple so that they are most liked by teachers. However, the lecture method often places students in the position of listeners and recorders, so the class situation becomes passive, resulting in the level of student saturation increases so that it can reduce the desire to learn and can cause a decrease in learning outcomes. There are several factors that influence student learning outcomes in the control class. First, because there is a feeling of laziness for students to study again after completing the end of semester exams. This can be seen when the teacher enters the class, the class atmosphere is less conducive and difficult to control, making time wasted. Second, students do not repeat material that has been studied at home. Whereas in the experimental class, the use of learning models and media presents a pleasant learning atmosphere so that it attracts student learning interest. With an interest in student learning, students are happy to follow the learning process and pay attention to the colloidal system material being taught. With attention expressed through learning activities or participation during the learning process, students will be more active in learning and thus learning outcomes will increase. During the learning process the researcher observed that the use of crossword models and media was very suitable to be applied in the learning process because it could attract the attention and activeness of students in the learning process and create a pleasant atmosphere through the games that were carried out. In addition, the use of crossword models and media is very effective because each group member must master the material in a short period of time, students try to think about

doing the questions on the crossword puzzle sheet. This is supported by Sudono in Mulyaningtis (2009) who states that learning fun learning will have a positive impact on students who always increase the desire to learn. In addition, the game will increase the activity of students' brain cells so that it can facilitate the learning process. Through this crossword game, students can react as well as learn and think to solve problems. The application of TGT learning will greatly assist teachers in teaching and learning because there is collaboration between students with the hope of achieving more optimal learning outcomes.

Based on the results of the questionnaire on student learning interest in the experimental class and the control class showed different results. In the experimental class, the average interest in learning chemistry before treatment was 49.33% and the interest in learning chemistry after treatment was 74.48%. Whereas in the control class the average student interest before treatment was 53.69% and interest in learning chemistry after treatment was 59.77%. Comparative data of students' learning interest can be seen in Table 2.

Table 2. Comparison of Student Learning Interests in the experimental class and the control class

Class	<i>Pre test</i>	<i>Post test</i>
	Average	Average
Experiment	49.33	74.48
Control	53.69	59.77

Interest in learning is very important for students because interest in learning is the driving force for students to learn so as to obtain good learning results. This student learning interest questionnaire consists of two categories, namely the initial questionnaire and the final questionnaire. The questionnaire was made to see comparisons before and after learning by applying different models and media.

The data obtained from the results of the student learning interest questionnaire, it can be concluded that the experimental class has a higher interest in learning chemistry

compared to the control class. The difference in learning interest in the two sample classes is caused by the use of different learning models and media. In the control class where the learning process takes place by applying conventional learning models, the researchers observed that the pattern of interaction between students and teachers was very limited. Students who are less active in learning become bored quickly and only high-ability students are active in learning and interacting with teachers. Students also feel bored with the teacher's way of teaching with the same lecture method so that students pay more attention to other things when learning chemistry such as chatting with their classmates, falling asleep in class, not taking notes on teacher explanations and often being allowed to leave class. In addition, chemistry material is felt to be very difficult for students so that students are dissatisfied and find it difficult with the chemistry material taught by the teacher but they are reluctant to ask questions or express opinions. These things reflect that students' interest in learning is low. Meanwhile, the students' interest in learning in the experimental class increased for each individual, this was because at the beginning of the lesson before being given treatment the students had already thought that chemistry learning material would be difficult and difficult to understand. But this changed the results of students' interest in learning after learning by using crossword puzzles as media. Learning by using crossword game media looks more interesting and not boring for students.

This can be seen from several factors including: the activeness of students when discussing in groups to work on crossword puzzles, actively looking for answers while playing crossword games and students are also seen to be active in asking questions when there is material that is not understood. Students' attention is also focused on learning chemistry, such as when playing, students are not allowed to enter and leave the class. In this case, the application of crossword puzzle games in learning activities raises interest for students to try to get more achievements than

before. The most visible thing is the difference in aspects of student confidence to give opinions and actively answer questions.

So that it can be said that producing an interesting learning nuance, namely the use of learning models and media in the learning process influences student interest and learning outcomes so that students' understanding of the material being taught and student learning outcomes are satisfying. The use of the TGT type cooperative learning model assisted by crosswords media can create an interesting and fun learning atmosphere for students so that in the learning process students become active participants not passive observers. A fun learning atmosphere can attract students' interest in learning chemistry with indicators of student participation, interest and activeness during the teaching process in class.

Based on the results of the calculation of the two differences test, the average student learning outcomes for the sample class obtained a sig.2 tailed value, a significant level of 5%, namely $0.002 \leq 0.05$, then H_1 is accepted and H_0 is rejected. Thus it can be concluded that there are differences in learning outcomes between students who are taught using the TGT type cooperative learning model assisted by crossword puzzles and students who are taught with conventional learning models. Data analysis of differences in student learning outcomes can be seen in Table 3.

Table 3. Analysis of Difference Tests in Student Learning Outcomes

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig.
Learning Outcomes	Equal variances assumed	.252	.619	3.282	32	.002

While the data analysis tests the difference in the average students learning interest can be seen in Table 4.

Table 4. Analysis of Difference Tests in Student Learning Interest Data

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	2809.895	1	2809.895	60.855	.000
Within Groups	1477.546	32	46.173		
Total	4287.441	33			

Based on the results of the calculation of the average difference test, the average data on student interest in the sample class obtained a significant 2-tailed value, a significant level of 5%, namely $0.00 \leq 0.05$, then H_1 is accepted and H_0 is rejected. Thus it can be concluded that there are differences in the learning interests of students who are taught using the cooperative learning model of the TGT type assisted by crossword media with students who are taught with the conventional model on colloid system material for class XI students of SMA HTM Halilulik integrated school year 2021/2022. Student learning interest will affect student learning outcomes. This is in line with the opinion of Sudjana. Learning outcomes are related to the learning process, so that the success of the learning process is influenced by the learning strategy used, namely the learning model and media used during learning activities.

The N-Gain test is carried out to see the effectiveness of the model used in learning. In the tests that have been carried out, it can be seen that the Gain value in the experimental class reaches 0.56 in the moderate category and the control class reaches 0.32 in the moderate category. Based on the data from the N-Gain test results, it can be stated that the N-Gain in the experimental class is higher than the N-gain in the control class. The N-gain test data can be seen in Table 5.

Table 5. N-Gain Test Result

Result	Experiment Class	Control Class
Indeks Gain	0.56	0.32
Category	Medium	Medium

Based on the research data, it can be stated that there is a good influence between learning interest and student learning outcomes. The application of the TGT type cooperative learning model assisted by TTS media is very effective in increasing student learning interest so that it can affect the improvement of student learning outcomes. With learning that is presented as interesting as possible through the right models and media, it can make students interested in learning the material so that students' thinking skills in solving existing problems will increase.

CONCLUSION

Based on the formulation of the problem, research objectives, submission of hypotheses and analysis of research data regarding the learning model of the Teams Games Tournament type assisted by crossword media on students' interests and learning outcomes in colloid system material for class XI SMA Terpadu Hati Tersuci Maria Halilulik academic year 2021/2022, it can be concluded as follows: (1) There is a significant difference in learning interest between students who are taught using the TGT type cooperative learning model assisted by crossword puzzles and students who are taught with conventional learning models on colloidal system material with two sample classes expressed by test the average difference in student learning outcomes data with a sig.2 tailed value $<5\%$ significant level, namely $0.00 \leq 0.05$; (2) There is a significant difference in learning outcomes between students who are taught using the TGT type cooperative learning model assisted by crossword puzzles and students who are taught with conventional learning models on colloidal system material with two sample classes as expressed by the test of the difference in the average data student learning outcomes with a tailed sig.2 value $<5\%$ significant level, namely $0.002 \leq 0.05$.

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