

LEARNING MODEL OF COOPERATIVE LEARNING TYPE TEAM GAMES TOURNAMENT BASED ON E-LEARNING IN SMK NUSAJAYA TANGERANG

Ajay Supriadi¹; Fifit Alfiah^{2**}; Mochamad Fiqri Nur Fauzan³

Information Systems¹, Informatics Engineering ^{2,3}
Universitas Raharja, Tangerang, Indonesia
<https://raharja.ac.id/>
ajay.supriadi@raharja.info¹, fifitalfiah@raharja.info², fiqri.nur@raharja.info³
** Contributor Author



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Abstract— This research is motivated by gaps in teaching and learning at Nusajaya Vocational School, Tangerang. This study aims to make Cooperative Learning Type Team Learning Games based on E-learning that can increase student interest and learning attitudes at Nusajaya Tangerang Vocational School. The results of this study are an e-learning that can attract students' interests and attitudes to learning. In e-learning not only contains learning material content but there is a menu for interaction with students and an interesting menu for students, then this research is a Research and Development (R & D) research on the application quality testing process using Black box testing. So that the testing of this system shows results that are very feasible to use, after being used in two-stage learning, namely cycle 1 is 68.53% and cycle 2 gets results that increase 12.94% on student interests and attitudes to 81.47%.

Keywords: Model, Kooperatif, TGT, E-Learning.

Intisari—Penelitian ini dilatar belakangi dengan adanya kesenjangan dalam belajar mengajar di SMK Nusajaya Tangerang, penelitian ini bertujuan untuk menjadikan model pembelajaran Kooperatif Learning Tipe Team Game Tournament Berbasis E-learning yang bisa meningkatkan minat dan sikap belajar siswa pada Sekolah Menengah Kejuruan (SMK) Nusajaya Tangerang. Hasil penelitian ini adanya sebuah e-learning yang bisa menarik minat dan sikap siswa untuk belajar. Di dalam e-learning tidak hanya memuat konten materi pembelajaran tetapi terdapat menu untuk interaksi dengan siswa dan menu yang menarik untuk siswa, maka penelitian ini merupakan penelitian *Research and Development* (R&D) pada proses pengujian kualitas aplikasi menggunakan *Black box testing*. Sehingga pengujian sistem ini menunjukkan hasil yang sangat layak untuk dipergunakan, setelah digunakan pada pembelajaran dengan dua tahap

yaitu siklus 1 sebesar 68,53% dan siklus 2 mendapatkan hasil yang meningkat 12,94 % pada minat dan sikap siswa menjadi 81,47%.

Kata Kunci: Model, Kooperatif, TGT, E-Learning.

INTRODUCTION

The learning process in vocational high schools (SMK) has a variety of methods and media that can be used, currently education in Indonesia using the 2013 curriculum (K-13) in K-13 students are more demanded to learn independently. To meet the needs as a means of support in K-13 e-learning can be used as a learning medium. E-learning is one of today's modern learning media and e-learning has become one of the media in transferring or distributing learning material through electronic media, so students are able to receive lessons well. The cooperative learning model of team game tournament type so that it is more interesting in the delivery of learning material is integrated with e-learning. TGT cooperative learning also creates an active learning environment in completing exercises, and discussions between students and teachers. This study provides evidence that the probability of learning with TGT is beneficial for students (Veloo & Chairhany, 2013).

At the time of observation, the writer also found and got other problems at the Nusajaya Tangerang Vocational School, namely the learning methods applied by the teacher teaching in class so that students tend to be less interested (Pratiwi Hartono, Saptaning Wilujeng, & Andarini, 2015) in participating in the learning process, especially in the eyes difficult subject. Students feel bored (Rijal & Bachtiar, 2015) with the existing learning system so that it affects students' interests and attitudes, in poor learning outcomes and children tend not to follow the lessons there are also

complaints from parents of students who are submitted through the homeroom teacher about declining interest learning children because they feel bored (Juwita, Sari, & Septianingrum, 2017).

After obtaining the results of observations at the Tangerang Nusajaya Vocational School in Tangerang, researchers have attempted to make a cooperative learning model of the type of team games tournament (TGT) learning in some Vocational subjects that are complex in class X (SMK) both compulsory group subjects, Specialization groups (basic areas of expertise and basic expertise programs).

MATERIALS AND METHODS

The author will describe some of the methods used in this study, and explain the design needed in the research elements as follows:

A. Cooperative Learning

Cooperative Learning Model teaches how to cooperate with each other in solving a problem in groups through discussion with other friends who have different views and thoughts - through this, each member will have a broader view because of sharing knowledge, experience, and skills so that through all of these groups can complete the tasks given through shared thought that is considered true and good (Fuad & Ghufro, 2014). In the implementation of cooperative learning begins with delivering material to students both verbally and non-verbally, then proceed with grouping students into heterogeneous groups (Agus, 2009). Then under the guidance of the teacher, students learn in their groups after that the teacher gives an opportunity to one of the group members to present the results of the discussion to the front of the class, then proceed to give tests to students individually. This aims to determine the ability of students to the material that has been discussed.

At the time of learning the teacher first presents new material in class, then under the guidance of the teacher group members work together to complete the tasks to be discussed. These tasks must be mastered by each group member and at the end of this cooperative learning, the teacher asks students to submit the results of their group discussions then proceed with conducting individual student ability tests (Rohmah & Wahyudin, 2016), while working on the test is not allowed to students to help each other. The group that gets the best score will be given a prize.

B. TGT (Teams Game Tournament) Model

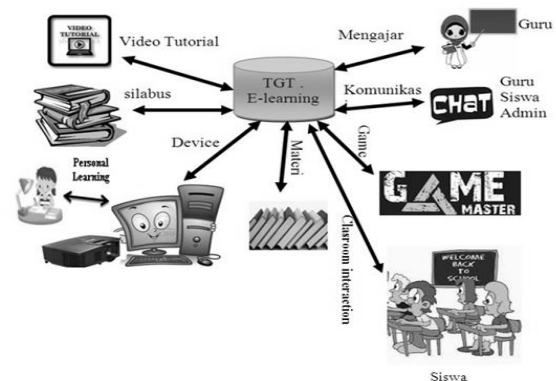
The TGT learning model is one of the cooperative learning models originally developed

by David De Vries and Keets Edwards (Kurnia, Ruskan, & Ibrahim, 2014). This learning model is the first learning model from John Hopkins (Susilowati, 2013). The TGT learning method is one of the cooperative learning models that are easy to apply (Kariyana, 2013), involves the activities of all students without the need for differences in status, and contains an element of reinforcement. This learning uses lessons that are delivered by the teacher and the same work team as STAD but replaces quizzes with weekly tournaments. Where students play academic games with other team members to contribute points to their team's score. TGT type of cooperative learning consists of 5 steps including class presentation (learning) in groups (teams), games, games and team recognition (Husain, Husain, & Husain, 2015).

Games in TGT can be in the form of questions written on numbered cards. Each student, for example, will take a card that was given a number earlier and try to answer questions that correspond to that number. The tournament must allow all students of all levels of ability (intelligence) to contribute points to the group, the game which is packaged in the form of this tournament can act as an alternative assessment or can also be a review of learning material

C. Design of the TGT Model. E-learning based

From the results of the analysis of existing business processes, it can be made a Cooperative Learning Model for Game Type Tournament Team Based on E-learning (Pratiwi & Mulyani, 2015).



Source: (Supriadi, Alfiah, & Fauzan, 2019)

Image 1 Designing TGT Learning Models

D. PIECES Analysis

In the weakness of the system, the author uses PIECES analysis (Performance, Information, Economy, Control, Efficient and Service) (Dewi, Marchada, & Rifai, 2016) as a measurement tool to determine whether a new system is feasible or not because 6 aspects must experience a better increase in size from the old system.

1. Performance Analysis,

Performance problems occur when the tasks performed by the system reach the target, performance is measured by the amount of production and response time. The amount of production is the amount of work carried out during a certain period. Response time is the average delay between a transaction and the response given to the transaction.

2. Analysis of Information (Information),

Information is an important commodity for end users. Because the information that will be generated can meet the wishes of the user and can also overcome existing problems. This information can also be utilized by internal parties or external parties.

3. Economic Analysis,

Economics is the most common motivation for an institution. The basic foothold for most managers is low costs.

4. Analysis of Control (Control),

The tasks of an information system need to be monitored and corrected if sub-standard performance is found. Controls are installed to improve system performance, prevent or detect misuse or system errors and ensure data security.

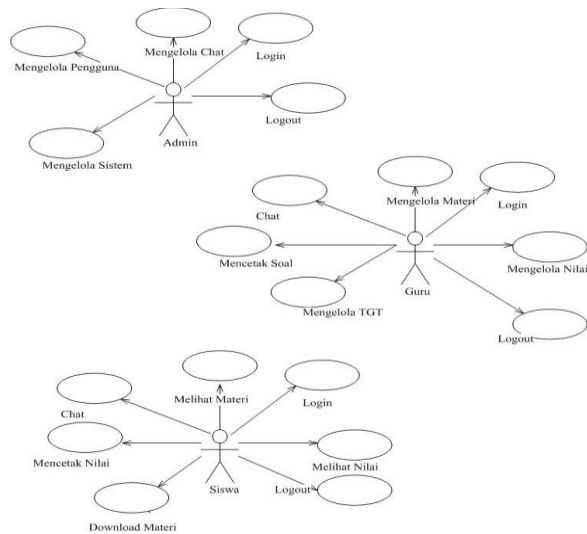
5. Efficiency Analysis

Efficiency is related to how the source is used with minimal waste. Therefore, efficiency problems require increased output or results. Because the existing system has been able to be used properly and has also been able to produce output as expected

6. Analysis Services

Good service can reflect an institution that is good or not good, so services must also be calculated well

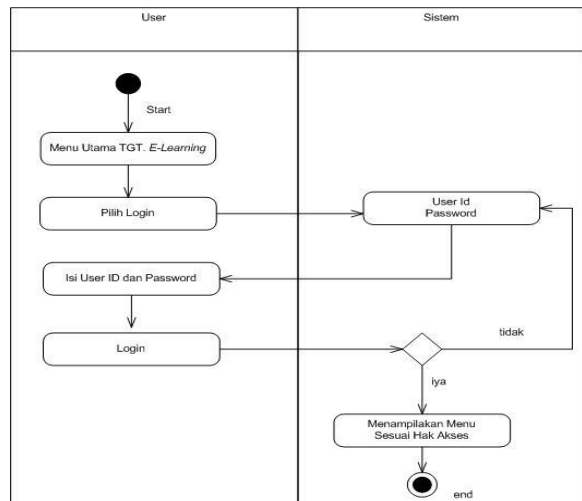
divided into 3 parts, namely: administrators, teachers, and students. Use cases can be seen in the image below:



Source: (Supriadi, Alfiah, & Fauzan, 2019)
Figure 2 Use Case Diagram of E-Learning System

2. Activity Diagram

To meet the system requirements in accordance with the above analysis, an activity diagram will be made that illustrates the steps in the workflow performed by the user.



Source: (Supriadi, Alfiah, & Fauzan, 2019)
Figure 3 Login Menu Activity Diagram

Figure 3 above is the process of depicting the work path of the system when the user first runs the Prototype Learning Model Type Cooperative Learning Team Game Tournament Based on E-learning then first must log in by entering the user id and password respectively. If the user ID and password that are filled in are correct, the system will display a menu in accordance with the user's access rights.

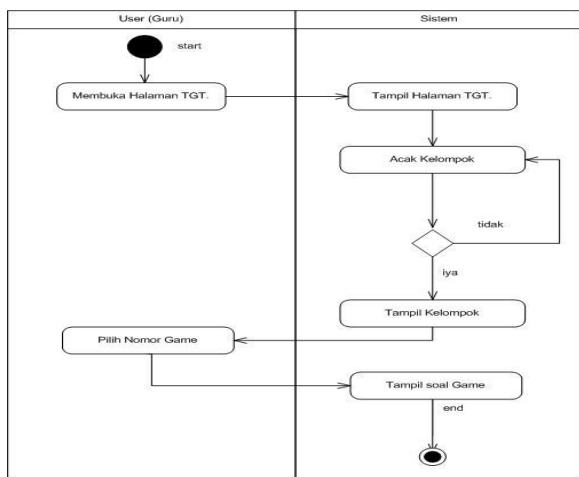
RESULTS AND DISCUSSION

A. System Design

As is known in compiling a program we must pay close attention so that the program has the correct logic rules. If the logic in a program is incorrect, it will cause an error in the output of the program. To help track the logic of a program, which also helps us to understand a problem before starting to write the program code, we need an object-oriented programming design called UML (Unified Modeling Language).

1. Use Case Diagrams

Use Case Diagrams are used to explain what activities can be performed by users of the system that is running. The data processing process based on the e-learning system that will be developed is

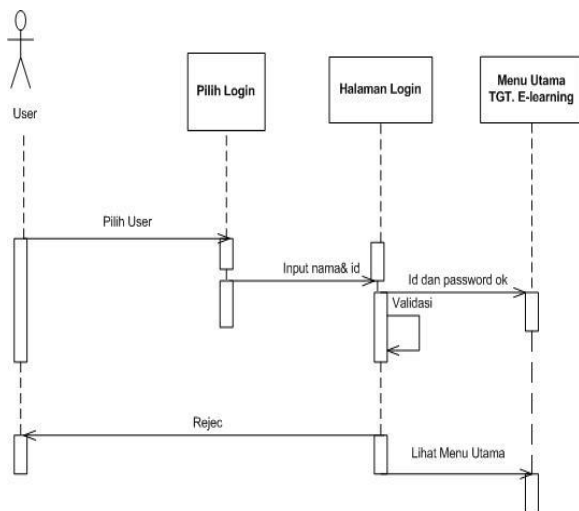


Source: (Supriadi et al., 2019)
Figure 4 Activity Diagram Team Game Tournament

Based on Figure 4 above is a system workflow of the process of E-Learning learning methods using TGT conducted by teachers to their students.

3. Sequence Diagram

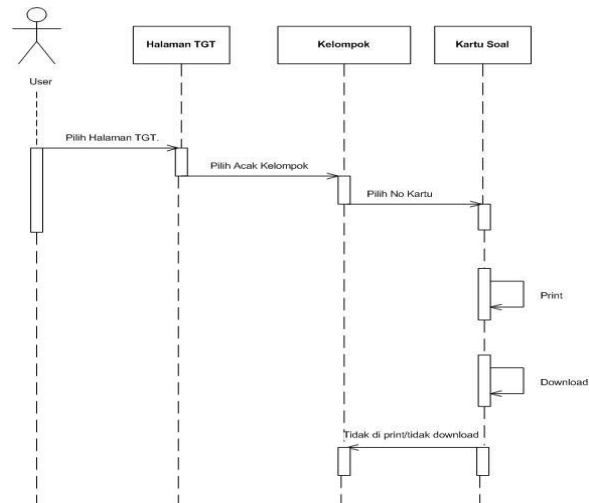
The design of sequence diagram models, the authors describe some of the processes that exist in the Prototype Model of Learning Cooperative Learning Type Team Game Tournament Based on E-learning.



Source: (Supriadi et al., 2019)
Figure 5 Login Sequence Diagram

Figure 5 above is the process of depicting the work path of the system when the user first runs the Prototype Learning Model Type Cooperative Learning Team Game Tournament Based on E-learning then first have to log in by entering the user id and password respectively. If the user ID and password that are filled in are correct, the

system will display a menu in accordance with the user's access rights.

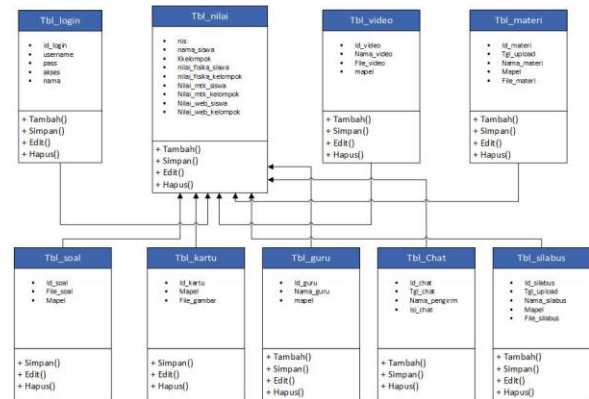


Source: (Supriadi et al., 2019)
Figure 6 TGT Sequence Diagram

Based on Figure 6 above is the system workflow of the process of E-Learning learning methods using TGT carried out by the teacher to his students.

4. Class Diagram

The following is the design and explanation of the Class Diagram of the E-Learning Learning System developed.



Source: (Supriadi et al., 2019)
Figure 7 Class Diagram of E-Learning system

Following is an explanation of the class diagram of the system:

1) Login login

This table is used to access data for user logins. Includes: login id, username, pass, access, name

2) Tbl nilai

This table is used to store and access student grades. Includes student, student_name, group, student physics value, Group physics value,

student's student grade, group student grade, student's grade, group web score.

3) Prev. Material

This table is used to access data related to the material. Includes material id, material name, material file, maple

4) Previous question

This table is used to access questions related to the tournament game team. Includes question id, question file, maple.

5) Previous question

This table is used to access questions related to the tournament game team. Includes question id, question file, maple.

6) Tbl card

This table serves to access the card to display the game tournament team. Includes card ID, mop, image file.

7) Teacher's date

This table serves to access subject data related to the teacher. Includes: teacher id, teacher name, subject

8) Chat chat

This table functions to access the chat data contained on the web site. Includes: chat id, chat date, sender's name, chat contents

9) Tbl syllabus

This table is used to access data related to syllabus files. Includes: syllabus id, upload date, syllabus name, maple, syllabus file

5. System Display Design



Source: (Supriadi et al., 2019)

Figure 8 Main Page Display Design

Figure 8 above is an illustration of the main page display design of the e-learning system for the TGT learning method.

B. System Implementation Results

1. Results of Implementation of Cycle Learning 1

The author made observations of research during 2x meetings in the learning process using the E-Learning system with the Team Games Tournament model. The following are the observational data that have been carried out by researchers:

Table 8 Data Observation Results of Student Learning Activities Cycle I

No	Aspect	Indicator	Description	Observation Results %
1	Visual	A	Students read the subject matter	81,03
		B	Students pay attention to the explanation from the teacher	70,69
2	Write	C	Students work on assignments from the teacher as a group	63,79
		D	Students record the material given by the teacher	77,59
3	Liste	E	Students listen to the explanation given by the teacher	68,96
		F	Students listen to their friends' opinions during group discussions	55,17
4	Oral	G	Students give answers in the game stage	70,69
5	Mental	H	Students ask questions to the teacher when explaining the material	60,34
Average Score				68,53

Source: (Supriadi et al., 2019)

Based on table 8 above of the 5 aspects assessed based on observations of learning activities during the application of the learning model Cooperative Learning Type Team Games Tournament (TGT) based on E-Learning in the learning process it appears that for point a the results obtained by 81.03% Students read the material lessons obtained from the number of 27 students and 7 students known to not read the material, point b by 70.69% of students pay attention to the explanation of the teacher known from 24 students pay attention to the teacher's explanation and 10 students do not pay attention, point c obtained 63.79% of students work on assignments from the teacher in groups were obtained from 22 students who did the work from the teacher while 12 students did not do the assignments from the teacher in groups.

Point d is known only 26 students recorded material given by the teacher while 8 students did

not record the material provided by the teacher resulting in 77.59% recorded the material provided by the teacher, for point e it was known 23 students listened to the explanation given by the teacher in class while 11 students did not listen to the explanation, resulting in 68.96% of students listened to the explanation given from the teacher, f point 55.17% of students listened to their friends' opinions when group discussions were obtained from 19 students who listened to their friends' opinions while 15 students did not listen to their friends' opinions during the discussion, point g is obtained 60.34% of students ask questions to the teacher when the explanation of the material is known from 21 students can ask questions to the teacher when explaining the material while 13 students do not do that, point h get the results of 70.69% of students to give answers in stage of the game (game) there are only 24 students who da pat provides answers in the game stage (game) while 10 students just remain silent. Overall learning activities of students in learning during the application of the learning model Cooperative Learning Type Team Game Tournament (TGT) based on E-Learning in the learning process got a score of 68.53%.

2. Results of the Implementation of Cycle Learning 1

Just as in the first cycle observations were carried out in conjunction with the implementation in the second cycle, starting from the beginning to the end of learning. Observations made by researchers. Observations were made using observation sheets. In the second cycle, this time the students were able to adjust to the Cooperative Learning Type Team Games Tournament (TGT) Learning Model Based on E-learning Students are accustomed to carrying out their respective tasks and play a role to contribute to the implementation of learning. Student Learning Activity Data can be seen in the following table: The following are observational data that have been carried out by researchers:

Table 9 Data Observation Results of Student Learning Activities Cycle II

N o	Aspect	Indicator	Description	Observation Results %
1	Visual	A	Students read the subject matter	86,21
		B	Students pay attention to the explanation from the teacher	79,31
2	Write	C	Students work on assignments from the teacher as a group	84,48
		D	Students record the material given by the	89,65

N o	Aspect	Indicator	Description	Observation Results %
3	Listen	E	Students listen to the explanation given by the teacher	79,31
		F	Students listen to their friends' opinions during group discussions	77,59
4	Oral	G	Students give answers in the game stage	79,31
5	Mental	H	Students ask questions to the teacher when explaining the material	75,86
		Average Score		

Source: (Supriadi et al., 2019)

Based on observations of learning activities during the application of the Cooperative Learning Type Team Games Tournament (TGT) learning model, from the results of point A it was found 86.21% of students read the subject matter out of 29 students who could read the material while 5 students could not read the material, point B as much 26 students pay attention to the teacher's explanation while 8 students don't pay attention to the teacher's explanation by 79.31% students pay attention to the teacher's explanation it is known as many as 28 students pay attention to the teacher's explanation while 6 students don't pay attention to the teacher's explanation, point C is 84.48% students work on assignments from the teacher in groups of 30 students work on assignments from teachers in groups while 4 students do not, point D is known 89.65% recorded material given by the teacher of 26 students while 8 students did not record the material provided by the teacher. E point is 79.31% of students listening to the explanation given from the teacher, likewise for F point 77.59% of students listening to their friends' opinions during group discussions, for point G the result is 75.86% of students asking questions to the teacher when explaining the material from 25 students can ask questions to the teacher while 9 people cannot ask questions to the teacher, as well as point H which produces a value of 79.31% of students giving answers in the game stage (game) of 26 students who are able to give answers in the game stage while 8 people no. Overall student learning activities in learning during the Application of the Cooperative Learning Type Team Games Tournament (TGT) Learning Model in the second cycle amounted to 81.47%. The results of the study in the second cycle showed an increase in each score of the Student Learning Activity Indicator, it showed that the weaknesses that existed in the first cycle could be fixed in the second cycle. Seen from the

observation data in cycle II that has reached the minimum criteria that have been previously determined at 75%, with the use of the E-Learning Cooperative Learning Type, Team Games Tournament (TGT) Learning Model students become more actively involved in existing learning. Students have been actively asking and giving their opinions when taking lessons in class.

3. Results of the System Implementation from Cycle I and Cycle II

Success rates Increased students' interest and attitudes on the TypeTeam Games Tournament (TGT) Cooperative Learning Model Based on E-learning both cycle I and cycle II can be presented in the following table:

Table 10 Improvement in Learning Activity Score Based on Observation in Cycle I and Cycle II

No	Aspect	Indicator Description	Score (%)		Enhancement (%)
			Cycle I	Cycle II	
1	Visual	A Students read the subject matter	81,0 3	86,2 1	5,18
		B Students pay attention to the explanation from the teacher	70,6 9	79,3 1	8,62
2	Write	C Students work on assignments from the teacher as a group	63,7 9	84,4 8	20,69
		D Students record the material taught by the teacher	77,5 9	89,6 5	12,06
3	Listen	E Students listen to the explanation given by the teacher	68,9 6	79,3 1	10,35
		F Students listen to their friends' opinions during group discussions	55,1 7	77,5 9	22,42
4	Oral	G Students give answers in the game stage	60,3 4	75,8 6	15,52
5	Menta	Students			

I	H	ask question s to the teacher when explainin g the material	70,6 9	79,3 1	8,62
Average Score			68,5 3	81,4 7	12,94

Source: (Supriadi et al., 2019)

Based on observations in Cycle I and Cycle II above it can be seen that an increase in the average score of learning activities based on observations seen from an increase of 12.94%.

CONCLUSION

Based on the results of research and discussions that have been done by previous authors, the conclusions in this study are as follows: Learning Model Cooperative Learning Type Team Games Tournament Based on E-learning in a learning media and can increase students' interests and attitudes. Learning models Cooperative Learning Type Team Games Tournament Based on E-learning that is made can also solve problems for teachers more easily in delivering learning material and for students to easily understand the subject matter delivered by the teacher. Based on the results of the Black Box Testing on the learning model of Team Games Tournament Based on E-learning, this system test showed very decent results to be used, after being used in learning with two stages, namely, cycle 1 of 68.53% and cycle 2 getting increased results 12.94% in the interests and attitudes of students to 81.47%.

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