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THE EFFECTIVENESS OF TIKTOK ASSISTED PROBLEM BASED LEARNING ON CRITICAL THINKING SKILLS AT SMPN 2 BATANGHARI

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ABSTRACT
Students' suboptimal competence in Social Studies is influenced by conventional teaching methods and the lack of digital technology utilization in the classroom. The **purpose** of this study is evaluates the impact of implementing Problem-Based Learning (PBL) integrated with the TikTok platform in improving the cognitive skills of eighth-grade students at SMPN 2 Batanghari. This **research method** employs an quantitative approach through a quasi-experiment applying a pretest-posttest control group design. The research sample consisted of 54 students, comprising 27 students in the experimental class and 27 students in the control class, selected using a cluster random sampling technique. The treatment was administered over two sessions. The PBL model was applied in both classes, but the learning media used differed. The experimental class used TikTok content as learning support media, while the control class used PowerPoint. Data collection methods included observation, interviews, documentation, as well as pre-tests and post-tests. Data analysis was conducted through normality testing, homogeneity testing, paired t-tests, and N-Gain tests. The **results** of the study indicate that the PBL model assisted by TikTok content is effective in improving students' critical thinking skills, with a significance value of 0.000 (< 0.05) and an N-Gain score of 0.7621, which indicates a high classification. This finding **conclude** demonstrates that the integration of digital social media into the PBL model is capable of creating a more contextual, interactive, and student-centered Social Studies learning experience, thereby **contributing** as a learning innovation to enhance critical thinking skills.
Keywords: critical thinking; problem based learning; quasi experiment; social studies learning; tiktok media

ABSTRAK
Kompetensi peserta didik yang belum optimal pada mata pelajaran Ilmu Pengetahuan Sosial dipengaruhi oleh metode pengajaran yang masih konvensional dan minimnya pemanfaatan teknologi digital di kelas. ***Tujuan*** *penelitian ini mengevaluasi dampak penerapan Problem Based Learning (PBL) yang diintegrasikan dengan platform TikTok dalam meningkatkan keterampilan kognitif peserta didik kelas VIII di SMPN 2 Batanghari. Metode penelitian ini menggunakan pendekatan kuantitatif melalui eksperimen semu yang menerapkan desain pretest-posttest kelompok kontrol. Jumlah sampel penelitian adalah 54 siswa, yang terdiri dari 27 siswa pada kelas eksperimen dan 27 siswa pada kelas kontrol yang dipilih melalui teknik cluster random sampling. Perlakuan diberikan selama dua kali pertemuan. Pada kedua kelas diterapkan model PBL, namun media pembelajaran yang digunakan berbeda. Kelas eksperimen menggunakan media konten TikTok sebagai pendukung pembelajaran, sedangkan kelas kontrol menggunakan media PowerPoint. Metode pengumpulan data mencakup observasi, wawancara, dokumentasi, serta tes awal dan akhir. Analisis data dilaksanakan melalui pengujian normalitas, homogenitas, t-test berpasangan, dan tes N-Gain.* ***Hasil studi*** *menunjukkan bahwa model PBL berbantu media konten TikTok efektif meningkatkan kemampuan berpikir kritis siswa dengan nilai signifikansi 0,000 (< 0,05) dan nilai N-Gain 0,7621 menunjukkan klasifikasi tinggi.* ***Kesimpulan*** *temuan ini menunjukkan bahwa integrasi media sosial digital dalam model PBL mampu menciptakan pembelajaran IPS yang lebih kontekstual, interaktif, dan berpusat*

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*pada siswa sehingga **berkontribusi** sebagai inovasi pembelajaran untuk meningkatkan kemampuan critical thinking.*
***Kata kunci**:* critical thinking; *media tiktok; pembelajaran IPS, problem based learning; quasi eksperiment*

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Introduction

Navigating the complexities of the 21st-century educational landscape demands that learners master Higher Order Thinking Skills (HOTS), with a particular emphasis on critical analysis, as a provision to face various increasingly complex social problems (Halimah et al., 2024; Mashudi, 2021; Ramadhani et al., 2025). Within social studies curricula, analytical proficiency stands out as a crucial skill. Learners are expected to go beyond mere memorization by actively examining societal issues, weighing data objectively, and crafting viable answers to real-world complexities. (Adam et al., 2024; Ulfa & Munastiwi, 2021). Such proficiencies manifest through specific metrics ranging from interpreting data to formulating conclusions which correspond directly to the advanced cognitive tiers (C4 to C6) outlined in the updated Bloom's Taxonomy framework (Anjani & Isnawati, 2026; Sabir et al., 2021). However, various studies show the proficiency of Indonesian students is comparatively inadequate (Nurdiyati et al., 2025). The results of international assessments and national research show that students still have difficulty analyzing information, evaluating arguments, and solving contextual problems (Alfaruqi, 2025; Nababan & Manurung, 2025). This prevalent issue stems from heavily instructor-led pedagogy, overreliance on basic-level assessments, and inadequate integration of interactive technological tools designed to foster student engagement (Firdaus, 2025); Lestari et al., 2025).

Numerous academic investigations have highlighted the efficacy of PBL, or problem-based learning approach within fostering analytical capabilities. Research (Afifa et al., 2024; Putri & Fitri, 2022; Ristiani, 2024; Siswanto et al., 2025; Tama et al., 2026) shows that problem-based learning able to improve students' analysis, evaluation, and problem-solving skills. Theoretically, every syntax problem-based learning contribute to the development of HOTS. (Fatonah et al., 2026). The problem orientation stage trains analytical skills (C4), the investigation stage encourages information evaluation (C5), while the presentation and solution reflection stage develops creative skills (C6). Consequently, the fundamental traits of PBL align seamlessly with the overarching goals of social studies, which prioritize a deep, analytical grasp of civic and societal matters. (Astikawati & Warpala, 2020; Maryati & Kurino, 2025).

Beyond the pedagogical framework itself, the integration of digital tools significantly elevates the overall educational experience (Trilaksana & Safitri, 2025). One of the media that is close to the lives of students today is TikTok.

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Research (Widarti et al., 2022; Wiguna et al., 2023; Yulianti, Alif Aditya Candra, 2025) shows that TikTok can improve student learning engagement and abilities. For this investigation, the TikTok platform served as a repository for bite-sized educational clips featuring dynamic infographics, real-life case scenarios, and pertinent societal dilemmas tailored to the social studies syllabus. The content serves as an initial stimulus (Problem Trigger), a source of information, as well as a medium of reflection that helps students observe, analyze, and evaluate various social problems studied.

Despite its popularity, existing literature reveals a gap; prior research primarily explores TikTok's utility in subjects like Biology or languages, often isolating variables such as general motivation rather than specific HOTS in social studies. In addition, research that integrates problem-based learning and TikTok generally does not specifically explain the contribution of TikTok media to enhancing critical thinking abilities grounded in HOTS indicator in social studies learning at the middle school tier. Prior investigations also tends to compare problem-based learning with conventional learning so that it has not been able to isolate the influence of the media used in the implementation of learning via problems.

Based on the gap, this research has novelty in three aspects. First, research was carried out on social studies subjects at the junior high school level, which include still rarely researched in the context of integrating problem-based learning and TikTok. Second, ability is measured specifically using HOTS metrics encompassing the capacity to analyse (C4), assess (C5), and generate (C6). Third, the study contrasted using various media to apply the same problem-based learning methodology, namely TikTok and PowerPoint, so that it can be seen more clearly the contribution of TikTok media in supporting the efficacy using problem-based learning in developing pupils' capacity for critical thought.

Derived from the findings of the interviews and observations made at SMP Negeri 2 Batanghari, it is known that pupils' critical thinking abilities are still lacking. The learning evaluation instrument is still dominated by questions in the Higher Order Thinking Skills (HOTS) category, whereas the questions in the Lower Order Thinking Skills (LOTS) category are still very limited. In addition, students still have difficulties in connecting learning concepts with real problems, are less active in asking questions, and are not able to provide critical arguments during the learning process. The outcomes of the analysis are shown in Table 1.

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Table 1. Empirical data on end-of-semester questions for Junior High School students 2 Batanghari

Bloom's Taxonomic Levels	Categories	Number of Questions	Percentage (%)
C1	Remembering	14	31,11%
C2	Understanding	21	46,47%
C3	Apply	2	4,44%
C4	Analyze	8	17,78 %
C5	Evaluate	0	0
C6	Create	0	0
Quantity		**45**	**100%**

Source: Data on Final Semester Questions for Grade VIII SMP Negeri 2 Batanghari.

An analysis of the final semester examination items at SMP Negeri 2 Batanghari (as detailed in Table 1) reveals a heavy concentration of lower-tier cognitive questions (C1-C3). Conversely, higher-order items are restricted solely to the C4 tier, completely lacking representation in the C5 and C6 domains. This condition shows that the assessment instruments used have not fully supported the development of students' high-level thinking skills. (Lestari et al., 2025) stated that the dominance of questions with LOTS characteristics contributes to the low ability of students' analysis, evaluation, and creation.

Addressing these deficiencies requires an instructional approach that successfully fuses robust teaching methodologies with media specifically designed to nurture advanced cognitive abilities. From a theoretical standpoint, short-form videos portraying real-world societal events act as the initial cognitive trigger within the PBL framework. Following this, the PBL structure guides learners to pinpoint issues, gather relevant data, scrutinize the findings, assess potential remedies, and deduce logical outcomes, thereby facilitating a structured enhancement of analytical skills. Consequently, the integration of problem-based education supported by TikTok content is estimated to be able to create social studies learning that is more contextual, interactive, and student-centered to enhance analytical reasoning abilities. Based on this description, this research seeks to evaluate the efficacy of Problem-Based Education approach supplemented via TikTok material regarding critical thinking abilities of eighth- pupils in grades in social studies at SMP Negeri 2 Batanghari.

Research Methods

Research Design

This study uses a quasi-experimental design with a pretest-posttest control group and a quantitative methodology. The purpose of the study was to assess how well students' critical thinking skills in social studies were affected by the problem-based learning approach enhanced with TikTok content medium. Table 2 shows the research approach used.

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Table 2. Pretest-posttest control group design

Groups	Pretest (O)	Treatment (X)	Posttest (O)
Experiments	O1	X1	O2
Controls	O3	X2	O4

Sources: (Scott, 2021)

Which means:

O_1 and O_3 = *Pretest* in the experimental and control groups
X1 = treatment (*Treatment*) *problem-based learning* Help Tiktok content
X2 = treat (*Problem-Based Learning* Help *PowerPoint*
O_2 and O_4 = *Posttest* in each group

As outlined in the design matrix (Table 2), the investigation divided participants into an experimental cohort and a control cohort, both of which underwent initial baseline testing. Following this, the experimental cohort engaged with the PBL framework enhanced by TikTok video content, whereas the control cohort participated in PBL sessions utilizing standard PowerPoint slides for visual instruction. Upon concluding the instructional phase, a final assessment was administered to both segments to measure post-intervention analytical proficiencies.

Population and Sample

The research was carried out at SMP Negeri 2 Batanghari in the even semester of the 2025/2026 school year. The study involved 54 eighth-grade learners spread across two distinct sections (VIII.1 and VIII.2). Participants were selected utilizing a cluster random sampling approach to maintain the integrity of preexisting class groups. Since the population consists of only two classes, the randomization process is carried out by drawing to determine The control group and the experimental group. The outcomes of the draw showed that class VIII.1 was designated as an experimental class and class VIII.2 as a control class, each consisting of 27 pupils.

Research Stages

Both participant groups followed the identical PBL instructional sequence and covered the exact same curriculum content. The sole differentiating variable between the two was the type of digital medium integrated into the lessons. In the experimental class, using the problem-based learning paradigm is backed by TikTok content media which contains the presentation of contextual problems, materials, and learning stimuli in the form of interactive short videos. Meanwhile, within the control group, the application *of the problem-based learning* model was supported by PowerPoint (PPT) media which was used to convey learning materials and problems conventionally. Thus, the difference in learning outcomes obtained can be attributed to The efficiency of using TikTok content media in

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contrast to *PowerPoint media* in supporting the application of the idea of problem-based learning.

Variable Operational Definition

The independent variable investigated was the TikTok-integrated PBL framework, measured against the dependent variable of students' analytical capacities.

Research Instruments

The tools employed for the investigation consisted of observation sheets, interview guidelines, documentation, and multiple-choice pretest and posttest tests. Observation sheets are used to obtain information about the conditions of the educational procedure within the classroom, teacher and student activities while acquiring knowledge. Interview guidelines are used to obtain initial data pertaining to social studies learning problems, students' abilities. Meanwhile, documentation is used to acquire research supporting data in the form of school profiles, number of students, student name lists, learning tools, photos of research activities, and other documents relevant to the research. Tes the information is presented as a pretest and posttest. This is constructed according to the HOTS indicator in Anderson and Krathwohl's updated Bloom Taxonomy, specifically focusing on analysing (C4), assessing (C5), and creating (C6).

Before use, the test instrument is tested for validity, reliability, difficulty, and differentiating authority to guarantee the feasibility of the instrument in measuring pupils' capacity for critical thought.The test of validity was performed employing the Pearson Product Moment correlation with the help of SPSS 26. The question item is deemed legitimate if the r-value computed exceeds or is equivalent to the r-table at a 5% significance level or a significance value (Sig.) < 0.05. The dependability assessment was conducted via Cronbach's Alpha Coefficient. The difficulty level test was carried out using the difficulty index (P). The differentiating power test is carried out to determine the ability of the questions in distinguishing students who have high and low abilities.

Data Collection Techniques

Empirical data was gathered through a combination of field observations, structural interviews, document analysis, and academic assessments. Observations were made to obtain information about social studies learning conditions, teacher and student activities, and the utilisation of the Problem Based Learning (PBL) framework facilitated by TikTok content during the process of learning. Interviews were carried out with social studies teachers to obtain preliminary details about students' critical thinking skills and problems faced in learning. Documentation is used to obtain research supporting data in the form of school profiles, student data, learning tools, and documentation of research activities.

EDUNOMIA
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Data Analysis Techniques

Before conducting hypothesis testing, the parametric assumptions were validated through Levene's test for homogeneity of variance and the Shapiro-Wilk test for normality. The research data underwent analysis by statistical techniques that are both descriptive and inferential. Before testing hypotheses, the data underwent an assessment for normality via the Shapiro-Wilk test and for homogeneity through Levene's Test. The data is considered to satisfy parametric assumptions if the significance level exceeds 0.05.

A paired sample t-test was employed to evaluate the enhancement of skills within each group by contrasting pretest and posttest scores. The efficacy of learning was evaluated by the N-Gain exam to assess the enhancement of students' skills following the intervention.

Results and Discussion

1. Validity Test

Instrument accuracy was evaluated using Pearson correlation. Before being administered to the actual research sample, the 30-item test instrument was trialed on 21 external students. The analysis revealed that 24 items achieved an the r-count above the essential r-table threshold (0.433), qualifying them for the final assessment, while 6 items were discarded. Before its utilisation in the investigation sample, the test instrument was first tested on 21 students outside the research sample with a total of 30 questions. The results of the test validity test instrument can be seen in Table 3.

Table 3. Results of instrument test validity

No Question	Pearson Corelation (R-Count)	Sig Value	R-Table	Conclusion
1.	0.062	0.791	0.433	Invalid
2.	0.466	0.033	0.433	Valid
3.	0.462	0.035	0.433	Valid
4.	0.593	0.005	0.433	Valid
5.	0.469	0.032	0.433	Valid
6.	0.704	0.000	0.433	Valid
7.	0.462	0.035	0.433	Valid
8.	0.577	0.006	0.433	Valid
9.	0.593	0.005	0.433	Valid
10.	0.463	0.035	0.433	Valid
11.	0.585	0.005	0.433	Valid
12.	0.577	0.006	0.433	Valid
13.	0.755	0.000	0.433	Valid
14.	0.543	0.011	0.433	Valid
15.	0.434	0.049	0.433	Valid
16.	0.107	0.644	0.433	Invalid

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No Question	Pearson Corelation (R-Count)	Sig Value	R-Table	Conclusion
17.	-0.022	0.926	0.433	Invalid
18.	0.616	0.003	0.433	Valid
19.	0.441	0.045	0.433	Valid
20.	0.758	0.000	0.433	Valid
21.	0.551	0.010	0.433	Valid
22.	0.092	0.692	0.433	Invalid
23.	0.508	0.019	0.433	Valid
24.	0.508	0.019	0.433	Valid
25.	0.530	0.014	0.433	Valid
26.	-0.203	0.377	0.433	Invalid
27.	0.641	0.002	0.433	Valid
28.	0.138	0.551	0.433	Invalid
29.	0.530	0.014	0.433	Valid
30.	0.541	0.011	0.433	Valid

Source: Data processing results using *SPSS 26 for Windows*

Based on Table 3. it is known that 24 of the 30 queries that were tested were deemed legitimate and 6 questions that were declared invalid. Valid question items with an r-count value higher than or equal to the r-table (0.433), while invalid question The r-count value of the objects is smaller than the r-table. Therefore, only 24 valid questions were used as research instruments, while 6 invalid questions were not used in data collection.

The results show that most of the question tools have effectively evaluated pupils' skills. according to the indicators that have been set. The high number of valid questions indicates that the instrument prepared has a good relationship with the constructed being measured, so that the data obtained from the instrument can describe the student's abilities more accurately.

The identification of invalid items indicates a failure to properly capture the targeted cognitive metrics, likely stemming from ambiguous phrasing, misaligned complexity, or a disconnect with the syllabus. Consequently, these flawed items were excised to preserve the integrity of the final data.

Overall, the outcomes of the validity assessment indicated that the research instrument had good quality because as many as 80% of the question items (24 out of 30 questions) had met the validity criteria. Thus, test instruments are feasible to be used to measure students' abilities and can produce data that is in alignment with the research aims.

2. Reliability Test

Instrument consistency was confirmed via a Cronbach's Alpha coefficient of 0.862. This high-tier metric guarantees that the assessment tool yields stable and

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reproducible measurements across multiple testing scenarios. Thus, the instrument used has met the reliability criteria as a test measuring tool.

3. Difficulty Benchmark

Item difficulty index analysis was conducted to ensure an optimal balance of assessment complexity. The findings indicated that 4 items (13.3%) were categorized as easy, 25 items (83.3%) as medium, and 1 item (3.4%) as difficult, demonstrating a proportionate distribution suitable for evaluating student competencies. The results of the difficulty level test can be seen in Table 4.

Table 4. Test question difficulty level results

Categories	Number of Questions	Question Number	Percentage
Easy (P > 0.70)	4	1,14,19,20	13,3%
Medium (0.30 ≤ P ≤ 0.70)	25	2,3,4,6,7,8,9,10,11,12, 13,15,16,17,18,21,22, 23,24,25,26,27,28,29,30	83,3%
Difficult (P < 0.30)	1	5	3,4%
Quantity	30		100%

Source: Data processing results using *SPSS 26 for Windows*

Based on Table 4. of the difficulty level test results, it is known that of the 30 questions tested, there were 4 questions (13.3%) that were included in the easy category, 25 questions (83.3%) that were in the medium category, and the difficult category consisted of only 1 question (3.4%). These results show that most of the question items are in the medium category. This condition indicates that the instrument used has a good level of difficulty because it is not too easy or too difficult for students.

From a psychometric perspective, items classified as 'medium' difficulty are considered optimal for academic investigations, as they provide the most reliable differentiation of learner competencies. With the dominance of medium category questions of 83.3%, the test instrument can be declared to have a proportionate level of difficulty and is suitable to be used to measure students' abilities in this study. In addition, the existence of several easy category questions and one difficult category question also provides a variation in the level of difficulty so that the instrument becomes more comprehensive in measuring students' abilities.

4. Differentiating Power Test

Item discrimination analysis was applied to verify if the questions could adequately separate high-performing from low-performing learners. Results confirmed that 19 questions (63.3%) possessed good to excellent discriminating power, 8 questions (26.7%) were sufficient, and 3 items (10%) were deemed poor

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and subsequently excluded. The results of the question differentiating power test can be seen in Table 5.

Table 5. Differentiating power test results

Categories	Number of Questions	Question Number	Percentage
Ugly (D < 0.20)	3	2,23,27	10%
Fair (0.21 ≤ D ≤ 0.40)	8	1,4,9,10,17,22,24,25	26,7%
Good (0.41 ≤ D ≤ 0.70)	18	3,5,6,7,8,11,12,13, 14,15,16,18,20,21, 26,28,29,30	60%
Very Good (D > 0.70)	1	19	3,3%
Quantity	30		100%

Source: Data processing results using *SPSS 26 for Windows*

Table 5. illustrates the item discrimination outcomes, revealing that out of 30 initial questions, 3 (10%) fell into the poor bracket, 8 (26.7%) achieved a sufficient rating, 18 (60%) secured a good classification, and a single item (3.3%) demonstrated excellent discriminatory power. The findings of the examination indicated that the majority of the question items were in the good and very good category with a total of 19 questions or 63.3%. This indicates that the majority of questions are able to distinguish between students who have high ability and low ability effectively. In addition, there were 8 questions (26.7%) that had enough differentiating power so that they were still suitable for use in research. Meanwhile, there were 3 questions (10%) that were included in the bad category because they were not able to distinguish students' abilities, so questions number 2, 23, and 27 were not used in the research instrument.

Thus, of the 30 questions examined, as many as 27 questions that have sufficient, good, and very good criteria are declared suitable for use as research instruments. The dominance of questions in the good category shows that the instruments used have good quality in measuring students' abilities and producing more accurate data in accordance with the research objectives.

5. Normality Test

Given the sample size of 27 per group, the Shapiro-Wilk algorithm was utilized for distribution testing. The analysis yielded significance values of 0.600 (pretest) and 0.104 (posttest) for the experimental class, alongside 0.194 (pretest) and 0.135 (posttest) for the control class. All values exceeded the 0.05 threshold, confirming normal data distribution across both groups. Normality test show the Table 6.

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Table 6. Normality test results

Data	N	S-W Statistics	Sig.	Remarks
Pretest Experiment	27	0,970	0,600	Normal
Post-test Experiment	27	0,937	0,104	Normal
Pretest Control	27	0,948	0,194	Normal
Posttest Control	27	0,942	0,135	Normal

Source: Data processing results using *SPSS 26 for Windows*

Table 6. shows the outcomes of the normalcy test utilising the Shapiro-Wilk method show that the significance value of the experimental class pretest is 0.600 and the experimental class posttest is 0.104. Meanwhile, the significance value of the control class pretest was 0.194 and the control class posttest was 0.135. All of these significance values are greater than 0.05, so it can be concluded that the pretest and posttest information in both classes are typically dispersed.

These results show that the distribution of data in both the experimental class and the control class did not experience significant deviations from the normal distribution. In other words, the data obtained from the results of measuring students' critical thinking skills has a good distribution pattern and represents the condition of the research sample proportionally.

The meaning of the outcomes of this normalcy test is If the research findings have satisfied one of the basic Presumptions in parametric statistical evaluation. The fulfillment of the assumption of normality shows that the measurement results obtained can be analyzed using parametric statistical tests, such as t-tests, so that the outcomes of the conducted hypothesis testing become more valid and reliable. Thus, the results of the normality test provide evidence that the experimental and control groups' pretest and posttest results classes have met the analysis requirements, so that the research can be continued at the homogeneity test and hypothesis test stages to ascertain the efficiency of the problem-based learning approach with the help of TikTok content media on students' abilities.

6. Homogeneity Test

Levene's Test was administered to ensure equal data variance across both cohorts, fulfilling a fundamental prerequisite for subsequent parametric evaluations. Table 7 displays the findings of the homogeneity test using Levene's Test.

Table 7. Homogeneity test results

Data	Leveneg Statistic	Sig.	Remarks
Pretest -Posttest	2,625	0,054	Homogeneous

Source: Data processing results using SPSS 26 for Windows

Table 7. homogeneity test findings using Levene's Test revealed a significance value of 0.054. The pretest and posttest data in the experimental class

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and the control class exhibit homogeneous variance since the value is greater than 0.05.

These statistical outputs confirm that the distribution spread across both participant cohorts is highly comparable. This equivalency in variance is crucial, as it validates that any subsequent disparities in learning outcomes are directly attributable to the specific educational interventions rather than pre-existing cohort inequalities.

The meaning of the results of this homogeneity test is that the experimental class and the control class have relatively equal initial conditions in terms of variation in students' abilities. Therefore, the research data has fulfilled one of the basic assumptions of parametric analysis so that hypothesis testing using the t-test can be carried out. With the fulfillment of the homogeneity assumption, the results of the analysis were carried out to find out the effectiveness of the problem-based learning model assisted by TikTok content media on students' critical thinking skills became more valid and trustworthy.

7. Hypothesis Test (T Test)

a) Uji Paired Sample T-Test

To verify the intervention's impact within the experimental group, scores before and after treatment were contrasted via a paired sample t-test. The statistical output produced a t-count of 36.972 and a significance value (Sig. 2-tailed) of 0.000 ($p < 0.05$), leading to the rejection of the null hypothesis and confirming a substantial improvement following the treatment. The test results can be seen in Table 8.

Table 8. Paired sample t-test

Data	Mean Difference	t-count	df	Sig. (2-tailed)	Remarks
Pretest-Posttest Experiment	-29,667	-36,972	26	0,000	H0 rejected, H_a accepted

Source: Data processing results using SPSS 26 for Windows

Based on Table 8. statistical evaluation yielded a two-tailed significance of 0.000 ($p < 0.05$) and a t-value of 36.972, which surpasses the critical t-table threshold of 2.055 at 26 degrees of freedom. Consequently, the alternative hypothesis was accepted, confirming a prominent divergence between the initial and final assessments within the experimental group. This verifies that the TikTok-enhanced instructional strategy tangibly boosted learners' cognitive proficiencies. The differences that occur are not just due to data variations or coincidental factors, but show the real influence of the learning model applied.

Fusing the PBL framework with short-form video media yields a highly engaging and context-rich educational atmosphere, which inherently drives learners to actively participate in the problem-solving journey. This condition

EDUNOMIA
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helps students cultivate analytical abilities by engaging in critical thinking exercises information, evaluating problems, and formulating solutions based on the material learned. Thus, the results of the paired sample t-test provide evidence that the Problem Based Learning learning model assisted by TikTok content the use of media can enhance pupils' abilities in social studies subjects in grade VIII of SMP Negeri 2 Batanghari. This proof is the basis that the critical thinking ability that occurs in the experimental class is the impact of the treatment given during the research.

b) N-Gain Test

To quantify the magnitude of cognitive advancement post-intervention, an N-Gain analysis was executed. This metric evaluates instructional efficacy by calculating the precise score progression between the initial and final testing phases. Table 9 below displays the N-Gain test results.

Table 9. N-Gain Test

Data	N	Average N-Gain	N-Gain (%)	Categories
Critical Thinking Skills	27	0,7621	76,21	Height

Source: Data processing results using *SPSS 26 for Windows*

Based on Table 9. analysis of the N-Gain scores revealed an average of 0.7621 (76.21%), placing the cognitive advancement firmly within the high category. This substantial progression underscores the efficacy of integrating the PBL model with TikTok-based instructional media. The meaning of the results of the N-Gain test is that the learning model applied not only produces a difference in grades between *the pretest* and *posttest*, but is also able to provide a substantial improvement in students' abilities. The high category indicates that most students experience optimal development of critical thinking skills after receiving the learning treatment.

This substantial metric highlights how TikTok-enhanced PBL facilitates deeper comprehension of social studies by anchoring academic concepts to relatable, everyday scenarios. The interactive nature of the video platform stimulates learner engagement, compelling them to rigorously analyze data, articulate viewpoints, and design practical solutions.

Thus, the results of the N-Gain test provide evidence that the Problem Based Learning model assisted by TikTok content Students' critical thinking abilities can be enhanced by media in social studies subjects grade VIII SMP Negeri 2 Batanghari. The high N-Gain score indicates that the treatment provided successfully achieves learning objectives and has a positive impact on the development of students' critical thinking skills. These results reinforce the findings of the *paired sample t-test* which showed a significant difference between pretest and posttest scores. Thus, the improvement of students' critical thinking skills is not only statistically significant, but also has a high level of effectiveness based on the results of the N-Gain test.

EDUNOMIA
Jurnal Ilmiah Pendidikan Ekonomi
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The results of the study show that the Problem Based Learning (PBL) learning model assisted by TikTok content media is effective in improving students' critical thinking skills in social studies subjects grade VIII SMP Negeri 2 Batanghari. This effectiveness was shown by the results of the paired sample t-test which obtained a significance value of 0.000 < 0.05 and an N-Gain value of 0.7621 which was classified as high. These findings show that learning that integrates the problem-based learning model with digital media that is close to students' lives is able to create a more meaningful learning experience and encourage the development of high-level thinking skills.

The observed cognitive enhancements are not exclusively attributable to either the instructional framework or the digital platform in isolation; rather, they emerge from the dynamic interplay and symbiotic integration of both elements. In this study, TikTok content was used as an initial stimulus that presented social phenomena and contextual problems that are close to students' lives. These problems are then processed through a problem-based learning syntax that requires students to identify problems, gather information, analyze the causes, evaluate various alternative solutions, and draw conclusions. This series of activities directly trains skills at the HOTS level, namely analyzing (C4), evaluating (C5), and creating (C6). In other words, TikTok functions as a cognitive trigger, while problem-based learning is a learning framework that directs students to carry out the critical thinking process systematically.

A pivotal takeaway from this research is that educational technologies transcend mere information delivery; they actively shape the depth of cognitive processing. Learners exposed to dynamic, visual, and highly contextual short clips demonstrate a more profound grasp of civic issues compared to those relying exclusively on traditional text-based or verbal instruction. This condition increases student involvement in discussions, encourages the emergence of more critical arguments, and helps students connect social studies concepts with the reality of daily life. These findings show that the effectiveness of 21st century learning is not only determined by the learning model used, but also by the suitability of learning media with the characteristics of digital generation students.

There are several factors that are suspected to be the cause of the high increase in students' abilities. First, the characteristics of TikTok videos that are short, visual, and attractive can increase students' attention and motivation to learn. Second, the content presented is based on actual social phenomena so that it makes it easier for students to analyze the problems they learn. Third, problem-based learning syntax provides opportunities for students to actively discuss, express opinions, defend arguments, and evaluate various solutions that arise. Fourth, student-centered learning allows for independent knowledge construction so that the understanding gained becomes more deep. The combination of these factors leads to a more optimal improvement of abilities compared to learning that is only oriented to the delivery of material.

These outcomes strongly corroborate constructivist paradigms, reinforcing the notion that comprehension is actively forged via immersive educational

EDUNOMIA
Jurnal Ilmiah Pendidikan Ekonomi
Vol. 7, No. 1, 2026. 74-92
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encounters and collaborative engagement. In the implementation of TikTok-assisted problem-based learning, Learners do not merely absorb information passively, but build understanding through the process of video observation, problem identification, information search, group discussions, and solution formulation. This process allows students to construct knowledge based on meaningful learning experiences so that their abilities develop more optimally.

The results of this research align with the results of the research (Nababan & Manurung, 2025; Putri & Fitri, 2022; Siregar et al., 2026) This demonstrates that the model Problem Based Learning Effectively improve the ability Critical Thinking students. In addition, the results of this study support the research (Widarti et al., 2022; Wiguna et al., 2023) that found that social media integration with the problem-based learning able to improve students' skills and learning outcomes. The study also reinforces the findings (Yulianti, Alif Aditya Candra, 2025) which states that TikTok-based learning media can increase student engagement and encourage high-level thinking activities. Consequently, The results of this study emphasize that the application of social media that is designed pedagogically can have a positive impact on the learning process.

However, this study has novelty compared to previous research. Most previous research has focused on the effectiveness of problem-based learning on the ability or use of TikTok on motivation and general learning outcomes. This study not only combines problem-based learning and TikTok, but also tests the effectiveness of integrating the two, specifically in social studies subjects at the junior high school level with HOTS-based ability indicators. In addition, this study shows that TikTok can function as a problem trigger medium in the problem-based learning syntax so that it can strengthen the process of analysis, evaluation, and solution preparation by students. The findings provide a new empirical contribution to the role of social media as an integral part of problem-based learning.

The strengths of this study are multifold. Primarily, deploying media tailored to digital natives ensures the curriculum remains engaging and highly pertinent. Furthermore, pairing the PBL methodology with TikTok guarantees robust student participation, elevating both general academic performance and specialized analytical competencies. Lastly, utilizing strict HOTS criteria for assessment delivers an accurate reflection of cognitive growth. Nonetheless, certain constraints within the study design must be acknowledged. The research was only conducted in one school so the generalization of the results is still limited. In addition, the duration of treatment is relatively short and the use of TikTok content is still limited to certain materials in social studies learning.

The implications of this study show that teachers need to consider the use of digital media that is close to students' lives to support the implementation of innovative learning models. The integration of TikTok-assisted Problem-oriented education can serve as a viable alternate method of learning strategy in improving *critical thinking* skills, learning engagement, and 21st century skills. Theoretically, this research strengthens the theory of constructivism and problem-based

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learning. Practically, this study provides evidence that social media not only functions as a means of entertainment, but can also be used as a learning medium that is able to develop students' high-level thinking skills.

CONCLUSIONS AND SUGGESTIONS

Empirical findings confirm that integrating the TikTok platform into the PBL framework significantly elevates eighth-graders' analytical capabilities in social studies. This positive outcome is supported by a paired sample t-test significance of 0.000 ($p < 0.05$) and a high-category N-Gain score of 0.7621. Such integration facilitates a highly contextual, interactive, and learner-centric environment, ultimately sharpening students' capacities to evaluate and resolve societal issues while contributing valuable empirical evidence to digital pedagogy.

Educators are strongly encouraged to curate and produce short-form video content aligned with the curriculum to serve as cognitive triggers during classroom activities. Furthermore, institutions should facilitate comprehensive digital literacy training to equip teachers with the necessary skills for responsible social media integration. Cultivating students' digital literacy is equally crucial to ensure productive online engagement. Future investigations might explore this model's viability across diverse educational levels and disciplines to broaden these empirical insights.

EDUNOMIA
Jurnal Ilmiah Pendidikan Ekonomi
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