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Effects of peer communication and teachers' teaching methods on students' learning interest at SMK Wikarya Karanganyar

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Abstrak

Minat belajar berperan penting sebagai faktor pendorong utama keberhasilan akademik siswa SMK. Penelitian ini bertujuan menguji pengaruh komunikasi teman sebaya dan metode mengajar guru terhadap minat belajar siswa SMK Wikarya Karanganyar tahun ajaran 2025/2026, baik secara parsial maupun simultan. Penelitian menggunakan pendekatan kuantitatif dengan desain asosiatif kausal. Populasi penelitian adalah seluruh siswa kelas X dan XI yang berjumlah 233 siswa, dengan sampel sebanyak 147 siswa yang ditentukan menggunakan rumus Slovin dan dipilih dengan teknik proportionate stratified random sampling. Data dikumpulkan dengan angket berskala Likert 1–5 yang telah diuji validitas dan reliabilitasnya, kemudian dianalisis dengan regresi linear berganda menggunakan IBM SPSS 25.0. Hasil penelitian menunjukkan bahwa secara parsial komunikasi teman sebaya tidak berpengaruh signifikan terhadap minat belajar ($t = 0{,}702$; $p = 0{,}484 > 0{,}05$; sumbangan efektif 4,1%), sedangkan metode mengajar guru berpengaruh signifikan dan dominan ($t = 10{,}025$; $p < 0{,}001$; sumbangan efektif 68,1%). Secara simultan, kedua variabel berpengaruh signifikan terhadap minat belajar ($F = 187{,}287$; $p < 0{,}001$) dengan koefisien determinasi (R^2) sebesar 0,722 (72,2%). Nilai Durbin–Watson sebesar 1,942 menunjukkan model bebas dari autokorelasi. Guru disarankan mengoptimalkan variasi metode mengajar untuk mempertahankan dan meningkatkan minat belajar siswa.

Kata kunci: interaksi sosial; strategi instruksional; keterlibatan siswa; pendidikan vokasi

Abstract

Learning interest plays a crucial role as a main driver of academic success among vocational high school (SMK) students. This study examines the partial and simultaneous effects of peer communication and teachers' teaching methods on students' learning interest at SMK Wikarya Karanganyar in the 2025/2026 academic year. A quantitative approach with a causal associative design was used. The population comprised all 233 students in Grades X and XI, from which a sample of 147 students was determined with Slovin's formula and selected through

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proportionate stratified random sampling. Data were collected with a five-point Likert-scale questionnaire whose validity and reliability had been tested, and were analyzed through multiple linear regression in IBM SPSS 25.0. Peer communication had no significant partial effect on learning interest ($t = 0.702$, $p = .484$; effective contribution [EC] = 4.1%), whereas teachers' teaching methods had a significant and dominant partial effect ($t = 10.025$, $p < .001$; EC = 68.1%). Together, the two variables significantly affected learning interest ($F = 187.287$, $p < .001$), with a coefficient of determination (R^2) of .722 (72.2%). A Durbin–Watson value of 1.942 indicated no autocorrelation in the model. Teachers are advised to optimize variation in their teaching methods in order to maintain and increase students' learning interest.
Keywords: instructional strategy; learning interest; peer communication; social interaction; vocational education

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Introduction

In education, learning interest plays a crucial role as a main driver of academic success. Hartawan et al. (2024) found that higher learning interest significantly influenced students' learning outcomes in vocational high schools, and Herpratiwi and Tohir (2022) emphasized that students tend to take an active part in learning when their interest and emotions are positively aroused and that learning with interest yields better results than learning without it. Learning interest can be understood as students' active participation in learning, driven by a sense of attachment, enjoyment, and satisfaction during the learning process (Dwi Muliani & Arusman, 2022). It is also associated with learning achievement: Charli et al. (2019) reported a significant relationship between learning interest and students' achievement. Learning interest is therefore an important variable for both the process and the results of learning, and ideally every student should have a high level of it so that classroom activities run efficiently. In practice, however, the situation in schools often falls short of this ideal.

Engagement and interest in technical and vocational education and training (TVET) are a concern in many countries. Vocational students are commonly described as losing academic engagement when teaching methods do not respond to the world of work or when peer dynamics distract them from instructional goals. In Indonesia, Taqwani and Ni'mah (2024) found that vocational students' learning interest had not reached an optimal level, with only 41% of students willing to take an active part in classroom problem solving. Such low interest suggests that students may be present in class without being motivated to contribute, which directly affects mastery of vocational competencies and graduates' competitiveness at a time when industry demands on SMK graduates are rising.

The same gap between expectation and reality appears at SMK Wikarya Karanganyar, a vocational school that prepares students with practical skills and for which learning interest is therefore a key to optimal achievement. Initial observations showed that many students had low concentration during lessons, with their attention often diverted by interaction with peers. One student interviewed said, "I feel bored during lessons because of the monotonous teaching method and the classroom atmosphere, which is not conducive, so I find it difficult to focus on the material" (translated from Indonesian). A pre-study questionnaire administered to 55 respondents showed that, on average, 73.08% of respondents had a low level of learning interest, confirming that low interest is a real problem that needs to be addressed.

According to Putri and Baskara (2024), learning interest is influenced by internal and external factors, the latter including teachers, peers, and parents. This study focuses on two external factors: peer communication, which represents the dynamic friendship environment, and teachers' teaching methods, which reflect the educator's role as a dominant factor. In Littlejohn and Foss's (2011)

Theories of Human Communication, communication is not merely the transmission of information but a process of social construction in which interaction can build shared understanding and emotional engagement, so the quality of messages and the comfort of interaction among students may shape the direction of their learning interest. Peer group dynamics must also be understood through Group Socialization Theory (Harris, 1995), which holds that adolescents' socialization within peer groups shapes social identity norms and peer culture more strongly than it directs attention to formal academic commitment. This theoretical tension makes it important to establish how far peer communication actually affects learning interest in the classroom. Falah and Sa'adah (2022) and Mahmud and Idrus (2025) showed that peer interaction can contribute substantially to developing students' learning interest.

From the perspective of Piaget's (1971) constructivism, teachers are providers of the means for learning and are responsible for creating learning environments in which students can connect new information to what they already understand. Consistent with this, Dewi and Lestari (2021), Laili et al. (2024), and Padila and Armiati (2025) reported that the learning methods teachers apply can strongly influence students' learning interest. Earlier studies have examined peer interaction (Falah & Sa'adah, 2022; Mahmud & Idrus, 2025) and teaching methods (Dewi & Lestari, 2021; Laili et al., 2024) separately or in general-school settings, and few have tested both variables simultaneously in vocational high schools that span several skill programs (Beauty, Visual Communication Design, Marketing, Office Management and Business Services, and Accounting and Institutional Finance). The novelty of this study lies in testing, in an integrated way, horizontal communication among students and the teacher's vertical instructional strategy as determinants of learning interest in a practice-based vocational setting with heterogeneous skill programs. Examining the combination of these social and pedagogical factors should give a fuller picture of how students' learning interest is formed.

The research question is whether peer communication (X1) and teachers' teaching methods (X2) influence students' learning interest (Y), both partially and simultaneously. Three hypotheses are tested: H1, peer communication has a significant effect on students' learning interest; H2, teachers' teaching methods have a significant effect on students' learning interest; and H3, peer communication and teachers' teaching methods together have a significant effect on the learning interest of students at SMK Wikarya Karanganyar.

Research Methods

The study was conducted at SMK Wikarya Karanganyar, Central Java, Indonesia, from January to June 2026. It followed a quantitative approach with a causal associative design and an ex post facto strategy, which is used to examine cause-and-effect relationships among variables without manipulating them (Sugiyono, 2023). Data collection and analysis proceeded systematically in three stages.

Stage 1: Preparation and instrument try-out. From January to March 2026, the questionnaire was developed from the indicators of each variable. In March 2026 it was tried out on 35 respondents outside the main sample, and its validity (Pearson product–moment correlation) and reliability (Cronbach's alpha) were tested.

Stage 2: Main data collection. In April 2026, the structured questionnaire, using a five-point Likert scale, was distributed in person to the 147 students selected as the research sample from the various skill programs.

Stage 3: Data processing and analysis. From May to June 2026, the collected data were tabulated, checked against the classical assumptions, and analyzed through multiple linear regression in IBM SPSS 25.0.

The population comprised all Grade X and XI students of SMK Wikarya Karanganyar, a total of 233 students. The sample size was determined with Slovin's formula (Subhaktiyasa, 2024) at a 5% margin of error, giving 147 students ($n = 233 / [1 + 233 \times 0.05^2] \approx 147$). Proportionate stratified random sampling was used to ensure proportional representation of each skill program (Beauty [KC], Visual Communication Design [DKV], Marketing [PM], Office Management and Business Services [MPLB], and Accounting and Institutional Finance [AKL]) in Grades X and XI. Table 1 shows the allocation of the sample.

Table 1
Distribution of the Research Sample

Skill program	Grade X	Grade XI	Total
KC	12	19	31
DKV	12	16	28
PM	13	15	28
MPLB	20	18	38
AKL	6	16	22
Total	63	84	147

Note. KC = Beauty; DKV = Visual Communication Design; PM = Marketing; MPLB = Office Management and Business Services; AKL = Accounting and Institutional Finance. Row and column totals were computed from the allocation reported by the authors.

The main data were collected with a written questionnaire using a five-point Likert scale. The instrument was developed by the researchers, who wrote the items from a synthesis of dimensions and indicators proposed by experts. The indicators of learning interest were drawn from Friantini and Winata (2019): feelings of pleasure, concentration of attention, active participation, persistence, and learning effort. The indicators of peer communication were adapted from Littlejohn and Foss's (2011) interpersonal communication framework: openness, empathy, positiveness, supportiveness, and equality. The indicators of teachers' teaching methods were developed from Padila and Armiati (2025): active student involvement, motivation, enthusiasm, a lively learning atmosphere, and the effectiveness of learning outcomes.

The instrument was tried out on 35 respondents outside the main sample to test validity (product–moment correlation) and reliability (Cronbach's alpha). With n = 35 and an r-table value of .334, all 20 learning interest items were valid. For peer communication, 14 items were valid (r-count = .391–.782) after one item was eliminated, and for teachers' teaching methods, 14 items were valid (r-count = .361–.712) after one item was eliminated. Cronbach's alpha was .921 for learning interest, .866 for peer communication, and .850 for teachers' teaching methods; all exceeded the .60 criterion (and also the more conservative .70 threshold), so the instrument was considered reliable and suitable for the main data collection. The final instrument therefore contained 48 items (20, 14, and 14, respectively).

Data were analyzed in IBM SPSS 25.0. The classical assumption tests comprised the Kolmogorov–Smirnov normality test, the ANOVA-based linearity test, the multicollinearity test (variance inflation factor [VIF] and tolerance), the Glejser heteroscedasticity test, and the Durbin–Watson autocorrelation test. Hypotheses were then tested with multiple linear regression: the t-test (partial effects), the F-test (simultaneous effect), and the coefficient of determination (R^2), followed by the calculation of effective contributions (EC) and relative contributions (RC) of each predictor.

Results and Discussion

Descriptive Statistics

Table 2 presents the mean item score and percentage achievement for each indicator of the three variables. Categories were set from the percentage achievement: low (20.00%–59.99%), moderate (60.00%–69.99%), and high (70.00%–100.00%). The category of each variable was based on the average percentage achievement across its indicators.

Table 2

Mean Scores and Percentage Achievement per Indicator

Variable	Indicator	Mean score	Achievement (%)	Category
Learning interest (Y)	Feelings of pleasure and enthusiasm	3.24	64.8	Moderate
	Attention and concentration	3.18	63.6	Moderate
	Active participation and desire to learn	3.35	67.0	Moderate
	Persistence and willingness to learn	3.41	68.2	Moderate
	Effort to realize the desire to learn	3.28	65.6	Moderate
	Overall	3.29	65.84	Moderate
Peer communication (X_1)	Openness	3.60	72.0	High
	Empathy	3.52	70.4	High
	Positiveness	3.58	71.6	High
	Supportiveness	3.48	69.6	Moderate
	Equality	3.64	72.8	High
	Overall	3.56	71.28	High
Teachers' teaching methods (X_2)	Active student involvement	3.30	66.0	Moderate
	Generating motivation to learn	3.38	67.6	Moderate
	Generating enthusiasm for learning	3.42	68.4	Moderate
	Enlivening the learning process	3.36	67.2	Moderate
	Improving learning outcomes	3.45	69.0	Moderate
	Overall	3.38	67.64	Moderate

Note. Scores are on a 1–5 scale; achievement = mean score / 5 × 100. "Overall" rows are the unweighted averages of the five indicators in each variable.

As Table 2 shows, learning interest (Y) was in the moderate category overall (65.84%), with all five indicators between 63.6% and 68.2%; persistence and willingness to learn scored highest (68.2%) and attention and concentration lowest (63.6%). Peer communication (X1) was in the high category overall (71.28%). Four of its five indicators were high and supportiveness (69.6%) was just below the threshold, with equality (72.8%) and openness (72.0%) the highest. Teachers' teaching methods (X2) were in the moderate category overall (67.64%), and all indicators lay between 66.0% and 69.0%. Students thus perceived their peer communication more favorably than their teachers' teaching methods and their own learning interest.

Classical Assumption Tests

Before the hypotheses were tested, the classical assumptions of regression were examined; the results are summarized in Table 3. All assumptions were met: the residuals were normally distributed, both predictors had linear relationships with learning interest, and the model showed no multicollinearity, heteroscedasticity, or autocorrelation.

Table 3
Summary of Classical Assumption Test Results

Test	Result	Criterion	Conclusion
Normality (Kolmogorov–Smirnov, residuals)	Asymp. Sig. = .200	Sig. > .05	Normal
Linearity (deviation from linearity)	X_1: Sig. = .894; X_2: Sig. = .132	Sig. > .05	Linear
Multicollinearity	Tolerance = .301; VIF = 3.322	Tolerance > .10; VIF < 10	No multicollinearity
Heteroscedasticity (Glejser)	Sig. = .216 and .098	Sig. > .05	No heteroscedasticity
Autocorrelation (Durbin–Watson)	DW = 1.942	dU (1.777) < DW < 4 − dU (2.223)	No autocorrelation

Note. X_1 = peer communication; X_2 = teachers' teaching methods. Glejser significance values are listed in the order in which they were reported (X_1, X_2). dU = upper critical value of the Durbin–Watson statistic.

Hypothesis Testing

The partial effects of the two predictors were tested with multiple linear regression (Table 4), which yielded the equation Y = 8.609 + 0.069X1 + 1.134X2.

Table 4
Multiple Linear Regression and Partial Test (t-test) Results

Predictor	B	t	Sig.
(Constant)	8.609	2.828	.005
Peer communication (X_1)	0.069	0.702	.484
Teachers' teaching methods (X_2)	1.134	10.025	< .001

Note. Dependent variable: learning interest. B = unstandardized regression coefficient.

Peer communication (X1) did not have a significant partial effect on learning interest, t(144) = 0.702, p = .484 (> .05); H1 is therefore not supported. Teachers' teaching methods (X2) had a positive and significant partial effect, t(144) = 10.025, p < .001; H2 is therefore supported. In terms of the coefficients, with the other predictor held constant, a one-unit increase in teachers' teaching methods was associated with a 1.134-unit increase in learning interest, whereas the corresponding coefficient for peer communication was only 0.069.

The simultaneous effect was tested with the F-test (Table 5). The model was statistically significant, F(2, 144) = 187.287, p < .001, which exceeds the critical value of 3.06 (α = .05, df1 = 2, df2 = 144). Peer communication and teachers' teaching methods therefore had a significant joint effect on learning interest, and H3 is supported.

Table 5
Simultaneous Test (F-test/ANOVA) Results

Source	Sum of squares	df	Mean square	F	Sig.
Regression	22,776.117	2	11,388.059	187.287	< .001
Residual	8,755.965	144	60.805		
Total	31,532.082	146			

Note. Dependent variable: learning interest. Predictors: (constant), teachers' teaching methods, peer communication.

The coefficient of determination indicates how much of the variance in learning interest is explained by the predictors (Table 6). The correlation coefficient was R = .850, indicating a very strong relationship between the two predictors jointly and learning interest. The R^2 of .722 means that 72.2% of the variance in learning interest at SMK Wikarya Karanganyar is explained jointly by peer communication and teachers' teaching methods, while the remaining 27.8% is influenced by other factors outside the model.

Table 6
Model Summary

Model	R	R^2	Adjusted R^2	Std. error of the estimate
1	.850	.722	.718	7.798

Note. Predictors: (constant), teachers' teaching methods, peer communication. Dependent variable: learning interest.

To show how much each predictor contributes to the explained variance, effective contributions (EC) and relative contributions (RC) were calculated (Table 7). Teachers' teaching methods accounted for most of the explained variance (EC = 68.1%, RC = 94.36%), whereas peer communication contributed only 4.1% (RC = 5.64%). The two ECs sum to the model's R^2 (72.2%).

Table 7
Effective Contribution (EC) and Relative Contribution (RC)

Predictor	B	r	EC (%)	RC (%)
Peer communication (X_1)	0.069	.590	4.1	5.64
Teachers' teaching methods (X_2)	1.134	.845	68.1	94.36
Total	—	—	72.2	100

Note. r = zero-order correlation of each predictor with learning interest. EC = standardized coefficient × r × 100; RC = EC of the predictor / total EC × 100.

Discussion

Peer communication had no significant partial effect on learning interest. Its regression coefficient was small (B = 0.069), and its contribution was low (EC = 4.1%, RC = 5.64%). Group Socialization Theory (Harris, 1995) offers a plausible explanation: peer interaction in adolescence shapes social identity and peer culture more strongly than it directly promotes formal instructional commitment. Vocational schooling is dominated by practical activities and non-academic social interaction, and student interaction may drift toward casual conversation and distraction when it is not managed within structured learning; social comfort among friends does not necessarily translate into academic desire in the formal classroom. These mechanisms were not measured here and remain interpretations. Two further points deserve attention. Peer communication was rated high (71.28%) and was substantially correlated with learning interest at the bivariate level (r = .590), yet its unique contribution became negligible once teachers' teaching methods were taken into account. This pattern is consistent with peer communication and teaching methods sharing much of their variance, so the result should not be read as evidence that peer communication is irrelevant to learning interest. It also differs from studies that reported a substantial role for peer interaction (Falah & Sa'adah, 2022; Mahmud & Idrus, 2025), possibly because those studies examined peer interaction alone, in general-school settings, rather than alongside teaching methods.

Teachers' teaching methods, in contrast, were the dominant and significant external driver of learning interest: each one-unit increase was associated with a 1.134-unit increase in learning interest, and the variable accounted for 68.1% of the explained variance (RC = 94.36%). This finding is consistent with Piaget's (1971) constructivism, in which the educator organizes interactive, practice-oriented learning experiences that trigger and construct students' enthusiasm for learning. It also supports Dewi and Lestari (2021), Laili et al. (2024), and Padila and Armiati (2025), who found that the variety and appropriateness of the methods teachers use are positively related to students' engagement and interest. Initial observations in this study showed that students quickly became bored with monotonous lecture-based teaching. The authors' informal observations in the MPLB program suggest that when teachers replaced lectures with group-based creative product projects, students' boredom appeared to decrease and their attention, participation, and enjoyment appeared to improve. This observation was not measured systematically in the present study and is offered only as an illustration of how practice-based methods such as Project-Based Learning and Cooperative Learning might raise learning interest in vocational classrooms.

The two variables together had a significant effect on learning interest ($F = 187.287$, $p < .001$) and explained 72.2% of its variance, leaving 27.8% to factors outside the model. Because almost all of the explained variance is attributable to teaching methods, the model's strength rests mainly on that predictor. One possible reading, consistent with the complementary roles of vertical instructional

direction (the teacher) and horizontal emotional support (peers), is that teaching methods which channel peer communication positively could raise learning interest further, in line with Putri and Baskara (2024) and with Piaget's emphasis on integrating learning experiences with social interaction. This interplay was not tested in the present study (no interaction term was estimated), and it should be examined in future research.

Conclusion

Peer communication had no significant partial effect on students' learning interest, whereas teachers' teaching methods had a significant positive effect. Together, the two variables had a significant effect on learning interest among students at SMK Wikarya Karanganyar in the 2025/2026 academic year, explaining 72.2% of its variance, almost all of it attributable to teaching methods.

Theoretically, the study enriches the literature on the educational psychology of vocational schooling by showing that, in skills-based SMK settings, the teacher's instructional structure is the main predictor of learning interest, while peer communication may function as a supporting context that requires instructional channeling to become academically oriented. Practically, the findings imply that SMK Wikarya Karanganyar's management and teachers should focus the development of teachers' pedagogical competence on mastering active, project-based learning methods and should guide peer-group interaction so that communication among students supports vocational learning outcomes.

The study has limitations: it examined a limited set of external variables, drew its sample from a single school, and relied on self-reported questionnaires, so its findings should be generalized with caution. Future research should extend the scope to students' internal psychological variables, such as academic self-efficacy, achievement motivation, and academic burnout, and should also consider family environment factors.

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