



The Effect Of Teams Games Tournaments Model In Arabic Language To Increase Student Motivation And Learning Outcomes

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Abstract:

Creating an enjoyable learning atmosphere is very necessary in this era, especially in learning Arabic in order to increase students' motivation and learning outcomes. Researchers used the Teams Games Tournament (TGT) type cooperative learning model as the right solution to stimulate students' enthusiasm for learning and critical thinking. This study aims to determine the effect of Teams Games Tournaments (TGT) model to improve motivation and learning outcomes of Arabic language. Researchers used the Quasi Experiment method with pretest-posttest group design. The sample in this study consisted of 52 students who were divided into two classes, namely class A as an experimental class consisting of 26 students and class B as a control class of 26 students. The results of this study indicate an increase in learning motivation and student learning outcomes in Arabic language learning. This is evidenced by the hypothesis test where the sig value is $0.000 < 0.05$ so that H_0 is rejected and H_a is accepted, so there is an effect of the Teams Games Tournaments (TGT) model to increase student motivation and learning outcomes in Arabic language learning.

Keywords: *Learning Model, Teams Games Tournament (TGT), Arabic Learning, Student motivation, Learning Outcomes*

Abstrak:

Menciptakan suasana belajar yang menyenangkan sangat diperlukan di era sekarang. khususnya dalam mempelajari bahasa Arab guna meningkatkan motivasi dan hasil belajar siswa. Peneliti menggunakan model pembelajaran kooperatif tipe Teams Games Tournament (TGT) sebagai solusi yang tepat untuk menstimulus semangat belajar dan daya kritis siswa. Penelitian ini bertujuan untuk mengetahui pengaruh model Teams Games Tournaments (TGT) untuk meningkatkan motivasi dan hasil belajar bahasa Arab. Peneliti menggunakan metode Quasi Eksperimen dengan *pretest-posttest group design*. Sampel dalam penelitian ini terdiri dari 52 siswa yang terbagi menjadi dua kelas yaitu kelas A sebagai kelas eksperimen yang terdiri dari 26 siswa dan kelas B kelas kontrol sebanyak 26 siswa. Hasil penelitian ini menunjukkan adanya peningkatan motivasi belajar dan hasil belajar siswa dalam pembelajaran bahasa Arab. Ini dibuktikan dengan uji hipotesis di mana nilai sig $0,000 < 0,05$ sehingga H_0 ditolak dan H_a diterima, sehingga terdapat pengaruh model Teams Games Tournaments (TGT) untuk meningkatkan motivasi dan hasil belajar siswa dalam pembelajaran bahasa Arab.

Kata Kunci: *Model Pembelajaran, Teams Games Tournament (TGT), Pembelajaran Bahasa Arab, Motivasi Siswa, Hasil Belajar*

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INTRODUCTION / المقدمة

Arabic language learning is an essential component in Islamic junior high schools, serving not only as a linguistic tool but also as a medium for understanding Islamic texts and values. However, Arabic often poses significant challenges for students, particularly when instruction is dominated by conventional, teacher-centered methods that do not cater to the learners' diverse needs and abilities (Aymard et al., 2021; In'am & Sutrisno, 2020; Y. J. Luo et al., 2020). In such contexts, learning becomes monotonous, student motivation declines, and comprehension remains minimal, especially among students who enter Islamic junior high schools without prior exposure to Arabic during elementary education. These pedagogical challenges call for a shift towards more interactive and student-centered approaches to enhance engagement and achievement in Arabic language classes (X. Luo & Chen, 2024; Wahyuningsih et al., 2021).

One of the models that has gained attention in modern educational discourse is Teams Games Tournaments (TGT), a cooperative learning strategy developed by Robert Slavin. This model integrates group collaboration, academic competition, and game-based learning to stimulate students' active participation and foster deeper understanding of learning materials (Anggoro & Khasanah, 2024; Capinding, 2021; Fresnedo et al., 2021). The TGT approach aligns with the principles of social constructivism, which emphasize knowledge construction through meaningful interaction and teamwork (Y. J. Luo et al., 2020; Xia et al., 2023). In the context of Arabic instruction, the use of TGT can break the monotony of lecture-based teaching and provide dynamic opportunities for vocabulary development, grammar practice, and sentence construction through peer-supported learning games.

Several studies have highlighted the positive outcomes of using the TGT model in language education. Research by Sutrisno (2020), Havaei (2023), and Manaseer (2020) revealed that TGT not only improves student learning outcomes but also enhances motivation and promotes inclusivity in the classroom. These findings are supported by Jamari (2020) and Putri (2024), who demonstrated that integrating TGT with other instructional methods can further increase students' speaking skills and enthusiasm, creating a more engaging classroom environment. Despite these promising results, limited studies have examined the application of the TGT model specifically in Arabic language instruction, especially within the unique sociocultural setting of Islamic junior high schools in Indonesia.

This research focuses on addressing that gap by exploring the application of the TGT model in Arabic language learning at Islamic Junior High School Al-Kautsar Dompu. The school continues to face challenges in Arabic instruction due to the use of conventional methods and the limited background knowledge of many students. Given these barriers, this study seeks to introduce the TGT model as a pedagogical intervention aimed at increasing students' learning motivation and improving their Arabic language learning outcomes. Through structured group learning and game-based assessments, TGT is expected to foster active participation, healthy competition, and collaborative

spirit among learners.

This study is built on the premise that improving Arabic language outcomes requires not only effective content delivery but also the use of innovative instructional models that match students' developmental and motivational needs. By implementing the TGT model, this research aims to measure its effectiveness in increasing student engagement, motivation, and achievement in Arabic language learning. The originality of the study lies in its context-specific application of TGT within an Islamic educational setting, offering a pedagogical model that supports both linguistic mastery and active learning. The findings are expected to contribute to a more engaging and impactful Arabic instruction framework in Islamic junior high schools.

RESEARCH METHOD / المنهجية

This research employed a quantitative approach with a quasi-experimental method to examine the effect of the Teams Games Tournaments (TGT) model on students' motivation and learning outcomes in Arabic language learning. The quantitative approach was chosen because the data collected and analyzed were numerical in nature, allowing statistical testing of hypotheses regarding the relationship between the instructional model and student achievement (Cheng & Chen, 2021). The specific research design used was the non-equivalent control group design, consisting of a pre-test and post-test given to both an experimental and a control group. This design was appropriate because it allowed the researcher to compare the effectiveness of the TGT model in a real classroom setting without random assignment, while still measuring the changes in motivation and academic performance quantitatively.

The study was conducted at Islamic Junior High School Al-Kautsar Dompu, with the research subjects being students from two seventh-grade classes. Class VII-A was designated as the experimental group and consisted of 26 students who were taught using the Teams Games Tournaments model, while Class VII-B served as the control group, also with 26 students, and was taught using traditional teacher-centered instruction. The research was carried out over six meetings, with four sessions used for delivering the Arabic language material using the TGT model, and two sessions dedicated to administering the pre-test and post-test. During the treatment, students in the experimental group participated in TGT learning activities that involved group work, competitive educational games, and collaborative tournaments, designed to build engagement and facilitate more active learning.

To gather the data needed, several instruments were used. Tests were administered to measure learning outcomes before and after the intervention, while motivation scales and observation sheets were used to assess students' engagement levels (Bachri et al., 2023). Documentation was also collected to support contextual understanding of the learning process. Data analysis was conducted using SPSS version 25, beginning with normality and homogeneity tests to ensure that the data met the necessary statistical assumptions. The Kolmogorov-Smirnov and Shapiro-Wilk tests

indicated that the data were normally distributed, while Levene's test confirmed that the data variances between groups were homogeneous. These tests validated the use of the independent samples t-test to assess the research hypotheses.

The hypothesis testing results showed that the TGT model had a statistically significant effect on both motivation and learning outcomes. For motivation, the t-test yielded a significance value of 0.000, indicating a meaningful improvement in student interest and engagement in the experimental group. Similarly, the learning outcomes also showed a significant increase, with a significance value of 0.000, suggesting that the TGT model effectively enhanced students' understanding of Arabic language material. These findings support prior studies that highlight the potential of game-based cooperative learning to foster equitable participation and deeper comprehension. In conclusion, the research method was effective in demonstrating that the application of the Teams Games Tournaments model contributes positively to Arabic language learning at the junior high school level, particularly in motivating students and improving their academic performance.

FINDINGS AND DISCUSSION / نتائج البحث و المناقشة

Findings

The Team Games Competition Model in Arabic Language Learning

This research was conducted in accordance with the research objectives, which aimed to find out the effect of the team games competition model on Arabic language learning in order to increase the motivation and learning outcomes of students in grade 7 at Islamic Junior High School Al-Kautsar Dompu. The learning process in this study was implemented over the course of 6 meetings, where the material was presented in 4 meetings, and 2 meetings were dedicated to conducting the pre-test and post-test at the beginning and end of the study. This study consists of two classes, one experimental group and one control group.

In implementing the Teams Games Tournaments (TGT) model, the researcher followed a structured sequence of activities to enhance student engagement in Arabic language learning. The process began with a class presentation, where the researcher introduced the topic of "home" by showing visual aids and asking students to repeat new vocabulary aloud. This stage aimed to activate prior knowledge and ensure students were familiar with the basic terms. Following the presentation, students were divided into teams consisting of five to six members with diverse abilities. These teams served as the foundation for the cooperative learning process throughout the sessions.

Once the teams were formed, the game phase commenced, where the researcher explained the mechanics and rules of the educational games to be played. The session progressed into the tournament phase, in which students drew random question cards prepared by the researcher, read them aloud in their groups, and discussed the answers collaboratively within a set time. Representatives from each team then competed to present answers on the blackboard, fostering healthy academic competition. Finally, in the team recognition phase, students who answered correctly and quickly received the

highest score, and the team with the most points was recognized with a reward. This step was designed to build motivation and reinforce cooperative spirit while maintaining a fun and dynamic learning atmosphere.

The impact of Teams Games Tournaments model to enhance motivation in Arabic language teaching

In this research, the researcher divided the data analysis into three parts from the results of testing the initial conditions, namely: Normality test results, homogeneity test results, and hypothesis test results (t-test).

Normality Test

The normality test was conducted to see if the data follows the normal or abnormal condition. To find out whether the data follow normality or non-normality, the Kolmogorov-Smirnov test was used in SPSS 25. The results of the normality test analysis using SPSS 25 are shown below.

Table 1.1
Normality test
Tests of Normality

		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statisti			Statisti		
	Class	c	df	Sig.	c	df	Sig.
Motivation to Learn Arabic	Pretest A (Eksperimen)	.113	26	.200*	.970	26	.636
	Posttest A (Eksperimen)	.156	26	.106	.923	26	.053
	Pretest B (Kontrol)	.110	26	.200*	.938	26	.122
	Posttest B (Kontrol)	.139	26	.200*	.960	26	.390

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on the above table, from the results of the normality test for the pre-test and post-test in the experimental group and the control group, the following statistical significance value was obtained: 0.200 for the pre-test in the experimental group, 0.106 for the post-test in the experimental group, 0.200 for the pre-test in the control class, and 0.200 for the post-test in the control class. These results indicate that the data follows normality because the significance value is greater than 0.05, thus it can be concluded that the data is usable.

Homogeneity test

The homogeneity test was performed to see if the data contains homogeneous or heterogeneous variance. Below are the results of analyzing the data for the homogeneity test using SPSS 25.

Table 1.2
Homogeneity test

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Motivation to Learn Arabic	Based on Mean	.163	1	50	.688
	Based on Median	.093	1	50	.762
	Based on Median and with adjusted df	.093	1	49.902	.762
	Based on trimmed mean	.159	1	50	.692

From the results of the homogeneity test in the experimental and control groups, it can be seen that the significance value of 0.688 is greater than 0.05. Therefore, it can be concluded that the data has homogeneous variance.

Hypothesis test results (t-test)

After conducting the normality test and homogeneity test for the data which showed that they follow normality and homogeneity, the next step is to test the hypothesis (t-test) to find out the effect of the Teams Games Tournaments model on students' motivation in Arabic language learning. Below are the results of the data analysis for the hypothesis test.

Table 1.3
Hypothesis test (t-test)

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2- tailed)	Mean Differen ce	Std. Error Differen ce	95% Confidence Interval of the Difference	
									Lower	Upper
Motivation to Learn Arabic	Equal variances assumed	.163	.688	11.4 42	50	.000	12.654	1.106	10.433	14.87 5
	Equal variances not assumed			11.4 42	49.9 96	.000	12.654	1.106	10.433	14.87 5

Based on the results of the above t-test, a probability significance value of 0.000 was obtained, which is smaller than 0.05, which means that the null hypothesis (Ho) is

rejected and the alternative hypothesis (Ha) is accepted. Thus, it can be concluded that there is an effect of the Teams Games Tournaments model to enhance the Arabic language learning motivation of seventh grade students at Islamic Junior High School Al-Kautsar Dompu.

The impact of Teams Games Tournaments model to promote learning outcomes in Arabic language teaching

In this research, the researcher divided the data analysis into three parts from the results of testing the initial conditions, namely: Normality test, homogeneity test, and hypothesis test (t test).

Normality condition

The normality test was conducted to see if the data follows the normal or abnormal condition. To find out whether the data follows normality or non-normality, the Kolmogorov-Smirnov test was used in SPSS 25. The data that follows normality can be used to test the hypothesis (t-test). Below are the results of analyzing the normality test using SPSS 25.

Table 1.4
Normality test
Tests of Normality

		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statisti			Statisti		
		c	df	Sig.	c	df	Sig.
Motivation to Learn Arabic	Pretest A (Eksperimen)	.122	26	.200*	.948	26	.206
	Posttest A (Eksperimen)	.143	26	.185	.962	26	.435
	Pretest B (Kontrol)	.140	26	.200*	.927	26	.066
	Posttest B (Kontrol)	.147	26	.154	.966	26	.531

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on the above table, the following statistical significance value was obtained: 0.200 for the pre-test in the experimental group, 0.185 for the post-test in the experimental group, 0.200 for the pre-test in the control class, and 0.154 for the post-test in the control class. These results indicate that the data follows normality because the significance value is greater than 0.05, thus it can be concluded that the data is usable.

Homogeneity test

The homogeneity test was performed to see if the data contains homogeneous or heterogeneous variance. Below are the results of analyzing the data for the homogeneity test using SPSS 25.

Table 1.5
Homogeneity test

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Motivation to Learn Arabic	Based on Mean	.885	1	50	.351
	Based on Median	.545	1	50	.464
	Based on Median and with adjusted df	.545	1	45.72 2	.464
	Based on trimmed mean	.816	1	50	.371

Based on the results of the homogeneity test in the experimental and control groups, it can be seen that the significance value of 0.351 is greater than 0.05. Therefore, it can be concluded that the data has homogeneous variance.

Hypothesis Testing (t-test)

After conducting the normality test and homogeneity test for the data which showed that they follow normality and homogeneity, the next step is to test the hypothesis (t-test) to find out the effect of the Teams Games Tournaments model on students' Arabic language learning motivation.

Table 1.6
Hypothesis test (t-test)

		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2- tailed)	Mean Differ ence	Std. Error Differ ence	95% Confidence Interval of the Difference	
Motivation to Learn Arabic	Equal variances assumed	.885	.351	14.822	50	.000	14.76 9	.996	12.76 8	16.77 1
	Equal variances not assumed			14.822	48.3 74	.000	14.76 9	.996	12.76 6	16.77 2

Based on the results of the above t-test, a probability significance value of 0.000

was obtained, which is smaller than 0.05, which means that the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted. Thus, it can be concluded that there is an effect of the Teams Games Tournaments model to promote learning outcomes in teaching Arabic language to seventh grade students at Islamic Junior High School Al-Kautsar Dompu.

Discussion

The results of this study empirically validate the effectiveness of the Teams Games Tournaments (TGT) model in enhancing both student motivation and learning outcomes in Arabic language instruction at Islamic Junior High School Al-Kautsar Dompu. Over a six-session intervention, the implementation of the TGT model followed a structured and interactive approach, beginning with visual-based vocabulary presentation, followed by group-based activities, competitive game formats, and culminated in team recognition and rewards. This process not only activated students' prior knowledge but also cultivated an engaging learning environment that emphasized active participation and peer-supported learning (Arifin et al., 2024; Primadani et al., 2020; Rohyami & Huda, 2020). The statistical results support these observations: the experimental group showed a significant improvement in motivation scores, with a t-value of 11.442 and a significance level of 0.000, confirming a strong effect of the TGT model on increasing motivation. Similarly, the post-test results for learning outcomes revealed a highly significant difference ($t = 14.822$, $\text{sig.} = 0.000$), further affirming the model's impact on academic performance.

These findings are in line with previous studies highlighting the transformative role of TGT in cooperative learning environments. As emphasized by Fauziyah and Wijaya (2020), the model reduces achievement gaps by providing equitable opportunities for all students to actively engage and succeed, especially in linguistically diverse classrooms. Through structured group competition, students are encouraged to not only recall vocabulary but also to apply it collaboratively and contextually, which aligns with Vygotsky's sociocultural theory of learning. In this framework, the zone of proximal development is optimized when learners interact meaningfully with peers (Abdullah, 2024; Kholidah & Qohar, 2021; Sain, 2025). Additionally, the motivational component of competition such as the reward system used in the tournament phase proved effective in sustaining attention and fostering intrinsic interest. These dynamics support the conclusions of Azis & Pertiwi (2021), who found that the TGT model can be flexibly integrated with other teaching strategies to enhance Arabic speaking skills and student confidence.

From a pedagogical standpoint, the TGT model emerges not just as a motivational tool but as a comprehensive strategy that caters to various learning styles. Visual aids appeal to visual learners, group interactions benefit interpersonal learners, and kinesthetic engagement through games energizes active participants. This multimodal design reinforces memory retention and improves performance across different language

skills (Heru & Bali, 2024; Munawwaroh, 2024; Nisa' & R, 2024). The consistent normality and homogeneity of the data sets confirmed through SPSS analyses strengthen the reliability of these findings and confirm that the observed effects are attributable to the intervention rather than external variance. As such, the application of the TGT model in Arabic language classes has demonstrated a practical and measurable impact on the quality of student learning and engagement.

Overall, this research contributes to the growing body of evidence that cooperative learning strategies like TGT can enhance both cognitive and affective outcomes in Islamic educational contexts. Particularly in Arabic language learning, which often faces challenges due to student unfamiliarity and limited exposure, integrating interactive and socially-driven models offers a meaningful solution. The TGT model not only motivates students but also supports academic achievement through structured, inclusive, and culturally appropriate pedagogical methods. Therefore, this study affirms the TGT model as a valuable framework for Arabic language instruction that can be adopted broadly in similar school settings to achieve more equitable and effective educational outcomes.

CONCLUSION / الخلاصة

Based on the results of this study, it can be concluded that the implementation of the Teams Games Tournaments (TGT) model significantly enhances both motivation and learning outcomes in Arabic language instruction for seventh grade students at Islamic Junior High School Al-Kautsar Dompu. Through its five structured stages Class Presentation, Teams, Games, Tournament, and Team Recognition the model integrates cooperative learning with elements of academic competition, making the learning environment more interactive, engaging, and efficient. The statistical analysis using SPSS 25 demonstrated a significance value of 0.000 for both motivation and learning outcomes, indicating a strong and positive effect of the TGT model compared to conventional methods. This supports the idea that game-based and team-oriented learning strategies can increase student enthusiasm, participation, and comprehension. Therefore, the TGT model represents a practical and effective pedagogical approach that can be applied to Arabic language teaching in similar Islamic school contexts to improve educational quality and student achievement.

REFERENCES / المراجع

- Abdullah, A. (2024). Innovative Approach in Curriculum Development; Improving Education and Training Programs through Multidimensional Strategies. *PEDAGOGIK: Jurnal Pendidikan*, 11(2), 160–179. <https://doi.org/10.33650/pjp.v11i2.9290>
- Anggoro, K. J., & Khasanah, U. (2024). Technology-infused Teams-Games-Tournaments in Arabic Language Class: A Mixed Method Study on Students' Achievement and Perception. *Research in Learning Technology*, 32.

- Arifin, S., Khoiroh, U., Aini, T. N., & Sahidah, A. (2024). Teacher Strategies for Instilling an Attitude of Tolerance in Students in Responding. 02(02), 2020–2024. <https://ejournal.unuja.ac.id/index.php/icesh>
- Aymard, A. L., Teychené, J., Laborie, S., Bertrand, M., & Dietrich, N. (2021). Tournament Battle: Gamifying Bibliographic Research and Oral Argumentation Applied to Chemical Engineering Topics. *Journal of Chemical Education*, 98(9), 2937–2943. <https://doi.org/10.1021/acs.jchemed.1c00458>
- Azis, P. A., & Pertiwi, N. D. (2021). The Effect of Cooperative Learning Model Type Team Games Tournament (TGT) with Play Wheel Media on Students' Interest. In *Journal of Physics: Conference Series* (Vol. 1752, Issue 1). <https://doi.org/10.1088/1742-6596/1752/1/012068>
- Bachri, B. S., Tegeh, M., & Jayanta, I. N. L. (2023). Impact of Phenomenon-Based Learning Model Assisted By Virtual Book-Based Digital Comics on Elementary-School Students' Agile Innovation and Independence in Science Learning. *Jurnal Pendidikan IPA Indonesia*, 12(3), 493–503. <https://doi.org/10.15294/jpii.v12i3.46881>
- Capinding, A. T. (2021). Effect of Teams-Games Tournament (TGT) Strategy on Mathematics Achievement and Class Motivation of Grade 8 Students. *International Journal of Game-Based Learning*, 11(3), 56–68. <https://doi.org/10.4018/IJGBL.2021070104>
- Cheng, M., & Chen, P. (2021). Applying Perma To Develop College Students' English Listening and Speaking Proficiency in China. *International Journal of English Language and Literature Studies*, 10(4), 333–350. <https://doi.org/10.18488/journal.23.2021.104.333.350>
- Fresnedo, O., Castro, P. M., Dapena, A., & Lopez, F. L. (2021). Developing Cooperative Learning and TV-like Quizzes to Improve Students' Motivation in Higher Education. In *2021 IEEE Urucon, Urucon 2021* (pp. 522–526). <https://doi.org/10.1109/URUCON53396.2021.9647109>
- Havaei, P., Zekri, M., Mahmoudzadeh, E., & Rabbani, H. (2023). An Efficient Deep Learning Framework for P300 Evoked Related Potential Detection in EEG Signal. *Computer Methods and Programs in Biomedicine*, 229. <https://doi.org/10.1016/j.cmpb.2022.107324>
- Heru, M. J. A., & Bali, M. M. E. I. (2024). Crafting Leaders in the Digital Age: How Adaptive Management Strategies Revolutionize Leadership Development in Islamic Schools. *Communautaire: Journal of Community Service*, 3(1), 79–92. <https://doi.org/10.61987/communautaire.v3i1.458>
- In'am, A., & Sutrisno, E. S. (2020). Strengthening Students' Self-efficacy and Motivation in Learning Mathematics through the Cooperative Learning Model. *International Journal of Instruction*, 14(1), 395–410. <https://doi.org/10.29333/IJI.2021.14123A>

- Jamari, H., Rofiee, M. S., Johari, R. J., Salleh, M. Z., & Kek, T. L. (2020). Standardised Extracts of *Moringa Oleifera* and *Centella Asiatica* Enhanced the Antioxidant Activity, Learning and Memory Effects by Inhibiting Acetylcholinesterase Activity in D-galactose Induced Ageing Rats. *Pertanika Journal of Science and Technology*, 28(1), 293–310.
- Kholidah, N., & Qohar, A. (2021). Students' Mathematical Communication in Teams Games Tournaments (TGT) Learning Model on Trigonometry Topic. In *Journal of Physics: Conference Series* (Vol. 1806, Issue 1). <https://doi.org/10.1088/1742-6596/1806/1/012110>
- Luo, X., & Chen, L. (2024). Sex Differences and Cultural Diversity in Perceptions Toward Esports between American and Chinese University Students. *Cogent Social Sciences*, 10(1). <https://doi.org/10.1080/23311886.2024.2399932>
- Luo, Y. J., Lin, M. L., Hsu, C. H., Liao, C. C., & Kao, C. C. (2020). The Effects of Team-Game-Tournaments Application towards Learning Motivation and Motor Skills in College Physical Education. *Sustainability (Switzerland)*, 12(15). <https://doi.org/10.3390/su12156147>
- Manaseer, T. S., Whittaker, J. L., Isaac, C., Schneider, K., Roberts, M. R., & Gross, D. P. (2020). the Reliability of Clinical Balance Tests Under Single-Task and Dual-Task Testing Paradigms in Uninjured Active Youth and Young Adults. *International Journal of Sports Physical Therapy*, 15(4), 487–500. <https://doi.org/10.26603/ijspst20200487>
- Munawwaroh, I. (2024). Enhancing Critical Thinking Through the Integration of Self-Directed Learning in Sustainable Education in Madrasah. *AFKARINA: Jurnal Pendidikan Agama Islam*, 9(1), 1–10. <https://doi.org/10.33650/afkarina.v9i1.9352>
- Nisa', K., & R, A. H. A. (2024). Empowering Educators: A Comprehensive Human Resources: Framework for Improving Islamic-based Schools. *Journal of Islamic Education Research*, 5(1), 31–44. <https://doi.org/10.35719/jier.v5i1.385>
- Primadani, A. I., Mardiyana, & Triyanto. (2020). The Effect of Teams Games Tournament (TGT) Learning Model with PQ4R Strategy towards the Mathematical Reasoning based on Metacognitive Awareness. In *Journal of Physics: Conference Series* (Vol. 1594, Issue 1). <https://doi.org/10.1088/1742-6596/1594/1/012043>
- Putri, D. F. (2024). Mindful Messaging: Public Relations (PR) Strategies in Schools by Using Hierarchy of Effects. *Managere: Indonesian Journal of Educational Management*, 6(1), 98–110. <https://doi.org/10.52627/managere.v6i1.429>
- Rohyami, Y., & Huda, T. (2020). The Effect of Flipped Classroom Cooperative Learning on Learning Outcomes in the Analytical Chemistry Course. In *AIP Conference Proceedings* (Vol. 2229). <https://doi.org/10.1063/5.0002664>
- Sain, Z. H. (2025). From Chalkboards to Chatbots: Revolutionizing Education with AI-Driven Learning Innovations. *Educative: Jurnal Ilmiah Pendidikan*, 3(1), 1–10. <https://doi.org/10.70437/educative.v3i1.823>

- Wahyuningsih, D., Muchson, M., Saefi, M., Muntholib, M., & Suryadharma, I. B. (2021). The Integration Effects of Socrative Online Game in Cooperative - Teams Games Tournament (TGT) Models to Student Learning Outcomes and Learning Motivation on Salt Hydrolysis Topic. In *AIP Conference Proceedings* (Vol. 2330). <https://doi.org/10.1063/5.0043115>
- Wijaya, R., Febrianto, I., & Kusdiyanti, H. (2020). Blended Learning between Team Games Tournament (TGT) and Web-Based Module as an Effort to Improve the Achievement of Student Competency in Automotive Departement. In *ACM International Conference Proceeding Series*. <https://doi.org/10.1145/3452144.3452247>
- Xia, L., Huang, C., Xu, Y., & Pei, J. (2023). Multi-Behavior Sequential Recommendation With Temporal Graph Transformer. *IEEE Transactions on Knowledge and Data Engineering*, 35(6), 6099–6112. <https://doi.org/10.1109/TKDE.2022.3175094>