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Developing Self-Regulation and Digital Learning to Improve Students' Critical Reasoning in Economics

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ABSTRACT

Critical thinking is a crucial skill required in 21st-century learning, particularly in economics. Students are expected to analyze problems, analyze information, and make informed choices. Many students still demonstrate inadequate levels of critical thinking due to limited self-control during learning, inefficient use of digital learning resources, and an unsupportive learning environment. Previous studies have generally examined these elements individually, yet research examining the combined impact of self-regulation, YouTube teaching resources, and the learning environment on students' critical reasoning in economics is limited. Therefore, this study seeks to examine the partial and overall impact of self-regulation, YouTube usage, and the learning environment on students' critical thinking skills in economics. This study employed a quantitative method with an exploratory research design. The population comprised all eleventh-grade students of SMA Negeri 1 Tengaran, while the sample was drawn through proportional random sampling. Data were collected through questionnaires using a Likert scale instrument. Before processing the data, the measurement tools were tested for validity and reliability. The collected data were analyzed using descriptive statistics, classical assumption tests, and multiple linear regression analysis to determine the relationships between variables. Research shows that self-regulation during learning, YouTube usage, and the learning environment, both partially and simultaneously, have a positive impact on students' critical thinking skills in economics. Therefore, educators and institutions are encouraged to design creative learning tactics that encourage independent learning, maximize the use of digital resources, and foster a cooperative and reflective learning environment to enhance students' critical thinking skills.

Keywords: self-regulation, YouTube educational media, learning environment, critical reasoning, economics learning.

ABSTRAK

Kemampuan berpikir kritis merupakan salah satu keterampilan penting yang diperlukan dalam pembelajaran abad ke-21, terutama dalam pendidikan ekonomi, siswa diharapkan dapat mengurai masalah, mengkaji informasi, dan mengambil pilihan yang masuk akal. Banyak siswa masih memperlihatkan tingkat berpikir kritis yang kurang memadai sebab keterbatasan kontrol diri saat belajar, pemanfaatan sarana belajar digital yang tidak efisien, serta suasana belajar yang kurang mendukung. Kajian terdahulu umumnya mengkaji unsur-unsur ini satu per satu, padahal riset yang menelaah dampak gabungan antara regulasi diri, sarana ajar YouTube, dan suasana belajar terhadap penalaran kritis siswa dalam

pelajaran ekonomi masih sedikit. Karenanya, riset ini berupaya menelaah dampak sebagian dan keseluruhan dari regulasi diri, pemakaian YouTube, serta lingkungan belajar pada kecakapan berpikir kritis siswa dalam bidang studi ekonomi. Penelitian ini memakai metode kuantitatif dengan rancangan riset penjajakan. Populasi mencakup seluruh peserta didik kelas XI SMA Negeri 1 Tengaran, sementara sampel diambil melalui cara pengambilan sampel acak proposional. Data dikumpulkan lewat penyebaran angket menggunakan instrument skala Likert. Sebelum mengolah data, alat ukur diuji validitas dan reabilitasnya. Data yang terhimpun dianalisis memakai statistik deskriptif, uji asumsi klasik, dan analisis regresi linier berganda guna menentukan hubungan antar variabel. Hasil riset memperlihatkan bahwa regulasi diri saat belajar, pemakaian YouTube dan lingkungan belajar secara parsial dan simultan memberikan dampak positif pada kecakapan berpikir kritis siswa dalam pembelajaran ekonomi. Maka dari itu, para pengajar dan institusi didorong untuk merancang taktik belajar kreatif yang mendorong pembelajaran mandiri, memaksimalkan pemakaian sarana digital, serta menunjang suasana belajar yang kooperatif dan penuh refleksi demi meningkatkan kemampuan berpikir kritis siswa.

Kata kunci: *pengaturan diri, media pendidikan YouTube, lingkungan belajar, penalaran kritis, pembelajaran ekonomi*

A. INTRODUCTION

Education plays a key role in preparing a workforce ready to face the challenges of the 21st century, which require analytical, evaluative, and critical thinking skills. With advances in globalization and information technology, students need not only to acquire knowledge but also to possess higher-order thinking skills to analyze, evaluate, and make logical choices. Critical thinking is a crucial competency in 21st-century learning, particularly in economics, where students need not only to understand theory but also to possess higher-order thinking skills to analyze, evaluate, and make rational decisions (Hafiz, Agustini, & Suartama, 2025). However, the educational pathway in schools still focuses more on providing learning materials and final results rather than developing students' critical thinking skills, so that critical thinking skills are less developed (Fitriani et al., 2023). According to Peter A. Facione, critical thinking involves understanding, verifying, evaluating, formulating, interpreting, and exercising self-control in order to comprehend information and draw logical conclusions (Pratiwi et al., 2025). As a result, developing critical thinking abilities has become a crucial assignment in the implementation of modern education, particularly in preparing students to meet the increasingly complicated social and economic challenges of the digital age. Minimum Competency Assessment (AKM) by the Ministry of Education, Culture, Research, and Technology which measures students' literacy and numeracy skills as part of the analytical and reasoning skills in solving contextual problems (Pendidikan & Teknologi, n.d.)

National assessment data from 2023 shows that Indonesian students' literacy and numeracy performance needs improvement. Compared to 53% in 2021, approximately 67% of students achieved the minimum literacy level. However, numeracy performance

also increased, from approximately 67% in 2023 to 33% in 2021. The data suggests that some students still struggle to absorb information deeply and use reasoning to solve data-based problems, despite improvements (Pendidikan & Teknologi, n.d.).

Developing critical thinking skills has become a top priority in 21st-century education, as students need to analyze information, evaluate arguments, and solve contextual problems logically, not simply understand ideas. *The Organisation for Economic Co-operation and Development* (OECD) measure the capacity of 15-year-old students to apply knowledge and skills to solve real-world problems through the Programme for International Student Assessment (PISA) (PISA, 2023). PISA 2022 results show that Indonesian students' performance remains below the OECD average, particularly in reading, mathematics, and science. Findings from the PISA 2022 Indonesia PUBE Fact Sheet (2023) indicate that students' abilities in analysis, assessment, and logical thinking have not yet fully developed. This indicates that their higher-order thinking and critical reasoning skills need to be improved Furthermore, a World Bank study found that the learning process in Indonesia still tends to emphasize memorization and mastery of content, while analytical and reflective thinking skills have not yet become the primary focus of learning activities (*The Promise of Education in Indonesia*, n.d.)

This circumstance is supported by a number of previous studies that revealed students' critical thinking skills are still comparatively poor. According to research conducted by Abdul Haris, the majority of students fall into the low critical thinking ability category (75.50%), with only 15.00% falling in the average category and 9.50% in the high category (Haris et al., 2023). The findings show that during the learning process, students continue to have difficulty interpreting information, evaluating difficulties, and drawing logical conclusions. According to the Delphi Report, critical thinking is composed of several crucial indicators, such as interpretation, analysis, evaluation, and conclusion. Nevertheless, because students continue to struggle with understanding issues thoroughly, connecting information, critically evaluating arguments, and drawing logical conclusions based on the evidence at hand, these indicators have not yet been sufficiently developed (Fayza, 2025).

In economics instruction, the incidence of poor critical thinking skills has also been documented. On January 27, 2026, the researcher conducted an initial interview with an economics instructor, who reported that there was a large range in the students' ability to reason critically. While many other students still struggle to understand analytical economic concepts and answer reasoning-based questions, some students are able to identify important information and connect economic concepts with problem-solving. Interviews with a few kids revealed that they also had trouble examining economic data, weighing cause-and-effect relationships, and drawing logical conclusions from facts and evidence. These findings indicate that students' critical reasoning skills in economic learning have not yet developed optimally, necessitating learning strategies that can promote analytical, reflective, and independent thinking processes.

The findings of the preliminary study of 124 respondents indicate that students' critical thinking skills are still in the moderate category. In terms of understanding economic data in the form of tables or graphs (63.7%), identifying economic problems (62.1%), and comprehending economic information from news or articles (62.9%), the majority of students fall into the moderate category. According to the analysis, 67.7% of students fell into the moderate category for explaining cause-and-effect connections of economic occurrences, and 66.1% fell into the moderate category for applying economic principles to analyze problems. In addition, the capacity to conclude and evaluate remains in the moderate category, especially in drawing conclusions, predicting the impact of economic events, and determining alternative solutions to economic problems. The findings are in line with Maulidta's (2025) Pearson's correlation value of 0.995 and significance below 0.001 were obtained from research demonstrating a positive relationship between critical reasoning abilities and pupils' cognitive learning outcomes (Maulidta et al., 2025). Conventional teaching methods that place a strong emphasis on memorization have been shown to have a detrimental effect on critical reasoning skills, whereas teaching strategies that promote discussion, analysis, and reflection are more effective at improving students' critical thinking skills, according to further studies (Hermansyah et al, 2025).

Critical reasoning skills are essential in economics since students must understand economic events, analyze cause-and-effect relationships, and make sound judgments. These skills are impacted by internal and external variables, one of which is self-regulation in learning or independent learning. Students with good self-regulation are more likely to manage learning strategies, use information sources, and understand material more deeply. Barry J. Zimmerman claims (Dimas Ghimby, n.d.). *self-regulated learning* is an individual's ability to plan, monitor, and evaluate his or her own learning process (Hermiati, Cholifah, & Nuraini, 2024). Maria's research also shows that self-regulation in learning has a positive influence on students' critical thinking skills (Wahyuningtyas et al., 2026).

The quick growth of information technology has had a significant impact on how students acquire, process, and understand knowledge during the learning process. YouTube is a popular digital platform that is now used for educational purposes as well as amusement. It provides students with access to a wide range of learning materials at any time and from anywhere (Derma1 & Darwinsyah2, n.d.). Students may learn independently, review challenging explanations, and access information from various angles thanks to YouTube. YouTube may help students comprehend abstract economic ideas by providing visual and contextual explanations that relate to real-world economic occurrences. Additionally, YouTube promotes the growth of critical thinking skills by encouraging pupils to evaluate data, contrast opinions, assess source validity, and connect ideas to actual societal conditions (Tara & Sridiyatmiko, 2022).

Besides the use of digital media, the learning environment is another important element influencing students' critical reasoning skills. The learning environment involves the conditions around the learner, including family support, school climate, peer interactions, and classroom atmosphere, all of which can influence the quality of the

learning process. Students may be encouraged to participate in discussions, ask questions, articulate ideas in a logical way, and improve their reflective thinking abilities by having a supportive learning atmosphere.

Although earlier research has studied the impact of YouTube media or the learning environment on student learning outcomes and critical thinking abilities separately, there is still limited research that simultaneously examines the role of self-regulation, YouTube educational media, and the learning environment in shaping students' critical reasoning in economics instruction. Therefore, the novelty of this research lies in the integration of internal factors, namely self-regulation, and external factors, namely YouTube educational media and the learning environment, in explaining students' critical reasoning abilities in the context of economic education in the digital era.

Moreover, a supportive learning environment may encourage students to participate more actively in the learning process and motivate them to learn different ideas. An encouraging learning environment can aid students in comprehending economic phenomena in society, evaluating the cause-and-effect relationship of an economic event, and cultivating critical thinking skills in resolving various economic challenges in the context of economic education.

Based on this description, it is apparent that a student's critical thinking abilities are shaped by a variety of internal and external factors related to their learning activities, in addition to the classroom learning process. These variables include self-regulation in learning, the use of educational social media like YouTube, and a supportive learning environment. Therefore, this study was conducted to analyze the influence of self-regulation in learning, the use of *YouTube*, and the learning environment on critical reasoning skills in economics subjects of SMA Negeri 1 Tengaran students. Based on this background, the formulation of this research problem is: 1) How does self-regulation in learning affect students' critical reasoning skills in economic learning? 2) How does the use of *YouTube* affect students' critical reasoning skills in economic learning? 3) How does the learning environment affect students' critical reasoning skills in economic learning? 4) How does self-regulation in learning, the use of *YouTube*, and the learning environment simultaneously affect students' critical reasoning skills in economic learning?

B. RESEARCH METHOD

The link and impact of variables are objectively evaluated in this study using a quantitative approach via exploratory research and numerical data processed with statistical techniques (Sugiono, 2023). The research approach was a causal associative study with a survey research design. According to John W. Creswell, survey research is conducted by sending respondents questionnaires in order to collect data about specific variables and their relationships (Robbie, Roziqin, Deniar, Praharjo, & Roz, 2024). A survey was used in this study to examine how the learning environment, YouTube use, and self-regulation in learning affect students' critical reasoning abilities in learning economics.

The research was conducted at SMA Negeri 1 Tengaran during the even semester of the 2025/2026 academic year, from January to May 2026. The selection of the research location was based on the implementation of the Independent Curriculum, which emphasizes higher-order thinking skills and the integration of digital media in learning. The population of this study consisted of all Grade XI Social Science students totaling 168 students. The sample was determined using the Slovin formula with a 5% error rate, resulting in 118 students as respondents. The sampling technique used was probability sampling with a proportional random sampling approach, ensuring that each student had the same opportunity to be selected and that all classes were proportionally represented (Sugiono, 2023).

The variables examined in this study included self-regulation in learning (X1), YouTube utilization (X2), learning environment (X3), and students' critical reasoning skills (Y). Both primary and secondary data sources were utilized in the study. Questionnaires given to students were used to gather primary data, which was supported by non-participatory observations. Books, journals, pertinent prior research, and school papers were used to collect secondary data. A Likert-scale questionnaire made up of statements pertaining to each variable served as the study's instrument. Before data collecting, the instrument was evaluated for reliability and validity using SPSS software. The validity test revealed that every item on the questionnaire had a r-value that was higher than the r-table value, proving that each item was legitimate. In addition, the reliability test revealed that the Cronbach's Alpha score for all variables was higher than 0.70, indicating that the instrument was reliable and constant for data collection.

To characterize the respondents' answers and the variable circumstances, descriptive statistics were employed to analyze the acquired information. Additionally, normality, multicollinearity, and heteroscedasticity tests were run prior to hypothesis testing. To assess the partial and concurrent effects of independent variables on the dependent variable, hypothesis testing was conducted utilizing multiple linear regression analysis. The coefficient of determination (R2) was used in the analysis to assess the independent variables' contribution to students' critical thinking abilities, the F-test to assess concurrent effects, and the t-test to assess partial effects (Sugiono, 2023).

C. RESULTS AND DISCUSSION

RESULT

The findings of this study were obtained via surveys sent to 118 Grade XI Social Science students at SMA Negeri 1 Tengaran. Descriptive statistics, classical assumption tests, and multiple linear regression analysis were used to analyze the collected data in order to ascertain how self-regulation in learning, YouTube use, and the learning environment impacted economics students' critical reasoning abilities. Prior to running hypothesis testing, the research tools passed the validity and reliability testing, and the data also satisfied the requirements of the normality, multicollinearity, and

heteroscedasticity tests. Thus, it was determined that the data were suitable for additional statistical study.

In general, students demonstrated moderate to high self-regulation, YouTube usage, and quality of the learning environment, according to the descriptive study's findings. However, the critical reasoning skills of students were still very diverse, especially in metrics linked to analysis, assessment, and deriving logical conclusions from economic problems. The regression study revealed that students' critical thinking skills were simultaneously positively and significantly affected by their self-regulation in learning, use of YouTube, and learning environment. The combination of internal variables, like self-regulated learning, and external factors, like supportive learning environments and digital learning media, is crucial for fostering students' critical reasoning skills in economics education, as shown by these results.

ANALYSIS Descriptive Statistics of Research

Table 1. Descriptive Statistical Analysis of Self-Regulation

Descriptive Statistics					
	N	*Minimum*	*Maximum*	*Mean*	*Hours of Deviation*
Self-Regulation	118	41. 000	75.000	54.64	7.301
	118				

Source: Data Processed 2026

According to Table 1, the data analysis results indicate that 118 students were interviewed. The mean value for the self-regulation variable in learning was 54.64, with a standard deviation of 7.301, and the minimum and maximum scores were 41 and 75, respectively. This demonstrates that student learning's self-regulation level falls into the high category. In economic education, this suggests that the majority of pupils have been able to independently plan, observe, and assess their learning process. Table 2 displays the frequency distribution of self-regulation variables in learning, as seen below.

Table 2. Frequency Distribution of Self-Regulation Variables

No	Interval	Criteria	Frequency	Presentase
1	62-75	Very High	21	17.8%
2	55-61	Hight	29	24.6%
3	48-54	Enough	46	39%
4	41-47	Low	22	18.6%
5	34-40	Very Low	0	0%

Source: Data Processed 2026)

According to Table 2, the majority of pupils fall into the moderate to high range, with moderate (39.0%) and high (24.6%) categories dominating. Additionally, 18.6% of students fall into the low category, while 17.8% fall into the very high category. There are no students in the very low category. This proves that self-regulation is generally good when it comes to student learning. Students' capacity to plan the learning process, manage their time, stay focused, identify learning challenges, and assess the learning methods

utilized illustrates this. Students therefore have enough knowledge and accountability for handling their learning in economics courses.

Table 3. Descriptive Statistical Analysis of YouTube Utilization

Descriptive Statistics					
	N	*Minimum*	*Maximum*	*Mean*	*Hours of Deviation*
YouTube Utilization	118 118	19. 000	75.000	48.22	9.092

Source: Data Processed 2026

According to Table 3, the data analysis reveals that the YouTube usage variable has a minimum value of 19, a maximum value of 75, a mean value of 48.22, and a standard deviation of 9.092. According to this, the use of YouTube as a tool for financial education falls within the necessary category. This shows that while YouTube has been utilized by certain pupils as a supplementary instructional tool, it is not ideal.

Tabel 4. Frequency Distribution of YouTube utilization

No	Interval	Criteria	Frequency	Presentase
1	62-75	Very High	4	3%
2	53-63	Hight	35	30%
3	42-52	Enough	49	42%
4	31-41	Low	28	24%
5	19-30	Very Low	2	2%

Source: Data Processed 2026

According to Table 4, the majority of students fall into the sufficient category, with 42%, followed by the high category, with 30%. In the meantime, a very small number of students fall into the very high or very low groups. So, it may be inferred that utilizing YouTube in economic education falls under the category of being adequate, and that further enhancements are required to improve the learning process for students.

Table 5. Descriptive Statistical Analysis of Learning Environment

Descriptive Statistics					
	N	*Minimum*	*Maximum*	*Mean*	*Hours of Deviation*
Learning Environment	118 118	39. 000	75.000	52.91	7.516

Source: Data Processed 2026

The data analysis results, shown in Table 5, reveal that the learning environment variable has a minimum value of 39 and a maximum value of 75, with an average of 52.91 and a standard deviation of 7.516. This demonstrates that the category of the student learning environment is high. This implies that the learning process in economics is sufficiently supported by the student learning environment's circumstances, including the accessible learning amenities, the classroom atmosphere, and social connection. Additionally, as can be seen in Table 6 below, there is a frequency distribution of learning environment variables.

Table 6. Variable Frequency Distribution of Learning Environment

No	Interval	Criteria	Frequency	Presentase
1	66-75	Very High	3	2.5%
2	57-65	Hight	36	30.5%
3	48-56	Enough	49	41.5%

4	39-47	Low	30	25.4%
5	30-38	Very Low	0	0%

Source: Data Processed 2026

Based on the learning environment variable, Table 6 shows that the majority of students fall into the categories of sufficient and high. This indicates a positive and encouraging learning atmosphere for students, as evidenced by positive connections between students and teachers and friends, a comfortable learning environment, and access to suitable learning resources and media.

Table 7. Descriptive Statistical Analysis of Critical Reasoning

Descriptive Statistics					
	N	*Minimum*	*Maximum*	*Mean*	*Hours of Deviation*
Critical Reasoning	118 118	32. 000	75.000	52.34	8.124

Source: Data Processed 2026

According to the findings of the data analysis displayed in Table 7, the critical thinking variable's lowest value was 32, its highest value was 75, its mean value was 52.34, and its standard deviation was 8.124. The students' critical thinking skills are rated as being between adequate and excellent, according to this. It indicates that students possess adequate abilities to comprehend, examine, and assess the economic data they acquire.

Table 8. Frequency Distribution of Critical Reasoning Variables

No	Interval	Criteria	Frequency	Presentase
1	67-75	Very High	17	14.4%
2	55-61	Hight	28	23.7%
3	48-54	Enough	32	27.1%
4	41-47	Low	33	28%
5	34-40	Very Low	8	6.8%

Source: Data Processed 2026

It may be inferred from Table 8 that the majority of pupils fall under the category of good high for critical thinking. This indicates that students have rather good critical reasoning skills, as evidenced by their capacity to comprehend economic data, identify problems, analyze cause-and-effect correlations, and arrive at conclusions based on the data at hand. It may therefore be inferred that students' critical reasoning skills in economics are fairly strong, but that they still need to be developed in order for all students to be able to think more analytically, evaluatively, and proactively when dealing with a variety of economic issues.

Classic Assumption Test

Table 9. Normality Test Results

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		118
Normal Parameters[a,b]	Mean	0.0000000
	Std. Deviation	4.915123 73

Most Extreme Differences	Absolute		0.086
	Positive		0.068
	Negative		-0.086
Test Statistic			0.086
Asymp. Sig. (2-tailed)			.030[c]
Monte Carlo Sig. (2-tailed)	Sig.		.323[d]
	99% Confidence Interval	Lower Bound	0.310
		Upper Bound	0.335

Source: Data Processed, 2026

Based on Table 9, the results of the normality test using *the Kolmogorov-Smirnov One-Sample* method show that the significance value of *Monte Carlo Sig. (2-tailed)* is 0.323 which is greater than α = 0.05. Thus, it can be concluded that the residual data is normally distributed. This shows that the assumption of normality in regression analysis has been met, so that the regression model used is feasible to continue at the next stage of parametric statistical analysis.

Table 10. Multicollinearity Test Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	1.485	3.902		0.381	0.704		
	Self-Regulation	0.381	0.081	0.364	4.723	0.000	0.612	1.634
	YouTube Utilization	0.232	0.060	0.276	3.839	0.000	0.705	1.419
	Learning Environment	0.307	0.072	0.302	4.232	0.000	0.715	1.399

a. Dependent Variable: CRITICAL REASONING

Source: Data Processed, 2026

Table 10, is the result of a multicollinearity test show that the Self-Regulation variable has a Tolerance value of 0.612 and a VIF value of 1.634. The YouTube Utilization variable has a *Tolerance* value of 0.705 and a VIF value of 1.419. Furthermore, the Learning Environment variable has a Tolerance value of 0.715 and a VIF value of 1.399.

Based on these results, all independent variables had a *Tolerance* value of > 0.10 and a VIF value of < 10. Thus, it can be concluded that the regression model does not experience symptoms of multicollinearity. This means that there is no strong relationship or correlation between the independent variables in this study, so the regression model is suitable for further analysis.

Table 11. Heteroscedasity Test Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	0.604	2.883		0.209	0.835
	X1	0.006	0.060	0.012	0.094	0.925
	X2	-0.069	0.042	-0.195	-1.637	0.105
	X3	0.002	0.001	0.222	1.829	0.071

a. Dependent Variable: ABS

Source: Data Processed, 2026

Based on the results of the Glejser test, it is known that the X1 variable has a significance value of 0.925, the X2 variable 0.105, and the X3 variable of 0.071. All of these significance values are greater than 0.05. Thus, it can be concluded that the regression model in this study does not experience symptoms of heteroscedasticity, so the regression model is suitable for further analysis.

Hypothesis Test

Table 12. Persial Test Results (T Test)

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.565	4.415		0.808	0.421
	SELF-REGULATION	0.341	0.092	0.329	3.693	0.000
	YOUTUBE UTILIZATION	0.172	0.065	0.217	2.645	0.010
	LEARNING ENVIRONMENT	0.367	0.082	0.374	4.486	0.000

a. Dependent Variable: CRITICAL REASONING

Source: Data Processed, 2026

According to the coefficients table's t-test findings (partial), the importance value of each independent variable may be determined as follows: 1) The regression coefficient value for the self-regulation variable was 0.341, and its significance level was 0.000, which is less than 0.05. This suggests that a strong and positive correlation exists between critical thinking and partial self-regulation. Therefore, it is accepted that self-regulation has an impact on critical thinking. 2) The YouTube use variable yielded a regression coefficient of 0.172 and a significance value of 0.010 < 0.05. This indicates that employing YouTube partially has a favorable and substantial impact on critical thought. As a result, the hypothesis that critical thinking is impacted by YouTube consumption is supported. 3) The significance value of the learning environment variable was 0.000 < 0.05, and its regression coefficient value was 0.367. Critical reasoning is positively and significantly influenced in part by the learning environment, according to this study. Therefore, the assumption that the learning setting influences critical reasoning is supported

Table 13. Simultaneous Test Results (F Test)

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2772.114	3	924.038	37.852	.000[b]
	Residual	2197.045	90	24.412		
	Total	4969.160	93			

Source: Data Processed, 2026

Based on the results of the F test in the table, the F value was calculated at 37.852 with a significance value of 0.000 < 0.05. This shows that the variables of self-regulation, YouTube utilization, and learning environment together have a significant effect on critical reasoning. Thus, the regression model in this study was declared significant and the hypothesis that self-regulation, YouTube utilization and learning environment have a simultaneous effect on critical reasoning was accepted.

Table 14. Determination Coefficient (R^2) Test Results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.747[a]	0.558	0.543	4.941
a. Predictors: (Constant), LEARNING ENVIRONMENT, YOUTUBE UTILIZATION, SELF-REGULATION				

Source: Data Processed, 2026

Based on the results of the determination coefficient test in the *Model Summary table, the* Adjusted R Square value of 0.543 *was obtained*. This shows that the variables of self-regulation, YouTube utilization, and learning environment were simultaneously able to explain the critical reasoning variable of 54.3%. Meanwhile, the remaining 45.7% was explained by other factors outside the variables studied in this study. Thus, the regression model used has a fairly good ability to explain the influence of independent variables on dependent variables.

DISCUSSION

The Effect of Self-Regulation on Students' Critical Reasoning in Economics Subjects

Students' capacity to plan, monitor, control, and assess their learning process on their own in order to achieve their learning objectives is known as self-regulation in learning. According to the descriptive analysis, the self-regulation variable is in the good range. The results of the t-test revealed a significance value of 0.000 < 0.05 and a regression coefficient of 0.341, indicating that self-regulation in learning has a positive and substantial impact on students' critical thinking. The more capable students are of controlling their own learning processes, the more critically they can understand and evaluate economic content. These results support Barry J. Zimmerman's Self-Regulated Learning theory, which states that students with excellent self-regulation are better able to regulate their motives, actions, and learning strategies to meet academic goals (Tinajero, Mayo, Villar, & Martínez-López, 2024).

The results of this study are also supported by research which shows that (Hermiati et al., 2024). *self-regulated learning* has a positive effect on students' critical thinking skills. Students who are used to planning learning, repeating material independently, looking for additional references, and evaluating their understanding will find it easier to develop the ability to interpret, analyze, evaluate, and infer in solving economic problems. This finding is also in accordance with *the Social Cognitive Theory* of Albert Bandura which explains the existence of a reciprocal relationship between personal, behavioral, and environmental factors in the learning process (Saragih, 2024). Thus, self-regulation in learning is one of the important factors in improving students' critical reasoning in economics subjects.

The Influence of YouTube Utilization on Students' Critical Reasoning in Economics Subjects

The application of YouTube in teaching is an instance of using audiovisual-based digital media that aids students in understanding economic content via explainer films, case studies, graphs, and actual economic occurrences. YouTube use is categorized as good, according to the descriptive analysis's findings. Therefore, it can be said that using YouTube has a positive and significant influence on students' critical reasoning since the t-test results revealed a regression coefficient of 0.172 and a significance value of 0.010 < 0.05. This implies that students' critical thinking skills in analyzing economic issues will improve in proportion to how effectively YouTube is used as a tool for learning. Richard E. Mayer's Cognitive Theory of Multimedia Learning, which posits that audiovisual media may improve students' comprehension by combining visual and verbal information, is supported by the results of this research (Aselia Nur Lailli et al., 2026).

This finding is also supported by the research of Fitriani & Maarif (2023) and Lailatul Muthoharoh & Dita Hendriani (2025) who show that digital learning media is able to improve students' critical thinking skills because it provides more active and independent learning opportunities. In economics learning, YouTube videos help students understand abstract material through visual examples and real cases so that students can more easily connect theory with reality. This is in accordance with the theory *Connectivism* from George Siemens which explains that learning in the digital age allows students to acquire knowledge through a wide network of information (Alam, 2023).

The Influence of the Learning Environment on Students' Critical Reasoning in Economics Subjects

All of the factors surrounding students that might have an impact on their learning process and results, whether from the family, school, or social context, are included in the learning environment. Students are more likely to participate in debates, speak their minds, and evaluate different economic concerns in everyday life when the learning environment is conducive to economic learning. The descriptive analysis found that the factors of the learning environment fall into the positive area. It can be concluded that the learning environment has a significant and beneficial impact on students' critical thinking skills since the t-test results revealed a significance value of 0.000 < 0.05 and a regression coefficient

of 0.367. The greater their critical reasoning in understanding and resolving economic issues, the better the learning environment students have. Urie Bronfenbrenner's Ecological Systems Theory, which states that an individual's growth is affected by their environment, supports the findings of this research (Bronfenbrenner, n.d.).

This finding is also in line with research from Tri Astuti et al. (2024) which shows that a comfortable, interactive, and supportive learning environment can improve students' critical thinking skills. Empirically, a conducive learning environment can be seen through an active classroom atmosphere, teacher support in guiding discussions, peer involvement, and family support in the learning process. This condition helps students be more confident in expressing opinions, analyzing problems and drawing logical conclusions. This is in line with the theory *Social Constructivism* by Jerome Bruner who emphasized the importance of social interaction and collaboration in knowledge formation. In the context of modern education, a conducive learning environment allows students to actively discuss, exchange ideas, and build understanding together, thereby improving their critical reasoning skills (Bruner, 2021).

The Simultaneous Influence of Self-Regulation, YouTube Utilization and Learning Environment on Students' Critical Reasoning in Economics Subjects

Due to the fact that students must be able to comprehend concepts, evaluate problems, and make logical judgments, critical reasoning is an essential high-level thinking skill in economic education. Critical thinking was considered to be influenced by self-regulation, YouTube usage, and the learning environment in this research. An F value of 37.852 and a significance value of 0.000 < 0.05 were obtained from the F test, indicating that the three factors had a positive and substantial effect on students' critical thinking. Furthermore, the 0.543 Adjusted R Square indicated that 54.3% of the differences in pupils' critical thinking abilities might be attributed to their self-regulation, use of YouTube, and learning environment.

The results of this study are in accordance *the Social Cognitive Theory* of Albert Bandura which explains that the learning process is influenced by personal, environmental and individual behavioral factors (Abdullah, 2019). This finding is also supported by research by Nurfatma and Dyah (2024) as well as Sudiarti, Ashilah, and Nurjanah (Sudiarti, Ashilah, & Nurjanah, 2023) which shows that learning independence, the use of digital media, and a conducive learning environment have a positive effect on students' critical thinking skills

Empirically, students who have good self-regulation, use *YouTube* as a learning resource, and are supported by a conducive learning environment tend to be more active in understanding the material, discussing and critically analyzing economic problems. Thus, self-regulation, the use of *YouTube*, and the learning environment together have a positive effect on students' critical reasoning in economic learning.

D. CONCLUSION

Based on the results of the research and discussion, it can be concluded that self-regulation, the use of YouTube and the learning environment have a positive and significant influence on students' critical reasoning in economics subjects. Self-regulation had a positive effect with a significance value of 0.000 < 0.05 and a regression coefficient of 0.341. This shows that students who are able to organize, control, and evaluate their learning process independently tend to have better critical reasoning skills. In addition, the use of YouTube also has a positive and significant effect on students' critical reasoning with a significance value of 0.010 < 0.05 and a regression coefficient of 0.172. The use of YouTube as a learning medium helps students understand economic material more deeply through various interesting and easily accessible audiovisual learning resources.

The learning environment was also proven to have a positive and significant effect on students' critical reasoning with a significance value of 0.000 < 0.05 and a regression coefficient of 0.367. A conducive learning environment is able to support students to be more active, comfortable and critical in the learning process. Simultaneously, self-regulation, YouTube utilization, and the learning environment had a positive and significant effect on students' critical reasoning with a significance value of 0.000 < 0.05 and an F value of 37.852. In addition, the *Adjusted R Square* value of 0.543 showed that the three variables together contributed 54.3% to students' critical reasoning, while the rest were influenced by other factors outside the study.

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