



## Application of Teams Games Tournament (TGT) Learning Model assisted by Kahoot Media to Interest and Learning Outcomes of Class XI Students on Reaction Rate Material

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**Abstract: Application of Teams Games Tournament (TGT) Learning Model assisted by Kahoot Media to Interest and Learning Outcomes of Class XI Students on Reaction Rate Material.** This study aims to determine learning outcomes, interest in learning and the correlation between interest and learning outcomes conducted at SMA Swasta Dharmawangsa Medan. This research design used pretest-posttest control group design. The population in this study were all students of class XI IPA SMA Swasta Dharmawangsa Medan and the sample was class XI MIA 2 as an experimental class taught with Teams Games Tournament (TGT) model assisted by Kahoot and class XI MIA 3 as a control class taught with Teams Games Tournament (TGT) model assisted by cards taken by random sampling technique. The instruments used in this study were test instruments in the form of multiple-choice questions and non-test instruments in the form of a learning interest questionnaire. The results showed that the learning outcomes of students taught with the Kahoot-assisted TGT learning model were higher than the learning outcomes of students taught with the card-assisted TGT learning model on reaction rate material ( $75.00 > 70.00$ ). the average value of learning interest of the experimental class was higher than the control class ( $79 > 74.97$ ). There is a positive correlation between interest and learning outcomes seen from  $r_{\text{count}} = 0.744$  with a good category.

**Keywords:** Teams Games Tournament Learning Model, Kahoot, Cards, Learning Outcomes, Learning Interest

**Abstrak: Penerapan Model Pembelajaran Teams Games Tournament (TGT) Berbantuan Media Kahoot Terhadap Minat dan Hasil Belajar Siswa Kelas XI Pada Materi Laju Reaksi.**

Penelitian ini ditujukan untuk mengamati hasil belajar, minat belajar dan korelasi antara minat terhadap hasil belajar yang dilakukan di SMA Swasta Dharmawangsa Medan. Desain penelitian ini menggunakan pretest-posttest control group design. Populasi dalam penelitian ini adalah seluruh kelas XI IPA SMA Swasta Dharmawangsa Medan dan sampelnya adalah kelas XI MIA 2 sebagai kelas eksperimen dibelajarkan dengan model Teams Games Tournament berbantuan Kahoot dan kelas XI MIA 3 sebagai kelas kontrol yang dibelajarkan menggunakan model Teams Games Tournament berbantuan Kartu yang diambil menggunakan teknik random sampling. Instrumen yang digunakan dalam penelitian ini adalah instrumen tes berupa soal pilihan berganda dan instrumen non tes berupa angket minat belajar. Hasil penelitian menunjukkan bahwa hasil belajar siswa yang diajarkan dengan model pembelajaran TGT berbantuan Kahoot lebih tinggi daripada hasil belajar siswa yang diajarkan dengan model pembelajaran TGT berbantuan Kartu pada materi laju reaksi ( $75,00 > 70,00$ ). Nilai rata-rata minat belajar kelas

eksperimen lebih tinggi dari kelas kontrol ( $79,00 > 74,30$ ). Terdapat korelasi positif antara minat dan hasil belajar terlihat dari  $r_{hitung} = 0,744$  dengan kategori baik.

**Kata Kunci:** Model Pembelajaran Teams Games Tournament, Kahoot, Kartu, Hasil Belajar, Minat Belajar

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## ▪ INTRODUCTION

Education is a very important thing in life. Through education, students will be educated and formed according to their expertise. Education is said to be successful if the purpose of education can be achieved. The purpose of education is to change the mindset of students and instill noble morals in these students. To achieve these goals requires a process, namely the learning process (Desriyanty & Lazulva, 2016).

The chemistry learning process that has occurred so far has not been able to achieve learning objectives optimally. Students still have difficulty in understanding existing chemistry learning materials (Putri, 2021). Chemistry is one part of the natural science (IPA) field of study which is very close in context in everyday life. Chemistry is one of the subjects that is difficult for most high school students. Chemistry subjects are considered difficult because there is a lot of calculation material (Yakina et al., 2017). Chemistry learning is not just memorizing but most of the material contained in chemistry learning is abstract. (Rudi et al., 2023). So it is difficult for students to understand and requires a better explanation (Safitri & Sari, 2022). One of the materials considered difficult by students is reaction rate material (Syahri et al., 2017). Reaction rate is one of the subjects in chemistry learning content in class XI SMA IPA which has abstract concepts, mathematical calculations, graphs and symbols (Dita & Syafriani, 2022).

Based on the results of observations and interviews with chemistry teachers in class XI IPA SMA Swasta Dharmawangsa, there were problems in the process of learning chemistry, especially on the material of the reaction rate. Learning outcomes of chemistry on reaction rate material were not optimal, it can be seen from the low level of completeness of students' daily grades, which is around 50% of students in the class learning outcomes are still below the CMA (criteria of minimum achievement) which is 75. The teacher still uses the lecture method when delivering the material. Another problem is also found that students feel bored because the reaction rate material has many formulas and calculations that are difficult to understand. In addition, the media that teachers usually use is only Powerpoint.

Based on the description of these problems, students need more innovative learning alternatives with more interesting concepts from teachers in order to increase student interest and learning outcomes. One way that can be used to attract students' interest in learning is to apply an interesting learning model and can make it easier for students to learn chemistry. The learning model that can be applied to improve student learning outcomes in reaction rate material is the Teams Games Tournament learning model. The Teams Games Tournament learning model is a learning model that is easy to implement, because it involves the activities of all students which contain game elements, where students learn in small groups without any differences in status (Hamdani, 2011). The use of this learning model can significantly improve students' understanding and mastery of chemical materials (Sulorante, 2023).

According to research by Rumape et al. (2020) shows that the application of the TGT model improves student learning outcomes in chemistry. Rahayu et al. (2022)

showed the effect of applying the TGT learning model on student learning outcomes by 16.3%. Suliastifah (2023) stated that the application of the TGT learning model assisted by snakes and ladders on reaction rate material increased cognitive learning achievement by 42.42% to 81.82%. According to Christianto et al. (2023) the TGT model assisted by TTS is significantly better in increasing student interest and learning outcomes compared to conventional models.

Learning models can be successful, need to be supported using appropriate media. Learning media plays an important role in the learning process. In the chemistry learning process, intermediary media such as images, videos and animations are needed to make it easier for students to understand the material presented (Simanjuntak & Nainggolan, 2023). Media that can make students interested and fun like Kahoot. Kahoot is a type of educational game application because it can make it easier for students to understand the concepts contained in the teacher's teaching materials and hone their thinking skills (Sari & Labetubun, 2022). Kahoot media is very effective in improving student learning outcomes. Based on previous research conducted by Setiawati et al. (2019) showed that the average learning outcomes of students taught using Kahoot media were higher with an average post-test value of 83.0 while the control group was 74.33. This is due to the features of Kahoot media that are very supportive in learning. With the presence of discussion features to quiz, teachers are accommodated to conduct learning using Kahoot media. In addition, the use of fonts and colors in the application design also attracts users, so they are motivated in the learning process (Anviani & Pujiriyanto, 2022).

Based on this description, in increasing student interest and learning outcomes, it is necessary to innovate in the learning process through the application of the Teams Games Tournament (TGT) learning model assisted by kahoot media to the interest and learning outcomes of grade XI students on reaction rate material, with the hope that student interest and chemistry learning outcomes can increase.

## ▪ **METHOD**

The method in this research is true experiment. This research was conducted in November-December 2023 SMA Swasta Dharmawangsa Medan. The population in this study were all students of class XI IPA SMA Swasta Dharmawangsa Medan consisting of 8 classes. The sample of this study was class XI MIA 2 as an experimental class of 30 students and class XI MIA 3 as a control class of 30 students. Samples were taken by random sampling technique. The experimental class was taught using the Teams Games Tournament learning model assisted by Kahoot and the control class was taught using the Teams Games Tournament model assisted by Cards.

The procedure in the study was organized in four stages, namely: 1) preliminary stage, including: meeting the principal, observation, interview with one of the chemistry teachers; 2) preparation stage, including: compiling a research schedule, compiling materials, compiling lesson plans, compiling and validating test instruments to students and lecturers, determining experimental and control classes; 3) implementation stage, including: carrying out pre-test, carrying out learning, conducting post-test, giving interest questionnaire; 4) final stage, including: processing data, testing hypotheses, and correlation tests, drawing conclusions.

The instruments were pre-test and post-test questions totaling 20 multiple choice questions and an interest questionnaire totaling 30 statements. The steps taken to compile the test instrument are compiling a grid, compiling instrument items and testing the instrument. The instrument tested on students of class XII IPA because they have studied

Reaction Rate material in class XI IPA, then from the results of the trial, the validity of the test items, the difficulty level of the questions, the differentiation index, the distractor, and the reliability of the test instrument are calculated.

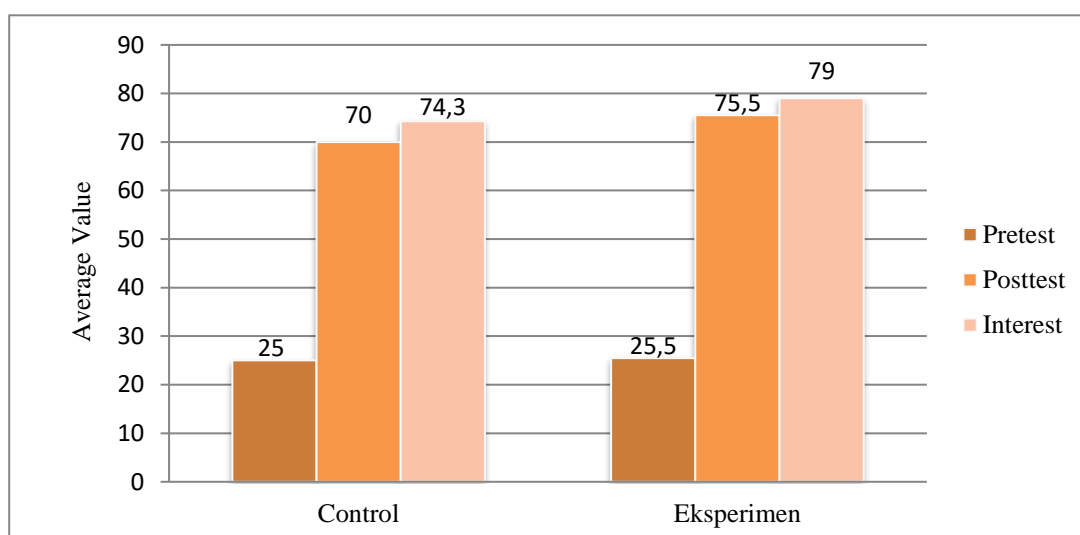
Technical data analysis includes prerequisite analysis consisting of normality test and homogeneity test. After that, hypothesis testing was carried out using the right party t test and the correlation test between interest and learning outcomes.

▪ **RESULT AND DISCUSSION**

From the results of data analysis of learning outcomes and student interest in experimental and control classes are presented in the graph below.

**1. Data on Student Learning Outcomes and Interest in Learning**

The data obtained were in the form of pretest, posttest and interest in learning. The average value of the control experimental class and experimental class can be seen in Figure 1 below.



**Figure 1.** Graph of Data on Student Learning Outcomes and Interest in Learning

Based on graph 4.1 it can be observed that the pretest score for the control class was 25.00 and for the experimental class was 25.50. This shows that initially, students in both classes have a low ability to understand the Reaction Rate material, because the pretest results show that none of the students reached or exceeded the Minimum Completion Criteria (KKM) of 75. Furthermore, the average posttest score for the control class is known to be 70.00 with a presentation of student learning completeness above the KKM of 50%. As for the experimental class, the average posttest score is known to be 75.50 with a presentation of student learning completeness above the KKM of 77%. This shows that there is a difference in learning outcomes between the two classes.

**2. Data Normality Test**

The normality test uses the Chi Square test at a significance level of  $\alpha = 0.05$  with the criterion that if  $\chi^2_{count} < \chi^2_{table}$  then the data is normally distributed. Normality test data is shown in Table 1:

**Table 1.** Data Normality Test

Class	Data	$\chi^2_{hitung}$	$\chi^2_{tabel}$	$\alpha$	Description
<b>Control</b>	Posttest	5,45	11,07	0,05	Normal
	Interest	8,75	11,07	0,05	Normal
<b>Experimental</b>	Posttest	6,00	11,07	0,05	Normal
	Interest	6,85	11,07	0,05	Normal

From the data in Table 1,  $\chi^2_{count} < \chi^2_{table}$ , the data in this study is normally distributed.

### 3. Homogeneity Test

Sample homogeneity analysis in this study was carried out using the F test with the criterion that if  $F_{count} < F_{table}$  with  $\alpha = 0.05$  then the data is homogeneous, Based on the homogeneity test of learning outcomes and interest in learning, homogeneous data was obtained as shown in Table 2 :

**Table 2.** Data Homogeneity Test

Class	Data	$F_{count}$	$F_{table}$	Description
<b>Experiment</b>	Pretest	1,39	1,858	Homogeneous
<b>Control</b>	Posttest	1,09	1,858	Homogeneous
	Interest	1,30	1,858	Homogeneous

From the data of Table 2,  $F_{count} < F_{table}$  then the three groups of data in this study are declared homogeneous.

### 4. Hypothesis Test

Hypothesis testing uses a statistical test, namely the right-sided t test. This test is used to determine whether the hypothesis in this study is accepted or rejected. The test criteria are  $t_{count} > t_{table}$  then  $H_a$  is accepted and  $H_0$  is rejected. Data on the results of hypothesis test calculations can be seen in Table 3:

**Table 1.** Hypothesis Test I (Learning Outcomes)

Data Source	Class	$\bar{X}$	$S^2$	$t_{count}$	$t_{table}$	Description
<b>Learning Outcomes</b>	Control	70	79,31	2,44	1,995	$H_0$ is rejected and $H_a$ is accepted
	Experiment	75,5	73,02			

Based on Table 3,  $t_{count} = 2,44$  and  $t_{table} = 1,995$ , where  $t_{count} > t_{table}$   $H_a$  is accepted, meaning that the learning outcomes of students taught using the Teams Games Tournament (TGT) learning model assisted by Kahoot are higher than the learning outcomes of students taught using the Teams Games Tournament (TGT) learning model assisted by Cards in the Reaction Rate material.

**Table 2.** Hypothesis Test II (Interest to learn)

Data Source	Class	$\bar{X}$	S <sup>2</sup>	t <sub>count</sub>	t <sub>table</sub>	Description
<b>Interest to learn</b>	Control	74,30	38,08	2,11	1,995	H <sub>0</sub> is rejected and Ha is accepted
	Experiment	79,00	54,07			

Based on Table 4, t<sub>count</sub> = 2,11 and t<sub>table</sub> = 1, 995 where t<sub>count</sub> > t<sub>table</sub> Ha is accepted, meaning that the learning interest of students taught using the Teams Games Tournament (TGT) learning model assisted by Kahoot is higher than the learning interest of students taught using the Teams Games Tournament (TGT) learning model assisted by Cards in the Reaction Rate material.

**Tabel 3.** Hypothesis Test III (Interests and Learning Outcomes)

Data Source	Class	$\bar{X}$	t <sub>count</sub>	t <sub>table</sub>	Description
<b>Interests and Learning Outcomes</b>	Control	74,30	0,74	0,334	H <sub>0</sub> is rejected and Ha is accepted
	Experiment	79,00			

Based on the results of testing the hypothesis of the correlation between interest and learning outcomes, it was found that there was a significant correlation between interest and student learning outcomes in the Reaction Rate material with the TGT learning model assisted by Kahoot. This is supported by the r<sub>count</sub> value of 0.74 and r<sub>table</sub> of 0.334 with a significance level ( $\alpha = 0.05$ ) so that H<sub>0</sub> is rejected and Ha is accepted.

The samples in this study were taken by random sampling so that two classes were obtained, namely XI MIA 2 and XI MIA 3. given teaching using the Teams Games Tournament (TGT) learning model assisted by cards.

Based on the research results obtained, initial ability data (pretest) in the experimental class had an average value of 25.5 and in the control class an average of 25.00. After that, different treatments were given to the two classes to determine student learning outcomes. Analysis of student learning outcomes obtained from final ability data (posttest), namely the experimental class had an average score of 75.50 and the control class had an average score of 70.00.

Testing Hypothesis I obtained t<sub>count</sub> = 2.44, while t<sub>table</sub> at the significance level  $\alpha = 0.05$  was 1.6723. The hypothesis testing criteria shows that the value of t<sub>count</sub> > t<sub>table</sub>, so that H<sub>0</sub> is rejected and Ha is accepted, thus it can be concluded that the learning outcomes of students taught using the Teams Games Tournament (TGT) learning model assisted by Kahoot are higher than the learning outcomes of students taught using the learning model Teams Games Tournament (TGT) with the help of cards on Reaction Rate material. This is because kahoot media provides a direct response to correct and incorrect answers, so students immediately know their score instantly. This makes students more active and serious in answering questions, besides that interesting and creative features and unique appearance and design also increase student enthusiasm in learning (Rozanah et al., 2023). As well as increasing student focus and attention to the questions given

(Konengian et al., 2023). Whereas in the control class during the games tournament it was seen that students did not pay much attention to which answers to the questions were right and wrong, some of them only guessed or just chose because on the media card the acquisition of scores and correct and incorrect answers were not told immediately but were told at the end of the game so that students were not very enthusiastic in learning. The results of this study are in accordance with the research results of Rumape et al. (2020) shows that applying the TGT model can improve student chemistry learning outcomes. The average learning outcome value for the control class was 79.47 while the experimental class was 88.32 (Amni et al., 2021). Next, Setiawati et al. (2019) stated that the average learning outcomes of students taught using Kahoot media were higher with an average posttest score of 83.0 while the control group was 74.33.

Testing Hypothesis II obtained a  $t_{\text{count}}$  of 2.60, while the  $t_{\text{table}}$  at the significance level  $\alpha = 0.05$  was 1.6723. The hypothesis testing criteria shows that the value of  $t_{\text{count}} > t_{\text{table}}$ , so that  $H_0$  is rejected and  $H_a$  is accepted, thus it can be concluded that the learning interest of students taught using the Teams Games Tournament (TGT) learning model assisted by Kahoot is higher than the learning interest of students taught using the learning model Card-assisted Teams Games Tournament (TGT) on Reaction Rate material resulted in an average score for students' learning interest in the experimental class of 79.00 while the control class was 74.30. The results of this research are in accordance with the results of research conducted by Puspitasari et al. (2022) which states that using Kahoot as a learning medium can increase students' interest in learning. The increase in cycle I was 78.12% and cycle II was 82.17% (Purnamasari et al., 2023).

The results of the Hypothesis III test obtained a value of  $r_{\text{count}} = 0.744$  and  $r_{\text{table}}$  of 0.334, so from the calculations it was obtained that  $r_{\text{count}} > r_{\text{table}}$ , namely  $0.744 > 0.334$ , so  $H_0$  was rejected and  $H_a$  was accepted. The results of this research show that there is a significant correlation between interest and learning outcomes of students taught with the TGT model assisted by Kahoot in the Reaction Rate material at 55%. From the coefficient of determination it can be seen that 55% interest influences chemistry learning outcomes. The higher the interest, the higher the learning outcomes, and vice versa. This is in line with research conducted by Rozikin et al. (2018) which states that interest in learning affects student learning achievement. Furthermore, Rohma (2020) stated that the factor that influences students' intelligence and learning outcomes is interest.

## ▪ CONCLUSION

Based on the research results, the learning outcomes of students taught using the Teams Games Tournament learning model assisted by Kahoot were higher than the learning outcomes of students taught using the Teams Games Tournament learning model assisted by Cards on Reaction Rate and student learning interest material. taught with the Teams Games Tournament learning model assisted by Kahoot was higher than the learning interest of students taught with the Teams Games Tournament learning model assisted with Cards in the Reaction Rate material. There is a significant correlation between interest and student learning outcomes taught using the Teams Games Tournament model assisted by Kahoot in Reaction Rate material

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