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DESIGNING STUDENT-CENTERED ECONOMICS INSTRUCTION: A FLIPPED PROBLEM-BASED LEARNING APPROACH TO ENHANCING CRITICAL THINKING AND SELF-REGULATED LEARNING

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Abstrak
Penelitian ini bertujuan untuk menganalisis pengaruh model Flipped Classroom yang terintegrasi dengan Problem Based Learning terhadap kemandirian dan kemampuan berpikir kritis siswa sekolah menengah atas pada mata pelajaran Ekonomi. Penelitian ini menggunakan pendekatan kuantitatif dengan desain kuasi eksperimen non-equivalent control group. Sampel penelitian terdiri atas siswa kelas sepuluh yang dibagi menjadi kelas eksperimen dan kelas kontrol. Instrumen penelitian meliputi angket kemandirian belajar dan tes esai untuk mengukur kemampuan berpikir kritis. Analisis data dilakukan menggunakan uji perbedaan rata-rata setelah memenuhi uji prasyarat normalitas dan homogenitas. Hasil penelitian menunjukkan bahwa terdapat perbedaan yang signifikan antara kelas eksperimen dan kelas kontrol baik pada variabel kemandirian maupun kemampuan berpikir kritis. Kelas eksperimen menunjukkan hasil yang lebih baik dibandingkan dengan kelas kontrol. Temuan ini mengindikasikan bahwa penerapan model Flipped Classroom yang terintegrasi dengan Problem Based Learning lebih efektif dibandingkan dengan pembelajaran konvensional. Simpulan penelitian menegaskan bahwa integrasi pembelajaran mandiri dan pemecahan masalah kontekstual mampu memperkuat regulasi diri serta meningkatkan kemampuan berpikir kritis siswa. Implikasinya, model ini dapat menjadi alternatif strategis dalam pengembangan pembelajaran ekonomi berbasis student-centered learning serta mendukung penguatan kompetensi abad ke-21.

Kata Kunci: Flipped Classroom; Pembelajaran Berbasis Masalah; Kemandirian, Berpikir Kritis

Abstract
This study aims to analyze the effect of the Flipped Classroom model integrated with Problem-Based Learning on the independence and critical thinking skills of high school students in the Economics subject. This study employs a quantitative approach using a quasi-experimental design with a non-equivalent control group. The research sample consisted of tenth-grade students divided into an experimental class and a control class. The research instruments included a learning independence questionnaire and an essay test to measure critical thinking skills. Data analysis was conducted using a mean difference test after meeting the prerequisites of normality and homogeneity. The results indicate a significant difference between the experimental and control groups in both learning autonomy and critical thinking skills. The experimental group demonstrated better results compared to the control group. These findings suggest that the implementation of the Flipped Classroom model integrated with Problem-Based Learning is more effective than conventional instruction. The study's conclusion affirms that the integration of self-directed learning and contextual problem-solving can strengthen self-regulation and enhance students' critical thinking skills. Consequently, this model can serve as a strategic alternative in the development of student-centered economics education and support the strengthening of 21st-century competencies.

Keyword*: Flipped Classroom; Problem Based Learning; Independence; Critical Thinking*

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INTRODUCTION

Life in the 21st century demands various skills that individuals must master, so that the education system aims to develop students' potential to think, act, and behave in accordance with the demands of life (Asri et al., 2023). The skills needed remain aligned with the four pillars of life, namely learning to know, learning to do, learning to be, and learning to live together. (Jayadi et al. 2020) . Economic instruction in schools plays a crucial role in preparing students for 21st-century skills (Aisyah & Srigustini, 2022). Most students consider economics a challenging subject due to the sheer number of concepts and terms required to understand. Economics instruction should emphasize not only memorization but also a deeper understanding of these concepts (Singh, 2020).

Responding to the challenges of 21st-century skills, the Independent Curriculum emphasizes the importance of student-centered learning and encourages the development of holistic potential. This curriculum reinforces the application of in-depth learning methods grounded in awareness, meaning, and enjoyment. Minister of Education and Culture Regulation Number 13 of 2025 explains that in-depth learning methods require students to actively engage in constructing understanding independently, connecting knowledge with real-life experiences, and analyzing information critically. Therefore, the Independent Curriculum prioritizes independent learning and critical thinking as key skills to be developed throughout the teaching and learning process (Ministry of Education and Culture 2025). This approach is in line with the need for economic learning that does not merely rely on memorization but demands a deep understanding of economic concepts to support critical thinking skills in the 21st century.

Based on this learning principle, students are expected to be more active in seeking and discovering knowledge independently. Learning materials come not only from teacher explanations but also from a variety of appropriate media and sources. Students are also expected to analyze information from multiple perspectives and seek alternative solutions to problems they face. In this regard, teachers function as supporters, assisting and guiding the learning process so that it runs smoothly and meaningfully.

Economics is an important subject to help students develop critical thinking skills and independence in learning (Joshi, Marthen, and Megasari 2025). The goal of learning Economics is to provide students with an understanding of how humans behave in meeting their needs through activities such as production, distribution, and consumption, as well as how to make wise economic decisions despite limited resources (Djahara et al. 2026) Therefore, teaching Economics emphasizes not only mastery of theory but also the skills to analyze economic problems contextually and reflectively. The development of information and communication technology (ICT) also influences the implementation of Economics learning. The integration of technology in Economics learning plays a vital role in increasing student engagement, supporting independent learning, and strengthening in-depth conceptual understanding (Hargaš et al., 2025).

One learning model relevant to these demands is the flipped classroom model. This model reverses the conventional learning pattern, in which students first learn the material outside of class through videos, modules, or digital teaching materials. In contrast, class time is used for discussion, practice, and problem-solving (Cahaya et al., 2024). Furthermore, the problem-based learning model significantly fosters critical thinking in students (Mulyasari et al., 2023). Problem-Based Learning (PBL) is a learning model that places real-world problems at the start of the learning process, allowing students to learn by actively understanding, analyzing, and finding solutions to these problems (Prastawa & Radiyanto, 2024).

The integration of the flipped classroom approach and problem-based learning is a teaching method that combines independent learning outside the classroom with in-class problem-solving

activities. Research shows that combining these two approaches can improve critical thinking skills, participation, collaboration, and the effectiveness of students' learning processes (Djahara et al., n.d.-a).

Based on observations on September 30, 2025, through interviews with Economics Teacher, Mr. Bayu Nur Dianto, S.Pd., and observations in class X2 of SMA Negeri 2 Situbondo, it was found that the learning process still faces several challenges. Some students appear to be less than fully engaged in learning activities, as reflected in low participation in discussions, limited initiative to ask questions, and a tendency to rely more on teacher explanations. These findings indicate that the development of student learning independence still requires more attention. In addition, students' critical thinking skills also appear to be able to be improved, as seen from several difficulties with problem-solving and expressing opinions during discussions. This condition indicates the need to strengthen learning management strategies to encourage students further to play an active role and participate optimally. To overcome these challenges, a change in approach is needed from teacher-focused learning to learning that places students at the center of the learning process (student-centered). (Prastawa and Radiyanto 2024) . Innovative and interactive learning models are needed to create a learning atmosphere that is fun, challenging, and able to motivate students to participate actively (Wahyuni & Saraswati, 2023).

Based on these issues, it is necessary to develop a learning model that can enhance students' independence in learning and critical thinking. Therefore, this study will examine the application of the flipped classroom model combined with problem-based learning in Economics as an alternative solution (Lalopua & Pinoa, 2025) The uniqueness of this study lies in the combination of the two learning models with an emphasis on improving students' learning independence and critical thinking skills, which have been less considered in previous studies that have focused more on cognitive learning outcomes.

METHOD

This study uses a quantitative, quasi-experimental, nonequivalent control group design to examine the effect of the Flipped Classroom model integrated with Problem-Based Learning (FC-PBL) on students' learning independence and critical thinking skills in Economics. The choice of this design is based on the existing classroom conditions, so that individual subject randomization is not possible. However, this design still allows for valid comparisons between the experimental and control groups through pre- and post-treatment measurements. The experimental group received treatment with the FC-PBL model, while the control class received treatment with the conventional teacher-centered model.

The population of this study included all 360 tenth-grade students at SMA Negeri 2 Situbondo. A sample of 144 students was selected using purposive sampling, considering equal academic ability, similar subject teachers, a relatively balanced number of students, and support from learning facilities. The sample was divided into two classes: an experimental class and a control class, each with 72 students. The pretest results showed no significant difference in initial ability between the two groups.

The instruments used in this study included a learning independence questionnaire and a critical thinking ability test. The questionnaire was designed based on the concept of self-regulated learning, which includes indicators of learning initiative, responsibility, perseverance, goal formulation, and self-evaluation, and was administered using a five-level Likert scale (Wira et al., n.d.). The critical thinking ability test was an essay-based test on economic problems that measured aspects of interpretation, analysis, evaluation, inference, and explanation. The validity of the instrument was determined through the exercise of judgment, while its reliability was assessed using the Cronbach

Alpha coefficient, which showed a high level of internal consistency. In addition, observation and documentation were used as supporting data to ensure the implementation of the learning process.

The treatment was administered for six weeks. In the experimental class, students studied the material prior to the meeting through videos and digital modules. They then collaboratively solved contextual economic problems in class, following the PBL syntax, with the teacher acting as a facilitator. They also conducted reflection sessions at the end of the lesson. Meanwhile, the control class received conventional learning methods, including lectures, question-and-answer sessions, and individual practice.

Research data were collected through pre- and posttests and then analyzed using descriptive and inferential statistics. Prerequisite tests included normality and homogeneity of variance. Hypothesis testing was conducted using an independent-samples t-test at a significance level of 0.05 to assess differences in learning outcomes between the two groups after treatment. The results of this analysis were used to evaluate the effectiveness of the FC-PBL model in improving students' learning independence and critical thinking skills.

RESULT

Descriptive Analysis of Independence and Critical Thinking in High School Students of Economics. This study was conducted in the control class and the experimental class to determine whether there is a significant difference in the level of Independence and in the Flipped Classroom model integrated with Problem-Based Learning, between the groups following the conventional learning model (Djahara et al., nd-a). This study is classified as an experimental study because it aims to determine the effects by giving a treatment to the experimental class group. The description of the independence and critical thinking data in this study is presented as quantitative data. Posttest. The posttest aims to determine independence and critical thinking before and after receiving treatment. Research data on independence were obtained from a questionnaire instrument. Data on independence results. The posttests for the experimental and control classes are presented in the table below.

Table 1. Description of independence data

Statistics		
independence		
N	Valid	144
	Missing	0
Mean		61,8194
Median		62,0000
Standard Deviation		5,78478
Minimum		40.00
Maximum		78.00

Based on the descriptive summary in the table above, the independent variable has a sample size of 144 respondents, with no missing data. The average value (mean) of 61.82 and the median of 62.00 indicate that the two values are almost the same, thus indicating that the data distribution tends to be symmetrical. The standard deviation of 5.78 indicates that the spread of data around the mean is relatively small, meaning that the variation in scores between respondents is not too great. The minimum score is 40,, and the maximum is 78, with a range of 38. Descriptively, the closeness of the mean and median values indicates that the independence data tends to be normally distributed, although to ensure statistical normality, it still needs to be supported by normality tests such as Kolmogorov-Smirnov or Shapiro-Wilk.

While the critical thinking data results are presented, the posttest results for the experimental and control classes are shown in the following table 2.

Table 2. Description of critical thinking data

Statistics		
critical thinking		
N	Valid	144
	Missing	0
Mean		84,7778
Median		85,0000
Standard Deviation		9.65883
Minimum		70.00
Maximum		100.00

Based on the descriptive summary, the critical thinking variable has a sample size of 144 respondents with no missing data. The mean of 84.78 and the median of 85.00 are very close, indicating a symmetrical distribution. The standard deviation of 9.66 indicates that there is variation in scores across respondents, but the distribution remains within reasonable limits. The minimum score obtained is 70, and the maximum score is 100, with a range of 30.

The normality test is used to determine whether samples from each dependent variable are normally distributed. The normality test is crucial as part of the prerequisite tests to determine the appropriate analysis technique. The normality test uses the Kolmogorov-Smirnov test in SPSS 24. The hypothesis proposed to measure data normality is as follows:

Ho: Data comes from a normally distributed population.

H1: The data does not come from a normally distributed population.

The testing criteria are: if the significance value is >0.05, then Ho is accepted; conversely, if the significance value is < 0.05, then Ho is rejected. The results of the normality test are presented in the table below.

Table 3. Results of the Normality Test (Kolmogorov-Smirnov)

Variables	N	Asymp. Sig. (2-tailed)
Independence	144	0.061
Critical thinking	144	0.060

Based on the results of the normality test, the data on independence and critical thinking are presented in Table 3. The normality test used the one-sample Kolmogorov-Smirnov test with the Lilliefors correction. If the significance value (Asymp. Sig.) is > 0.05, then the data are normally distributed. Based on the table above, the variables of independence (0.061) and critical thinking (0.060) have significance values greater than 0.05, so both variables are normally distributed.

The homogeneity test aims to analyze the uniformity of the sample based on the dependent variable in this study. The homogeneity test was conducted to ensure that the data sample originated from a homogeneous population. In this study, the homogeneity test was conducted separately for critical thinking skills and digital literacy skills using Levene's test. The following is a summary of the homogeneity test results calculated using SPSS 20 for Windows, as shown in Table 4 below.

Table 4. Results of Homogeneity Test Analysis

Variable	Levene Statistics	df1	df2	Sig.
Independence	8,485	1	142	0.004
Critical thinking	8,253	1	142	0.005

The homogeneity test was conducted using Levene's Test. Based on the results, the significance value for the independence variable is 0.004 and for the critical thinking variable is 0.005. Since both signicance values are less than 0.05, it can be concluded that the data are not homogeneus. Indicating that the variances between groups are not equal.

After the researcher obtained the data, it was analyzed statistically. In this data analysis stage, the researcher used the t-test to test the first hypothesis that there is a significant difference in the level of independence among high school students in Economics between the group following the conventional learning model and the PBL-integrated Flipped Classroom Model group. The results of the calculation, using SPSS 24.00 for Windows, are summarized in the following table: a summary of the independent sample t-test comparing the post-test results of the experimental class and the control class.

Table 5. Results of Hypothesis Testing with the Independent T-test

Independent Samples Test				
Variable	t	df	Sig. (2-teiled)	Mean Difference
Independence	5.814	132.948	0.000	5.06

Based on the results of the SPSS Independent Samples t-test above, Table 5 shows that the Sig. (two-tailed) value is 0.000. Since the Sig. value of 0.016 is less than the significance level ($\alpha = 0.05$), H_0 is rejected, and H_1 is accepted, meaning there is a significant difference in the level of students' independence between the group following the integrated PBL-Flipped Classroom learning model and the group following the conventional learning model. The t-test result of 5.814 with a degrees of freedom (df) of 132.948 yields a significance of 0.000 (two-tailed Sig. <0.05). This result indicates a significant difference between students who followed the integrated PBL-Flipped Classroom learning model and those who followed the conventional learning model. The average difference in independence scores between the groups was 5.06, with a 95% confidence interval ranging from 3.34 to 6.78. Thus, H0 was rejected and H1 was accepted, indicating that the Flipped Classroom model integrated with Problem-Based Learning significantly enhances student independence compared to conventional learning.

The results of the second hypothesis test indicate that there is a significant difference in the level of critical thinking in high school students studying Economics,s with the group following the conventional learning model and the group using the PBL-integrated Flipped Classroom Model. The calculation results, using SPSS 24.00 for Windows, are shown in the summary table below for the independent sample t-test comparing the post-test results of the experimental class and the control class.

Table 6. Results of Hypothesis Testing with the Independent T-test

Independent Samples Test				
Variable	t	df	Sig. (2-teiled)	Mean Difference
Critical Thinking	15.777	129.258	0.000	15.36

Based on the results of the SPSS Independent Samples t-test above, Table 6 shows that the Sig. (two-tailed) value is 0.000. Since the Sig. value is smaller than the significance level ($\alpha = 0.05$), Ho is rejected, and Ha is accepted, which means there is a significant difference in the level of students' critical thinking skills between the group that followed the Flipped Classroom model integrated with Problem-Based Learning and the group that followed the conventional learning model. The t-value of 15.777 with degrees of freedom (df) of 129.258 show significant difference between the teo groups, with an averege difference of 15.36.

DISCUSSION

This study aims to examine the effect of the Flipped Classroom model integrated with Problem-Based Learning (PBL) on students' learning independence and critical thinking skills in Economics. Based on data analysis, the implementation of this integrative model had a significant positive impact compared with conventional learning models. The results of the study showed significant differences between students who participated in the Flipped Classroom model integrated with

Problem-Based Learning (PBL) and those who participated in conventional learning, both in terms of independence and critical thinking skills. A significance value of 0.000 (<0.05) for both variables indicates that the applied learning model significantly improved both competencies.

The increase in learning independence in this study can be explained through Barry Zimmerman's Self-Regulated Learning (SLR) theory. In SLR theory, independent students are characterized by the ability to plan, monitor, and evaluate their own learning process.

In the FC-PBL model, students first study the material independently before face-to-face learning. This stage encourages students to determining learning strategies, manage time and Identify parts of the material that are not yet understood

Next, in the problem-based discussion phase of the class, students are required to test their initial understanding through argumentation and case analysis. This process strengthens self-regulation because students must actively monitor and reflect on their understanding.

The average difference in independence scores of 5.06 indicates that this model is effective in encouraging student responsibility for learning. This finding aligns with Lestari et al. (2026) research, which finds that self-regulation strategies are positively related to the success of technology-based learning. Similarly, Khodaei et al. (2022) explain that interventions involving reflective activities and learning planning can significantly increase student autonomy.

However, the increase in independence in this study was not as significant as the increase in critical thinking. This suggests that developing an independent character requires a continuous process of habituation and cannot be achieved instantly within a relatively short intervention period.

A higher increase in critical thinking skills with an average difference of 15.36 points, can be explained through the constructivist approach pioneered by Jean Piaget and Lev Vygotsky. According to Piaget, as reported in Bissessar and Youssef's (2021) research, learning occurs when students experience cognitive conflict and restructure their knowledge. In the context of FC-PBL, cognitive conflict arises when students are confronted with contextual economic problems that require analysis and evaluation of solutions. Meanwhile, according to Vygotsky, learning develops through social interaction and scaffolding within the Zone of Proximal Development (ZPD). Group discussions in PBL allow students to exchange arguments and deepen their analysis through collaboration. The teacher acts as a facilitator, guiding as needed, so that the knowledge construction process remains student-centered.

The significant increase in critical thinking demonstrates that integrating the flipped classroom and PBL directly stimulates students' analytical skills. PBL's syntax, which involves systematic problem identification, data analysis, evaluation of alternative solutions, and logical argumentation, contributes to the development of Higher Order Thinking Skills (HOTS). This finding is consistent with the research of Riska et al. (2024), which stated that flipped classrooms effectively improve high-level learning outcomes when combined with problem-solving activities. Furthermore, Siregar (2026) emphasized that problem-based learning encourages the development of reasoning and knowledge-transfer skills.

Conceptually, independent learning and critical thinking are mutually reinforcing. Independent learning, rooted in self-regulation, enables students to consciously manage their cognitive processes, from planning and monitoring to evaluating understanding. Students with strong self-regulation tend to be more cognitively prepared for analytical tasks because they have already established a prior understanding before entering the discussion or problem-solving phase. From Barry Zimmerman's perspective on self-regulated learning, self-regulation encompasses the ability to set goals, choose

appropriate learning strategies, and reflect on learning outcomes. This process directly contributes to students' metacognitive readiness. When students have gone through the planning and monitoring stages independently, they have more stable cognitive control when faced with problem -solving situations. Thus, self-regulation serves as an internal prerequisite for the development of higher-order thinking skills.

In the FC-PBL model, the flipped phase serves as the foundation for developing self-regulation. At this stage, students not only receive material but are also required to understand, take notes, and identify areas of learning that have not yet been mastered.d These activities indirectly train cognitive monitoring and responsible learning. When entering the A phase of Problem -Based Learning, students already have an initial schema that enables them to be more actively involved in the analysis process. The PBL phase then serves as a vehicle for strengthening critical thinking. The contextual problems presented require students to interpret information, analyze cause and effect, evaluate alternative solutions, and construct logical arguments. In this context, pre-established self-regulation facilitates students' ability to organize information and maintain focus on the analytical process. In other words, the flipped classroom builds internal readiness, while PBL optimizes cognitive exploration.

This relationship can also be explained through Lev Vygotsky's social constructivism perspective, which emphasizes that optimal learning occurs when there is cognitive readiness to participate in interactions. meaningful social interactions. Students who have learned independently are better prepared to enter the zone of proximal development (ZPD) because they already have an initial conceptual foundation.n Group discussions in PBL, students then broaden and deepen the construction of knowledge through dialogue and negotiation of meaning. Thus, the increase in independence in this study not only impacted affective or dispositional aspects but also served as a supporting mechanism for more effective cognitive development. At the same time, problem-solving activities provided a stimulus to maximize analytical skills. The integration of these two phases explains why the increase in critical thinking in this study showed a higher difference than the increase in independence. Overall, in FC-PBL design, independent learning serves as an internal foundation, while critical thinking is an external manifestation of this cognitive readiness. The two are not standalone variables, but rather form an integrated learning system that promotes the quality of students' learning processes.

The results of this study align with previous findings that the flipped classroom model can increase student engagement and responsibility in learning (Cahaya et al., 2024). The study explained that learning that provides access to materials before face-to-face meetings allows students to have greater control over their learning pace and strategies. Mulyasari et al. (2023) revealed that PBL significantly improves critical thinking skills because students are trained to identify problems and develop analytical solutions. This finding is also consistent with research by Soima et al. (2021), which reports that implementing the Problem-Based Learning (PBL) model with video media can improve students' critical thinking skills in teaching and learning. Furthermore, research by Bintang et al. (2020) shows that integrating the flipped classroom and PBL has a stronger impact than implementing each model separately, especially in increasing active participation and improving the quality of class discussions.

In addition to critical thinking skills, integrating these two models also positively impacts creativity. Fitrah et al. (2025) in their study revealed that the synergy between PBL and Flipped Classroom significantly improves students' mathematical creative thinking skills, which include aspects of flexibility, originality, and the ability to generate innovative solutions Through the independent learning phase before face-to-face learning, students can build confidence in their basic

knowledge, which is then applied flexibly and creatively during problem -solving tasks in class. The findings of this study can also be enriched by the results of research by Djahara, Novi, and Mauli Lovia (n.d., 2026), which suggest that the systematic learning structure in an innovative problem-based model increases the consistency of student engagement during the discussion process. According to research by Domu et al. (2023), the application of problem-based learning combined with an active learning approach can increase academic interaction and the depth of students' argumentation.

This study not only confirms the findings of Rahayu et al. (2025) but also provides new empirical evidence that at the high school level, the integration of PBL in a flipped structure can mitigate the weaknesses of conventional PBL, which often requires significant classroom time to understand basic problems. By having an independent learning phase before face-to-face learning, students already have a basic understanding, allowing class time to be focused on in-depth analysis and solution exploration. This makes the learning process more efficient and of higher quality.

However, the difference in critical thinking scores in this study was relatively higher than in several previous studies. This is likely because the intervention was implemented in a structured, systematic manner, allowing students to experience continuity between independent learning activities and collaborative discussions. Thus, this study contributes to the argument that model integration is not only a methodological alternative but also a pedagogical strategy that optimizes the effectiveness of learning time and the quality of interactions.

Theoretically, the results of this study reinforce the constructivist framework, which states that knowledge is actively constructed by students through learning experiences. The integration of the Flipped Classroom and Problem-Based Learning (PBL) reflects a student-centered learning approach that aligns with the principles of deep learning in the independent curriculum: conscious, meaningful, and reflective. From the perspective of HOTS developers, these findings suggest that learning designs that combine independent exploration and contextual problem solving can be an effective strategy in integrating higher-order cognitive dimensions in character-building learning.

Practically, these findings have implications for high school economics teachers. First, teachers should develop systematic and structured digital materials to provide students with a conceptual foundation before class discussions. Second, teachers should design contextual problems that are authentic and relevant to real-life economic phenomena to make the analysis process more meaningful. Third, schools need to provide technological infrastructure support to ensure equitable access to digital learning materials. Furthermore, the results of this study can serve as a basis for policymakers in designing teacher training programs that integrate innovative learning models. Strengthening pedagogical competencies in integrating technology and problem-based learning is a key factor in successful implementation.

Although the study demonstrated a significant effect, several limitations need to be considered. First, the research design used was a quasi-experimental study with purposive sampling, so control over external variables was not fully optimal, and internal validity remained limited. Second, this research was conducted in only one school with specific characteristics, so generalizing the results to a broader population needs to be done carefully. Third, the measurement of independence uses a self-report questionnaire, so the potential for subjective bias remains. Fourth, the analysis in this study still uses separate t-tests for each dependent variable. However, independence and critical thinking are interacting psychological constructs. The use of multivariate analysis, such as MANOVA, in future research will provide a more comprehensive picture of the simultaneous influence of learning models on both variables. This will make the interpretation of the results methodologically sound and more suitable for publication in reputable journals.

Given these limitations, further research is recommended to use a more robust experimental design, such as a randomized controlled trial, to improve internal validity. Furthermore, MANOVA is highly recommended for testing the effects of learning models on multiple dependent variables simultaneously. Future research could also add variables such as learning motivation, digital literacy, or cognitive learning outcomes as moderators or mediators to enrich the conceptual model. Testing across educational levels and subjects is necessary to assess the model's consistency of effectiveness across different contexts.

CONCLUSION

This study aims to examine the effect of the Flipped Classroom model integrated with Problem-Based Learning on students' learning independence and critical thinking skills in Economics at the high school level. The research employed a quantitative approach with a quasi-experimental nonequivalent control group design, involving experimental and control classes that received different instructional treatments. The results of the study indicate that there are significant differences between students who were taught using the Flipped Classroom model integrated with Problem-Based Learning and those who received conventional instruction. Students in the experimental group demonstrated higher levels of learning independence and critical thinking skills compared to those in the control group. These findings suggest that the integration of the Flipped Classroom model with Problem-Based Learning is more effective in enhancing students' independence and critical thinking. Therefore, this model can be considered a strategic alternative for implementing student-centered learning and improving the quality of Economics education.

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