

The Implementation of a Blooket-Assisted PBL Learning Model on Students' Critical Thinking Skills in Economics at SMA N 2 Ungaran

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Abstract

Critical thinking ability is an essential competency that needs to be developed in economics learning, yet the dominance of conventional teaching methods remains a primary obstacle to its development. This study aimed to analyze the effectiveness of the Problem Based Learning (PBL) model assisted by Game Blooket in enhancing the critical thinking skills of Grade XI students at SMA Negeri 2 Ungaran on the topic of economic growth and development. This study employed a quantitative approach with a quasi-experimental Nonequivalent Control Group Design. The sample consisted of 36 students from Class XI 7 as the experimental group and 36 students from Class XI 8 as the control

group, selected through purposive sampling. Research instruments included multiple-choice questions based on critical thinking competencies (C4, C5, C6). Data were analyzed using the Kolmogorov-Smirnov normality test, Levene's homogeneity test, Independent Sample T-Test, and N-Gain test. Results showed that: (1) the mean N-Gain of the experimental class was 0.717 (High category), higher than the control class at 0.641 (Medium category); (2) there was a significant difference between the learning outcomes of the experimental and control classes, evidenced by a sig. (2-tailed) value of $0.030 < 0.05$ in the posttest Independent Sample T-Test. Therefore, the PBL model assisted by Game Blooket is proven effective in improving students' critical thinking skills in economics learning.

Keywords

Problem-Based Learning; Blooket; Critical Thinking Skills; Economics Education

I. Introduction

1.1 Introduce the Problem

Education is the cornerstone of shaping a nation's human resources. In the context of the current curriculum, critical thinking is one of the most emphasized competencies—that is, the ability to think systematically to analyze problems and formulate evidence-based solutions (Ariadila et al., 2023). However, developing this skill in Economics classes still faces serious challenges, primarily due to the dominance of traditional teaching approaches that are inadequate for encouraging students to think critically and deeply (Richardo et al., 2023).

International data underscores the urgency of this issue. In the 2022 PISA survey results, Indonesia ranked among the bottom 12 out of 81 participating countries (Ramadhan et al., 2023),

which, among other things, reflects the low level of higher-order thinking skills among Indonesian students. Hadi (2021) states that students' tendency to memorize rather than understand concepts is a major factor hindering the development of critical thinking skills.

The lecture method, which still dominates the learning process, causes students to passively receive information without developing the ability to analyze, evaluate, and apply knowledge in real-world contexts (Pratama et al., 2019; Bosica et al., 2021).

This situation is also observed at Ungaran State High School 2. Based on an interview with the 11th-grade Economics teacher, Mr. Ari Susanto, S.Pd., student engagement during the learning process is considered low due to monotonous, teacher-centered instruction. Students tend to solve problems mechanically, relying solely on the examples provided, without developing critical reasoning skills. The average final exam scores for the first semester of the 2025/2026 academic year in classes XI 7 and XI 8 remained below the minimum passing score of 75, indicating low learning outcomes related to critical thinking skills.

A learning model that has proven effective in addressing this issue is Problem-Based Learning (PBL). PBL is an approach that positions students as active participants through the collaborative resolution of real-world problems, thereby inherently fostering the development of critical thinking skills (Tahsinia et al., 2022). To optimize its implementation, learning media that support active student engagement are required. One such relevant tool is Blooket, a gamified learning platform accessible online that has been shown to enhance students' motivation and critical thinking skills (Paudia et al., 2024; Adiningsih, 2024).

Previous studies have demonstrated the effectiveness of PBL in enhancing critical thinking (Effendi et al., 2022; Butar et al., 2022; Nurlaeli, 2022), as well as the effectiveness of the Blooket game as a learning tool (Alfajri & Yamin, 2025). However, studies integrating both in the context of high school

economics courses remain limited. The novelty of this study lies in the synergistic combination of the PBL model and the Blooket game as an interactive gamification medium in the context of high school economics learning—an area that has not yet been extensively explored empirically. The research gap addressed by this study is the lack of quantitative studies that specifically measure the effectiveness of integrating these two approaches on C4–C6-level critical thinking skills in the subject matter of economic growth and development. Thus, this study aims to examine the effectiveness of the PBL model supported by the Blooket game in enhancing the critical thinking skills of 11th-grade students in the Economics course at Ungaran State High School 2. Therefore, this study aims to examine the effectiveness of the PBL model supported by the Blooket game in improving the critical thinking skills of 11th-grade students in the Economics course at Ungaran State High School 2.

The urgency of this research lies in the low level of critical thinking skills among high school students in economics classes, as evidenced by the 2022 PISA results, which placed Indonesia in the bottom 12 out of 81 countries. This situation calls for an innovative learning model capable of fostering active engagement while developing higher-order thinking skills. The integration of PBL with technology-based gamification tools such as Blooket is a relevant and urgent solution that needs to be empirically tested, particularly in high school economics classes.

II. Method

This study employed a quantitative approach using a quasi-experimental design of the Nonequivalent Control Group type (Sugiyono, 2021). This design involved administering pretests and posttests to both the experimental and control classes, with the sample not selected at random.

Research Subjects

The study population consisted of all 11th-grade students at Ungaran State High School 2 for the 2025/2026 academic year who were enrolled in the Economics course, totaling 180 students from five classes (XI 7 through XI 11). The sample was selected using purposive sampling based on considerations of equivalence in academic characteristics and the fact that the students were taught by the same teacher. Class XI 7 (36 students) was designated as the experimental class, receiving instruction using the PBL model supplemented by the Blooket game, while Class XI 8 (36 students) served as the control class, receiving instruction using the PBL model without the Blooket game.

Data Collection Instruments and Techniques

The research instrument consisted of 30 multiple-choice questions designed to measure critical thinking skills at levels C4 (analyzing), C5 (evaluating), and C6 (creating) based on Bloom's revised taxonomy. The questions were validated by experts based on content validity, presentation, and alignment with the syllabus. Additionally, observations of instructional implementation were conducted using a validated observation sheet. All instruments were deemed suitable for use after undergoing a revision process based on feedback from the validators.

Data Analysis Techniques

The data were analyzed in four stages: (1) a normality test using the Kolmogorov-Smirnov test; (2) a homogeneity test using Levene's test; (3) a test for differences in means using an independent samples t-test; and (4) an N-Gain test to measure the extent of improvement in critical thinking skills. All analyses were performed using SPSS Statistics version 26. Decision criteria: if sig. > 0.05, the data are normally distributed and homogeneous; if sig. (2-tailed) < 0.05, there is a significant difference between the two groups.

Table 3.1 Classification of n-gain tests

N-Gain Value	Effectiveness
$g \geq 0,7$	High
$0,3 \leq g < 0,7$	Medium
$0,00 < g < 0,3$	Low

III. Result and Discussion

Research Findings

Descriptive Statistics

Table 4.1 presents the results of the descriptive statistical analysis of the pretest and posttest scores for both classes.

Table 4.1. Descriptive Statistics of Student Learning Outcomes

Class	N	Min	Maks	Rerata
Pretest Kontrol	36	39	66	52,17
Posttest Kontrol	36	71	100	83,69
Pretest Eksperimen	36	43	69	59,08
Posttest Eksperimen	36	71	100	88,11

Source: Processed data, 2026

Based on Table 4.1, the average posttest score for the experimental class (88.11) was higher than that of the control class (83.69). Both classes showed an increase from the pretest to the posttest, but the experimental class showed a greater increase (29.03 points) than the control class (31.52 points). The average pretest scores for both classes did not reach the school's minimum passing score of 75.

Prerequisite Tests

The results of the Kolmogorov-Smirnov normality test indicate that all data are normally distributed, with the following significance values: experimental pretest ($0.062 > 0.05$), experimental posttest ($0.200 > 0.05$), control pretest ($0.059 > 0.05$), and control posttest ($0.200 > 0.05$). The results of the Levene's test for homogeneity showed a significance value of $0.345 > 0.05$, indicating that the data from both classes are homogeneous. With both prerequisite tests met, the analysis proceeded to the hypothesis testing.

Independent Samples T-Test

Table 4.2 and Table 4.3 present the results of the Independent Samples T-Test for the pretest and posttest.

Table 4.2. Pretest T-Test Results

Description	t	df	Sig. (2-tailed)
Equal variances assumed	-3,795	70	0,000

Source: Processed data, 2026

The significance value (2-tailed) for the pretest of $0.000 < 0.05$ indicates that there is a significant difference in initial ability between the experimental and control classes. This difference must be taken into account when interpreting the effectiveness of the treatment.

Table 4.3 Posttest T-Test Results

Description	t	df	Sig. (2-tailed)
Equal variances assumed	-2,216	70	0,030

Source: Processed data, 2026

The significance value (2-tailed) for the posttest of $0.030 < 0.05$ proves that H_0 is rejected and H_1 is accepted. This means that there is a significant difference between the mean posttest scores of the experimental class and the control class. These results are consistent with the study by Putu & Dara (2025), which also found a significant difference in the implementation of the digital media-assisted PBL model.

N-Gain Test

Table 4.4 presents the results of the N-Gain test for both classes.

Table 4.4 N-Gain Test Results

Class	Rerata g	Rerata %	Kategori
Eksperimen	0,717	71,74%	Tinggi
Kontrol	0,641	64,10%	Sedang

Source: Processed data, 2026

The experimental class achieved an average N-Gain of 0.717 (High category), while the control class achieved 0.641 (Moderate category). Based on the interpretation of the N-Gain percentage, the experimental class, with 71.74%, falls into the “fairly effective” category (56–75%), while the control class, with 64.10%, is also in the same category but with a lower value. This difference in N-Gain categories (High vs. Moderate) confirms that the PBL model aided by the Blooket game is more effective in

promoting improvements in critical thinking skills compared to PBL without gamification. The magnitude of the effect of the Blooket-assisted PBL model on students' critical thinking skills can be seen from the difference in the average N-Gain between the experimental class (71.74%) and the control class (64.10%), which is 7.64 percentage points. This indicates that the use of the Blooket game contributes an additional 7.64% to the improvement in students' critical thinking skills compared to PBL without gamification.

Discussion

The findings of this study provide empirical evidence that integrating the Blooket game into the PBL framework significantly enhances the effectiveness of economics instruction in developing students' critical thinking skills. This can be explained through several pedagogical mechanisms.

First, the PBL model provides an authentic learning context by presenting real-world problems related to economic growth and development. Each group of students was asked to identify problems, analyze factors influencing economic growth across regions, and formulate policy solutions. This process directly trains critical thinking skills—from formulating problems, presenting arguments, and engaging in deductive and inductive reasoning, to evaluating and deciding on solutions (Arnyana in Anisa, 2024). This aligns with constructivist theory (Vygotsky, 1978), which asserts that knowledge is actively constructed through social interaction and problem-solving in real-world contexts.

Second, the Blooket game serves as a supportive tool that enhances students' active engagement. Through its warm-up quizzes, rapid-analysis exercises, intergroup challenge mode, and game-based final assessments, students are encouraged to critically process information in a fun, competitive atmosphere (Muhajirin, 2024; Saiful et al., 2024). Gamification has been shown to increase

motivation and concentration during learning, enabling students to internalize concepts more deeply (Adiningsih, 2024). This aligns with the findings of Alfajri & Yamin (2025) and Nuryani & Rafsanjani (2025), which demonstrate the positive impact of the Blooket game on student learning outcomes.

Third, group collaboration in PBL encourages students to exchange perspectives, compare arguments, and reach a logical consensus—which is at the heart of critical thinking development (Hada et al., 2024; Melihayatri et al., 2025). Structured group discussions within the PBL framework foster a more participatory and dynamic learning environment (Arief & Sudin, 2016; Cahyani, 2022).

These findings are consistent with a number of previous studies. Effendi et al. (2022) found a moderate increase in N-Gain in PBL without gamification. Soima et al. (2021) demonstrated that video-assisted PBL can improve critical thinking indicators. Nasral & Meliandika (2022) confirmed the superiority of PBL supported by visual media over conventional methods. This study complements those previous studies by demonstrating that the addition of interactive gamification media, such as the Blooket game, can elevate the effectiveness of PBL to a higher level, particularly in the context of economics education.

IV. Conclusion

Based on the results of the analysis and discussion, it can be concluded that:

- 1) The Problem-Based Learning (PBL) model assisted by the Blooket game proved effective in improving the critical thinking skills of 11th-grade students at Ungaran State High School 2 in the Economics subject, as evidenced by the experimental class's average N-Gain of 0.717 (High category) compared to the control class's 0.641 (Moderate category).

2) There is a significant difference between the learning outcomes of the experimental class and the control class, as evidenced by a sig. value (2-tailed) of $0.030 < 0.05$ in the posttest Independent Sample T-Test; therefore, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted.

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