

Student-Centered Learning to Improve Character Education in High School Economics Learning: The Mediating Role of Economic Literacy

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Abstract: The background of this research is that the development of economic literacy and character education in students has become a primary goal of economics education, including in secondary schools. Although SCL has been widely recognized as an effective pedagogical approach, empirical evidence explaining how SCL contributes to character education through economic literacy is still limited, particularly in secondary school economics education. This study aims to examine the effect of SCL on economic literacy and character education in students, as well as the role of economic literacy as a mediating variable. The method used a quantitative approach. Data were collected from 249 high school students in three schools in East Java. The sampling technique used was simple random sampling. The instrument used a questionnaire with a Likert scale. Data analysis used PLS-SEM. The results showed that SCL has a positive effect on economic literacy; SCL has a direct positive effect on character education ($\beta = 0.120$); economic literacy positively affects character education; and economic literacy mediates the effect of SCL on character education ($\beta = 0.064$). The Conclusion indicates that SCL improves student character both directly and indirectly through the mediation of economic literacy. This study highlights the importance of integrating student-centered economic learning to improve economic literacy and student character. The theoretical implications of this research extend constructivist learning theory by identifying economic literacy as an important mediating mechanism linking SCL to student character development. The practical implications of this study are for economics teachers and curriculum developers seeking to integrate SCL with economic literacy to promote character among secondary school students.

Keywords: Character Education, Constructivist Learning, Economic Literacy, Economics Learning, Student-Centered Learning

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INTRODUCTION

Current economics education demands that students possess strong economic literacy and character to face the challenges of daily economic activities. Educational transformation, including in economics, is not sufficient if it only emphasizes cognitive achievement, but also the development of students' lifelong literacy and character. Traditional learning, such as teacher-

centered learning, is still frequently implemented (Aliusta & Özer, 2016) and is inadequate (Cappiali, 2023). Student-centered learning (SCL) is increasingly gaining significant attention as a pedagogical approach and strategy for improving the quality of learning (Sørensen et al., 2023) (Woods & Copur-Gencturk, 2024).

The SCL approach positions students as the primary actors. SCL is a type of active learning that shifts students from passive participants into the center of learning (Martin-Alguacil et al., 2024; McCabe & O'Connor, 2014; Neumann, 2013). SCL is an approach that emphasizes active learning activities in constructing knowledge (Klemencic, 2017). SCL emphasizes students as learners and what students do to succeed in learning (Tholibon et al., 2022). From a constructivist perspective, student-centered learning allows students to actively engage in the learning process and construct their own understanding and knowledge better than teacher-centered learning (Alam, 2023; I. Kang et al., 2007; S. J. Lee & Branch, 2017).

SCL also provides learning autonomy and provides opportunities for students to take responsibility for their own learning (Lea et al., 2003; S. J. Lee & Branch, 2017; Maclellan, 2008; McCabe & O'Connor, 2014). In addition, reciprocal interactions between teachers and students are also emphasized in SCL (Baeten et al., 2016; Bhardwaj et al., 2025; Neumann, 2013; Rangachari, 2010), and teachers must facilitate students in learning (S. J. Lee & Branch, 2017; McCabe & O'Connor, 2014). SCL emphasizes student empowerment, confidence, and self-belief (Tangney, 2014). Thus, the SCL approach aligns with constructivist theory.

Previous research has consistently shown that SCL can improve students' academic performance (Andersen & Andersen, 2017; Bara & Xhomara, 2020; Bhardwaj et al., 2025), increase student participation, motivation, and learning outcomes (Sørensen et al., 2023), increase students' learning responsibility and creativity (Kember, 2009), and improve students' attitudes (Connell et al., 2016). In addition, SCL can encourage active participation and student engagement in class (Tholibon et al., 2022) and even has a positive impact on students' non-academic achievements (Li & Ding, 2023). The findings of previous research indicate that SCL research is very relevant in the current context, especially in economics learning.

Furthermore, several previous research findings show that student-centered learning is still little implemented by teachers in their classes (Aksit et al., 2016; Martin-Alguacil et al., 2024; Niemi, 2002). There are several obstacles faced by teachers in implementing SCL, including students being accustomed to or comfortable with traditional teacher-centered learning methods, fear of failure, fear of making mistakes, and students' need for time to develop new competencies (Martin-Alguacil et al., 2024).

Furthermore, economic literacy is an understanding of basic economic concepts and principles that are used practically to make economic decisions (Al-Rabaani, 2019; Anthony et al., 2015; CEE, 2010; Diez-Martinez, 2009; Welsandt & Abs, 2023). Other opinions also indicate that economic literacy is a skill needed to solve economic problems (Welsandt et al., 2024). Economic literacy is the understanding of the formulation of economic reasoning and the transfer of situations present in economics textbooks into various real economic situations (Grol et al., 2016). Economic literacy is not just memorizing definitions, but an essential ability to make personal and social decisions (Walstad et al., 2013). This demonstrates that economic literacy requires not only memorization of concepts but also the ability to understand, analyze, and apply economic principles in real life (Hansen et al., 2002). Students who possess economic literacy are capable of understanding and analyzing various sequences of past economic activities (Adams, 2021), including their implications (Carter, 2013). Students with a solid basic understanding of economics are capable of making appropriate decisions in a variety of economic activities (Gill &

Bhattacharya, 2019). Therefore, pedagogical transformation in the classroom, such as implementing SCL, is needed to ensure economic literacy develops well in students (Narmaditya et al., 2024).

Economic literacy is also described as a competency necessary for social participation in economic activities (Welsandt & Abs, 2023), as economic activities can impact others. In this context, economic literacy is a prerequisite for responsible action (Welsandt & Abs, 2023). Wahyono et al. (2021) also revealed that an individual's level of economic understanding can influence economic morality and character in economic decision-making during a crisis. Good student economic literacy can lead to responsible consumer or citizen behavior. Therefore, for effective learning to achieve good economic literacy, teachers need to implement student-centered learning, namely by providing opportunities for students to learn actively, leading them to understand various economic materials that can be applied in everyday life (Happ et al., 2016).

SCL applied by economics teachers can improve students' ability to interpret economic phenomena and make financial decisions appropriately and rationally in real life (Lusardi & Mitchell, 2014, 2023). Active instructional methods, such as SCL applied in economics classes, can have a long-term impact on economic literacy compared to traditional lecture methods (Allgood et al., 2015). The same findings also show that SCL can improve students' long-term performance in econometrics (Shah et al., 2024). Furthermore, the goal of all secondary school economic education programs is to improve financial literacy, including economics, and the traditional classroom-centered learning approach in economics education can ignore the long-term effects of what students learn for their daily lives after completing their studies (Grimes et al., 2010). Therefore, an experience-based SCL approach is very relevant to improving students' economic literacy.

Furthermore, character education means a deliberate effort to help people understand, care about, and act based on ethical values (Lickona, 1996, 1999). Character education teaches ways of thinking and behaviors that help individuals live and work together as a family, society, and nation, while assisting them in making accountable decisions (Kamaruddin, 2012). In addition, character education helps develop students' character and behavior so that they become good citizens (Althof & Berkowitz, 2006; Hoge, 2002). Character education equips students with the intellectual, civic, and moral virtues to make wise choices and live well within the framework of a democratic society (Arthur, 2024). Character education is an intentional practice to foster student character development in schools (Berkowitz, 2011; Berkowitz & Bier, 2007; Berkowitz & Hoppe, 2009).

Good character is defined as the ability to make correct and responsible decisions (Çubukçu, 2012). Character education highlights core values of good character, such as respect for oneself and others, truth, justice, honesty, caring, having empathy and sympathy, cooperation, independence, and responsibility for oneself and others (Abdullah, 2018; Agboola & Tsai, 2012; Berkowitz & Bier, 2007; Hoge, 2002; Skaggs & Bodenhorn, 2006). The same opinion also shows that good character is trust that can make someone have integrity and honesty; justice that makes someone open-minded and does not like to take advantage of others; caring, which makes someone have a caring and attentive attitude towards others and social conditions in the surrounding environment; respect, which makes someone always appreciate and respect others; citizenship, which makes someone aware of the law; and responsibility, which makes a person responsible and always does things as well as possible (Kamaruddin, 2012).

Character education development can be done through integration into the learning process (Agboola & Tsai, 2012; Jerome & Kisby, 2020), including in economics learning (Amri et

al., 2020; Sugiono et al., 2022). Interactive strategies among students that can be implemented in SCL are the core of effective character education pedagogy (Berkowitz, 2011; Berkowitz & Bier, 2005, 2007). Other opinions also show that virtues can be taught and learned through appropriate pedagogy (Cooley, 2008). Developing character in learning can improve student behavior (Benninga et al., 2003). Integrating character education into learning through student-centered learning (SCL) methods is effective in improving students' value development and academic achievement (Katilmiş et al., 2011), and integrating character education into learning that implements SCL can improve students' attitudes towards becoming good citizens (Rahman et al., 2017). Furthermore, well-designed economic literacy interventions will mitigate irrational consumer behavior and foster strong economic character in students (Agussalim et al., 2021).

This explanation demonstrates that economic literacy is a crucial competency for high school students to understand economic phenomena and make rational economic decisions. At the same time, character education plays a crucial role in shaping individuals into good citizens. This study highlights the crucial role of student-centered learning in fostering economic literacy and student character.

Although previous research consistently demonstrates the effectiveness of SCL in improving various educational outcomes, these studies have mostly examined partial relationships rather than integrated models. For example, Allgood et al. (2015) reported that active learning strategies contribute to long-term improvements in students' economic literacy, primarily focusing on learning approaches and economic knowledge outcomes without examining students' character development. Similarly, Katilmiş et al. (2011) found that integrating character education into student-centered teaching practices can improve students' character development. However, their study did not examine economic literacy as a cognitive mechanism bridging students' character development.

Similarly, a recent study by Narmaditya et al. (2024) showed that economic literacy mediates the relationship between lecturer competence and students' economic behavior. However, the study focused on higher education and lecturer competence rather than Student-Centered Learning as a pedagogical approach, and did not examine character education as a primary educational outcome. Empirical evidence explaining how Student-Centered Learning influences character education through economic literacy in secondary school economics instruction is still limited. Therefore, this study extends previous literature by integrating Student-Centered Learning, economic literacy, and character education into a single structural model framework and testing it simultaneously using Partial Least Squares Structural Equation Modelling (PLS-SEM). Unlike previous studies that investigated these constructs separately or only examined partial relationships, this study explicitly examines the mediating role of economic literacy in explaining how Student-Centered Learning contributes to character education among secondary school students. Based on this explanation, the hypothesis in this study is as follows:

H1: SCL has a positive effect on economic literacy

H2: SCL has a positive effect on character education

H3: Economic literacy has a positive effect on character education

H4: SCL has an indirect positive effect on character education via economic literacy as a mediating variable

METHOD

Sampling Techniques

The respondents of this study were students from three high schools in three regions in East Java. The respondents were students who had taken economics lessons, namely, students in grades 2 and 3. The sampling technique utilized was simple random sampling (West, 2016), which allows all students the opportunity to become research respondents. Based on this sampling technique and after a data filtering process to ensure data quality, it was determined that the research respondents used for data analysis in this study numbered 249. There were 68 male respondents from grade XI (27.31%) and 27 from grade XII (10.84%). Meanwhile, there were 67 female respondents from grade XI (26.91%) and 87 from grade XII (34.94%). To ensure the adequacy of the minimum sample size, this study used G*Power analysis (Faul et al., 2009; H. Kang, 2021). The sample size set in the study of 249 is sufficient to be used as material for statistical analysis, because this has met the minimum sample size using G*Power analysis (Faul et al., 2009).

Research Instruments

This study employed a quantitative cross-sectional approach. A questionnaire was used to collect data. All data collection instruments used a Likert scale, with response options ranging from 1 (strongly disagree) to 5 (strongly agree) (Emerson, 2017). This study ensured that the instruments underwent thorough pre-testing under the supervision of economics learning experts and economics teachers before being administered to student respondents. This review by a diverse group of reviewers ensured content validity (Nawanir et al., 2018).

Table 1. Instrument

Construct	Indicators	Item	Sources
SCL	Active participation	Economics teachers provide opportunities for all students to participate actively	Lea et al. (2003), Neumann (2013), S. J. Lee & Branch (2017)
	Reciprocal interaction	Economics teachers give students the freedom to interact reciprocally during the learning process.	Neumann (2013), Rangachari (2010)
	Autonomy in learning	Economics teachers provide students with the opportunity to determine the best way to learn according to their individual abilities and speed.	Lea et al. (2003), Maclellan (2008), McCabe & O'Connor (2014), S. J. Lee & Branch (2017)
	Guiding and facilitating	Economics teachers facilitate and guide students in learning economics in class without discrimination.	McCabe & O'Connor (2014), Neumann (2013), S. J. Lee & Branch (2017)
	Building confidence	Economics teachers build students' confidence to improve their understanding of economics.	Lea et al. (2003), Tangney (2014)
Economic Literacy	Account cost-benefit	You make the right decision by calculating the cost-benefit of each option.	CEE (2010), Hansen et al. (2002), Walstad et al. (2013)
	Resource allocation	You allocate the resources you have in various ways so that various daily needs	CEE (2010), Hansen et al. (2002), Walstad et al. (2013)

Character		can be met with a relatively equal level of intensity.	
	Transactions	You realize that so far transactions in the market have occurred due to interactions carried out as buyers/sellers	CEE (2010), Hansen et al. (2002), Walstad et al. (2013)
	Economic institutions	So far, you have realized that the existence of the government is very important in the economy to maintain economic stability.	CEE (2010), Hansen et al. (2002), Walstad et al. (2013)
	Socio-economics	So far, you have realized that the economic activities you carry out depend on/are related to the economic activities of other people.	Welsandt & Abs (2023)
	Kindness and honesty	You understand that deviant/bad economic activities or economic behavior can harm others.	Althof & Berkowitz (2006), Berkowitz & Bier (2007), Hoge (2002), Lickona (1996)
	Respect	Respecting others in various activities, including economic activities, does not have to be applied	Hoge (2002), Kamaruddin (2012), Lickona (1996)
	Caring and responsibility	Sharing happiness by giving to others in need is a behavior that does not need to be done.	Berkowitz (2011), Berkowitz & Bier (2007), Hoge (2002), Kamaruddin (2012), Lickona (1996)
	Cooperation	Cooperation is not necessary to address issues of common interest.	Althof & Berkowitz (2006), Berkowitz & Bier (2007)

Data Analysis Techniques

This research used PLS-SEM with SmartPLS 4 software (Sarstedt & Cheah, 2019). This statistical technique was chosen because of its superior ability to handle complex model structures (Hair et al., 2019). The choice of PLS-SEM in this study aligns with the exploratory nature of the study, which seeks to expand structural theory (Hair et al., 2022). There are several stages in testing carried out when using SEM-PLS, namely: Outer Model testing, also called the measurement model, to test all existing indicators against latent variables. The purpose of the measurement model is to ensure that validity and reliability requirements are met, namely through convergent validity, internal consistency, and discriminant validity tests (Hair et al., 2022; Nawaniir & Moshood, 2025). After that, the inner model or structural model test is conducted to examine the correlation or influence between constructs based on the hypothesis formulation.

RESULTS AND DISCUSSION

Research Results

Normality, Validity, and Reliability of Constructs

In this study, data normality testing was not a requirement for analysis. Non-normal data distribution is suspected to distort the findings of multivariate analysis (Hair et al., 2022). Although PLS-SEM does not require normally distributed data because it is a variance-based structural equation modelling technique (Hair et al., 2022). Data distribution was still examined

using skewness and kurtosis statistics to evaluate overall data quality. The results showed that the absolute value of the kurtosis statistic ranged from -0.873 to 0.535, and the skewness value ranged from -0.915 to 0.138. The results data were approximately normally distributed (Hair et al., 2022). Therefore, the skewness and kurtosis assessments are reported as descriptive evidence of data quality, not as prerequisites for applying PLS-SEM.

Furthermore, this study ensured that the validity and reliability of the data had been tested. Convergent validity in this study was demonstrated by outer loadings and Average Variance Extracted (AVE). The convergent validity results are shown in Table 2, confirming that all items had outer loadings that met the recommended criteria for convergent validity. Several indicators showed outer loading values between 0.60 and 0.70, which were maintained based on the overall construct reliability and the AVE threshold (Hair et al., 2022). As seen in Table 2, all constructs had AVE above the recommended threshold of 0.5. Furthermore, the data met internal consistency reliability. Table 2 shows internal consistency reliability, as indicated by Cronbach's Alpha and composite reliability (CR) values for all constructs above 0.7.

Table 2. Convergent Validity and Internal Consistency Reliability

Construct	Item Code	Outer Loadings	AVE	Cronbach's Alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)
SCL	SCL2	0.782	0.542	0.793	0.819	0.855
	SCL3	0.821				
	SCL4	0.668				
	SCL5	0.731				
	SCL6	0.667				
	LIT2	0.663				
Economic Literacy	LIT3	0.758	0.516	0.765	0.772	0.841
	LIT4	0.772				
	LIT6	0.713				
	LIT7	0.678				
Character	CHA1	0.707	0.526	0.704	0.711	0.816
	CHA2	0.680				
	CHA4	0.734				
	CHA5	0.775				

Note: rho_a, based on outer loadings, rho_c, based on standardized indicator loadings. Both exceed 0.70 as required

This study also met discriminant validity for all constructs. Discriminant validity indicates the extent to which all constructs are truly distinct from one another (Henseler et al., 2015). Discriminant validity results are demonstrated by Heterotrait-Monotrait Ratio of Correlations (HTMT). This study used an HTMT threshold value of 0.85 (Hair & Alamer, 2022; Henseler et al., 2015). Table 3 shows HTMT values below 0.85. The data indicate no issues with discriminant validity, so all constructs are conceptually distinct. Therefore, this study has met the assessments

of convergent validity, internal consistency reliability, and discriminant validity so that the model can be analyzed further.

Table 3. Discriminant Validity: HTMT

	CHA	LIT	SCL
CHA			
LIT	0.513		
SCL	0.234	0.208	

Hypothesis Testing

Before conducting hypothesis testing, a collinearity check was first performed. The Variance Inflation Factor (VIF) was used to assess multicollinearity among first-order constructs (Thien, 2019). There is no multicollinearity if the VIF value is less than 3.3 (Diamantopoulos & Siguaw, 2006). Based on Table 4, the VIF value is less than 3.3, multicollinearity does not occur in the model in this study.

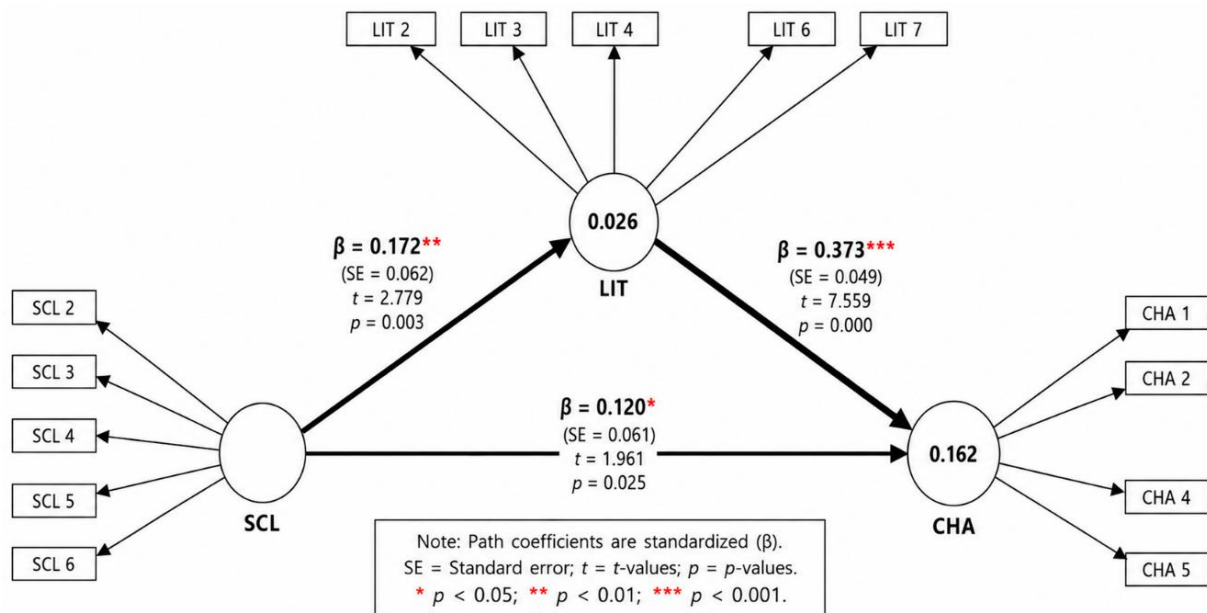


Figure 1. Hypothesized PLS Path Model

Hypothesis testing was conducted using a bootstrapping procedure (Becker et al., 2023). Bootstrapping used 5000 subsamples, bootstrap percentiles, a significance level of 0.05, and a one-tailed test. The significant positive effect or null hypothesis was rejected if the calculated t-value was ≥ 1.645 , $p < 0.05$, and the 95% confidence intervals for the estimated coefficients did not include zero. Based on these criteria, Table 4 indicates that SCL has a positive effect on economic literacy ($\beta = 0.172$, $t = 2.779$), SCL has a positive effect on character ($\beta = 0.120$, $t = 1.961$), and economic literacy has a positive effect on student character ($\beta = 0.373$, $t = 7.559$). These results indicate that H1, H2, and H3 are accepted, and the null hypothesis is rejected.

The research results are then displayed in Table 5. The hypothesis of an indirect effect was tested through a mediating variable. Based on the same criteria, the SCL indirect has a positive effect on student character through economic literacy ($\beta = 0.064$, $t = 2.539$). Based on these results, the null hypothesis is rejected, and H4 is accepted.

Table 4. Summary of Hypotheses Testing

Hypotheses	Path	Std. beta	Std. error	T values	Bias	Confidence Intervals		VIF	Decision	R-square adjusted	f- square
						5%	95%				
H1	SCL -> LIT	0.172	0.062	2.779	0.017	0.046	0.252	1.000	Supported	0.026	0.030
H2	SCL -> CHA	0.120	0.061	1.961	0.009	0.005	0.207	1.030	Supported	0.162	0.017
H3	LIT -> CHA	0.373	0.049	7.559	0.009	0.274	0.442	1.030	Supported		0.163

Note: *P* values < 0.05 (1-tailed test)

Table 5. Summary of Indirect Effect Hypothesis Testing

Hypothesis	Path	Std. Beta	Std. Error	T Value	Bias	Confidence Intervals		Decision
						5%	95%	
H4	SCL>LIT> CHA	0.064	0.025	2.539	0.008	0.017	0.098	Supported

Note: *P* values < 0.05 (1-tailed test)

Furthermore, the results in Table 4 show that contributions of the exogenous variables to the endogenous variables was evaluated using the coefficient of determination (adjusted R^2) and effect size (f^2). According to Cohen (1988), the level of acceptance of the adjusted R^2 value is: 0.26 indicates substantial, 0.13 indicates a moderate correlation, and 0.02 indicates a weak correlation of an exogenous variable with an endogenous variable. The adjusted R^2 contribution of the SCL and economic literacy variables to character is 0.162 or 16.2%, and the contribution of SCL to economic literacy is 0.026 or 2.6%. These results can be interpreted as meaning that the SCL and economic literacy variables moderately explain 16.2% of the variance in the character variable. Meanwhile, the SCL variable weakly explains 2.6% of the variance in the economic literacy variable.

Next, an effect size analysis (f^2) was carried out, which measures the magnitude of the effect of the removed exogenous on the endogenous construct, whether the removed construct has a substantial impact on the endogenous construct (Hair et al., 2022). The level of acceptance category of the f^2 value, namely 0.35, indicates large, 0.15 Medium, and 0.02 Small (Cohen, 1988). Based on Table 4, effect size analysis (f^2) on the influence of SCL on economic literacy shows a small impact or influence (0.030), SCL on character shows a small impact or influence (0.017), and the effect size value of less than 0.02 indicates no measurable effect (Hair et al., 2022). Meanwhile, the influence of economic literacy on character shows a moderate impact (0.163).

Next, Table 6 shows predictive power (Q^2). Based on the results of the PLSpredict test, the Q^2 predictive values for most endogenous variable indicators are above 0, indicating that the model has good predictive relevance in general. However, there is one indicator, namely CHA1, that has a negative Q^2 predictive value. This indicates that the model's predictive ability for the indicator is still below average. Although CHA1's predictive accuracy is slightly below the average-based benchmark, the overall pattern across indicators still supports the model's predictive relevance. Thus, the results indicate that the model has high predictive power, as most PLS-SEM_RMSE values are smaller than LM_RMSE values.

Table 6. PLS Predict

	Q²predict	PLS-SEM_RMSE	LM_RMSE
CHA 1	-0.002	1.218	1.234
CHA 2	0.004	0.980	0.998
CHA 4	0.005	0.994	1.007
CHA 5	0.036	0.964	0.976
LIT 2	0.002	0.977	0.990
LIT 3	0.009	0.870	0.880
LIT 4	0.009	0.914	0.927
LIT 6	0.012	0.779	0.793
LIT 7	0.008	1.129	1.142

Discussion

The Effect of SCL on Students' Economic Literacy

The study's results indicate that SCL has a positive effect on students' economic literacy. These results indicate that learning carried out by teachers using the SCL approach can contribute to improving the economic literacy. The more frequently teachers apply SCL, the more significantly students' economic literacy skills will improve. In the context of economics education, SCL shifts students' roles from passive recipients of information to active agents who construct their own understanding. When students are involved in active methods such as group discussions, case study analysis, or economic simulations, they do not simply memorize abstract economic definitions or formulas. Instead, they learn to understand the essence of basic economic concepts and apply them to solve real-life economic problems.

The results align with previous research. Allgood et al. (2015) revealed that active learning can have a long-term impact on improving students' economic literacy when compared to using traditional lecture methods. These results also support the finding that traditional, non-student-centered learning approaches in economics can ignore the long-term impact of economic activities on students' daily lives (Grimes et al., 2010). The results also support previous findings that providing opportunities for students to learn actively can improve students' understanding of economic material that can be applied to everyday life (Happ et al., 2016), including improving students' ability to make rational economic decisions (Lusardi & Mitchell, 2014).

These results also support previous research on the SCL approach's ability to improve long-term econometric skills (Shah et al., 2024). Previous research findings also revealed that the SCL learning approach can empower students to explore financial literacy from the perspective of their own circumstances (Gibert et al., 2024). Our research results indicate that the more frequently teachers apply SCL in the learning process, the more effective their efforts to improve students' economic literacy.

However, this study found that SCL's contribution to economic literacy was relatively small. This finding suggests that economic literacy is a multidimensional competency influenced not only by the learning approach but also by other factors, such as teacher quality, curriculum design, prior learning experiences, learning motivation, family socioeconomic background, and economic experiences in daily life.

The Effect of SCL on Student Character

The results provide evidence that SCL applied in the economics learning process has a positive effect on students' character education. Although its contribution is small based on the

analysis, these empirical findings demonstrate that a learning environment using SCL can predict improvements in students' character. Rationally, SCL creates an economics classroom ecosystem rich in social interaction, cooperation, and responsibility. In an SCL model, students are required to respect others' opinions, practice honesty within groups, and take responsibility for their independent assignments. These activities indirectly internalize core character values such as respect, caring, responsibility, and cooperation. Our research results can be rationalized as learning that implements SCL is full of active student involvement, fostering cooperation and responsibility, and is appropriate to students' real-life contexts. These results suggest that SCL applied by teachers in economics learning can contribute to efforts to improve students' character.

The results of this study support Tangney's (2014) research, which explains that student-centered learning provides space for the development of autonomy, self-reflection, and personal responsibility as the foundation for character formation. Furthermore, McCabe & O'Connor (2014) show that changing teachers' roles to facilitators encourages the development of independent, collaborative, and responsible attitudes in the learning process. The results are also in line with the opinion that shows that virtue can be taught through appropriate pedagogy (Cooley, 2008). The results of this study also support the arguments of Sugiono et al. (2022) and Katılmış et al. (2011), who stated that the application of student-centered learning methods has proven effective in improving student character development, such as students' responsibility, cooperation, and social awareness. Rahman et al. (2017) also stated that implementing SCL can improve students' attitudes toward becoming good citizens. These results indicate that efforts to improve students' character cannot be separated from the learning process carried out by teachers (Baehr, 2017; Hakam, 2018).

The SCL approach implemented by teachers in the classroom allows students to actively explore economic concepts and relate theory to everyday economic activities in students' lives. The research findings strengthen previous research stating that learning centered on active student involvement in the classroom can increase positive social behavior (Durlak et al., 2011), and that teachers' ability to teach and manage social interactions in the classroom can create characters full of prosocial attitudes, such as responsibility and empathy (Jennings & Greenberg, 2009; Wentzel, 2002). The findings suggest that SCL not only influences students' cognitive abilities but can also influence students' character.

The Effect of Economic Literacy on Student Character

Based on the analysis conducted, this study uncovered significant insights into the role of economic literacy in improving the character of high school students. These results indicate that economic literacy is a strong predictor of improved character among high school students. This proves that economic literacy plays a crucial role in shaping students' character. These results provide a deeper understanding that a sound understanding of economics is not merely a cognitive competency for seeking personal gain, but rather a key prerequisite for acting responsibly in a social environment. Students with economic literacy are capable of sound economic reasoning; they are aware that every consumption or production decision they make will impact others. Strong economic knowledge creates good self-control, so that students demonstrate good economic character, are wise, and can avoid irrational consumer behavior.

These findings align with the notion that economic literacy is a necessary competency for responsible action (Welsandt & Abs, 2023). Economic literacy is essential for students to understand the complex economic relationships within society. Our findings align with previous research that suggests that individual literacy can encourage responsible behavior and reduce the

tendency to engage in unethical behavior (Xiao & Porto, 2017). These findings also support previous research suggesting that students with high economic literacy can develop positive character traits, such as responsible and prudent behavior (Lusardi & Mitchell, 2014). These results are consistent with previous findings, economic literacy is the basis for the formation of socially responsible character, with students understanding that economic decisions in consumption and production can affect others (Davies et al., 2005).

Our research also supports the argument of Gathergood (2012) and Grohmann (2018) that individuals with low economic literacy are highly vulnerable to being trapped in consumer debt due to a lack of self-control, while those with high literacy can control themselves and thus act more responsibly by avoiding high-risk economic and financial decisions. Our research also supports previous findings that individuals with better economic literacy tend to exhibit responsible economic and financial behavior (Fernandes et al., 2014; Tang & Baker, 2016).

Our research findings confirm that students' economic literacy can influence their economic attitudes and behavior. Our findings align with the Theory of Planned Behavior (TPB), which states that knowledge can influence attitudes and behavior (Ajzen, 1991, 2020). High levels of economic literacy in students enable them to make wise and rational decisions, be responsible in everyday economic decisions, and understand the consequences of their economic actions. This reflects the strength of students' character. These findings complement the opinion of Walstad et al. (2013) that economic literacy is an essential prerequisite for rational economic decision-making. Our research findings suggest a link between cognitive abilities in the form of economic literacy and the attitudes and behaviors demonstrated by students' character. These findings confirm that students' economic literacy strongly predicts character formation in daily economic activities.

The Indirect Effect of the SCL on Character Education through Economic Literacy

Our research results indicate that economic literacy positively mediates the effect of SCL on student character. The PLS-SEM analysis results direct effect of SCL on student character is low. However, when mediated by economic literacy, SCL's contribution to student character increases. These results suggest that cognitive knowledge, in this case economic literacy, serves as a strong foundation for students. Improvements in this cognitive aspect significantly mediate the formation of student character. The test results show indirect effects. This study demonstrates that the cognitive variable serves as a crucial mediator. This means that the effectiveness of innovative learning methods in the form of SCL can improve students' economic knowledge, which in turn drives character-based attitudes and behavior. These results complement the research by Narmaditya et al. (2024), which found that the relationship between lecturer competence and students' economic behavior is mediated by economic literacy.

Based on these results, the direct impact of SCL on student character is relatively small. However, when SCL first improves students' economic literacy, its cumulative impact on character building becomes much greater. This indicates that changes in economic character or wise economic behavior do not occur instantly simply by changing teachers' teaching methods in the classroom. A bridging mechanism is needed in the form of internalizing cognitive knowledge. Through SCL, students construct their economic literacy. Once this literacy is firmly established, this knowledge then becomes the driving force for students to demonstrate rational, honest, caring, and responsible character in their daily economic activities.

Our research results indicate that the SCL approach does not automatically change students' economic character or behavior, but rather requires a mechanism that bridges this

pedagogical stimulation, namely, through economic literacy. In the constructivist paradigm, knowledge is not transferred passively but is constructed independently by students, as in learning that applies SCL (Alam, 2023; Baeten et al., 2013, 2016; Bhardwaj et al., 2025; I. Kang et al., 2007; E. Lee & Hannafin, 2016; Ocak et al., 2016; Sioukas, 2023). The construction process in SCL can produce in-depth and contextual mastery of economic literacy (Narmaditya et al., 2024). This literacy is not merely passive knowledge, but rather an internal cognitive structure that guides individuals in evaluating choices and making responsible decisions (Agussalim et al., 2021).

Furthermore, established economic literacy is not merely a cognitive ability; it serves as a primary foundation that guides attitudes and behavior, which in turn shape rational attitudes, economic morality, and character in everyday life (Agussalim et al., 2021; Walstad et al., 2013). These results confirm the role of economic literacy as a mediator between the SCL learning environment and students' economic behavioral character. Character formation does not occur simply, but through a process of internalizing knowledge in the form of economic literacy. Economic literacy becomes a cognitive mechanism that bridges the influence of SCL on character formation. Therefore, economic literacy can be said to be an intervening mechanism in the formation of the character of high school students, especially in the field of economics.

Research Implications

The results of this study show that SCL, economic literacy, and character education are three interconnected components within an integrated learning mechanism, not merely stand-alone variables. Empirical findings indicate that SCL not only contributes directly to enhancing economic literacy and character education but also has a stronger influence through the mediating mechanism of economic literacy. This research enriches the literature on economics education, which has tended to separate studies on pedagogy, economic literacy, and character education. The resulting empirical model shows that these three constructs form a mutually reinforcing causal pathway. This contribution broadens the scope of research on economics education in secondary schools beyond merely academic achievement to the formation of responsible, rational, honest, caring, and socially oriented economic characters. Thus, this research offers a holistic framework regarding how pedagogical innovation produces affective impacts by strengthening students' cognitive abilities.

An important contribution of this study to the literature on economics education is that theoretically, these findings enrich the literature on the effectiveness of active pedagogy in secondary school economics education. Teacher-centered approaches often fail to provide a long-term impact on students' understanding of economics. This research contributes by updating the literature: through SCL, constructivist learning can transform economic knowledge from mere textual memorization into contextual economic reasoning skills that students can apply in real life. These results also provide a strategic contribution for schools, especially teachers, in overcoming the obstacles of a passive learning culture inherent in economics subjects. These findings provide an empirical basis for secondary school teachers to redesign, for example, conventional teaching modules into activity-based modules such as digital financial literacy projects or local market analysis. This ensures that economics is no longer considered rote learning but rather an applied science applicable to students.

Another important contribution to the literature of economic education is that this study fills the research gap that has rarely linked active instructional methods to non-academic outcomes such as student character. Its significant contribution lies in providing new empirical

evidence that managing social interactions and providing learning autonomy in economics classes can stimulate affective values such as cooperation, respect, caring, and responsibility. This broadens the scope of the literature that economics classrooms are not merely places for the transfer of market theory, but rather ecosystems for the formation of good citizen character. These findings also provide a tangible contribution in the form of practical classroom management solutions for economics teachers. These results show that strengthening character traits such as cooperation and caring does not have to be taught as separate moral subjects, but can be cultivated and integrated into economics classes through structured management of social interactions during the SCL process. The findings convey a strong message that schools' efforts to build student character are not sufficient through isolated character education or the normative delivery of moral values. Character development will be more effective when integrated into the economics learning process through the systematic application of SCL, which encourages students to think, discuss, analyze real-world problems, make decisions, and reflect on the consequences of each economic decision.

These findings provide a fundamental conceptual contribution by strengthening the TPB in the literature on economic education. Previous literature often separates cognitive literacy and economic morality. This study unifies these two concepts by empirically proving that a person's level of economic understanding is directly proportional to their economic morality. Mature economic cognition has been proven to be the foundation for students to control themselves, avoid irrational consumer behavior, and make socially responsible economic decisions. Conceptually, this research also provides a new explanation regarding the position of economic literacy within the character education model. Economic literacy is no longer viewed merely as a learning outcome in the form of mastery of economic concepts, but as a transformational mechanism that transforms knowledge into rational, ethical, and responsible economic behavior. This perspective broadens the definition of economic literacy from academic competence to the foundation of character building in everyday economic life.

The results are also important for the orientation of the secondary school economics curriculum. This research confirms that the goal of economics education in schools is not simply to achieve short-term cognitive test scores, but rather to develop the ability to conduct economic activities in accordance with moral values, or improve students' ability to make rational, responsible, and moral economic decisions. The secondary school economics curriculum should be geared toward producing wise and socially responsible consumers and producers in the future. Therefore, indicators of successful economics learning need to encompass the dimensions of economic literacy and character as two complementary learning outcomes. Integrating these two dimensions enables the curriculum to produce graduates who not only understand economic concepts but also are able to apply them in real life.

Furthermore, the results make a significant scientific contribution to the literature on economics education by providing a blueprint for a holistic economics learning model in schools. This study offers a new holistic framework by simultaneously examining direct and indirect influences within a single structural model. Previous literature tends to view the relationships between these variables separately. This study successfully maps the scientific pathway of interconnection between pedagogical aspects (SCL), material understanding (economic literacy), and behavioral outcomes (character) as a unified whole. This study successfully demonstrates a more comprehensive relationship by proving that economic literacy is a cognitive mechanism linking active learning experiences to student character development. By proving the existence of a cognitive mediation pathway, this study updates economics learning theory by confirming that

pedagogical stimulation (SCL) requires a mechanism for internalizing knowledge (economic literacy) before it can effectively crystallize into concrete economic behavior or character in students. These results provide valuable guidance for schools: the effectiveness of economics teaching innovations in character building will be optimal if they focus first on strengthening students' economic reasoning.

Overall, this research produces a strong conceptual synthesis that SCL is the starting point for learning transformation, economic literacy is the connecting mechanism, and character education is the final outcome that is formed gradually through the process of internalizing knowledge. Thus, the effectiveness of economics learning is no longer understood merely as the success of improving conceptual understanding, but rather as the learned ability to shape economic thinking that ultimately develops into a rational, responsible, honest, caring, and welfare-oriented economic character. This integrated relationship model strengthens the argument that pedagogical innovation, strengthening economic literacy, and character education must be designed as a single entity in economics learning in schools, thus providing a more solid scientific foundation for the development of economic education theory and practice in the future.

CONCLUSIONS

This study examines the structural relationships between Student-Centered Learning (SCL), economic literacy, and character education in economics instruction in secondary schools. First, SCL positively influenced economic literacy ($\beta = 0.172$, $t = 2.779$), although its explanatory power for economic literacy is relatively low (adjusted $R^2 = 0.026$). Second, SCL positively influences' character education ($\beta = 0.120$, $t = 1.961$). Third, economic literacy positively influences' character education ($\beta = 0.373$, $t = 7.559$), indicating that students with higher levels of economic literacy tend to exhibit stronger economic character. Finally, economic literacy positively mediates the effect of SCL on character education ($\beta = 0.064$, $t = 2.539$), confirming that SCL's contribution to character formation operates both directly and indirectly through improving students' economic literacy.

Our research findings provide important insights into the factors that determine student character in secondary school economics learning. The results also confirm that student knowledge, specifically economic literacy, is a crucial factor contributing to character development in daily economic activities.

Theoretically, this study can expand the economics learning model in secondary schools that apply the SCL approach. SCL is a learning approach based on constructivist theory. Thus, through the application of SCL, students can master in-depth and contextual economic knowledge according to economic activities. In addition, the results also provide theoretical support for the TPB in economic education. Economic literacy functions as a cognitive mechanism that forms the foundation for students' economic attitudes and behavior. Students with high economic literacy can influence their attitudes and behavior in economic activities, enabling good, wise, caring, responsible, and rational behavior. Conversely, students with low economic literacy allow their attitudes and behavior in carrying out economic activities to be bad, detrimental, and irrational.

Practically, the results suggest that economics teachers should consistently apply the SCL approach while simultaneously strengthening students' economic literacy, as these two components together contribute to student character development. SCL can transform students' roles from passive to more active. Various SCL-based learning methods can be implemented by economics teachers in their classrooms, such as cooperative, contextual, and problem-based learning. This study provides economics teachers with insight into how SCL, when applied

continuously, can contribute to improving students' economic literacy and character. Furthermore, teachers must be able to measure students' existing levels of economic literacy so that they can contribute to student character development, especially in carrying out daily economic activities.

Although this study has yielded several findings, there are still limitations and areas for further research to explore and improve. First, SCL only accounts for 2.6% of the variance in economic literacy. This result suggests that other factors, such as teacher quality, curriculum design, prior economic knowledge, learning motivation, attitudes toward the subject, and other factors, need to be investigated in future research to better understand secondary school students' economic literacy. Second, this study conceptualizes SCL as a general learning approach implemented by teachers and does not fully examine the specific SCL-based learning methods used in their lessons, such as contextual learning, cooperative learning, problem-based learning, or other SCL-based methods. Therefore, further research is needed that can capture the contribution of various specific SCL-based learning methods to economic literacy and student character.

Third, there are limitations related to the study group. This study was conducted in a limited number of high schools, reflecting specific demographic characteristics. Future studies could consider respondents from high schools across various provinces in Indonesia, or even universities. Furthermore, the influence of individual and demographic factors on respondents could be considered to broaden the scope of research on economics learning in high schools, relating to economic literacy and student character. Fourth, this study did not examine the impact of SCL on students' economic literacy and character after they graduate. This could provide an opportunity for further research to examine the contribution of economics learning or education to improving students' economic literacy and character after they graduate.

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