

SYNERGY OF PEER AND QUALITY OF LEARNING FACILITIES: THE KEY TO SUCCESSFUL VOCATIONAL SCHOOL STUDENT ACHIEVEMENT

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ABSTRACT

This study aims to identify factors that influence student achievement, such as peers and the quality of learning facilities. Using a quantitative approach with a saturated sample of 108 students of class X Office Management and Business Services (MPLB), XI MPLB, and X Retail Business (BR), data were collected through questionnaires and analyzed using the Statistical Package for the Social Sciences (SPSS) version 29. The analysis involved multiple linear regression, statistical prerequisite tests, and hypothesis testing, including t-test, f-test, and R-square. The results showed that peer factors and the quality of learning facilities had a significant impact on student achievement both partially and simultaneously. Recommendations include increasing collaborative activities between students and improving facilities. Practically, this research can be a basis for further research.

Keyword: Peers, Quality of learning facilities, Student achievement, Social interaction

ABSTRAK

Penelitian ini bertujuan untuk mengidentifikasi faktor-faktor yang memengaruhi prestasi siswa, seperti teman sebaya dan kualitas fasilitas belajar. Menggunakan pendekatan kuantitatif dengan sampel jenuh sebanyak 108 siswa kelas X Manajemen Perkantoran dan Layanan Bisnis (MPLB), XI MPLB, dan X Bisnis Ritel (BR), data dikumpulkan melalui kuesioner dan dianalisis menggunakan *Statistical Package for the Social Sciences* (SPSS) versi 29. Analisis melibatkan regresi linier berganda, uji prasyarat statistik, dan pengujian hipotesis, termasuk uji-t, uji-f, dan *R-square*. Hasil menunjukkan bahwa faktor teman sebaya dan kualitas fasilitas belajar berdampak signifikan terhadap prestasi siswa baik secara parsial maupun simultan. Rekomendasi termasuk meningkatkan kegiatan kolaboratif antar siswa dan meningkatkan fasilitas. Secara praktis penelitian dapat menjadi pijakan bagi penelitian berikutnya.

Kata kunci: Teman sebaya, Kualitas fasilitas belajar, Prestasi belajar, Interaksi sosial

INTRODUCTION

Academic achievement, which demonstrates how learners, instructors, curricula, and educational institutions have met predetermined learning objectives, is a byproduct of education (Chapagai, 2024). Students' academic success has a significant impact on their future, particularly in terms of continuing their education, participating in technical training facilities, and achieving careers in their chosen professions (Ogot et al., 2020). Academic achievement is critical to the prosperity of nations, with a close relationship between socio-economic development and academic achievement. International studies such as the OECD's

PISA provide indicators of academic achievement, help analyze the strengths and weaknesses of education systems, and support education policy decision-making (Gamazo & Martinez-Abad, 2020).

Countries like Finland, Australia, and Singapore have demonstrated that a comprehensive approach to education can lead to remarkable achievements. In Finland, a strong focus on literacy, school equality, inclusion, and resilience has resulted in impressive PISA survey results since 2000, supported by comprehensive educational facilities and respectful student interactions (Agustyaningrum & Himmi, 2022). Australia's education system emphasizes subject choice and ability, with organized learning environments and harmonious student behavior contributing to above-average OECD performance, bolstered by sufficient educational resources (Department of Education, 2019). Singapore's modern learning facilities and positive peer interactions have led to outstanding achievements in mathematics, reading, and science, significantly surpassing OECD (OECD, 2023).

In this context, peers are crucial to a student's intellectual and social growth. Interactions with peers can influence attitudes and study habits, impacting student achievement. Research shows that students with persistent peers tend to have better study habits and stronger social networks, which improves their academic performance (Golsteyn et al., 2021). In addition, the quality of learning facilities, such as classrooms, libraries, and technology, is key to creating an effective learning environment (Yangambi, 2023). Research shows that adequate facilities improve student motivation and academic outcomes, with good access to physical and digital books encouraging independent learning habits and active engagement in academic materials (Damanik et al., 2023).

Although many studies have examined the impact of educational resources and peers on students' performance, this study offers a different perspective. The study by Nurjanah et al. (2022) focused on time management among high school students, while this study examined the quality of learning facilities in vocational schools. In addition, the study by Sawat et al. (2021) explored learning interests, while this study highlighted the impact of peer groups. With only one variable in common and differences in variables and locations, At Public Vocational High School 31 Jakarta, This study's goal is to investigate how peers and the quality of the learning facilities affect students' academic performance. The study's findings should provide practical methods for raising pupils' academic performance to the "Very Good" level.

LITERATURE REVIEW

Peers

Filade (2019) describes a peers as a small group of individuals who have similar interests and are generally close friends, regardless of age. Peers can help young people develop bargaining skills and problem-solving abilities in a social setting. Similarly, Laursen and Veenstra (2021) emphasize that peers are individuals who are similar in age and can affect or be affected by each other's actions or thoughts due to their interactions and experiences together. Tenenbaum et al. (2020), further define peers are those of similar age or educational level who collaborate to achieve shared learning goals, enhancing both academic outcomes and social skills through interaction and consensus-building.

According to Sholihah (2023), the indicators of peer influence include social interactions, providing information or experiences not obtained from families, skill development, and serving as examples of behavior or identity. Fitriani (2020) further identifies the indicators of peer influence as including social interactions that occur, habits exhibited by peers, encouragement to imitate, a sense of solidarity, and the support provided by peers. Additionally, Suwanto et al. (2021), note that peer influence encompasses social, emotional, and moral support provided, freedom to express opinions, act, and discover identity, facilitation of social learning, serving as role models, and the development of necessary skills. Together,

these perspectives highlight the multifaceted role of peer influence in shaping individuals' behavior and development.

Quality of Learning Facilities

According to Barrett et al. (2019), the standard of learning facilities includes all amenities and infrastructure required to guarantee that the educational process runs well in schools. High-quality facilities are crucial for facilitating teaching and learning activities, as their completeness significantly influences the efficiency of the learning process. Hanaysha et al. (2023) further elaborates that the quality of learning facilities refers to the comfort and adequacy of elements like air quality, temperature, lighting, and classroom components such as desks, chairs, and audio-visual equipment, which influence students' perceptions of their educational environment. Similarly, Mubarok et al. (2023) emphasize that the quality of learning facilities encompasses all necessary infrastructure and amenities for effective teaching and learning. This includes school buildings, classrooms, sports fields, places of worship, and art rooms as part of the infrastructure, while facilities also encompass textbooks, reading materials, tools, school laboratories, and various other learning media. These elements collectively contribute to creating conducive environments that enhance educational processes and support comprehensive learning experiences.

According to research by Ika Rahmawati and Rosy (2021), study rooms that are well furnished, appropriate learning equipment, enough lighting, and suitable furniture are all signs of a high-quality learning facility. In order to create learning settings that promote productive study habits and academic performance, several components are necessary. Similarly, findings from Fathoni and Sobandi (2019) indicate that indicators of learning facility quality include the condition of school buildings, the quantity and quality of classrooms, the functionality of libraries, classrooms, and laboratory facilities, the availability of textbooks, and the effective use of educational media and aids. Furthermore, as highlighted by Istanilah (2023), indicators such as the availability of student learning resources, adequate study spaces, utilization of learning aids, and the supportive roles of libraries and laboratories are crucial in enhancing the overall educational setting and facilitating productive teaching and learning processes.

Student Achievement

Ozcan (2021) explain student achievement is defined as the progress and success in reaching educational goals set by individuals or institutions, which includes acquiring knowledge, skills, and demonstrating effective task performance and problem-solving abilities. According to Tannous (2020), student achievement is the measure of students' performance in their studies and test results, which reflects the effectiveness of education and informs educational improvement and accountability. Kuo et al. (2024) refer to the level of success demonstrated by students in understanding academic content at school, measured by scores obtained from assessments covering various subjects. These perspectives collectively highlight student achievement as a multifaceted concept encompassing cognitive, affective, and psychomotor abilities, crucial for evaluating students' educational progress.

According to Yulyani (2022), student achievement involves various aspects related to instructional materials. These include demonstrating understanding of the material, recalling and explaining content, linking learning materials, accepting or rejecting instructional content, actively participating in learning activities, recognizing the importance of provided instructional material, applying the material in daily life, and achieving proficiency in mastering instructional content. These factors collectively contribute to assessing comprehensive student learning progress. Additionally, Yusuf and Sari (2022) categorize student achievement into cognitive (related to production), affective (related to emotion), and psychomotor (related to volition). These domains represent different facets of learning

outcomes, encompassing understanding and application of knowledge, development of attitudes and values, and acquisition of practical skills. Similarly, Wulanningtyas and Ate (2020) further highlight that student accomplishment includes the cognitive domain (knowledge), affective domain (attitudes), and psychomotor domain (skills). Understanding and assessing these domains comprehensively contribute to evaluating students' educational progress and overall development.

METHOD

This study tests three hypotheses related to the factors that influence the learning achievement of students of Public Vocational High School 31 Jakarta. First hypothesis (H1) states that there is a positive influence of peers on student achievement. The second hypothesis (H2) states that the quality of learning facilities has a positive effect on student achievement. The third hypothesis (H3) states that there is a positive influence of both peers and the quality of learning facilities on student achievement.

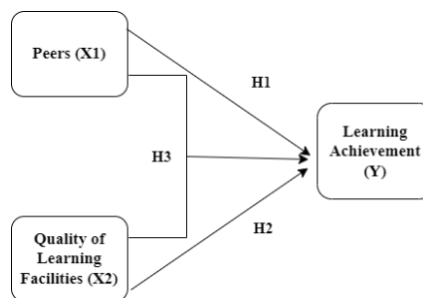


Figure 1. Hypothesis Development

This research uses a quantitative methodology. The data analysis in this study encompassed many primary methodologies. Descriptive statistics were employed to summarize the data, including measures such as the mean, median, and standard deviation. The accuracy and consistency of the measuring instruments were assured by validity and reliability assessments. Linear regression was employed to examine the correlation between peers, the quality of learning facilities, and learning performance. Statistical precondition tests verified that the data satisfied the assumptions necessary for regression analysis. Ultimately, the importance of the link and the model's ability to explain were assessed using hypothesis testing using the t-test, f-test, and R-square.

The sampling technique used is saturated sampling. According to Iimaaniyah (2019), saturated sampling is the selection of a sample by choosing all members of the population when the population size is relatively small. The following are the details of the respondent's profile:

Table 1. Summary of Respondent Profile

Respondent Demographics	Number of Respondents	Percentage (%)
Gender	Males	24 22,2%
	Female	84 77,8%
Class	X MPLB	36 33,3%
	XI MPLB	36 33,3%
	X BR	36 33,3%

An overview of the responder profile, which includes 108 pupils overall, is displayed in the table. Based on gender, the respondents include 24 males (22.2%) and 84 females (77.8%). In terms of class distribution, the respondents are evenly divided with 36 students (33.3%) each in classes X Office Management and Business Services (MPLB), XI MPLB, and X Retail Business (BR).

Data collection techniques include observation through a questionnaire consisting of 26 statements on a Likert scale with a range of 1 to 5. Peer measurement was conducted through a ten-item questionnaire, describing respondents' views on social interactions, information providers, skill development, and behavioral or identity examples (Sholihah, 2023). The quality of learning facilities was measured with a ten-item questionnaire, focusing on the condition of classrooms, school buildings, libraries, and learning media (Damayanti, 2019). Student achievement was measured using a six-item questionnaire, covering cognitive, affective, and psychomotor abilities (Yulyani, 2022).

RESULTS AND DISCUSSION

Peers

Peers was measured using primary data collected through a questionnaire distributed to 108 students, consisting of 6 validated statements out of 10. The mean score was calculated using Microsoft Excel.

Table 2. Average Score Calculation of Peers

No.	Indicator	Item	Score	Total Score	N	Mean	% per indicator
1	As Social Interaction	X1.1	405	772	2	386	24,59%
		X1.2	367				
2	Providing Information or Experiences Not Obtained from Family	X1.4	412	412	1	412	26,26%
3	Skill Development	X1.6	426	789	2	394,5	25,13%
		X1.8	363				
4	As a Model of Behavior and Identity	X1.9	378	378	1	378	24,08%
Total				2351	6	1570,5	100%

Based on the calculated percentages, the highest percentage indicator is X1.4, "Providing information or experiences not obtained from family," with the statement "My friends often invite me to study together or join extracurricular activities" scoring 26.26% with a total score of 412. This indicates that this indicator is the most dominant among the four indicators. Skill Development ranks second with a percentage of 25.13% on X1.6 "I can solve study problems well with my peers" and X1.8 "I am more confident in learning thanks to my peers' help." Social Interaction ranks third with a percentage of 24.59% on X1.1 "My peers always encourage me in daily life" and X1.2 "My peers always support me in learning activities." The indicator with the lowest percentage among the four indicators is X1.9, referring to being a model of behavior and identity, with the statement "My peers have habits that make me diligent and disciplined in studying," which stands at 24.08% and a total score of 378.

Quality of Learning Facilities

Quality of Learning Facilities was measured using primary data collected through a questionnaire distributed to 108 students, consisting of 10 validated statements. The mean score was calculated using Microsoft Excel.

Table 3. Average Score Calculation of Quality of Learning Facilities

No.	Indicator	Sub Indicator	Item	Score	Total Score	N	Mean	% per indicator
1	Infrastructure	Comfortable study room conditions	X2.1	421	1001	3	333,67	31,53%
			X2.2	310				
			X2.3	270				
		X2.4	389	783	2	391,5	37,07%	

No.	Indicator	Sub Indicator	Item	Score	Total Score	N	Mean	% per indicator
		School building condition	X2.5	394				
		Library and Laboratory	X2.6	438	1194	3	398	37,69%
			X2.7	399				
			X2.8	357				
2	Facilites	Media Learning	X2.9	387	766	2	383	36,27%
			X2.10	379				
Total					3744	10	1506,17	100%

The Library and Laboratory are the most prominent indicators, with a percentage of 37.69% and a total score of 438 for item X2.6, "The atmosphere in my school library is quiet and conducive to studying." This shows that these facilities greatly contribute to the quality of learning. The second highest indicator is the Condition of School Buildings, at 37.07% and a score of 783 for items X2.4 and X2.5, indicating good windows, doors, and clean, well-maintained buildings. Learning Media ranks third, with a percentage of 36.27% and a score of 766 for items X2.9 and X2.10, indicating sufficient textbooks and practical tools in classrooms. Lastly, Comfortable Learning Spaces indicators X2.1, X2.2, and X2.3 have a percentage of 31.53% and a total score of 1001, highlighting adequate lighting, comfortable temperatures, and noise-free classrooms.

Student Achievement

Student achievement was measured using primary data collected through a questionnaire distributed to 108 students, consisting of 4 validated statements out of 6. The mean score was calculated using Microsoft Excel.

Table 4. Average Score Calculation of Student Achievement

No.	Indicator	Item	Score	Total Score	N	Mean	% per indicator
1	Cognitive	Y.1	400	400	1	400	31,93%
2	Affective	Y.3	407	852	2	426	33,96%
		Y.4	445				
3	Psychomotor	Y.6	428	428	1	428	34,15%
Total				1680	4	1254	100%

Based on the displayed table, the highest to lowest scores for learning achievement indicators are as follows: the psychomotor indicator has the highest score with a total of 428 and a percentage of 34.15% from item Y.6, stating, "I am able to understand and follow instructions given in completing tasks." This shows that psychomotor skills contribute the most to learning achievement. The affective indicator is in second place with a total score of 852 and a percentage of 33.96%, consisting of two items: Y.3 with a score of 407, "I have the willingness and interest in learning materials," and Y.4 with a score of 445, "I am disciplined in learning." Lastly, the cognitive indicator holds the lowest position with a total score of 400 from one item, Y.1, "I am able to understand and follow instructions given in completing tasks," and has a percentage of 31.93%.

Normality Test

The significance value of 0.183 was calculated using the One-Sample Kolmogorov-Smirnov test to assess the normality. Given that the significance value exceeds 0.05, it may be inferred that the study data follows a normal distribution.

Table 5. Normality Test Results

One-Sample Kolmogorov-Smirnov Test			
		Unstandardized Residual	
N		108	
Normal Parameters ^{a,b}	Mean	.0000000	
	Std. Deviation	2.06687313	
Most Extreme Differences	Absolute	.074	
	Positive	.050	
	Negative	-.074	
Test Statistic		.074	
Asymp. Sig. (2-tailed) ^c		.183	
Monte Carlo Sig. (2-tailed) ^d	Sig.	.153	
	99% Confidence Interval	Lower Bound	.143
		Upper Bound	.162

Linearity Test

The significance value, as derived from the SPSS report, indicates that the variable peers on academic achievement has a deviation from linearity value of 0.054, which is greater than 0.05. Therefore, it can be concluded that the relationship between peer influence and academic achievement is linear.

Table 6. Linearity Test Results Peers to Student Achievement

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Student Achievement * Peers	Between Groups	(Combined)	172.986	16	10.812	2.474	.004
		Linearity	57.932	1	57.932	13.256	<.001
		Deviation from Linearity	115.053	15	7.670	1.755	.054
	Within Groups	397.681	91	4.370			
Total			570.667	107			

Based on the SPSS output analysis, the significance value for Deviation from Linearity for the variable learning facility quality in relation to student achievement is 0.508, which is greater than 0.05. Therefore, it can be concluded that there is a linear relationship between the quality of learning facilities and student achievement.

Table 7. Linearity Test Results Learning Facility Quality to Student Achievement

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Student Achievement * Quality of Learning Facilities	Between Groups	(Combined)	558.167	104	5.367	1.288	.490
		Linearity	27.768	1	27.768	6.664	.082
		Deviation from Linearity	530.399	103	5.150	1.236	.508
	Within Groups	12.500	3	4.167			
Total			570.667	107			

Multicollinearity Test

The peers and quality of learning facilities variables have tolerance values of 0.863 > 0.10 and VIFs of 1.158 < 10, indicating no multicollinearity. Thus, the regression model is considered good.

Table 8. Multicollinearity Test Results

Model	Coefficients ^a				Collinearity Statistics		
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Tolerance	VIF
	B	Std. Error	Beta				
1 (Constant)	9.515	1.693		5.621	<.001		
Peers	.198	.071	.275	2.777	.006	.863	1.158
Quality of Learning Facilities	.050	.041	.119	1.205	.231	.863	1.158

a. Dependent Variable: Student Achievement

Heteroskedaticity Test

The peers has a significance value of 0.081 > 0.05, and the learning facility quality has a significance value of 0.794 > 0.05, indicating no heteroscedasticity. Thus, the regression model is considered good.

Table 9. Heteroscedacity Test Results

Model	Coefficients ^a			t	Sig.
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta		
1 (Constant)	3.140	1.037		3.028	.003
Peers	-.077	.044	-.182	-1.761	.081
Quality of Learning Facilities	.007	.025	.027	.262	.794

a. Dependent Variable: RES2

Multiple Linear Regression

Here is the procedure for generating the multiple linear regression equation model:

$$Y = a + b_1x_1 + b_2x_2 + \dots + b_nx_n$$

$$Y = 7.579 + 0.139 * \text{Peers} + 0.143 * \text{Quality of Learning Facilities}$$

These findings indicate that for every one unit increase in the number of peers, there is a corresponding rise of 0.139 in learning performance. Similarly, for every one unit increase in the quality of learning facilities, there is a corresponding increase of 0.143 in learning achievement, provided all other factors remain same.

Table 50. Multiple Linear Regression Analysis Results

Model	Coefficients ^a			t	Sig.
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta		
1 (Constant)	7.579	1.617		4.688	<.001
Peers	.139	.068	.192	2.041	.044
Quality of Learning Facilities	.143	.040	.337	3.575	<.001

a. Dependent Variable: Student Achievement

F-test

The significance value for peers and the quality of learning facilities on learning achievement is 0.002 < 0.05, and f-count of 6.739 > f-table 3.08. This indicates a strong effect of peers and the quality of learning facilities on student achievement, rejecting H0 and accepting Ha.

Table 61. F Test Results

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	64.920	2	32.460	6.739	.002^b
Residual	505.746	105	4.817		
Total	570.667	107			

t-test

Based on the Table 12, show that the significance value for peers on student achievement is $0.001 < 0.05$, and the t-count is $5.554 > t\text{-table } 1.98282$, thus rejecting H_0 and accepting H_a which indicates a significant influence of peers on student achievement. In addition, the t-test results for the quality of learning facilities on student achievement show a significance value of $0.018 < 0.05$ and a t-count of $2.410 > t\text{-table } 1.98282$, thus rejecting H_0 and accepting H_a , this suggests that the quality of learning facilities has a substantial impact on student success.

Table 72. t-test Results

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	9.515	.846		11.242	<.001
Peers	.198	.036	.474	5.554	<.001
Quality of Learning Facilities	.050	.021	.206	2.410	.018

a. Dependent Variable: Student Achievement

Coefficient of Determination Analysis (R²)

Based on Table 13, adjusted R square is 0.525 (52.5%). That is, 52.5% of the variability of student achievement can be explained by peers and quality of learning facilities, while 47.5% is influenced by other factors.

Table 83. Coefficient Of Determination Test Results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.731 ^a	.534	.525	.857

a. Predictors: (Constant), Quality of Learning Facilities, Peers

Discussion

The findings demonstrated that peers had a favorable and substantial impact on students' learning success at Public Vocational High School 31 Jakarta as indicated by Sig value <0.001 and t-count $5.554 > t\text{-table } 1.98282$. Thus, the study's hypothesis H_1 is accepted. Peers have a large and positive impact on students' academic achievement, according to the data, which is in line with the findings of Alkadri et al. (2021), Rukayah et al. (2022), and Mehic (2024).

The quality of the learning environment has a favorable and substantial impact on the academic performance of students at Public Vocational High School 31 Jakarta, according to the study's findings, which is indicated by the Sig. $0.018 < 0.05$ and the tcount value of $2.410 > t\text{ table } 1.98282$, so that hypothesis H_2 in this study is accepted. The results show that the quality of learning facilities has a positive and significant influence on student achievement, in line with the research findings of Stevani (2021), Dewi et al. (2023), and Pagalilauan et al. (2023).

It is evident from the F test results that the significance value is $0.002 < 0.05$ and the F-count value is $6.379 > F\text{-table } 3.08$. The study's third hypothesis, H_3 , is approved as it can be shown that peers and the caliber of the school's resources positively and significantly affect students' academic performance at Public Vocational High School 31 Jakarta. In line with the discoveries of Anom and Usman (2021) and Rusnida et al. (2022), the results demonstrated that peers and the caliber of learning environments had a favorable and substantial impact on

student accomplishment.

CONCLUSION AND RECOMMENDATION

Conclusion

Several inferences may be made in light of the testing, investigation, and data analysis that were done. First, peers significantly and favorably affects students' learning outcomes. Second, student learning achievement is also favorably and considerably impacted by the quality of the learning facilities. Third, there is a clear and positive correlation between the quality of learning facilities and the effect of peers on students' academic performance. These results highlight how crucial it is to provide positive peer relationships and top-notch learning settings in order to improve academic achievement.

Recommendation

This study focuses on two independent variables, peer influence and the quality of learning facilities, affecting learning achievement. However, it does not account for other potential factors like physical health, intelligence, interest, psycho-emotional aspects, school environment, family support, and community influences. Additionally, the study was conducted only at Public Vocational High School 31 Jakarta, focusing on specific programs, limiting its broader applicability. The subjective nature of the questionnaire responses may not fully reflect the actual learning environment. Future research should include a wider range of variables and additional methods, such as observations or interviews, to offer a more thorough and precise knowledge of the variables affecting students' academic performance.

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