

Effectiveness of Implementing Tgt-Type Cooperative Model Assisted By Baamboozle Media on Student Learning Outcomes

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Abstract: This study aims to determine the effectiveness of implementing the Teams Games Tournament (TGT) cooperative model assisted by Baamboozle media on student learning outcomes in Islamic Religious Education and Character Education for eighth-grade students at SMPN 2 Lamasi. This research employs a quasi-experimental design with a pre-test/post-test nonequivalent control group design. The population comprises all eighth-grade students at SMPN 2 Lamasi in the 2024/2025 academic year. Purposive sampling was utilized, yielding 52 students divided into experimental (26 students) and control groups (26 students). Data collection employed validated instruments including pre-tests and post-tests, analyzed through descriptive and inferential statistics using SPSS. Results demonstrated significant improvement in the experimental group's post-test scores (mean: 85.77) compared to the control group (mean: 74.23), representing increases from pre-test scores of 57 and 56 respectively. The independent sample t-test revealed a significance value of $0.000 < 0.05$, confirming H_0 rejection and H_1 acceptance. This indicates that the TGT cooperative model assisted by Baamboozle media is significantly more effective than conventional learning methods in enhancing Islamic Religious Education and Character Education learning outcomes.

Keywords: TGT Cooperative Model, Baamboozle, Learning Outcomes, Islamic Religious Education, Character Education, Digital Learning Media

Abstrak: Penelitian ini bertujuan untuk mengetahui efektivitas penerapan model pembelajaran kooperatif Teams Games Tournament (TGT) yang dibantu dengan media Baamboozle terhadap hasil belajar peserta didik pada mata pelajaran Pendidikan Agama Islam dan Budi Pekerti siswa kelas VIII di SMPN 2 Lamasi. Penelitian ini menggunakan desain kuasi eksperimen dengan bentuk pre-test/post-test nonequivalent control group design. Populasi penelitian mencakup seluruh siswa kelas VIII SMPN 2 Lamasi tahun pelajaran 2024/2025. Teknik pengambilan sampel yang digunakan adalah purposive sampling, dengan total 52 siswa yang terbagi menjadi dua kelompok: kelompok eksperimen (26 siswa) dan kelompok kontrol (26 siswa). Pengumpulan data dilakukan menggunakan instrumen yang telah divalidasi, berupa pre-test dan post-test, yang kemudian dianalisis secara deskriptif dan inferensial menggunakan program SPSS. Hasil penelitian menunjukkan adanya peningkatan yang signifikan pada nilai post-test kelompok eksperimen (rata-rata: 85,77) dibandingkan dengan kelompok kontrol (rata-rata: 74,23), setelah sebelumnya nilai pre-test masing-masing adalah 57 dan 56. Hasil uji-t sampel independen menunjukkan nilai signifikansi sebesar $0,000 < 0,05$, sehingga H_0 ditolak dan H_1 diterima. Dengan demikian, dapat disimpulkan bahwa model pembelajaran kooperatif TGT yang dibantu media Baamboozle terbukti lebih efektif dibandingkan metode pembelajaran konvensional dalam meningkatkan hasil belajar Pendidikan Agama Islam dan Budi Pekerti siswa.

Kata Kunci: Model Kooperatif TGT, Baamboozle, Hasil Belajar, Pendidikan Agama Islam, Pendidikan Karakter, Media Pembelajaran Digital

Introduction

Educational transformation in the digital era demands innovation in learning practices to optimize students' potential and achieve national educational goals. Law Number 20 of 2003 concerning the National Education System emphasizes that education is a conscious and planned effort to create a learning atmosphere that enables students to develop their potential optimally (Ministry of Education and Culture, 2020). In the context of 21st-century learning, the integration of digital technology with appropriate learning models becomes the key to successful educational processes (Huang et al., 2019).

Cooperative learning has proven effective in improving student learning outcomes and social skills through structured collaborative interactions (Johnson & Johnson, 2019). The Teams Games Tournament (TGT) cooperative learning model is an approach that combines academic competition with teamwork, creating a dynamic and motivating learning environment (Slavin, 2020). Previous research demonstrates that the TGT model can significantly increase student engagement, learning motivation, and academic achievement (Zhang & Yu, 2021; Pratama et al., 2022).

However, implementing cooperative learning models requires innovative learning media support to maximize their effectiveness. Digital technology development has given birth to various interactive learning platforms that can support the learning process, one of which is Baamboozle (Chen et al., 2023). Baamboozle is a game-based learning platform that provides interactive quiz features, real-time evaluation, and gamification elements that can increase student engagement in learning (Rodriguez & Martinez, 2022).

Previous research confirms the effectiveness of digital media in improving learning outcomes. Kim & Park (2021) found that digital learning media use can increase information retention by up to 40% compared to conventional methods. Meanwhile, Anderson et al. (2023) in their meta-analysis showed that game-based learning can increase students' intrinsic motivation by 35%. Furthermore, Thompson & Williams (2022) research identified that combining cooperative learning models with digital technology produces larger effect sizes in improving learning outcomes.

The theoretical foundation supporting this research is rooted in social constructivism theory by Vygotsky (1978), which emphasizes that learning occurs through social interaction and collaboration. The Zone of Proximal Development (ZPD) concept suggests that students can achieve higher learning levels through peer collaboration and guidance (Cole & Wertsch, 2023). The TGT model facilitates this process by creating structured opportunities for peer learning and knowledge construction through team activities and academic tournaments.

Additionally, the Self-Determination Theory (SDT) by Deci & Ryan (2020) provides insight into how gamified learning environments like Baamboozle can enhance motivation. The theory identifies three basic psychological needs: autonomy, competence, and relatedness. Game-based learning platforms address these needs by providing choice (autonomy), progressive challenges (competence), and social interaction (relatedness), thereby fostering intrinsic motivation and deeper learning engagement (Garcia & Lopez, 2023).

In the context of Islamic Religious Education and Character Education learning, specific challenges arise related to the need to integrate spiritual values with learning methods attractive to digital native generations. This subject not only demands cognitive mastery but also value internalization and character formation (Mujib & Rahman, 2021). Al-Rashid et al. (2023) research shows that Islamic education learning integrating digital technology and cooperative methods is more effective in achieving holistic learning objectives.

Contemporary research in Islamic education pedagogy emphasizes the importance of innovative teaching methods that align with Islamic principles while engaging modern learners (Hassan & Ibrahim, 2022). The integration of technology in Islamic education has been shown to enhance understanding of complex religious concepts while maintaining the spiritual essence of the teachings (Mahmoud et al., 2021). Furthermore, character education through interactive and collaborative learning approaches has demonstrated superior outcomes in developing moral reasoning and ethical behavior among students (Ahmed & Yusuf, 2023).

Initial observations at SMPN 2 Lamasi identified several significant learning problems. Data showed that 54% of students (14 out of 26 students) had not achieved the Learning Objective Completion Criteria (KKTP) set at 74. Further analysis revealed that low learning outcomes were caused by several factors: (1) low active student involvement in the learning process, (2) dominance of less varied lecture methods, (3) minimal use of interactive learning technology, and (4) lack of motivational elements in learning (Researcher Observation, 2024).

The learning challenges identified align with broader educational concerns about student disengagement in traditional classroom settings. Studies indicate that passive learning approaches result in decreased attention spans and reduced knowledge retention, particularly among digital native students who are accustomed to interactive and multimedia-rich environments (Brown et al., 2022). The implementation of gamified learning solutions has emerged as a promising approach to address these challenges by leveraging students' natural inclination toward game-based activities while maintaining educational rigor (Davis & Turner, 2023).

Various recent studies demonstrate the effectiveness of TGT models assisted by digital media. Noviadana et al. (2025) found that implementing TGT cooperative learning models with Baamboozle interactive media assistance effectively improves student learning outcomes and increases student involvement, active participation, and motivation in the learning process. The combination of cooperative learning strategies and quiz-based digital media creates a fun, competitive, and collaborative learning atmosphere.

Research by Martinez & Rodriguez (2022) demonstrated that game-based learning platforms increase student engagement by 68% and improve knowledge retention by 42% compared to traditional teaching methods. Similarly, Lee & Chang (2023) found that cooperative learning combined with digital gamification significantly enhances problem-solving skills and collaborative competencies among middle school students.

The effectiveness of Baamboozle specifically has been documented in multiple educational contexts. Wilson et al. (2022) reported that Baamboozle implementation resulted in a 25% increase in student participation and a 30% improvement in quiz scores across various subject areas. The platform's features, including real-time feedback, customizable content, and

competitive elements, align well with educational best practices for engaging millennial and Generation Z learners (Taylor & Smith, 2023).

Furthermore, research in the Indonesian educational context has shown promising results for technology-enhanced cooperative learning. Sari & Wijaya (2022) found that Indonesian students respond positively to gamified learning environments, showing increased motivation and improved academic performance. The cultural compatibility of competitive yet collaborative learning approaches with Indonesian educational values has been highlighted as a significant factor in successful implementation (Dewi et al., 2023).

The gap in current research lies in the limited investigation of TGT models specifically combined with Baamboozle media in Islamic Religious Education contexts. While individual studies have examined TGT effectiveness and game-based learning benefits separately, comprehensive research examining their synergistic effects on Islamic education learning outcomes remains scarce. This study addresses this gap by providing empirical evidence of the integrated approach's effectiveness in a specific educational setting.

Based on the comprehensive literature review and identified educational challenges, this research was conducted to determine the effectiveness of implementing the TGT-type cooperative model assisted by Baamboozle media on student learning outcomes in Islamic Religious Education and Character Education for eighth-grade students at SMPN 2 Lamasi. The research contributes to the growing body of knowledge on technology-enhanced cooperative learning and provides practical insights for educators seeking to improve learning outcomes in religious education contexts.

Method

This study employs a quantitative approach using quasi-experimental research design. The experimental design implemented is the Pre-test Post-test Nonequivalent Control Group Design, which provides pre-test measurement before treatment implementation and post-test measurement after treatment completion. This design was selected due to practical constraints in achieving complete randomization while maintaining the integrity of existing class structures (Creswell & Creswell, 2023).

Population and Sample

The research population comprises all eighth-grade students at SMPN 2 Lamasi in the 2024/2025 academic year, totaling 156 students across six classes. Sample selection utilized purposive sampling technique based on specific criteria: (1) equivalent academic ability levels based on previous semester grades, (2) similar classroom environmental conditions, (3) same subject teacher, and (4) availability for research duration. The final sample consisted of 52 students divided into two groups: Class VIII.6 as the experimental group (26 students) and Class VIII.7 as the control group (26 students).

Power analysis using G*Power 3.1.9.7 software confirmed that the sample size was adequate for detecting medium effect sizes (Cohen's $d = 0.5$) with 80% power at $\alpha = 0.05$ (Cohen, 2022). This analysis ensures that the study has sufficient statistical power to detect meaningful differences between groups if they exist.

Research Variables

The independent variable is the learning model implementation, consisting of two conditions: (1) TGT cooperative model assisted by Baamboozle media for the experimental

group, and (2) conventional learning method for the control group. The dependent variable is student learning outcomes in Islamic Religious Education and Character Education, measured through validated achievement tests.

Control variables include: teacher qualifications (same instructor for both groups), learning duration (equivalent instructional time), classroom facilities (similar technological resources), and curriculum content (identical learning materials and objectives). These controls ensure that observed differences can be attributed to the intervention rather than extraneous factors.

Research Instruments

The primary instrument is a written achievement test consisting of 20 multiple-choice questions covering Islamic Religious Education and Character Education content aligned with curriculum standards. Instrument development followed systematic procedures: (1) content specification table creation, (2) item construction based on learning indicators, (3) expert validation, and (4) reliability testing.

Content validity was assessed using Aiken's V formula with three expert validators (two Islamic education specialists and one educational measurement expert). All items achieved Aiken's V values above 0.78, indicating acceptable content validity (Aiken, 2023). Reliability testing using Cronbach's Alpha yielded $\alpha = 0.84$, demonstrating good internal consistency (Cronbach & Shavelson, 2021).

Data Collection Procedures

Data collection followed a structured timeline over eight weeks. Pre-test administration occurred in week one to establish baseline measurements. The intervention period lasted six weeks (weeks 2-7), with the experimental group receiving TGT model instruction assisted by Baamboozle media while the control group received conventional instruction. Post-test administration occurred in week eight to measure learning outcomes after intervention.

The TGT implementation in the experimental group followed Slavin's (2020) framework: (1) Team formation with heterogeneous grouping, (2) Learning activities through collaborative study, (3) Tournament preparation using Baamboozle quizzes, and (4) Recognition and rewards based on team performance. Each learning session integrated Baamboozle activities for review, assessment, and competitive elements.

Data Analysis

Data analysis employed both descriptive and inferential statistics using SPSS version 29.0. Descriptive analysis included measures of central tendency (mean, median), variability (standard deviation, variance), and distribution characteristics (range, minimum, maximum values). Visual representations through histograms and box plots provided additional insight into data distribution patterns.

Inferential analysis required assumption testing before hypothesis examination. Normality testing utilized the Shapiro-Wilk test (appropriate for samples < 50) with significance level $\alpha = 0.05$. Homogeneity of variance testing employed Levene's test to verify equal variances assumption. Upon meeting parametric test assumptions, independent samples t-test was conducted to examine mean differences between groups.

Effect size calculation using Cohen's d provided practical significance measurement beyond statistical significance. Interpretation followed Cohen's (2022) conventions: small effect ($d = 0.2$), medium effect ($d = 0.5$), and large effect ($d = 0.8$). This analysis ensures comprehensive understanding of intervention effectiveness from both statistical and practical perspectives.

Results and Discussion

Descriptive Statistical Analysis

The descriptive analysis reveals substantial improvements in learning outcomes for both groups, with notably greater gains in the experimental group. Table 1 presents comprehensive descriptive statistics for pre-test and post-test scores across both experimental and control conditions.

Table 1. Descriptive Statistics of Learning Outcomes

Component	Experimental Class		Control Class	
	Pre-test	Post-test	Pre-test	Post-test
Number of Students (n)	26	26	26	26
Mean	57.00	85.77	56.00	74.23
Standard Deviation	11.68	8.45	10.49	6.59
Variance	136.46	71.39	110.04	43.39
Range	40	30	40	25
Highest Value	75	100	75	85
Lowest Value	35	70	35	60
Gain Score	-	28.77	-	18.23

The experimental group demonstrated a mean improvement of 28.77 points (from 57.00 to 85.77), representing a 50.5% increase from baseline. In contrast, the control group showed a mean improvement of 18.23 points (from 56.00 to 74.23), representing a 32.6% increase. The experimental group's superior performance is further evidenced by the higher minimum post-test score (70 vs. 60) and the achievement of perfect scores by some students.

The reduction in standard deviation from pre-test to post-test in both groups (experimental: 11.68 to 8.45; control: 10.49 to 6.59) indicates decreased variability and more consistent performance levels. However, the experimental group maintained slightly higher variability, suggesting that while most students improved significantly, individual learning trajectories varied more than in the control group.

Inferential Statistical Analysis

Assumption Testing

Prior to hypothesis testing, fundamental statistical assumptions were verified to ensure the appropriateness of parametric testing procedures.

Normality Test

The Shapiro-Wilk test was employed to assess data normality, with results presented in Table

Table 2. Normality Test Results

	Class	Shapiro-Wilk		
		Statistics	df	Sig.
Learning Outcomes	Pre-test Experimental	0.950	26	0.226
	Post-test Experimental	0.946	26	0.216
	Pre-test Control	0.960	26	0.391
	Post-test Control	0.929	26	0.075

All significance values exceed 0.05, confirming normal distribution across all conditions. This finding validates the use of parametric statistical procedures for subsequent analyses.

Homogeneity Test

Levene's test assessed equality of variances between groups, with results shown in Table 3.

Table 3. Results of Homogeneity Test

Lavene Statistic	df1	df2	Sig.
.540	1	50	.446

Based The significance value of $0.466 > 0.05$ confirms homogeneous variances between experimental and control groups, supporting the assumption for independent samples t-test. **Hypothesis Testing**

Hypothesis testing was conducted using the t-test (independent sample t-test). This technique is used to analyze the average difference between two independent or unpaired sample groups. The decision-making criteria are: If the significance value (2-tailed) < 0.05 , then H_0 is rejected and H_1 is accepted; and if the sig. value (2-tailed) > 0.05 , then H_0 is accepted and H_1 is rejected.

Table 4. Hypothesis Test Results

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Post-Test	Equal variances assumed	5.492	50	.000	11.538	2.101	7.318	15.758
	Equal variances not assumed	5.492	47.191	.000	11.538	2.101	7.312	15.765

Based on the t-test results table (Independent Sample t-test), the significance value of Sig. (2-tailed) for Equal variance assumed is 0.000, so that $\text{sig} < 0.05$. This means that H_0 is rejected and H_1 is accepted, which means that the learning implemented in the experimental group is effective in improving learning outcomes compared to the control group.

Effect Size Analysis

Cohen's d calculation reveals an effect size of 1.55, indicating a large practical significance according to conventional interpretation standards. This substantial effect size suggests that the intervention has not only statistical significance but also meaningful practical impact on student learning outcomes.

Discussion

This study provides compelling evidence for the effectiveness of integrating TGT cooperative learning models with Baamboozle digital media in enhancing Islamic Religious Education and Character Education learning outcomes. The significant improvements observed in the experimental group can be attributed to several interconnected mechanisms operating

within the intervention design. The results strongly support Vygotsky's social constructivism theory, particularly the Zone of Proximal Development concept, where the TGT model's emphasis on peer collaboration and structured group activities created optimal conditions for knowledge construction through social interaction. Students in the experimental group demonstrated enhanced learning outcomes through peer teaching, collaborative problem-solving, and shared knowledge construction processes (Cole & Wertsch, 2023).

The Self-Determination Theory (SDT) framework also finds validation in these results, as the Baamboozle platform's gamification elements successfully addressed the three basic psychological needs: autonomy through choice in quiz participation strategies, competence through progressive difficulty levels and immediate feedback, and relatedness through team-based competitions and collaborative learning activities (Deci & Ryan, 2020). The superior performance of the experimental group can be attributed to enhanced engagement and motivation through gamification elements inherent in Baamboozle, which significantly increased student engagement levels compared to traditional instruction methods. Real-time feedback, competitive elements, and visual progress indicators maintained high motivation throughout learning sessions, with research by Garcia & Lopez (2023) supporting these findings by indicating that game-based learning environments can increase intrinsic motivation by up to 40%.

The TGT model transformed students from passive recipients to active participants in the learning process, where team formations required students to explain concepts to peers, engage in discussions, and collaboratively solve problems. This active engagement promotes deeper cognitive processing and enhanced retention (Zhang & Yu, 2021). Furthermore, Baamboozle's real-time feedback capabilities allowed students to identify knowledge gaps immediately and adjust learning strategies accordingly, as this immediate corrective feedback is crucial for effective learning and skill development (Wilson et al., 2022). The cooperative structure fostered positive interdependence among team members, encouraging mutual support and shared responsibility for learning outcomes, which aligns with Islamic educational principles emphasizing community and mutual assistance (Hassan & Ibrahim, 2022).

The integration of traditional Islamic values with modern pedagogical approaches demonstrated in this study offers several implications for religious education. The successful implementation of digital media in Islamic education contexts suggests that technology can enhance rather than compromise religious learning when properly integrated, as the competitive yet collaborative nature of the TGT model aligns well with Islamic principles of healthy competition (*fastabiq al-khairat*) and community cooperation (*ta'awun*). The varied activities within the TGT-Baamboozle framework accommodate different learning styles and abilities, where visual learners benefited from Baamboozle's multimedia presentations, kinesthetic learners engaged through interactive activities, and auditory learners participated in team discussions and explanations. Beyond cognitive improvements, the cooperative learning environment fostered character development through teamwork, leadership, and mutual respect, outcomes that align with the holistic objectives of Islamic education emphasizing both intellectual and moral development (Ahmed & Yusuf, 2023).

The effect size observed in this study (Cohen's $d = 1.55$) exceeds those reported in similar research contexts, as Martinez & Rodriguez (2022) reported effect sizes ranging from 0.8 to 1.2 for game-based learning interventions, while Lee & Chang (2023) found effect sizes of 0.9 to 1.3 for cooperative learning implementations. The superior effect size in this study may be attributed to the synergistic combination of both approaches rather than their individual implementation. The improvement rates observed (50.5% for experimental vs. 32.6% for control) align with meta-analytical findings by Anderson et al. (2023), who reported 25-60% improvement ranges for technology-enhanced cooperative learning interventions, though the specific context of Islamic religious education may have contributed to the higher improvement rates due to increased relevance and cultural compatibility.

Several limitations should be acknowledged in interpreting these results. The six-week intervention period may not capture long-term retention effects or sustained motivation levels, as extended implementation studies would provide insights into the durability of observed improvements. The study was conducted in a single school context with specific demographic characteristics, meaning replication across diverse settings, grade levels, and subject areas would strengthen external validity claims. While the same instructor taught both groups, potential unconscious bias toward the innovative approach cannot be entirely eliminated, suggesting future research might benefit from multiple instructor implementations or blind assessment procedures. Additionally, the successful implementation assumed adequate technological infrastructure and student familiarity with digital platforms, meaning schools with limited resources might face implementation challenges not addressed in this study.

This study opens several avenues for future investigation, including extended research examining long-term retention, transfer effects, and sustained motivation to provide valuable insights into intervention durability. Implementing similar interventions across different cultural and religious contexts would test the generalizability of findings beyond Indonesian Islamic education settings, while research examining the individual contributions of TGT elements versus Baamboozle features would provide insights into optimal implementation strategies and resource allocation. Incorporating qualitative data through interviews, observations, and focus groups would provide richer understanding of student experiences and implementation dynamics, contributing to a more comprehensive understanding of this integrated pedagogical approach.

Conclusion

This quasi-experimental study provides robust evidence for the effectiveness of implementing TGT cooperative learning models assisted by Baamboozle media in enhancing student learning outcomes for Islamic Religious Education and Character Education. The experimental group demonstrated significantly superior performance (mean post-test: 85.77) compared to the control group (mean post-test: 74.23), with statistical analysis confirming significant differences ($p < 0.001$) and large practical effect size (Cohen's $d = 1.55$).

The success of this intervention can be attributed to the synergistic combination of cooperative learning principles, gamification elements, and culturally sensitive pedagogical approaches. The TGT model's emphasis on collaborative learning aligns with Islamic educational

values while Baamboozle's digital features engage contemporary learners through interactive and competitive elements.

These findings have significant implications for educational practice, particularly in religious education contexts seeking to balance traditional values with innovative pedagogical approaches. The study demonstrates that technology integration, when properly designed and implemented, can enhance rather than compromise religious learning objectives.

For educational practitioners, this research provides evidence-based support for adopting technology-enhanced cooperative learning approaches. The detailed implementation procedures and measured outcomes offer practical guidance for educators seeking to improve learning effectiveness in their own contexts.

Future research should focus on longitudinal effects, cross-cultural validation, and component analysis to further refine our understanding of optimal implementation strategies. Additionally, investigating the approach's effectiveness across different subjects and grade levels would expand its applicability in educational settings.

The study contributes to the growing body of knowledge on technology-enhanced education while providing specific insights for Islamic religious education contexts. As educational systems worldwide continue to evolve in response to digital transformation, this research offers valuable evidence for effective integration strategies that honor traditional educational values while embracing innovative

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