



Literature Review: The Effectiveness of the Teams Games Tournament (TGT) Learning Model for Chemistry Subjects on Student Learning Outcomes

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Abstract: Literature Review: The Effectiveness of the Teams Games Tournament (TGT) Learning Model for Chemistry Subjects on Student Learning Outcomes. Since chemistry is one of the more difficult topics, student success in the subject is often poor. This strengthens understanding of subject matter and develops students' social skills. The goals are to evaluate the benefits of the TGT model in creating student learning outcomes and to investigate the TGT learning model's effectiveness in enhancing learning outcome. The goals are to evaluate the benefits of the TGT model in creating student learning outcomes and to investigate the TGT learning model's effectiveness in enhancing learning outcomes. Method: review of the literature. In summary: Numerous inferences may be made in light of the findings of the literature review research, including: (1) There is hope that the Teams Games Tournament (TGT) concept can significantly improve student

Keywords: Cooperative Learning, Teams Games Tournaments, Chemistry.

Abstrak: Efektivitas Model Pembelajaran Tipe Teams Games Tournament (TGT) untuk Materi Kimia terhadap Hasil Belajar Siswa. Kimia adalah cabang ilmu yang mempelajari secara khusus tentang materi, sifat-sifatnya, perubahannya, dan energi yang menyertai perubahan tersebut untuk menjawab pertanyaan tentang komposisi, sifat, dan perubahan materi serta energi yang mengikuti perubahan tersebut. Sebagian besar konsep pelajaran kimia juga banyak melibatkan perhitungan matematis, sehingga siswa terlibat dalam pengembangan konsep materi (Suryani, 2019). Penerapan TGT (Teams-Games-Tournament) meningkatkan hasil belajar siswa melalui keterlibatan aktif dalam pembelajaran kelompok, kolaborasi, komunikasi, kompetisi sehat, pembelajaran timbal balik, dan pengakuan prestasi. Ini memperkuat pemahaman materi pelajaran dan mengembangkan keterampilan sosial siswa. Tujuan dari penelitian ini adalah menganalisis efektivitas model pembelajaran TGT dalam meningkatkan hasil belajar siswa serta menilai keunggulan model TGT dalam mengembangkan hasil belajar siswa. Metode yang digunakan adalah tinjauan literatur. Kesimpulan: Berdasarkan hasil kajian literatur, beberapa simpulan yang dapat ditarik adalah: (1) model TGT berpotensi efektif memberikan dampak positif yang signifikan terhadap hasil belajar siswa di tingkat SMA; (2) model pembelajaran TGT terbukti efektif dalam meningkatkan keaktifan siswa melalui elemen permainan dan turnamen.

Kata kunci: Pembelajaran Kooperatif, Teams Games Tournaments, Kimia.

▪ INTRODUCTION

Chemistry teaching in educational institutions is one of the aspects that determine success in achieving national education goals. As a tool to reach national education, it is undeniable that chemistry teaching must be taught and developed. With the presence of chemistry teaching in schools, learners can know, understand, master, and further develop and apply chemical science in daily life (Rosa Agustina et al., 2018). Chemistry teaching plays a crucial role in helping learners comprehend the concepts of chemical science. By understanding the basics of chemistry, students can apply this knowledge in everyday life, such as understanding chemical reactions in cooking processes or recognizing chemical ingredients in daily products (Sugianto et al., 2022).

Chemistry education faces various challenges, one of which is the low absorption rate of students. This is reflected in the average student learning outcomes that have not yet reached the Minimum Mastery Criteria. These learning outcomes are largely influenced by the learning conditions that are still centered on the teacher (teacher-centered) and do not provide sufficient opportunities for students to develop independently. The direct nature of the learning process, which does not consider the individual dimensions of students, also contributes to student inactivity in developing an understanding of chemistry (Arifah et al., 2023).

Student passivity can be minimized through the implementation of cooperative learning models. One example is TGT (Teams Games Tournament). TGT has demonstrated its effectiveness in various educational contexts, particularly in facilitating the understanding of material that requires specific and precise answers. This model is highly suitable for teaching content with clear and well-defined learning objectives, such as in the case of mathematical calculations, the application of chemical principles, and the understanding of fact-oriented natural science concepts. TGT can be employed as an effective method for teaching this chemical material, as it allows students to collaborate in teams, compete in educational games, and ultimately strengthen their understanding through interactive and collaborative learning experiences. Thus, TGT not only enhances student learning outcomes but also promotes valuable social skills and teamwork (Hidayah et al., 2020).

A literature review is necessary to gain a comprehensive understanding of the relevant knowledge and previous research pertaining to the topic under investigation. By conducting an analysis of the literature review on the relationship between and student learning outcomes, this study can significantly contribute to future research endeavors. Drawing insights from previous literature allows for a better understanding of how TGT influences student learning outcomes in the context of chemistry or other fields of study. The findings of this analysis can serve as a foundation for designing further research that is more focused and in-depth regarding the effectiveness of TGT in enhancing student academic achievement.

The cooperative learning model known as TGT offers a unique and engaging approach to education, particularly in studying complex concepts such as chemical bonding. Unlike other cooperative learning methods, TGT incorporates elements of gameplay that make students more enthusiastic and actively involved in the learning process. The analysis of literature review on TGT as a cooperative learning model is necessary to deeply understand its effectiveness in enhancing students' learning outcomes. By exploring relevant literature, research can identify its strengths, weaknesses, and factors influencing its implementation within educational contexts. This

provides critical insights into the role of TGT in facilitating student interaction, promoting teamwork, and improving conceptual understanding (Samuel & Santosa, 2020).

▪ **METHOD**

This study is a literature review. A literature review is an investigation that encompasses theories, research findings, and other sources taken from references as the basis for developing a clear framework in formulating the issues to be examined. The author compiles summaries, conducts critical and in-depth analysis, and synthesizes previous works. A good literature review includes evaluation of the quality and new findings from a scholarly paper. Researchers analyze several pieces of literature and summarize their findings, typically presenting this analysis in a table that covers seven components such as research title, year, location, purpose, research method, and others (Bagja, 2018). The literature sources for this research were obtained from various relevant journal articles in Indonesian or English available on Google Scholar, which will be reviewed in relation to “The Effectiveness of the TGT Learning Model Type for Chemistry Material on Student Learning Outcomes”. These sources include research conducted between 2018 and 2022. The selection of literature studies was carried out through inclusion and exclusion criteria (Najmi et al., 2021).

The general quality of research participants taken from the target population and available constitutes the inclusion criteria. This review establishes the following inclusion criteria: full-text papers or abstracts with pre-existing data findings; articles indexed in Sinta in either English or Indonesian; and a search year restriction from 2018 to 2023 (Rijali, 2019).

▪ **RESULT AND DISCUSSION**

Cooperative learning is a teaching technique that consists of small, heterogeneous groups designed to help learners work together more actively and effectively. According to Slavin (2016) in his research titled “Instruction based on cooperative learning,” he also discusses cooperative learning. Slavin suggests that cooperative learning is more than just group study or work groups. Cooperative learning begins by determining goals agreed upon by all members, creating social cohesion. To enable open communication and productive interdependence among group members, the cooperative learning model requires an encouraging structure and cooperative tasks (Assyakurrohim et al., 2022).

Teams Games Tournament (TGT) is a form of cooperative learning that involves students in games and academic tournaments with an individual scoring system. The TGT method allows the participation of all students regardless of status, as it is conducted heterogeneously, enabling students to compete in academic tournaments with other groups that have equivalent academic abilities. This learning concept is fairer than conventional learning (Wijaya, 2020). The TGT model combines group learning with discussion and games, encouraging students to be physically and mentally active in the learning process. The TGT-based learning model provides opportunities for students to actively participate and collaborate, as well as to enhance communication skills that are relevant in real life, particularly in the workplace (Slavin, 2016).

In the implementation of the TGT model, there are several advantages. First, TGT learning is more efficient for tasks involving physical movement. Second, this model utilizes individual ability differences, allowing each student to contribute optimally. Third, even with limited time, students can achieve good mastery of the material through

TGT learning. Fourth, students are actively involved in the learning process. Fifth, TGT learning trains students to interact and socialize well. Sixth, this model increases students' motivation to learn. Seventh, TGT learning contributes to improved student learning outcomes. Eighth, students develop a positive cooperative character. Lastly, this model encourages healthy competition among students. However, there are also some disadvantages in the implementation of TGT. First, forming groups with students of diverse academic abilities can be challenging. Second, some students with superior abilities may be reluctant to share insights with other students (Sembiring et al., 2020).

In the application of the Teams Games Tournament (TGT) model, there are several advantages. First, TGT learning is more efficient for tasks that involve physical movement. Second, this model leverages the differences in individual abilities, allowing each student to contribute optimally. Third, even with limited time, students can achieve a good grasp of the material through TGT learning. Fourth, students are actively engaged in the learning process. Fifth, TGT learning trains students to interact and socialize effectively. Sixth, the model enhances students' motivation to learn. Seventh, TGT learning contributes to the improvement of student learning outcomes. Eighth, students develop a positive cooperative character. Lastly, the model fosters healthy competition among students. However, there are also some drawbacks in the implementation of TGT. First, forming groups with students of varying academic abilities can be challenging. Second, some students with superior skills may be reluctant to share insights with others (Wulandari & Astutiningtyas, 2020).

A person's communication abilities are assessed in five different ways: (1) representation; (2) listening; (3) reading; (4) conversation; and (5) writing. In the Teams Games Tournament (TGT) learning model, students' communication abilities begin to emerge as they make presentations through to the game and tournament stages. Through a good understanding of communication, students can explain their ideas in more detail, allowing individual abilities to be recognized by the teacher and enhancing learning outcomes. This enables teachers to provide appropriate follow-up in educating and equipping students (Sihombing, 2018)

The learning outcomes in chemistry need to be strengthened among high school students. With creative ideas from various perspectives, students can use their intellectual abilities to compete and collaborate in the career world. Therefore, research data in the form of literature reviews will be analyzed based on results relevant to the questioned title and used as a source of research material, as indicated in the following table:

Table 1. List of Relevant Research

Title	Result	Reference
Communication Effectiveness Through Cooperatife Learning Model Type Teams Games Tournament (Tgt) On Chemical Bonding Materials Class X SMA.	On average, the TGT cooperative learning model was implemented with high percentages across its various phases, all of which were rated as excellent. Communication skills, specifically in questioning and expressing opinions, were also assessed with satisfactory ratings. Additionally, all students achieved	(Hafidz & Sukarmin, 2018)

	proficiency in learning outcomes, scoring above 75%.	
Efforts to Improve Student Learning Outcomes in Chemistry Through the Teams Games Tournaments (TGT) Learning Model for Class X IPA-2 Students at MAN 2 Padang City	The study's findings demonstrate that raising student learning outcomes is a benefit of the cooperative learning paradigm TGT (Teams Games Tournament). This progress is demonstrated by the pupils' growing comprehension of the teacher-presented content. From Cycle I (60.33%) to Cycle II (82.92%), there was an increase in the percentage of students who completed their learning, and most of them attained learning completeness with noteworthy average scores in Cycle II. As a result, TGT deployment improves student learning outcomes in Chemistry instruction.	(Lendra Hayu, 2023)
Use of the Cooperative Learning Model Team Game Tournament for Chemistry Material at SMA Negeri 1 Dukupuntang	The use of the Teams Games Tournament (TGT) approach, reading, discussion, and writing in order of priority. in chemistry education, specifically on the topic of Colligative Properties of Solutions at SMAN 1 Dukupuntang, has proven effective in improving student learning outcomes. In this classroom action research, there was a significant increase in the class's average score from 52.22 before the study to 71.67 in Cycle I, and further increased to 86.39 in Cycle II. The completeness of students' understanding in chemistry also saw a considerable increase, from 16.66% before the study to 52.78% in Cycle I, and reached 94.44% in Cycle II. Therefore, it is recommended to choose a learning model that aligns with the educational content before teaching, to enhance variety in the teaching-learning process and student motivation.	(Muhaimin, 2023)

<p>Cooperative Learning Type Team Game Tournament on Chemical Bonding Material in Class X IPA at SMA Negeri 1 Kotamobagu</p>	<p>The comparison of the learning process between the cooperative learning model TGT in class X IPA A (experimental class) and direct instruction in class X IPA B shows interesting results. Over four meetings with the main topic of chemical bonding, the experimental class demonstrated a better understanding. The TGT model offers tournament activities that make students more enthusiastic. A test of the difference between two means revealed significant learning outcomes, with the experimental class average reaching 89.6 and the control class at 71.68. These results indicate the superiority of the TGT model in enhancing student learning outcomes and rejecting the null hypothesis.</p>	<p>(Mamangkai et al., 2019)</p>
<p>Implementation of the Teams Games Tournament (TGT) Learning Equipped with Name Cards from the Nomenclature of Chemical Compounds</p>	<p>The validity test results show that 15 questions are valid, and the test reliability result is 0.92, which falls into the high category. Furthermore, hypothesis testing using the t-test with separate variance yielded interesting results. A calculated t-value ($t_{\text{calculated}}$) of 4.01 was achieved at a significance level of 0.05 with 51 degrees of freedom, which is larger than the table t-value (t_{table}) of 1.67. As a result, the alternative hypothesis (H_1) is accepted and the null hypothesis (H_0) is rejected. This suggests that there is a relationship between student learning results and the Teams Games Tournament (TGT) cooperative learning paradigm coupled with name card media. In the experimental class, the average score was 62.57, but in the control class, it was 53.58.</p>	<p>(Rumape et al., 2020)</p>

<p>The Influence of the Cooperative Learning Model Type Teams Games Tournament (TGT) Assisted by Destination Media on Motivation and Learning Outcomes in Buffer Solution Material</p>	<p>In this study, there were two groups: an experimental class and a control class. The average pre-test and post-test results for the experimental class were 23.89 and 52.57, respectively, while for the control class, they were 30.93 and 50.63. This data was then tested using ANOVA (Analysis of Variance). The test results showed that the calculated F-value ($F_{\text{calculated}}$) of 1.80 was lower than the table F-value (F_{table}) of 4.00. Therefore, it can be concluded that the implementation of the cooperative learning model type TGT (Team Games Tournament) with the aid of mole card media does not have a significant effect on the chemistry learning outcomes of the tenth-grade students of SMAN 1 Narmada for the academic year 2016/2017.</p>	<p>(Sumiati et al., 2019)</p>
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The Teams Games Tournament (TGT) learning paradigm is a very successful way to boost student involvement and learning results in the setting of chemistry. Orliida's (2020) earlier study suggests that using the TGT learning paradigm in chemistry classes for tenth graders can improve student engagement and learning outcomes. The pupils' growing comprehension of the teacher-taught content is indicative of this progress. Cycle I (65.625%) had the highest degree of learning completeness, followed by cycle III (87.5%), when all students had reached the desired level of learning completeness. Additionally, data analysis demonstrates that using the cooperative TGT approach has enhanced student participation during the learning process. Academic success among students is positively impacted by this outcome, as evidenced by the.

A similar statement was also made in the second study. Lendra (2023) states that the Teams Games Tournament (TGT) learning method is effectively applied to high school students to improve learning outcomes. This research shows that the TGT cooperative learning model has a positive impact on increasing student academic achievement. This improvement can be seen from students' increasingly strong understanding of the material being taught. The level of learning completeness increased from cycle I (60.33%) to cycle II (82.92%), and in cycle II most of the students achieved learning completeness with a significant average score. Therefore, the application of TGT is effective in improving student learning outcomes in chemistry lessons.

Research conducted by Muhaimin (2023) also shows that implementing the Teams Games Tournament (TGT) learning approach can increase student engagement and academic achievement. In classroom action research, the application of the TGT method in chemistry lessons with a focus on the topic Colligative Properties of Solutions at

SMAN 1 Dukupuntang was proven to be effective in improving student learning outcomes. There was a significant increase in the class average score from 52.22 before learning to 71.67 in cycle I, and then increased to 86.39 in cycle II. Apart from that, students' mastery of chemistry learning also experienced a large increase, from 16.66% before learning to 52.78% in cycle I, and reaching 94.44% in cycle II. Therefore, it is recommended to choose a learning model that is appropriate to the educational material before teaching, to increase variety in the teaching and learning process and motivate students.

Research conducted by Mamangkai (2019) shows that the Teams Games Tournament (TGT) model is effective in improving learning outcomes in chemistry subjects. A comparison between the use of the TGT cooperative learning model in class X Science A (experimental class) with direct learning in class X Science B produced interesting findings. During four meetings with the main topic of chemical bonds, students in the experimental class showed better understanding. The TGT model with its tournament activities makes students more enthusiastic. The difference test between two means shows significant learning outcomes, with the average score in the experimental class reaching 89.6, while in the control class it is only 71.68. These findings indicate that the TGT model has advantages in improving student learning outcomes and rejecting the null hypothesis.

Rumape (2020) concurs in the interim. Positive findings of TGT and student learning results came from his research. According to the test validity results, 15 questions had good validity, and the test reliability was classified as high at 0.92. Afterwards, intriguing results were obtained from hypothesis testing with the t-test with distinct variance. A calculated t-value ($t_{\text{calculated}}$) of 4.01 was achieved at a significance level of 0.05 with 51 degrees of freedom, which is larger than the table t-value (t_{table}) of 1.67. As a result, the alternative hypothesis (H_1) is accepted and the null hypothesis (H_0) is rejected. These findings suggest that student learning outcomes are influenced by the Teams Games Tournament (TGT) cooperative learning paradigm with name card medium. In the experimental class, the average score was 62.57, however.

In the study by Sumiati (2019), contrasting results were obtained. The research involved two groups: an experimental class and a control class. The average pre-test and post-test scores for the experimental class were 23.89 and 52.57, respectively, while for the control class, they were 30.93 and 50.63. This data was then tested using ANOVA (Analysis of Variance). The test results showed that the calculated F-value ($F_{\text{calculated}}$) of 1.80 was lower than the table F-value (F_{table}) of 4.00. Therefore, it can be concluded that the application of the cooperative TGT (Teams Games Tournament) model with the aid of mole card media does not significantly affect the chemistry learning outcomes of the tenth-grade students at SMAN 1 Narmada for the academic year 2016/2017.

The distinctive feature of TGT that enables its continuation in future research, based on the analysis conducted, lies in its ability to integrate game elements with cooperative learning, which has proven effective in enhancing student engagement and learning outcomes. Through the analysis, it was revealed that TGT provides opportunities for students to collaborate in teams, engage in healthy competition through educational games, and actively reinforce their understanding through interactive learning experiences. Considering this potential, future research can further explore specific aspects of TGT, such as its influence on various student learning aspects or its effectiveness in different educational contexts, thereby offering valuable contributions to the development of better learning strategies.

Based on the literature studies that have been described, it can be understood that student learning outcomes have improved, accompanied by an increase in student learning outcomes using the Teams Games Tournament learning model. The use of the TGT model in high school education is an appropriate choice because it can have a positive influence on learning by providing a significant positive impact. Through TGT learning, high school graduates can acquire additional resources to enhance soft skills, especially communication skills. This will add positive value to high school graduates, particularly at the career level. Through TGT learning, students are trained to collaborate, develop ideas, and present the best concepts to solve a problem in a discussion.

Research ideas for future TGT studies may include investigating its impact on various aspects of student learning, such as learning motivation, social skills, and conceptual understanding. Additionally, research could focus on the effectiveness of implementing TGT in different educational contexts, including virtual learning environments or multilingual classrooms. Furthermore, further research could explore the development or modification of TGT to meet specific educational needs, such as integrating technology into game design or adapting the curriculum to support TGT's success in teaching complex materials. By directing research in these directions, significant advancements in the understanding and application of TGT in diverse educational contexts are expected to occur.

▪ CONCLUSION

A number of conclusions can be made from the literature review study's findings, including the following: (1) the Teams Games Tournament (TGT) model has the potential to significantly improve high school students' learning outcomes; and (2) the TGT learning model has been shown to be successful in encouraging student activity that is typified by games and tournaments.

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