



The Implementation of Basketball Learning through TGT and PBL: Effects on Motivation and Critical Thinking in Adolescents Aged 15-18 Years

Trisnar Adi Prabowo^{1ABCDE}, Mar'atul Afifah^{1ABD}, Asyidika Vito Indarto^{1CD}, Achmad Zakaria^{1AD}, Zakwan Yumna Dhuha Pahlavi^{1BCD} and Febriansyah Dwi Cahyo^{1ABD}

¹Universitas Muhammadiyah Brebes

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Abstract

Objectives. This study aimed to examine and compare the effectiveness of two basketball instructional approaches – Team Games Tournament (TGT) and Problem-Based Learning (PBL) – in enhancing motivation and critical thinking among students aged 15–18.

Materials and Methods. The sample included 100 students (50 males and 50 females). A true experimental pretest–posttest control group design was used. Following initial skill-based screening, students were randomly assigned to either the TGT or PBL intervention group. Both programs were implemented over eight weeks (24 sessions). Instruments included a basketball skills test for participant selection, the Sport Motivation Scale II (SMS-II), and a dedicated instrument for assessing critical thinking. Data were analyzed using Multivariate Analysis of Covariance (MANCOVA) in SPSS 27.

Results. MANCOVA indicated no statistically significant multivariate differences between TGT and PBL on combined posttest motivation and critical thinking scores after adjustment for pretest values ($F = 0.758$, $p = 0.471$). Pretest motivation ($F = 3.604$, $p = 0.031$) and pretest critical thinking ($F = 3.281$, $p = 0.042$) were significant covariates. Subsequent univariate analyses also revealed no significant group differences for posttest motivation ($F = 1.071$, $p = 0.303$) or critical thinking ($F = 0.460$, $p = 0.499$).

Conclusions. Both instructional approaches effectively supported students' motivation and critical thinking, with neither demonstrating statistical superiority. Future research should include a control group and explore potential moderating variables such as gender.

Keywords: learning methods, basketball learning, high school students, physical education.

Introduction

Critical thinking is the ability to analyze information objectively, evaluate arguments, and identify biases (Negoro et al., 2023) a study was carried out which had the objectives of (1. It enables individuals not only to accept information but also to seek supporting evidence and develop innovative solutions. In physical education, critical thinking extends beyond understanding tactics and game strategies. It also involves the ability to make quick decisions on the court (Bayu et al., 2022; Hidayat et al., 2023). It also includes analyzing game situations, evaluating personal and team performance, and adapting strategies to changing conditions. Students with

strong critical thinking skills can judge when to pass, shoot, or dribble in dynamic situations, as well as analyze causes of failure and identify alternative solutions (Tangkudung & Mahyudi, 2022).

One fundamental factor influencing the development of critical thinking is motivation. Motivation serves as a primary driver for active engagement in learning, the exploration of new ideas, and the ability to overcome intellectual challenges (Prabowo et al., 2025). Among students aged 15-18 years, cognitive development becomes increasingly complex and their thinking skills begin to mature. At this stage, motivation is crucial as students tend to seek meaning and relevance in every learning activity (Shkola et al., 2022; Cagongon & Osorno, 2022). When motivated, students are more persistent in problem analysis, open to multiple perspectives, and confident in expressing ideas (Hartati et al., 2022; Juita et al., 2024).

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Basketball learning plays a vital role in the holistic development of adolescents aged 15-18. In addition to improving physical fitness, coordination, and motor skills, basketball also fosters teamwork, communication, sportsmanship, and leadership (Kolokoltsev et al., 2023). The fast-paced and dynamic nature of basketball, which demands immediate decision-making, makes it an ideal medium for cultivating critical thinking in real-life contexts (Iserbyt et al., 2022). There is limited research investigating physical activity levels during a sport education season in high school physical education settings and how these are affected by ability levels. The aim of this study was to investigate (1; Shi, 2024). Therefore, it is essential not only to teach basic techniques but also to guide students in applying strategic thinking during practice and competition.

Several instructional models have been applied to optimize basketball learning while simultaneously enhancing motivation and critical thinking, including Team Games Tournament (TGT) and Problem-Based Learning (PBL) (Usra et al., 2023; Prabandaru et al., 2020). TGT involves team-based competition in the form of tournaments and provides recognition for individual contributions to the team. Previous studies suggest that TGT creates a learning environment that is both competitive and collaborative, encouraging students to support each other to achieve team goals, which in turn enhances engagement and motivation (Luo et al., 2020). PE courses should be designed to enhance student motivation. Team-game tournaments (TGTs; Cahyadi, 2022) such as sports equipment and the field as a learning resource for physical education learning. If one of them is inadequate, both limited in quantity and quality, it will greatly affect the learning process, especially learning basic football techniques. Dribbling is an attempt to push the ball intermittently with the ball position not far from our feet and must be controlled by the dribbler while running to achieve certain goals in the game of football. This study aims to determine how much influence the practice of the jigsaw cooperative learning model and the team game tournament (TGT; Rubiyatno et al., 2023). In contrast, PBL emphasizes solving authentic and real-world problems, where students are presented with scenarios requiring analysis, investigation, and creative solutions (Li et al., 2022). PBL is highly relevant for fostering critical thinking because it requires students to identify problems, gather information, formulate hypotheses, and test solutions (Low et al., 2024; Chueh & Kao, 2024). It is important to connect course content to real-world industry while also maintaining academic rigor. The effectiveness of this integration has become a concern in university courses. In recent years, courses have used both Problem-Based Learning (PBL, thereby encouraging deep and systematic thinking. Although few studies have simultaneously examined TGT and PBL in relation to motivation and critical thinking, evidence of their individual effectiveness provides a strong rationale for this research.

Accordingly, implementing basketball learning strategies tailored to students aged 15-18, with an emphasis on enhancing motivation and critical thinking, is essential. This study aims to analyze and compare the effectiveness of the TGT and PBL learning models in basketball lessons on student motivation and critical thinking. The expected contribution of this research is to serve as a practical reference and innovative instructional model for teachers and as a foundation

for developing modern curricula and training programs in physical education.

Material and Methods

Study Participants

This study was conducted at Sekolah Menengah Atas (SMA) Negeri 1 Paguyangan, targeting students aged 15-18. To ensure ethical participation, the selection process began with obtaining informed consent from parents/guardians and assent from students. Prospective participants also completed an initial basketball skills test, as described in the instrument section.

Inclusion criteria required participants to be 15-18 years old, in good physical health, and free from chronic injuries. Based on their initial basketball skills test scores, they ranked among the top 50 male or 50 female students. Exclusion criteria included refusal by either the student or parents/guardians to provide consent/assent or failure to meet the minimum basketball skill requirements.

A total of 100 students who met the inclusion and exclusion criteria were randomly assigned to two experimental groups using a ball-draw lottery method. The groups were divided into the Team Games Tournament (TGT) group and the Problem-Based Learning (PBL) group, each consisting of 50 students (25 males and 25 females), ensuring balanced characteristics across groups. Ethical approval for this study was obtained from the University Research Ethics Committee (Approval No. B/1532/UN34.16/PT.01.04/2025).

Study Organization

This study employed a true experimental design, specifically a pretest-posttest control group design with two intervention groups. This design was selected to compare the effectiveness of TGT and PBL methods in improving students' motivation and critical thinking in basketball learning.

The independent variable was the learning method, comprising two conditions: TGT and PBL. The dependent variables were students' learning motivation and critical thinking skills. The intervention was implemented over eight weeks (24 sessions, three per week). This structure aimed to provide clear evidence of the causal effects of each learning method on the targeted outcomes.

Intervention Programs: TGT and PBL

The basketball learning intervention was carried out over eight weeks, totaling 24 sessions (three per week), equally distributed between the TGT and PBL experimental groups. Each program was designed to systematically develop fundamental basketball skills and strategies while simultaneously fostering students' motivation and critical thinking (Table 1, 2).

Research Instrument

Two types of research instruments were used in this study for data collection. The first instrument was applied to screen participants to ensure they met the inclusion criteria,

Table 1. Stages of the Team Games Tournament (TGT) program

Week	Focus of Materials & Skills	TGT Key Activities	Integration of Motivation and Critical Thinking
1	Introduction to TGT & Basic Dribbling	Formation of heterogeneous teams, static and dynamic dribbling drills, Mini Dribbling Tournament.	Motivation: Team formation and initial competition. Critical Thinking: Basic analysis of in-game dribbling.
2	Basic and Advanced Passing	Pair and moving passing drills, Mini Passing Tournament (accuracy, chain passing)	Motivation: Team achievement in passing. Critical Thinking: Decision-making on the appropriate type of passing according to the situation.
3	Shooting and Layup	Free shooting and layup drills, Mini Shooting and Layup Tournament (challenge, speed).	Motivation: Experiencing the success of shooting. Critical Thinking: Understanding techniques to improve shooting percentage.
4	Basic Defense Principles (Man-to-Man)	Defensive footwork drills, 1-on-1 and 2-on-2 defense practices, Mini Defense Tournament.	Motivation: The challenge of defending effectively. Critical Thinking: Analyzing defensive positioning and opponent movements.
5	Basic Offense Principles (Off-Ball Movement and Positioning)	Cut, screen, give-and-go drills; 3-on-0 simulation, Mini Offense Tournament.	Motivation: Engagement in creating opportunities. Critical Thinking: Strategies for creating space and movement without the ball.
6	Simple Team Strategies (Zone Defense and Offense)	Zone defense movement drills, offensive simulation against zones, Match Simulation Tournament.	Motivation: Applying team strategies. Critical Thinking: Analyzing weaknesses of zone defenses and designing offensive plays.
7	Game and Special Situation Analysis	Video analysis of games, special situation drills (inbound, free throw), Strategy and Rules Quiz Tournament.	Motivation: The challenge of solving complex problems. Critical Thinking: Analyzing game videos and formulating decisions in critical situations..
8	Final Review and TGT Tournament	Skill review, Full Basketball Tournament (5-on-5), and Reflection Session.	Motivation: The pinnacle of competition and teamwork. Critical Thinking: Applying all strategies and skills in a full match and engaging in reflective learning.

Table 2. The Problem-Based Learning (PBL) program

Week	Focus of Materials & Skills	PBL Key Activities	Integration of Motivation and Critical Thinking
1	Problem 1: Fast Break Effectiveness (Dribbling, Passing)	Problem identification, information gathering, passing/dribbling drills, solution demonstration.	Motivation: Direct engagement with relevant issues. Critical Thinking: Problem analysis, identification of relevant information, designing initial solutions.
2	Problem 2: Breaking the Zone Defense (Shooting, Passing)	Zone defense analysis, offense formation research, shooting/passing drills, simulation & evaluation.	Motivation: Intellectual challenge. Critical Thinking: Analyze zone weaknesses, design offense strategies, evaluate effectiveness.
3	Problem 3: Guarding the Opponent's Shooter (Defense)	Analysis of shooter techniques, defensive strategy research, footwork/close-out drills, defense simulation.	Motivation: Developing practical solutions. Critical Thinking: Identify defensive strategies and apply them in simulations.
4	Problem 4: Decision-Making Under Pressure (Offense)	Analysis of end-game scenarios, research on "last possession offense," pressured shooting/passing drills.	Motivation: Relevance of the problem to real situations. Critical Thinking: Analyze critical situations, formulate strategies under time constraints.
5	Problem 5: Rebounding and Second-Chance Points	Identification of rebound issues, research on box-out/rebounding techniques, box-out/rebound drills, mini-games.	Motivation: Satisfaction from problem solving. Critical Thinking: Analyze the importance of rebounds, design improvement drills..
6	Problem 6: Offense-Defense Transition	Transition speed analysis, transition drill research, sprint/fast passing drills, match simulation.	Motivation: Autonomy in finding solutions. Critical Thinking: Analyze transition effectiveness, design acceleration strategies.
7	Problem 7: Individual Skill Deficiency and Role-Playing	Identification of individual strengths/weaknesses, role-playing research, peer-teaching practices, mini-games.	Motivation: Collaboration and peer support. Critical Thinking: Analyze individual roles, design inclusive team strategies.
8	Final Project: Game Day Strategy	Designing a complete game plan against specific opponent profiles, strategy practice, full match simulations, final reflection.	Motivation: Challenging final project. Critical Thinking: Comprehensive analysis, knowledge synthesis, formulation of holistic strategies, individual and team evaluation.

while the second instrument was administered for pretest and posttest measurements using motivation and critical thinking questionnaires.

The screening instrument was developed through a Focus Group Discussion (FGD) among researchers and a literature review of relevant journals. This instrument served as the initial basketball ability test to determine eligible participants.

Table 3. Screening instrument for assessing initial basketball ability

Student's Name:	
Age:	
Examiner:	
Date:	
Part 1: Basic Knowledge (5 Questions)	True / False
Q1: Number of players on a basketball team	
Q2: Dribbling violation	
Q3: Name of the layup movement	
Q4: What should you do if a teammate under the basket needs the ball?	
Q5: Objective of defense	
Total Knowledge Score:	
Part 2: Basic Skills	Score (1 to 3)
A. Dribbling (Max 9)	
Ball control	
Body/head position	
Dribbling speed	
Total Dribbling Score:	
B. Passing (Max 6)	
Passing accuracy	
Basic passing technique	
Total Passing Score:	
C. Shooting (Max 6)	
Effort to make the basket	
Basic shooting technique	
Total Shooting Score:	
Inclusion Decision: (Yes/No)	
Additional Notes:	

The dependent variables are motivation and critical thinking. The motivation questionnaire was based on the Sport Motivation Scale II (SMS-II) developed by Pelletier et al., (2013) which comprises six dimensions: Amotivation, External Regulation, Introjected Regulation, Identified Regulation, Integrated Regulation, and Intrinsic Motivation. The

SMS-II has also been adapted into Indonesian, demonstrating validity coefficients ranging from 0.455 to 0.911 and a Cronbach's Alpha of 0.946 (Islami, 2020). Meanwhile, the critical thinking questionnaire was adapted from the work of Orhan and Çeviker Ay, (2022) which was designed for high school populations. This instrument includes five dimensions: Inference, Evaluating Arguments, Deduction, Recognizing Assumptions, and Interpretation, with KR-20 reliability coefficients of 0.87 and test-retest reliability ranging from 0.57 to 0.70. The scale used for both dependent variable instruments employed a 4-point Likert scale ranging from 1 to 4.

Statistical Analysis

The data in this study were analyzed using Multivariate Analysis of Covariance (MANCOVA), assuming that the requirements of normality and homogeneity were met. MANCOVA was selected because it enables the simultaneous examination of statistically significant differences across two dependent variables, posttest learning motivation scores and posttest critical thinking scores. In addition, pretest motivation scores and pretest critical thinking scores were included as covariates to control for baseline differences. All statistical tests were conducted at a significance level of $p < 0.05$, and the analyses were performed using SPSS version 27 (George & Mallery, 2021).

Results

This study began by testing the assumptions of normality and homogeneity. The normality test was conducted by analyzing the residual values of the motivation and critical thinking variables. Table 1 presents the results of the normality test.

Based on Table 4, the Kolmogorov-Smirnov test shows that the residual values of motivation (sig. = 0.083) and critical thinking (sig. = 0.200) are greater than 0.05 (Bernadett & Csa-ba, 2024). Therefore, the data are normally distributed. The next step was the homogeneity test, as presented in Table 4.

Table 5. Homogeneity Test of the Samples

	F	df1	df2	Sig.
Motivation	1.951	1	98	0.166
Critical Thinking	1.594	1	98	0.210

As shown in Table 5, Levene's test indicates that the significance values for motivation (sig. = 0.166) and critical thinking (sig. = 0.210) are greater than 0.05. This result confirms that the samples are homogeneous and come from the same population.

Since the assumptions of normality and homogeneity were met, the data were further analyzed using MANCOVA. The first analysis results are presented in the following table 6.

Table 4. Normality Test of the Dependent Variables

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Residual_Motivation	0.112	100	0.083	0.949	100	0.077
Residual_Critical_Thinking	0.052	100	0.200*	0.980	100	0.137

Table 6. Multivariate Test Results

	Effect	Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	0.590	68.217 ^b	2.000	95.000	0.000
	Wilks' Lambda	0.410	68.217 ^b	2.000	95.000	0.000
	Hotelling's Trace	1.436	68.217 ^b	2.000	95.000	0.000
	Roy's Largest Root	1.436	68.217 ^b	2.000	95.000	0.000
Pretest_Motivation	Pillai's Trace	0.070	3.604 ^b	2.000	95.000	0.031
	Wilks' Lambda	0.931	3.604 ^b	2.000	95.000	0.031
	Hotelling's Trace	0.073	3.604 ^b	2.000	95.000	0.031
	Roy's Largest Root	0.073	3.604 ^b	2.000	95.000	0.031
Pretest_Critical_Thinking	Pillai's Trace	0.062	3.281 ^b	2.000	95.000	0.042
	Wilks' Lambda	0.938	3.281 ^b	2.000	95.000	0.042
	Hotelling's Trace	0.064	3.281 ^b	2.000	95.000	0.042
	Roy's Largest Root	0.064	3.281 ^b	2.000	95.000	0.042
Learning_Method	Pillai's Trace	0.016	0.758 ^b	2.000	95.000	0.471
	Wilks' Lambda	0.984	0.758 ^b	2.000	95.000	0.471
	Hotelling's Trace	0.016	0.758 ^b	2.000	95.000	0.471
	Roy's Largest Root	0.016	0.758 ^b	2.000	95.000	0.471

Table 7. Tests of Between-Subjects Effects Results

	Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Posttest Motivation	19.721 ^a	3	6.574	1.064	0.368
	Posttest Critical Thinking	22.572 ^b	3	7.524	1.265	0.291
Intercept	Posttest Motivation	227.692	1	227.692	36.843	0.000
	Posttest Critical Thinking	600.930	1	600.930	100.999	0.000
Pretest_Motivation	Posttest Motivation	7.815	1	7.815	7.265	0.004
	Posttest Critical Thinking	6.713	1	6.713	4.528	0.038
Pretest_Critical_Thinking	Posttest Motivation	3.638	1	3.638	4.379	0.042
	Posttest Critical Thinking	15.507	1	15.507	7.916	0.010
Learning_Method	Posttest Motivation	6.620	1	6.620	1.071	0.303
	Posttest Critical Thinking	2.740	1	2.740	0.460	0.499

a. R Squared = 0.432 (Adjusted R Squared = 0.402)

b. R Squared = 0.438 (Adjusted R Squared = 0.408)

Based on Table 6, the effect of the intercept shows an F-value of 68.217 with a significance level of $p = 0.000$, indicating a highly significant difference in the combined dependent variables (Motivation Posttest and Critical Thinking Posttest). The results for Pretest_Motivation show an F-value of 3.604 with $p = 0.031$ (< 0.05), meaning that Pretest_Motivation is a statistically significant covariate. Similarly, Pretest_Critical_Thinking yielded an F-value of 3.281 with $p = 0.042$ (< 0.05), confirming that it is also a significant covariate. Meanwhile, the effect of Learning_Method (TGT vs. PBL) produced an F-value of 0.758 with $p = 0.471$ (> 0.05). This result indicates that there is no statistically significant multivariate difference between the two learning methods on the linear combination of the dependent variables (Motivation Posttest and Critical Thinking Posttest).

The next stage of the MANCOVA analysis presents the univariate results for each dependent variable (Motivation

Posttest and Critical Thinking Posttest), after controlling for the covariates. These results are summarized in Table 7 (Tests of Between-Subjects Effects).

The results indicate that Pretest Motivation had a statistically significant effect on both dependent variables: Posttest Motivation ($F = 7.265$, $p = 0.004$) and Posttest Critical Thinking ($F = 4.528$, $p = 0.038$). This suggests that students' initial motivation scores were significant predictors of both posttest motivation and critical thinking outcomes. Similarly, Pretest Critical Thinking also showed significant effects on both dependent variables: Posttest Motivation ($F = 4.379$, $p = 0.042$) and Posttest Critical Thinking ($F = 7.916$, $p = 0.010$). These findings confirm that students' baseline critical thinking ability was significantly associated with both posttest motivation and critical thinking scores. In contrast, the effect of Learning Method (TGT vs. PBL) on the dependent variables was not statistically significant. For Posttest Motivation, the results

were $F = 1.071$, $p = 0.303$, and for Posttest Critical Thinking, $F = 0.460$, $p = 0.499$. The model explained 43.2% of the variance in Posttest Motivation ($R^2 = 0.432$) and 43.8% of the variance in Posttest Critical Thinking ($R^2 = 0.438$), indicating a moderate level of explained variance.

Discussion

The findings of this study indicate that both teaching methods provided similar effects on students' motivation and critical thinking. The significance of pretest motivation and pretest critical thinking scores suggests that students' initial abilities in these variables were strongly associated with their posttest outcomes.

Previous studies have extensively examined the effectiveness of the Team Games Tournament (TGT) model in various physical education contexts. Cooperative learning through TGT has shown significant effects on football shooting outcomes, highlighting improvements in motor skills (Rubiayatno et al., 2023). Consistent with this, TGT has also been effective in enhancing enjoyment and fundamental handball techniques among student-athletes (Usra et al., 2023). Although these findings emphasized motor skills and affective domains, Luo et al. (2020) demonstrated that the application of TGT in college-level basketball courses significantly improved students' learning motivation, though not motor skill acquisition (Luo et al., 2020). Similarly, integrating Flipped Classroom with TGT has been reported to increase motivation and adaptive physical education outcomes (Syafrial et al., 2022). Furthermore, TGT has been found to significantly improve dribbling skills in football (Cahyadi, 2022). These studies suggest that TGT holds potential to enhance both motivational and skill-based aspects of physical education, forming a basis for comparison with the present findings.

On the other hand, the effectiveness of Problem-Based Learning (PBL) has also been well documented. Previous studies reported that PBL improved collaboration and learning outcomes in physical education (Dupri et al., 2020). Rahmadi et al. (2023) further supported this by showing that PBL significantly enhanced collaborative skills among secondary students (Rahmadi et al., 2023). PBL in physical education has also been shown to increase student interest, learning ability, problem-solving skills, and teamwork, all of which are implicitly linked to motivation and critical thinking (Li et al., 2022). Additional studies revealed that PBL encouraged students to be more active, creative, and innovative, while also improving their understanding and interest in PE learning (Marheni et al., 2020). In specific skill domains, PBL has been found to improve badminton service skills (Prabandaru et al., 2020). Collectively, these studies highlight that PBL is a strong pedagogical approach for developing motivation and higher-order thinking skills.

The absence of significant differences between TGT and PBL in this study can be interpreted from several perspectives. First, despite structural differences, both methods are student-centered and equally effective in fostering interactive, challenging learning environments that promote active participation, particularly in basketball lessons. This indicates that both methods may support the internalization of motivation and facilitate critical thinking through active engagement. Previous research has shown that collaborative

basketball learning significantly enhanced critical thinking skills (Huang & Ning, 2021). Similarly, game-based learning approaches (e.g., digital RPG and word guessing games) have simultaneously improved motivation and critical thinking (Yenprem, 2022; Chen & Wu, 2023), suggesting that engaging pedagogies often generate dual benefits.

Second, the nonsignificant results parallel findings in other studies where specific teaching interventions did not yield statistically significant differences. For example, Hartati et al. (2022) found that a tactical approach in basketball influenced creativity but not motivation (Hartati et al., 2022). This underscores that not all interventions equally affect all learning outcomes. Third, the intervention period of eight weeks (24 sessions) may have been sufficient to foster internal improvements within groups, but not enough to produce statistically significant differences between two equally student-centred methods. Other studies employing alternative models, such as Teaching Games for Understanding (Tangkudung & Mahyudi, 2022), peer observation, self-assessment, and circuit learning (Bayu et al., 2022) or motivating active learning strategies in Physical Education (Hidayat et al., 2023), also confirmed that physical education can strongly enhance critical thinking, though different models may yield comparable levels of effectiveness.

The practical implication is that both TGT and PBL can be regarded as viable and effective strategies for facilitating motivation and critical thinking in high school basketball lessons. While one method was not statistically superior, this does not diminish their individual effectiveness. Instead, it highlights the flexibility teachers have in adopting either approach, or integrating elements of both, depending on classroom context, learning objectives, and student characteristics. Future research may include a control group receiving conventional instruction to determine whether TGT and PBL generate significantly greater gains. Further exploration of moderating factors, such as gender or baseline ability levels, may also provide deeper insights into how students respond to these methods.

Conclusion

This study revealed no statistically significant differences between the TGT and PBL methods on the combined dependent variables of learning motivation and critical thinking skills at posttest, after controlling for pretest scores. The univariate analyses further confirmed that neither method produced significant differences in posttest motivation or critical thinking when considered independently. However, the significance of pretest motivation and pretest critical thinking underscores the importance of students' initial conditions in influencing learning outcomes. Therefore, the findings suggest that both TGT and PBL are equally effective in enhancing learning motivation and critical thinking in high school basketball education. This implies that physical education teachers have the flexibility to adopt either method, both of which are student-centered and promote active engagement and higher-order cognitive processes. Future studies are encouraged to employ longitudinal or intervention-based designs with control groups, and to explore potential moderating factors such as gender and baseline skill levels, to further refine the understanding of how these methods impact student outcomes.

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Conflict of Interest

The researcher does not have any conflict with other authors.

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Реалізація навчання баскетболу із застосуванням TGT і PBL: вплив на мотивацію та критичне мислення підлітків віком 15–18 років

Тріснар Аді Прабово^{1ABCDE}, Мар'атул Афіфах^{1ABD}, Асідіка Віто Індарто^{1CD}, Ахмад Закарія^{1AD}, Закван Юмна Дуга Пахлаві^{1BCD}, Фебріанся Дві Чайо^{1ABD}

¹Університет Мухаммадії Бребеса

Авторський вклад: А – дизайн дослідження; В – збір даних; С – статаналіз; D – підготовка рукопису; Е – збір коштів

Реферат. Стаття: 9 с., 7 табл., 2 рис., 34 джерел.

Метою дослідження було проаналізувати й порівняти ефективність методів навчання баскетболу турнір командних ігор (TGT) і навчання на основі розв'язування проблем (PBL) щодо мотивації та критичного мислення учнів віком 15–18 років.

Матеріали і методи. У дослідженні брали участь 100 учнів (50 хлопців і 50 дівчат) віком 15–18 років. Застосовано справжній експериментальний дизайн із пре- і посттестовою контрольною схемою. Після первинного відбору учасників випадково розподілили до груп TGT та PBL. Інтервенції тривали вісім тижнів і містили 24 заняття. Інструментарій дослідження включав тест із баскетбольних навичок для відбору учасників, шкалу спортивної мотивації SMS-II, а також спеціальний інструмент для оцінки критичного мислення. Дані аналізували за допомогою багатовимірного аналізу коваріації (MANCOVA) у SPSS 27.

Результати. Не виявлено статистично значущих мультіваріативних відмінностей між TGT і PBL щодо сукупних посттестових показників мотивації та критичного мислення після контролю пре-тестових значень ($F = 0.758$, $p = 0.471$). При цьому пре-тестова мотивація ($F = 3.604$, $p = 0.031$) та пре-тестове критичне мислення ($F = 3.281$, $p = 0.042$) були значущими коваріатами. Подальші уніваріантні тести також підтвердили відсутність значущих відмінностей між методами щодо мотивації ($F = 1.071$, $p = 0.303$) та критичного мислення ($F = 0.460$, $p = 0.499$) у посттесті.

Висновки. Методи TGT і PBL однаково ефективні для розвитку мотивації та критичного мислення у процесі навчання баскетболу в учнів старших класів. Жоден із методів не продемонстрував статистично значущої переваги. Майбутні дослідження можуть включати контрольну групу та аналіз модераторів, зокрема гендеру.

Ключові слова: методи навчання, навчання баскетболу, учні старших класів, фізичне виховання.

Information about the Authors:

Prabowo, Trisnar Adi: trisnar.prabowo@umbs.ac.id, <https://orcid.org/0000-0001-6977-0503>, Study Program of Physical Education, Universitas Muhammadiyah Brebes, Jl. Pangeran Diponegoro Grengseng No.184, Grengseng, Taraban, Kec. Paguyangan, Kabupaten Brebes, Jawa Tengah 52276, Indonesia

Afifah, Mar'atul: <https://orcid.org/0009-0004-2849-6543>; maratul.afifah@umbs.ac.id; Study Program of Physical Education, Universitas Muhammadiyah Brebes, Jl. Pangeran Diponegoro Grengseng No.184, Grengseng, Taraban, Kec. Paguyangan, Kabupaten Brebes, Jawa Tengah 52276, Indonesia.

Indarto, Asyidika Vito: <https://orcid.org/0009-0005-3210-8379>; asyidika.vito@umbs.ac.id; Study Program of Physical Education, Universitas Muhammadiyah Brebes, Jl. Pangeran Diponegoro Grengseng No.184, Grengseng, Taraban, Kec. Paguyangan, Kabupaten Brebes, Jawa Tengah 52276, Indonesia.

Zakaria, Achmad: <https://orcid.org/0009-0006-6184-1112>; achmadzakaria@umbs.ac.id; Study Program of Physical Education, Universitas Muhammadiyah Brebes, Jl. Pangeran Diponegoro Grengseng No.184, Grengseng, Taraban, Kec. Paguyangan, Kabupaten Brebes, Jawa Tengah 52276, Indonesia.

Pahlavi, Zakwan Yumna Dhuha: <https://orcid.org/0009-0008-2127-754X>, zakwanyumna1@gmail.com, Study Program of Physical Education, Universitas Muhammadiyah Brebes, Jl. Pangeran Diponegoro Grengseng No.184, Grengseng, Taraban, Kec. Paguyangan, Kabupaten Brebes, Jawa Tengah 52276, Indonesia.

Cahyo, Febriansyah Dwi: <https://orcid.org/0009-0006-6845-9602>; riancahyoqwerty@gmail.com; Study Program of Physical Education, Universitas Muhammadiyah Brebes, Jl. Pangeran Diponegoro Grengseng No.184, Grengseng, Taraban, Kec. Paguyangan, Kabupaten Brebes, Jawa Tengah 52276, Indonesia.

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