



THE EFFECT OF THE TEAM GAMES TOURNAMENT (TGT) COOPERATIVE LEARNING MODEL ON EIGHTH-GRADE STUDENTS' LEARNING OUTCOMES IN LIGHT TOPIC

Rini Kurnia Putri¹, Khairil Arif^{1,a)}, Tuti Lestari¹, Rani Oktavia¹
¹Department of Science Education, Universitas Negeri Padang

^{a)}Corresponding Author E-mail: kharilarif@fmipa.unp.ac.id

ABSTRACT

Students' low learning outcomes in science are often associated with instructional approaches that provide limited opportunities for active participation and collaborative learning. The Team Games Tournament (TGT) cooperative learning model has been widely recognized as an effective strategy for promoting student engagement and improving academic achievement. This study aimed to examine the effect of the TGT cooperative learning model on eighth-grade students' learning outcomes in the topic of light. A quasi-experimental research design employing a nonequivalent pretest–posttest control group design was used. The participants were selected through purposive sampling from seventh-grade classes at a public junior high school, with 25 students assigned to the experimental group and 25 students to the control group. Data were analyzed using an independent-samples *t*-test. The results revealed a statistically significant difference in learning outcomes between the experimental and control groups ($p = 0.022 < 0.05$), indicating that students who learned through the TGT cooperative learning model achieved significantly better learning outcomes than those who received conventional instruction. These findings demonstrate that the TGT cooperative learning model is an effective instructional approach for improving eighth-grade students' learning outcomes in the topic of light.

©Department of Science Education, Universitas Negeri Padang

Keywords: Team Games Tournament (TGT), Cooperative learning, Learning outcomes, Light topic

INTRODUCTION

In the development of a nation, education is crucial. Due to the fact that

education makes a person become a thoughtful, patriotic citizen. The National Education System Law No. 20 of 2003 stated that the purpose of national education is to

develop students' potential so that they can become human beings who believe in and fear God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent, & become a democratic and responsible citizen of the state.

Curriculum change always leads education system improvement. The primary justification for curriculum changes is the revision, assessment, and improvement of the prior curriculum. Curriculum 2013 as a new curriculum is designed to prepare learners in the face of their future challenges. Curriculum 2013 learning is not based on the teacher-centered learning, but it focused on students as the aim of learning or called student-centered learning, so Curriculum 2013 is more interactive than the previous curriculum. The 2013 curriculum demands an active and an exploratory learning, and the teacher as a learning facilitator that plans learning in a way that allows students to deal with real-world situations and problems (Sinambela, 2017).

Based on observations and interviews result although one of the science teachers in SMP Negeri 1 Sintuk Toboh Gadang found there were still using the conventional lecture method during learning process or also called the teacher the center of learning (teacher center). The effect of the methods are students felt lazy and become passive respondents during the learning process. There is not created two-way contact among teachers and students. In contrast, the curriculum 2013 involves participation from the kids, not just the teacher as a facilitator and creating a variative learning atmosphere and make fun learning atmosphere and do not monotonous.

Teacher who has an ability in creating a variative learning atmosphere and create a new idea in each lesson can be an innovation

at education system. The innovations of that teacher have an influence on the role and function in carrying out learning. The innovations of the teacher can be an innovative learning at the educational system. Innovative education is education that places the student at the center of the learning process. learning that gives pupils additional chances to create knowledge on their own (self-directed) and through peer mediation (peer mediated instruction) (Jusmawati, 2021). According to Ananda & Abdillah (2018), The learning model is a conceptual framework used by learning designers to plan and carry out the learning process. It defines a systematic process for arranging learning experiences to fulfill certain learning objectives.

To improve student learning outcomes, teacher can apply a learning model. According to Hunaepi, Samsuri, Asy'ari, & Sukaisih (2014), learning model divided into; cooperative learning, direct learning, problem-based learning, inquiry learning models, and lecture and discussion learning models. The learning models mentioned above can be applied based to the materials and the student characteristics. Based on the models of learning of Asmani (2016) argues that the cooperative learning model stimulates and explores the abilities of students as optimally as possible in a group learning consisting of 2-6 students, so that a collaborative process occurs in groups so as to foster peer tutor learning patterns and train activeness. students in working together (cooperative).

One of types of the cooperative learning models that can be applied is the TGT is learning model type in cooperative which involves the participation of students. TGT type in learning model is carried out in small groups consisting of 5-6 students with

heterogeneous abilities, gender, ethnicity and race (Fathurrohman, 2016). Previous researchers that talked about cooperative learning is about learning outcomes tend to increase using the TGT model rather than using the TAI (Team Assisted Individualization) model and the classical model, this is evidenced by the posttest average score of 85.67 for the experimental class I and 82.56 for the class for experimental II. The value of $t_{count} > t_{table}$ ($2.221 > 1.994$). The attitude of students learning achievement competence is using the TGT method is better than the TAI method, this is evidenced by the posttest average score of 3.60 for the class for experimental I and for the class for experimental II of 3, 42 and the value of $t_{count} > t_{table}$ ($2.117 > 1.994$) (Anggaraini, Ashadi, & Utami, 2015). One of the advantages of the TGT-type learning model is to evoke a sense of togetherness and tolerance among members. It is not only applied to the students who have more absorption ability, but also the students who have less ability can also participate. Based on the explanation above, students' participation during learning process can be expected to increase student outcomes of learning.

The purpose of this study is to investigate the effect of the TGT cooperative learning model on students' learning outcomes in the topic of light among eighth-grade students at SMP Negeri 1 Sintuk Toboh Gadang.

METHOD

This study employed a quasy-experimental research design, specifically the non-equivalent control group design. The study involved two groups: the experimental class, which received the TGT cooperative learning model, and the control class, which

received conventional learning. Classes were selected based on existing intact groups without random assignment. Both the experimental and control classes were given a pretest at the beginning and a posttest at the end of the treatment. The instrument used consisted of 25 objective questions to assess changes in students' learning outcomes as a result of the treatment.

RESULTS AND DISCUSSION

This study has two variables that become the object of research, namely the independent variable in the form of a TGT cooperative learning model, and the dependent variable in consist of learning outcomes. The researcher took two sample classes, namely class VIII-4 and class VIII-5 with a total of 50 students. Class VIII-4 as the experimental class with a total of 25 students and class VIII-5 as the control class with a total of 25 students. To see the effect of the TGT is learning model type of cooperative on the Light material on the learning outcomes, the researcher used pretest and posttest to analyze the data given. The following Table 1 is the result of the sample class pretest and posttest.

Table 1. Pretest and Posttest Result

Score	Experimental Class		Control Class	
	Pretest	Posttest	Pretest	Posttest
Min	20	52	8	44
Max	60	88	68	80
Average	38,24	66,96	38,72	60,48

Based on the data in Table 1, the average posttest score of the experimental class (66,96) was higher than that of the control class (60,48). Both classes showed improvement from pretest to posttest; the experimental class increased by 28,72 points on average, while the control class increased by 21,76 points. This indicates that both

groups experienced learning gains, but students who received the TGT cooperative learning model showed greater improvement. The higher gain in the experimental class suggests that the TGT model more effectively facilitated students' understanding of the light topic. This is consistent with the findings of Solihah (2016) and Putra et al. (2013), who demonstrated that TGT promotes active engagement through teamwork and academic games, leading to improved learning outcomes compared to conventional approaches.

The effect of the learning model cooperative type TGT on students' learning outcomes can be seen by testing the hypothesis with the independent sample t-test model (Table 2).

Tabel 2. The Independent Sample T-Test Result

Aspects		t-test		
		t	df	Sig. (2-tailed)
Learning outcomes	Equal variances assumed	2,36	48	0,022

The independent sample t-test results showed a significance value of 0.022, which is lower than $\alpha = 0.05$, indicating that H_0 was rejected. This result indicates that TGT cooperative learning model had a significant effect on students' learning outcomes in the light topic. This effect can be attributed to the core features of the TGT model, which actively engage students through group discussion, peer tutoring, academic games, and inter-group competition. These collaborative and competitive elements encouraged students to be more involved and motivated during the learning process. The topic of light, which involves observable physical phenomena, is particularly well-suited to cooperative exploration, allowing

students to discuss and verify concepts through social learning interactions.

Based on the independent sample t-test known that there is an effect on outcomes of learning after the implementation of the TGT learning model of cooperative. The N-Gain analysis was conducted to measure the effectiveness of the TGT learning model in improving students' learning outcomes. According to Hake (1999), N-Gain values are categorized as follows: high ($g > 0.70$), medium ($0.30 \leq g \leq 0.70$), and low ($g < 0.30$). The N-Gain results for both classes are presented in the Figure 1.

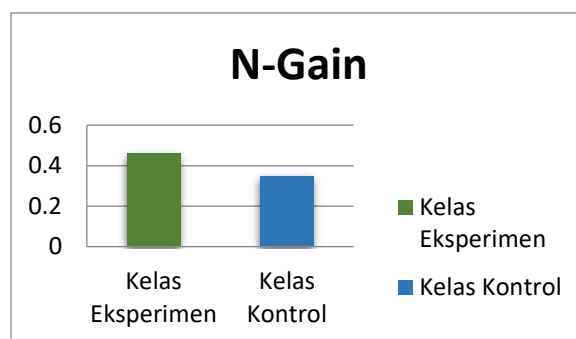


Figure 1. Comparison of N-Gain in Experiment and Control Class

The N-Gain results show that the experimental class obtained a score of 0.46, while the control class obtained 0.34. Both scores fall in the medium category; however, the experimental class N-Gain value is notably higher than that of the control class. This difference suggests that the TGT cooperative learning model was more effective in improving students' understanding of the light topic compared to conventional learning. The higher N-Gain in the experimental class can be attributed to the active participation encouraged by TGT, including group discussion, structured games, and academic competition, all of which facilitate deeper conceptual engagement with the material.

The findings of this study are consistent with prior research on TGT. Solihah (2016) reported that students taught using the TGT model achieved significantly higher mathematics learning outcomes compared to those taught with the STAD model, attributing this to TGT's ability to foster student motivation and healthy academic competition. Similarly, Putra, Achmad, and Marpaung (2013) found that TGT effectively enhanced students' understanding through direct experience in discussion and comparison activities. The current study extends these findings to the science topic of light in a junior high school context. While the previous studies focused on chemistry and biology topics, this study confirms that TGT is also effective for physics-related content, where conceptual discussion and collaborative inquiry are central to learning. The novelty of this study lies in its specific application of TGT to the light topic for eighth-grade students, demonstrating the model's versatility across different science domains.

CONCLUSIONS

The implementation of the Team Games Tournament (TGT) cooperative learning model had a significant effect on the learning outcomes of eighth-grade students at SMP Negeri 1 Sintuk Toboh Gadang in the topic of light, compared to conventional learning. The TGT model promoted active student participation through collaborative teamwork, peer tutoring, academic games, and structured competition, which contributed to greater knowledge acquisition and motivation. These results suggest that TGT is an effective alternative to traditional instruction for science learning at the junior high school level.

REFERENCES

- Ananda, R., & Abdillah. (2018). *Pembelajaran Terpadu Karakteristik, Landasan, Fungsi, Prinsip dan Model*. Medan: Lembaga Peduli Pengembangan Pendidikan Indonesia (LPPPI).
- Anggaraini, K. P., Ashadi, & Utami, B. (2015). Studi Komparasi Pembelajaran Kooperatif Metode Team Games Tournament (TGT) dan Team Assisted Individualized (TAI) pada sub pokok bahasan konsep mol di SMA Negeri 1 Sukoharjo Tahun pembelajaran 2013/2014. *Jurnal Pendidikan Kimia*, 4(1), 211–217.
- Asmani, J. M. (2016). *Tips Efektif Cooperative Learning Pembelajaran Aktif, Kreatif, dan Tidak Membosankan*. Yogyakarta: Diva Press.
- Fathurrohman, M. (2016). *Model-Model Pembelajaran Inovatif*. Yogyakarta: Ar-Ruzz Media.
- Hunaepi, Samsuri, T., Asy'ari, M., & Sukaisih, R. (2014). *Sains Teknologi Masyarakat "Strategi Pendekatan, Dan Model Pembelajaran"*. Mataram: Duta Pustaka Ilmu- gedung catur FPMIPA IKIP Mataram.
- Jusmawati, D. (2021). *Model-model pembelajaran inovatif di sekolah dasar*. Yogyakarta: Samudra Biru.
- Putra, E. O., Achmad, A., & Marpaung, R. R. (2013). Pengaruh model pembelajaran kooperatif tipe TGT terhadap hasil belajar siswa. *Jurnal Bioterdidik: Wahana Ekspresi Ilmiah*, 1(6), 1–9.
- Sinambela, P. N. (2017). Kurikulum 2013 dan implementasinya dalam pembelajaran. *Generasi Kampus*, 6(2), 1–14.
- Solihah, A. (2016). Pengaruh Model Pembelajaran Team Games Tournament (TGT) Terhadap Hasil Belajar Matematika. *Jurnal Susunan Artikel Pendidikan*, 1(1), 45–53.

- Yanuarti, E. (2017). Pemikiran Pendidikan KI.Hajar Dewantara dan Relevansinya dengan Kurikulum. *Jurnal Penelitian*, 239.
- Azmin, N. H. (2016). Effect of the jigsaw-based cooperative learning method on student performance in the general certificate of education advanced-level psychology: An exploratory Brunei case study. *International Education Studies*, 9(1), 91–106.
<https://doi.org/10.5539/ies.v9n1p91>
- Kurniawati, I. D., & Diantoro, M. (2016). Pengaruh pembelajaran inkuiri terbimbing integrasi peer instruction terhadap penguasaan konsep dan kemampuan berpikir kritis siswa. *Jurnal Pendidikan Fisika Indonesia*, 12(1), 8–16.
<https://doi.org/10.15294/jpfi.v12i1.4931>
- Prasetyo, Z. K., & Kusuma Wardani, R. (2020). The effectiveness of Team Games Tournament (TGT) cooperative learning on students' learning outcomes and motivation in science learning. *Journal of Physics: Conference Series*, 1440(1), 012073.
<https://doi.org/10.1088/1742-6596/1440/1/012073>