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The Effect of Scouting Activities and Environmental Support on Students' Academic Achievement with Self-Regulated Learning as a Mediating Variable in the PLS-SEM Approach

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Abstrak

Penelitian ini bertujuan untuk menganalisis pengaruh Kegiatan Kepramukaan dan Dukungan Lingkungan terhadap Prestasi Akademik Siswa dengan Self-Regulated Learning (SRL) sebagai variabel mediasi menggunakan pendekatan Partial Least Squares Structural Equation Modeling (PLS-SEM). Penelitian ini menggunakan desain survei kuantitatif yang melibatkan siswa yang aktif mengikuti kegiatan kepramukaan dan kegiatan akademik. Data dikumpulkan melalui kuesioner terstruktur yang disebarkan menggunakan Google Forms dan dianalisis dengan perangkat lunak SmartPLS. Hasil evaluasi model pengukuran menunjukkan bahwa seluruh konstruk telah memenuhi kriteria validitas konvergen, validitas diskriminan, dan reliabilitas, yang ditunjukkan oleh nilai factor loading di atas 0,70, nilai Average Variance Extracted (AVE) di atas 0,50, serta nilai composite reliability yang melebihi 0,70. Hasil analisis model struktural menunjukkan bahwa Kegiatan Kepramukaan berpengaruh positif dan signifikan terhadap Self-Regulated Learning ($\beta = 0,419$; $p < 0,05$) dan Prestasi Akademik ($\beta = 0,587$; $p < 0,05$). Dukungan Lingkungan juga memiliki pengaruh positif dan signifikan terhadap Self-Regulated Learning ($\beta = 0,575$; $p < 0,05$), namun pengaruh langsungnya terhadap Prestasi Akademik tidak signifikan secara statistik ($\beta = 0,383$; $p > 0,05$). Selain itu, Self-Regulated Learning tidak berpengaruh signifikan terhadap Prestasi Akademik ($\beta = -0,059$; $p > 0,05$), sehingga peran mediasi SRL dalam model penelitian ini tidak terbukti. Temuan penelitian menunjukkan bahwa partisipasi dalam kegiatan kepramukaan dan lingkungan yang mendukung berkontribusi secara substansial terhadap kemampuan regulasi diri siswa, sedangkan prestasi akademik lebih banyak dipengaruhi secara langsung oleh keterlibatan aktif siswa dalam kegiatan kepramukaan. Penelitian ini memberikan kontribusi terhadap pengembangan literatur mengenai pendidikan ekstrakurikuler, dukungan lingkungan, dan perkembangan akademik siswa dengan menegaskan pentingnya faktor-faktor nonkognitif dalam pencapaian prestasi pendidikan.

Kata Kunci: Kegiatan Kepramukaan, Dukungan Lingkungan, Self-Regulated Learning, Prestasi Akademik, PLS-SEM.

Abstract

This study investigates the effect of Scouting Activities and Environmental Support on Students' Academic Achievement with Self-Regulated Learning (SRL) as a mediating variable using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. The research employed a quantitative survey design involving students participating in scouting and academic activities. Data were collected using a structured questionnaire distributed through Google Forms and analyzed using SmartPLS. The measurement model evaluation confirmed that all constructs met the criteria for convergent validity, discriminant validity, and reliability, with factor loadings above 0.70, AVE values above 0.50, and composite reliability values exceeding 0.70. The structural model results revealed that Scouting Activities had a positive and significant effect on Self-Regulated Learning ($\beta = 0.419$; $p < 0.05$) and Academic Achievement ($\beta = 0.587$; $p < 0.05$). Environmental Support also showed a positive and significant influence on Self-Regulated Learning ($\beta = 0.575$; $p < 0.05$), but its direct effect on Academic Achievement was not statistically significant ($\beta = 0.383$; $p > 0.05$). Furthermore, Self-Regulated Learning did not significantly affect Academic Achievement ($\beta = -0.059$; $p > 0.05$), indicating that the mediating role of SRL was not supported in this model. The findings suggest that scouting participation and supportive environments contribute substantially to students' self-regulation abilities, while academic achievement is more directly influenced by students' active engagement in scouting activities. This study contributes to the literature on extracurricular education, environmental support, and student academic development by highlighting the importance of non-cognitive factors in educational achievement.

Keywords: Scouting Activities, Environmental Support, Self-Regulated Learning, Academic Achievement, PLS-SEM

A. Introduction

Scouting Activities, Environmental Support, and Academic Achievement have become important concerns in contemporary educational studies, particularly as schools increasingly emphasize factors influencing learning success beyond students' cognitive abilities alone. Recent literature over the past five years indicates that students' academic achievement is not solely determined by intellectual capacity, but is also influenced by participation in structured extracurricular activities, the quality of the learning environment, and students' ability to regulate their own learning processes independently (Chen et al., 2024a; Feraco et al., 2023a). Several recent studies have highlighted that involvement in extracurricular activities contributes to the development of discipline, social skills, learning motivation, and adaptive learning behaviors, which are closely associated with improved academic performance (Isma & Yusuf, 2025; Shoaib et al., 2025) .

In the context of school extracurricular programs, Scouting Activities possess distinctive characteristics because they are designed to foster responsibility, leadership, teamwork, perseverance, and discipline. These competencies are highly relevant to formal learning processes as they can strengthen students' behavioral readiness in planning, monitoring, and maintaining goal-oriented learning activities (Feraco et al., 2022a) . Recent findings also demonstrate that participation in scouting activities is associated with the development of positive learning character. Nevertheless, the direct effect of scouting activities on academic achievement remains inconsistent across studies, suggesting the need for further explanation regarding the mechanisms underlying this relationship (Zhao et al., 2024).

In addition to scouting activities, Environmental Support is another important contextual factor in explaining students' learning success. Support from family, teachers, peers, and the school climate provides emotional reinforcement, academic guidance, and learning motivation that may enhance students' engagement in the learning process. Recent studies suggest that a supportive learning environment not only directly influences learning outcomes but also affects how students manage academic demands through self-regulation processes. This mechanism

can be explained through Self-Regulated Learning (García-Ros et al., 2023; Xu et al., 2023). In modern educational literature, self-regulated learning is considered one of the strongest non-cognitive predictors of Academic Achievement because it reflects students' ability to set learning goals, select appropriate strategies, monitor progress, and evaluate learning outcomes independently. Numerous studies in the last five years consistently reveal that students with higher levels of self-regulated learning tend to achieve better academic performance. Therefore, scouting activities and environmental support are assumed to influence academic achievement not only directly but also indirectly through the enhancement of self-regulated learning (Chen et al., 2024b; Ha et al., 2023).

Preliminary observations in the field reveal an interesting phenomenon. Some students who actively participate in scouting activities do not necessarily demonstrate consistently high academic achievement. Conversely, some students who receive adequate environmental support still experience difficulties in managing study time, maintaining academic consistency, and sustaining learning motivation. These conditions indicate that the influence of external learning experiences on academic achievement may depend on the extent to which students possess adequate self-regulation abilities. Theoretically, this study is grounded in the Social Cognitive Theory developed by Albert Bandura. This theory explains that learning behavior is the result of reciprocal interactions among personal, behavioral, and environmental factors (Bandura, 2010; Schunk, 2012). Within this framework, scouting activities represent behavioral factors, environmental support represents external factors, and self-regulated learning represents personal factors that potentially explain how external experiences can be transformed into academic success (Bandura, 2001) .

Although studies on extracurricular activities, environmental support, and self-regulated learning continue to grow, important research gaps still remain. Most previous studies have examined the relationships among these variables separately, while studies investigating them simultaneously within a single structural model remain relatively limited. Furthermore, only a few studies have specifically examined the mediating role of Self-Regulated Learning in the relationship between Scouting Activities, Environmental Support, and Academic Achievement. This aligns with recent research trends in education that increasingly emphasize the importance of non-cognitive competencies, learning autonomy, and adaptive abilities as determinants of academic success (Ha, 2023; N. Sari et al., 2023).

Based on the above explanation, the grand research question of this study is: to what extent do Scouting Activities and Environmental Support influence Academic Achievement, and is this relationship mediated by Self-Regulated Learning? Therefore, this study aims to analyze both the direct and indirect effects among these variables using the PLS-SEM approach. The findings are expected to contribute theoretically to the development of students' academic achievement models and practically to the strengthening of learning strategies in schools.

B. Methodology

Research Design

This study employed a quantitative approach using a survey research design, with questionnaires utilized as the primary instrument for data collection (Feraco et al., 2023b). The research applied an explanatory and correlational design to examine the relationships among the independent variables, namely Scouting Activities and Environmental Support, the mediating variable of Self-Regulated Learning, and the dependent variable of Academic Achievement. Through this approach, the study aimed to analyze both the direct and indirect effects among the variables within the PLS-SEM framework.

Instruments

The variables in this study were developed based on the conceptual framework related to student learning behavior and academic achievement. The model includes Scouting Activities and Environmental Support as independent variables, Self-Regulated Learning as the mediating variable, and Academic Achievement as the dependent variable. Scouting Activities are expected to foster discipline, responsibility, and collaborative learning experiences among students, while Environmental Support reflects the role of family, school, and social surroundings in supporting students' learning processes. Furthermore, Self-Regulated Learning plays an important role in helping students manage their learning strategies, motivation, and academic responsibilities, which subsequently contributes to improved academic achievement. This framework provides a comprehensive understanding of both the direct and indirect relationships among variables in explaining students' academic outcomes. The research instrument initially consisted of 43

indicators designed to measure all variables in the study. Data were collected through a survey method using Google Forms as the medium for questionnaire distribution. Responses were measured using a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. The operational definitions and measurement indicators of each variable are presented in Table 1.

Table 1 The construct of the research variables

No	Variable	Indicators	Construct Code	References
1	X_1: Scout Activities	Participation in scouting activities	KP1	(Feraco et al., 2022b; Handayani et al., 2025; Indriyani et al., 2025; Tyas et al., 2021)
2		Involvement in scouting training	KP2	
3		Discipline in scouting activities	KP3	
4		Teamwork within scouting groups	KP4	
5		Development of independence	KP5	
6		Leadership experience	KP6	
7		Responsibility development	KP7	
8		Initiative in joining activities	KP8	
9		Problem-solving skills	KP9	
10		Positive values of scouting activities	KP10	
11	X_2: Environmental Support	Parental support	DL1	(Erwanti & Suratno, 2026; Roca-Barcelo et al., 2021; Sutarni et al., 2021; Voisin et al., 2023)
12		Family attention to academics	DL2	
13		Learning motivation from family	DL3	
14		Teacher support in learning	DL4	
15		Conducive school environment	DL5	
16		Availability of learning facilities	DL6	
17		Learning feedback	DL7	
18		Peer support	DL8	
19		Collaborative learning interaction	DL9	
20		Positive academic social environment	DL10	
21	Y: Self-Regulated Learning (SRL)	Academic grade achievement	PA1	(Kosnin, 2007; Matitaputty et al., 2025; Schunk, 2005; Siddik & Ishak, 2023)
22		Understanding learning materials	PA2	
23		Achievement of learning targets	PA3	
24		Consistency in academic performance	PA4	
25		Classroom academic participation	PA5	
26		Academic competence	PA6	
27		Improvement in learning outcomes	PA7	
28		Timely task completion	PA8	
29		Stability of academic achievement	PA9	
30		Academic grade	PA10	

No	Variable	Indicators	Construct Code	References
		achievement		
31			SL1	
32		Goal setting in learning	SL2	
33		Learning strategy planning	SL3	
34		Time management	SL4	
35		Monitoring learning progress	SL5	(Lindholm-Leary & Borsato, 2006; Moore, 2019; Salma & Alsa, 2023; Saputro & Indriayu, 2025)
36	Z: Academic Achievement	Evaluation of learning outcomes	SL6	
37		Learning motivation regulation	SL7	
38		Use of learning strategies	SL8	
39		Independent learning resources	SL9	

Data Analysis

Statistical analysis in this study used the PLS-SEM approach. The outer model evaluation was conducted to test the validity and reliability of the indicators and constructs using the criteria of factor loading > 0.70, AVE > 0.50, and reliability values including Cronbach's Alpha, rho_A, and Composite Reliability > 0.70. Furthermore, the goodness-of-fit model was assessed using SRMR < 0.10, NFI > 0.50, and rms Theta < 0.120 to determine the suitability of the model (Hair et al., 2020; Rasid & Azhari, 2025). The inner model analysis was then performed to examine the significance of both direct and indirect effects, including the mediating role of Self-Regulated Learning in the relationship between Scouting Activities, Environmental Support, and Academic Achievement.

C. Result and Discussion

Evaluation of Measurement Models (*Outer Model*)

Evaluation of the measurement model is an important stage in PLS-SEM analysis to ensure that each indicator used in this study is capable of measuring the latent variables in accordance with the research objectives (Hair et al., 2019; Rasid et al., 2025). The assessment of the outer model was conducted through factor loading, reliability, and discriminant validity testing in order to determine the quality and suitability of the indicators used in measuring Scouting Activities, Environmental Support, Self-Regulated Learning, and Academic Achievement. Based on the SmartPLS output, the initial model consisted of 39 indicators. However, several indicators that did not meet the minimum loading factor criterion of 0.70 were removed from the model. After the elimination process, only indicators that fulfilled the required threshold were retained, indicating that the remaining indicators were valid and appropriate for further analysis in explaining the relationships among the variables in this study.

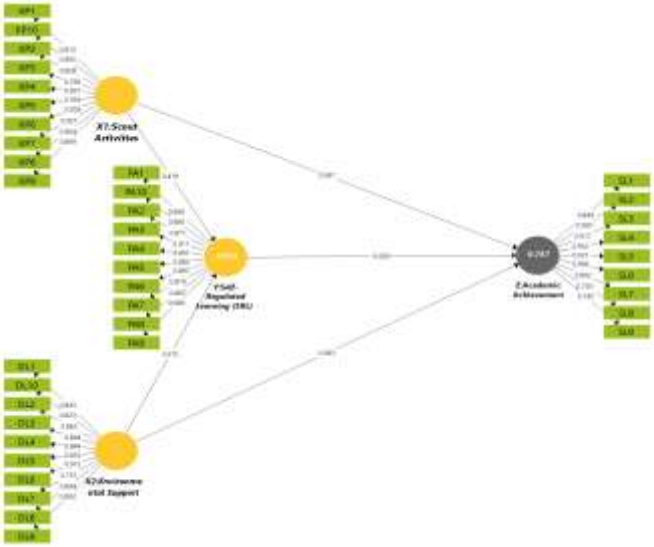

Figure 1. Measurement Model Evaluation

Based on the analysis results presented in the table, all loading factor values for each indicator have met the convergent validity criteria, as they are above the threshold of 0.70. The loading factor values range from 0.730 to 0.952. The lowest value was found in indicator SL8 with a loading factor of 0.730, while the highest value was observed in indicator SL4 with a loading factor of 0.952. These results indicate that the correlation between the indicators and their respective constructs ranges from 73.0% to 95.2%, suggesting that all indicators make strong contributions in representing their variables. Furthermore, the Average Variance Extracted (AVE) values for all variables exceeded the minimum requirement of 0.50. Variable X1 (Scouting Activities) obtained an AVE value of 0.770, variable X2 (Environmental Support) obtained 0.724, variable Y (Self-Regulated Learning) obtained 0.774, and variable Z (Academic Achievement) obtained 0.771. Therefore, it can be concluded that all variables in this research model satisfy the convergent validity criteria.

Table 2. Outer model: convergent validity and reliability

NO	Variable	Indicator	Convert Validity		Consistency Reliability		
			FL (λ>0.70)	AVE (>0.50)	CA (α>0.70)	rho_A (φ>0.70)	CR (δ>0.70)
1	X_1: Scout Activities	KP1	0.812	0.770	0.966	0.969	0.971
2		KP2	0.828				
3		KP3	0.785				
4		KP4	0.837				
5		KP5	0.934				
6		KP6	0.929				
7		KP7	0.927				
8		KP8	0.904				
9		KP9	0.899				
10		KP10	0.905				
11	X_2: Environmental Support	DL1	0.843	0.724	0.957	0.961	0.963
12		DL2	0.862				
13		DL3	0.844				
14		DL4	0.844				
15		DL5	0.832				
16		DL6	0.912				
17		DL7	0.751				
18		DL8	0.894				
19		DL9	0.892				
20		DL10	0.823				
21	Y: Self-Regulated Learning (SRL)	PA1	0.890	0.774	0.968	0.970	0.972
22		PA2	0.871				
23		PA3	0.911				
24		PA4	0.897				
25		PA5	0.882				
26		PA6	0.897				
27		PA7	0.879				
28		PA8	0.807				
29		PA9	0.900				
30		PA10	0.860				
31	Z: Academic Achievement	SL1	0.849	0.771	0.962	0.968	0.968
32		SL2	0.920				
33		SL3	0.917				
34		SL4	0.952				
35		SL5	0.921				
36		SL6	0.944				
37		SL7	0.892				
38		SL8	0.730				
39		SL9	0.745				

Based on the loading factor values, the most dominant indicator was SL4 with a value of 0.952, indicating that the indicator explained 95.2% of the construct variance. In contrast, the

indicator with the lowest contribution was SL8 with a loading factor of 0.730 or 73.0%. In reliability testing, a variable is considered reliable if it has Cronbach's Alpha (CA), rho_A, and Composite Reliability (CR) values above 0.70. The analysis results revealed that all variables fulfilled these criteria. Variable X1 had a rho_A value of 0.966, CA of 0.969, and CR of 0.971. Variable X2 obtained a rho_A value of 0.957, CA of 0.961, and CR of 0.963. Variable Y showed a rho_A value of 0.968, CA of 0.970, and CR of 0.972. Meanwhile, variable Z had a rho_A value of 0.962, CA of 0.968, and CR of 0.968. Based on these findings, it can be concluded that all variables in this study demonstrated very high internal consistency, indicating that the research instrument is reliable and appropriate for measuring Scouting Activities, Environmental Support, Self-Regulated Learning, and Academic Achievement.

Table 3 Discriminant validity: The Fornell Larcke

Variables	KP	DL	PA	SL
X1: Scout Activities	0.877	-		
X2: Environmental Support	0.889	0.851	-	
Y: Self-Regulated Learning (SRL)	0.929	0.947	0.880	-
Z: Academic Achievement	0.872	0.849	0.849	0.878

Based on the results of the discriminant validity assessment using the Fornell–Larcker criterion, the square root values of the Average Variance Extracted (√AVE) for each construct were higher than the correlations among the other constructs in the model. The √AVE values were 0.877 for X1 (Scouting Activities), 0.889 for X2 (Environmental Support), 0.929 for Y (Self-Regulated Learning), and 0.872 for Z (Academic Achievement). When compared with the inter-construct correlation values, such as the relationship between X1 and the other constructs (e.g., 0.851 and 0.849), as well as the remaining correlations that were lower than the diagonal values, it can be observed that each construct exhibited a higher √AVE value than its correlations with other constructs. This finding indicates that each construct explains its own indicators more effectively than the indicators of other constructs. Therefore, it can be concluded that all variables in this research model satisfy the discriminant validity criteria based on the Fornell–Larcker method. In other words, each construct demonstrates adequate distinctiveness and there is no issue of overlapping measurements among the variables, confirming that the model possesses satisfactory discriminant validity.

PLS-SEM Analysis: Evaluation of the Structural Model (*Inner Model*)

The structural evaluation in PLS-SEM is mainly conducted to determine the predictive capability of the proposed research model. This evaluation focuses on how effectively the model explains variations in the observed data and predicts the endogenous constructs. In general, structural model assessment is intended to provide a clearer understanding of the phenomenon being studied within the research framework. Through examining the relationships between variables, researchers are able to identify the factors influencing the phenomenon and obtain a more comprehensive understanding of the interactions and mechanisms underlying the study.

Table 4. Measurement of structural model: R^2

Variables	R Square	R Square Adjusted	Decision
Y: Self-Regulated Learning (SRL)	0.933	0.930	Substantial
Z: Academic Achievement	0.787	0.773	Substantial

Based on the R-Square test results presented in the table, the coefficient of determination (R^2) for variable Y, namely Self-Regulated Learning (SRL), was 0.933. This result indicates that X1 (Scouting Activities) and X2 (Environmental Support) jointly explained 93.30% of the variance in SRL, while the remaining 6.70% was influenced by other factors outside the proposed research model. Furthermore, the R^2 value for variable Z, namely Academic Achievement, was 0.787. This finding suggests that X1 (Scouting Activities), X2 (Environmental Support), and Y (Self-Regulated Learning) collectively contributed 78.70% to the variance in Academic Achievement, whereas the remaining 21.30% was explained by other variables not included in this study.Therefore, it can be concluded that the proposed structural

model demonstrates substantial explanatory power, particularly for Self-Regulated Learning, which falls into the very strong category, while Academic Achievement can be categorized as having strong explanatory capability within the model.

Table 5. Measurement of structural model: f2

Variabel	Y		Z:	
	Value	**Discision**	**Value**	**Discision**
X1: Scout Activities	0.552	Large Effect	0.220	Medium Effect
X2: Environmental Support	1.041	Large Effect	0.071	Small Effect
Y: Self-Regulated Learning (SRL)	-	-	0.001	No Effect

Based on the f^2 effect size assessment using the criteria of 0.02 = small, 0.15 = medium, and 0.35 = large, the results indicate that for variable Y (Self-Regulated Learning), Scouting Activities produced an f^2 value of 0.552 and Environmental Support produced an f^2 value of 1.041. Both values fall within the large effect category, indicating a substantial contribution in explaining variations in Self-Regulated Learning. Meanwhile, for variable Z (Academic Achievement), the effect of Scouting Activities yielded an f^2 value of 0.220, which is categorized as a medium effect. In contrast, Environmental Support showed an f^2 value of 0.071, indicating a small effect size. Furthermore, the effect of Self-Regulated Learning on Academic Achievement was only 0.001, which is below the threshold value of 0.02. Therefore, it can be concluded that Self-Regulated Learning does not demonstrate a meaningful effect size on Academic Achievement within the proposed research model.

Table 6. Measurement of structural model: Q^2

Variable	**Construct Crossvalidated**					**Discision**
		Redundancy		**Communality**		
	SSO	**SSE**	**$Q^2_{(>0.35)}$**	**SSE**	**$Q^2_{(>0.35)}$**	
X_1: Scout Activities	500.000	500.000	-	149.181	0.702	strong
X_2: Environmental Support	500.000	500.000	-	170.331	0.659	strong
Y: Self-Regulated Learning	500.000	144.818	0.710	144.738	0.711	strong
Z: Academic Achievement	450.000	194.151	0.569	134.742	0.701	strong

Based on the Q^2 predictive relevance analysis, the communality values ranged from 0.701 to 0.711, while the redundancy values ranged from 0.569 to 0.710 for the endogenous constructs. Specifically, Self-Regulated Learning demonstrated a redundancy value of 0.710 and a communality value of 0.711, whereas Academic Achievement showed a redundancy value of 0.569 and a communality value of 0.701. These findings indicate that the structural model is capable of explaining approximately 56.90% to 71.10% of the observed phenomenon related to Self-Regulated Learning and Academic Achievement. Furthermore, the results suggest that the model possesses strong predictive relevance, implying that Scouting Activities and Environmental Support provide substantial predictive contributions in explaining the endogenous variables within this study.

Path Analysis and Hypothesis Testing

One of the main purposes of hypothesis testing is to investigate the relationships between variables in the proposed research model. This process is carried out by evaluating both the magnitude and significance of the relationships among the variables involved. The assessment of direct effects helps determine whether the empirical results are aligned with the theoretical assumptions underlying the model. In addition, hypothesis testing also examines the presence and significance of mediating effects within the model. This analysis is important for explaining the mechanisms through which variables interact and for understanding how certain variables can mediate or influence the relationships between other variables.

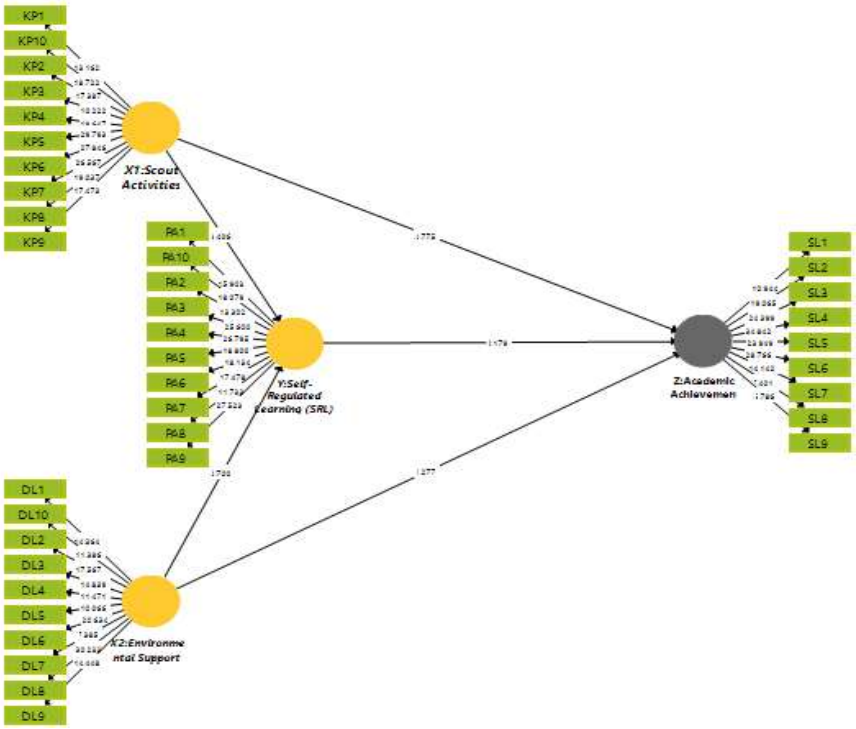

Figure 2. Structural Model Evaluation

Based on the hypothesis testing results, H-DIR1 revealed that the effect of Scouting Activities on Self-Regulated Learning produced a coefficient value of β = 0.419, T-statistics = 3.338 (> 1.96), and p-values = 0.001 (< 0.05). These findings indicate that Scouting Activities have a positive and significant effect on Self-Regulated Learning, with an effect magnitude of 41.90%. Furthermore, H-DIR2 demonstrated that the effect of Scouting Activities on Academic Achievement yielded β = 0.587, T-statistics = 2.670 (> 1.96), and p-values = 0.008 (< 0.05), indicating a positive and significant influence of 58.70%. In H-DIR3, the effect of Environmental Support on Self-Regulated Learning showed β = 0.575, T-statistics = 4.644 (> 1.96), and p-values = 0.000 (< 0.05). This result suggests that Environmental Support positively and significantly affects Self-Regulated Learning, contributing 57.50% to the construct. Meanwhile, H-DIR4 examined the effect of Environmental Support on Academic Achievement, resulting in β = 0.383, T-statistics = 1.288 (< 1.96), and p-values = 0.198 (> 0.05). Although the relationship was positive, the effect was not statistically significant. Similarly, H-DIR5 indicated that the effect of Self-Regulated Learning on Academic Achievement produced β = -0.059, T-statistics = 0.178 (< 1.96), and p-values = 0.859 (> 0.05), suggesting a negative and non-significant relationship. Overall, these findings demonstrate that Scouting Activities and Environmental Support play more substantial roles in enhancing Self-Regulated Learning, whereas improvements in Academic Achievement are more directly influenced by Scouting Activities within the proposed research model.

Table 7. Results of direct effects

Hypothesis	Path Analysis	β – values (+/-)	STDEV 0.097	T - Statistics (>1.96)	P - Values (>0.05)	Decision
H-DIR1$_a$	X1 → Y	0.419	0.125	3.338	0.001	Accepted
H-DIR2$_b$	X_1→ Z	0.587	0.220	2.670	0.008	Accepted
H-DIR3$_c$	X_2→ Y	0.575	0.124	4.644	0.000	Accepted
H-DIR4$_d$	X_2 → Z	0.383	0.297	1.288	0.198	Rejected
H-DIR5$_e$	Y → Z	-0.059	0.334	0.178	0.859	Rejected

A hypothesis is considered supported when the T-statistics value exceeds 1.96 and the p-values are below 0.05, while the direction of the relationship is determined by the sign of the β coefficient. Based on the mediation testing results, H-IND1, representing the indirect path of Scouting Activities → Self-Regulated Learning → Academic Achievement, obtained β = -0.025, T-statistics = 0.197, and p-values = 0.844. These findings indicate that the indirect effect of Scouting Activities on Academic Achievement through Self-Regulated Learning is negative and

statistically non-significant. In other words, Self-Regulated Learning does not significantly mediate the relationship between Scouting Activities and Academic Achievement. Furthermore, H-IND2, representing the indirect relationship between Environmental Support → Self-Regulated Learning → Academic Achievement, produced β = -0.034, T-statistics = 0.154, and p-values = 0.877. This result also demonstrates a negative and non-significant indirect effect, suggesting that Self-Regulated Learning is unable to function as a mediating variable in the relationship between Environmental Support and Academic Achievement within the proposed structural model

Table 8. Results of indirect effects

Hypothesis	Path Analysis	β – values	STDEV	T - Statistics	P - Values	Decision
		(+/-)	0.097	(>1.96)	(>0.05)	
H-IND$_1$	$X_1 \rightarrow Y \rightarrow Z$	-0.025	0.126	0.197	0.844	Rejected
H-IND$_2$	$X_2 \rightarrow Y \rightarrow Z$	-0.034	0.221	0.154	0.877	Rejected

Discussion

The findings of this study indicate that Scouting Activities have a positive effect on students' Self-Regulated Learning (SRL) (Atmaja & Pinaruh, 2025; Susilowaty, 2020). This result suggests that students who actively participate in scouting activities tend to develop stronger abilities to regulate and manage their own learning processes. Scouting activities emphasize discipline, responsibility, leadership, teamwork, problem-solving, and independence, which are closely related to the dimensions of Self-Regulated Learning, including goal setting, self-monitoring, self-control, and self-evaluation (Ariyanti & Himsyah, 2021; Kusumawati, 2012). From the perspective of social cognitive theory, experiential learning activities such as scouting provide students with opportunities to develop autonomy and personal responsibility. Through organizational involvement and collaborative activities, students learn how to manage time effectively, solve challenges independently, and maintain commitment toward group objectives. These experiences indirectly strengthen students' intrinsic motivation and their ability to organize academic tasks efficiently. Therefore, scouting activities not only function as extracurricular programs but also serve as developmental platforms that enhance students' self-management and learning independence. The results are consistent with previous international studies which reported that participation in leadership-oriented and extracurricular activities contributes significantly to the development of Self-Regulated Learning skills (Safitri, 2025; Wadu et al., 2024). Students who are actively involved in organizational and social activities generally demonstrate higher levels of self-discipline, emotional control, and learning persistence compared to students with limited participation in such activities. Furthermore, this study found that Environmental Support has a significant positive effect on Self-Regulated Learning (Geng & Su, 2025; Huang et al., 2025).

This finding indicates that supportive environments play an important role in shaping students' learning behavior and self-regulation abilities. Environmental support may come from family, peers, lecturers, or the academic environment itself. When students receive emotional, academic, and social support, they are more likely to feel motivated and confident in managing their learning activities. According to social support theory, a supportive learning environment creates psychological security and encourages students to engage more actively in academic activities. Supportive environments also enhance students' self-efficacy, which is an important component of Self-Regulated Learning (Cholis et al., 2026). Students who feel supported tend to establish clearer academic goals, maintain stronger learning motivation, and demonstrate greater persistence in overcoming academic difficulties. Therefore, environmental support becomes an essential external factor that contributes to the improvement of students' learning autonomy and academic behavior (Nadeak et al., 2024; Zulfa et al., 2025). However, the findings reveal that the direct effect of Scouting Activities on Academic Achievement is relatively weak. This result suggests that scouting activities do not directly improve students' academic performance. Instead, scouting primarily contributes to the development of non-cognitive competencies such as leadership, communication skills, discipline, and social responsibility. These competencies may not immediately influence academic scores, but they provide important psychological and behavioral foundations that support long-term academic success (Fatchudin et al., 2025; D. N. R. Sari, 2024). Similarly, the direct effect of Environmental Support on Academic Achievement is also relatively small. This finding implies that external support

alone is insufficient to significantly improve academic achievement unless students possess the ability to regulate and manage their learning effectively. Supportive environments may provide motivation and learning facilities, but academic success ultimately depends on how students utilize these resources through effective self-regulation strategies (Ratumbuisang et al., 2024; Yasmi et al., 2025).

The most important finding of this study is the mediating role of Self-Regulated Learning in the relationship between Scouting Activities, Environmental Support, and Academic Achievement. The results indicate that both scouting activities and environmental support improve academic achievement indirectly through the enhancement of students' Self-Regulated Learning abilities (Azhari et al., 2024; Rasid & Azhari, 2026a). Students with strong Self-Regulated Learning skills are more capable of planning learning activities, managing study time, selecting effective learning strategies, monitoring academic progress, and maintaining consistent learning motivation. This finding supports Zimmerman's theory of Self-Regulated Learning, which emphasizes that academic success is strongly influenced by students' active involvement in controlling their own cognitive, motivational, and behavioral processes. In this context, scouting activities and environmental support function as external factors that facilitate the development of internal self-regulation abilities. Consequently, academic achievement is more likely to improve when students are able to transform external experiences and support into effective self-regulated learning behaviors (Astra et al., 2024; Putri, 2024).

The findings of this study have several practical implications for higher education institutions. Universities should strengthen student development programs that focus not only on academic competence but also on character building, leadership development, and learning autonomy. Educational institutions are encouraged to optimize extracurricular activities such as scouting programs and create supportive academic environments that foster students' motivation and self-regulation skills (Azhari & Fuadi, 2026; Rasid et al., 2026). In addition, lecturers and academic advisors should encourage students to develop effective learning strategies and independent learning habits to improve sustainable academic achievement. Overall, this study confirms that students' academic achievement is influenced not only by intellectual ability but also by organizational experiences, environmental support, and students' capacity to regulate their own learning processes effectively (Rasid & Azhari, 2026b).

D. Conclusion

This study examined the relationships among Scouting Activities, Environmental Support, Self-Regulated Learning, and Academic Achievement using the PLS-SEM approach. The findings demonstrated that Scouting Activities positively and significantly influence both Self-Regulated Learning and Academic Achievement. Environmental Support was also found to have a significant positive effect on Self-Regulated Learning, although its direct influence on Academic Achievement was not statistically significant. In addition, Self-Regulated Learning did not show a significant effect on Academic Achievement, indicating that the mediating role of Self-Regulated Learning was not supported within the proposed structural model.

These findings suggest that students' participation in scouting activities contributes not only to the development of self-regulation skills but also directly enhances academic achievement through the improvement of discipline, responsibility, leadership, and collaborative abilities. Meanwhile, supportive learning environments primarily strengthen students' learning autonomy and motivational aspects rather than directly affecting academic outcomes. The study highlights the importance of extracurricular engagement and environmental factors in shaping students' academic development beyond cognitive competence alone. Practically, educational institutions are encouraged to strengthen scouting and student development programs that promote leadership, discipline, and independent learning behaviors. Schools and universities should also create supportive academic environments that foster motivation, emotional support, and positive learning interactions. Overall, this study confirms that academic achievement is influenced by both external learning experiences and students' behavioral development, emphasizing the importance of integrating cognitive and non-cognitive educational approaches in modern learning environments.

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