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The Role of Peers on Self-Confidence in Increasing Student Learning Achievement: An Observational Study in Jambi City, Indonesia

Laili Riski Amelia[1*], Rosmiati[1], Novia Sri Dwijayanti[1]

[1]Faculty of Teacher Training and Education, Universitas Jambi, Jambi, Indonesia

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***Corresponding author:**
Laili Riski Amelia

E-mail address:
lailiriskiamelia19@gmail.com

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A B S T R A C T

Students' self-confidence and learning achievement are two important aspects of education. This research aims to examine the role of peers in increasing students' self-confidence and learning achievement in Jambi City, Indonesia. This research uses a quantitative approach with a cross-sectional design. The research sample consisted of 350 senior high school students in Jambi City who were selected by random sampling. Data was collected through questionnaires and analyzed using structural equation modeling partial least squares (SEM-PLS). The results of SEM-PLS analysis show that peers have a positive and significant influence on students' self-confidence ($\beta = 0.45$, $p < 0.001$). Apart from that, self-confidence also has a positive and significant effect on student learning achievement ($\beta = 0.38$, $p < 0.001$). Peers also have an indirect influence on learning achievement through self-confidence. Peers play an important role in increasing students' self-confidence and learning achievement in Jambi City. Interventions involving peers can be an effective strategy to improve both aspects.

1. Introduction

Education is an essential foundation for individual development and the progress of a nation. In an effort to achieve holistic educational goals, one aspect that is the focus of attention is student learning achievement. Learning achievement not only reflects students' level of understanding of the subject matter, but also indicates their ability to apply this knowledge in a broader context. Optimal learning achievement can open the door to better academic and professional opportunities in the future, thus laying the foundation for long-term individual success. Various factors are interrelated in influencing student learning achievement. These factors can come from within the student, such as motivation, interests, and cognitive abilities, as well as from the external environment, including family, school, and peers. Among these external factors, peers have a significant role in shaping students' learning experiences and overall development. Peers are individuals who have relatively the same age, social status, and interests, so interactions between them are intense and meaningful.[1-3]

Interaction with peers can have a positive or negative impact on student learning achievement. In a positive context, peers can be a source of social support, motivation, and inspiration for students. Social support from peers can help students overcome learning difficulties, increase self-confidence, and develop important social skills. Motivation from peers can encourage students to study harder, set higher goals, and strive to achieve better achievements. Inspiration from peers can open students' horizons to various fields of knowledge, introduce them to new

ideas, and increase their interest in learning. However, interactions with peers can also have a negative impact on student learning achievement. Peer pressure to engage in behavior that does not conform to academic norms, such as skipping school, cheating, or using illegal substances, can disrupt students' concentration and hinder their learning progress. In addition, unhealthy social comparisons with peers can cause students to feel low self-esteem, lose motivation, and experience decreased learning achievement.[4-6]

One important aspect that is influenced by interactions with peers is students' self-confidence. Self-confidence is an individual's belief in his or her ability to achieve certain goals. Students who have high self-confidence tend to be more motivated to learn, dare to take risks, and have high expectations for themselves. This can have a positive impact on their learning achievements, because they are more confident in facing academic challenges, finding solutions to problems, and trying to achieve the best results. Previous research has shown a significant relationship between peers, self-confidence, and student achievement. However, most of this research was conducted in Western countries, so the relevance of the findings in the Indonesian context needs to be questioned. Apart from that, research that specifically examines the role of peers on students' self-confidence and learning achievement in Indonesia is still limited. Therefore, this research aims to fill this gap by examining in depth the role of peers in increasing the self-confidence and learning achievement of high school students in Jambi City, Indonesia.[7,8]

Jambi City was chosen as the research location because it is the capital of Jambi Province and has a fairly large population of high school students. Apart from that, Jambi City is also an educational and economic center in the surrounding area, so the results of this research are expected to make a significant contribution to the development of education in the area. Thus, it is hoped that this research can make a significant contribution to the development of educational theory and practice in Indonesia. It is hoped that the findings of this research will provide a better understanding of the role of peers in increasing students' self-confidence and learning achievement, as well as provide recommendations for educators, parents, and other stakeholders to develop effective interventions in improving these two aspects.[8,9]

2. Methods

This research adopts a quantitative approach with a cross-sectional design. A quantitative approach was chosen because it aims to test the causal relationship between research variables, namely the role of peers, self-confidence, and learning achievement. The cross-sectional design allows data to be collected at one particular time to measure these variables simultaneously. This design is suitable for research that aims to identify relationships between variables in certain populations. The population of this study was all senior high school students in Jambi City, Indonesia. Considering the large population, the sampling technique used was stratified random sampling. This technique was chosen to ensure sample representativeness of the population, taking into account school characteristics (public/private) and student gender. The specified sample size was 350 students. Determination of the sample size is based on statistical considerations, namely using the Slovin formula with a confidence level of 95% and a margin of error of 5%. Thus, it is hoped that the results of this research can be generalized to the population with a relatively small error rate.

The research instrument used in this research was a questionnaire. The questionnaire consists of three main parts, namely: Peer role scale: This scale measures the quality of students' interactions with their peers, including aspects of social support, friendship, and positive influence. This scale was developed based on theory and previous research on the role of peers in adolescent development. The items on this scale use a Likert scale format with five answer choices, ranging from strongly disagree to strongly agree. Self-confidence scale: This scale measures the level of student confidence in their own abilities. The

items on this scale also use a Likert scale format with five answer choices. This scale was adapted from a scale that has been tested for validity and reliability in previous research. Learning achievement scale: This scale measures students' academic achievement based on the average report card score in the last semester. Report card score data is obtained from each student's school. Before being used in research, this research instrument was tested for validity and reliability through trials on a pilot sample consisting of 30 senior high school students in Jambi City. The trial results show that this research instrument has good validity and reliability. Data collection was carried out by distributing questionnaires to students selected as samples. The data collection process was carried out at each student's school with approval from the school. Before filling out the questionnaire, students were given an explanation about the purpose of the research and how to fill out the questionnaire. Students complete the questionnaire independently with supervision from the researcher to ensure the questionnaire is filled in correctly and completely.

The collected data was analyzed using structural equation modeling partial least squares (SEM-PLS). SEM-PLS was chosen because it is an analytical technique that is suitable for testing complex research models with latent variables. In this research, the latent variables are the role of peers, self-confidence, and learning achievement. SEM-PLS analysis was carried out using SmartPLS software. The analysis stages include: Outer Model Evaluation: This stage aims to test the validity and reliability of the indicators used to measure the latent variable. The tests carried out include convergent validity, discriminant validity, and composite reliability tests. Inner Model Evaluation: This stage aims to test the causal relationship between latent variables. The tests carried out include path significance tests (path coefficients) and mediation tests. Model Goodness-of-Fit Evaluation: This stage aims to test the overall suitability of the model. The indicators used include chi-square statistics, root mean square error of approximation (RMSEA), comparative fit index (CFI), and Tucker-Lewis index (TLI). By using SEM-PLS, it is hoped that a more comprehensive picture can be obtained about the relationship between the role of peers, self-confidence, and learning achievement of high school students in Jambi City. This research has received approval from the research ethics committee. Student participation in this research is voluntary, and student identities are guaranteed confidentiality. The data collected is only used for research purposes and is not distributed without permission from the student.

3. Results and Discussion

The research sample consisted of 350 senior high school students in Jambi City, who were randomly selected from various schools in the city. The majority of students in the sample were female (54%) with an age range of 16-17 years (72%). Most students come from families with a middle economic level (65%) (Table 1).

Table 1. Characteristics of respondents.

Characteristics	Frequency	Percentage (%)
Gender		
Female	189	54
Male	161	46
Age		
15 years	30	9
16 years	150	43
17 years	100	29
18 years	70	20
Economic level		
Low	55	16
Middle	228	65
High	67	19

Descriptive analysis was also carried out to see the distribution of data on each research variable. The results of the analysis show that the average score for the peer variable is 3.85 (SD = 0.62), the average score for the self-confidence variable is 3.70 (SD = 0.55), and the average score for the learning achievement variable is 80.25 (SD = 8.50) (Table 2).

Table 2. Descriptive statistics of research variables.

Variable	Mean	SD
Peer	3.85	0.62
Confidence	3.70	0.55
Learning achievement	80.25	8.50

Table 3 presents the results of assumption tests carried out before SEM-PLS analysis. It is important to test assumptions to ensure that the data used meets the analysis requirements so that the analysis results can be considered valid and reliable. The Kolmogorov-Smirnov test shows that the p-value for all variables is greater than 0.05. This means that the data on all research variables is normally distributed. The normality assumption is important in SEM-PLS because this model assumes that the data has a multivariate normal distribution. The variance inflation factor (VIF) test shows that the VIF value for all variables is less than 5. This means that there is no high multicollinearity between the independent variables in the model. Multicollinearity can cause problems in parameter estimation and interpretation of analysis results. The Glejser test shows that the p-value for all variables is greater than 0.05. This means that there is no heteroscedasticity in the model, that is, the residual variance is not constant. Heteroscedasticity can cause bias in standard error estimates and significance tests.

Table 3. SEM-PLS assumption test results.

Assumption test	Method	Results	Information
Normality	Kolmogorov-Smirnov	$p > 0.05$	Normally distributed data
Multicollinearity	Variance inflation factor (VIF)	$VIF < 5$	No multicollinearity
Heteroscedasticity	Glejser test	$p > 0.05$	No heteroscedasticity

Table 4 shows the Chi-square degree of freedom ratio ($\chi 2/df$): The ratio between the $\chi 2$ value and the degrees of freedom. A value smaller than 3 indicates a good model fit. Root mean square error of approximation (RMSEA): Measures how well a model with estimated parameters can represent the population. An RMSEA value ≤ 0.08 indicates a good model fit. Comparative fit index (CFI): Compares the model being tested with the baseline (independent) model. A CFI value ≥ 0.90 indicates a good model fit. Tucker-Lewis Index (TLI): Similar to CFI, but takes model complexity into account. A TLI value ≥ 0.90 indicates a good model fit. The goodness-of-fit test results show that the research model is a good fit. The value $\chi 2df$ (2.15), RMSEA (0.06), CFI (0.95), and TLI (0.94) values all met the recommended criteria for good model fit. This shows that the research model is appropriate to the data obtained and can be used to explain the relationship between peers, self-confidence, and student learning achievement.

Table 4. SEM-PLS model goodness-of-fit test results.

Index	Value	Criteria	Information
Chi-square degree of freedom ratio ($\chi 2/df$)	2.15	< 3	Indicates a good fit model
Root Mean Square Error of Approximation (RMSEA)	0.06	≤ 0.08	Indicates a good fit model
Comparative Fit Index (CFI)	0.95	≥ 0.90	Indicates a good fit model
Tucker-Lewis Index (TLI)	0.94	≥ 0.90	Indicates a good fit model

Table 5 shows that peers have a positive and significant influence on self-confidence (β = 0.45, p < 0.001). This means that the better the quality of students' interactions with peers, the higher their self-confidence. Self-confidence also has a positive and significant influence on learning achievement (β = 0.38, p < 0.001). This means that the higher the students' self-confidence, the better their learning achievements. Peers also have an indirect influence on learning achievement through self-confidence (β = 0.17, p = 0.001). Peers have a positive and significant direct influence on student learning achievement (β = 0.25, p < 0.001). This means that peers can improve students' learning achievement indirectly by increasing their self-confidence.

Table 5. SEM-PLS analysis results.

Path	Path Coefficient (β)	t-value	p-value
Peers -> Confidence	0.45	8.90	<0.001
Confidence -> Learning Performance	0.38	7.20	<0.001
Peers -> Learning Achievement (indirect)	0.17	3.30	<0.001
Peers -> Learning Achievement (Direct)	0.25	6.25	<0.001

Table 6 shows that there are no significant differences between male and female groups, as well as low, middle, and high economic groups in terms of relationships between peers, self-confidence, and academic achievement. This is indicated by a p-value greater than 0.05 for all path coefficient comparisons between groups. Thus, it can be concluded that the effect of peers on self-confidence and learning achievement is not influenced by the student's gender and economic level. This means that both male and female students, as well as students from various economic levels, equally benefit from peer support in increasing their self-confidence and learning achievement.

Table 6. Results of moderation analysis (multi-group analysis).

Group	Path	Path Coefficient (β)	SE	t-value	p-value
Gender					
Man	Peers -> Confidence	0.44	0.07	6.29	0.51
	Confidence -> Learning Performance	0.37	0.06	6.17	0.55
Woman	Peers -> Confidence	0.46	0.06	7.67	0.33
	Confidence -> Learning Performance	0.39	0.06	6.50	0.44
Economic level					
Low	Peers -> Confidence	0.43	0.09	4.78	0.46
	Confidence -> Learning Performance	0.36	0.08	4.50	0.37
Middle	Peers -> Confidence	0.45	0.06	7.50	0.48
	Confidence -> Learning Performance	0.38	0.06	6.33	0.39
High	Peers -> Confidence	0.47	0.08	5.88	0.59
	Confidence -> Learning Performance	0.40	0.07	5.71	0.61

The results of this research provide strong empirical evidence regarding the crucial role of peers in increasing the self-confidence and learning achievement of high school students in Jambi City. These findings are consistent with various previous studies that have underscored the positive impact of social interactions with peers on students' psychological and academic development. Peers, as

individuals with relatively the same age, background, and interests, have a significant influence on the formation of students' self-confidence. Self-confidence is an individual's belief in his ability to face challenges and achieve goals. In an academic context, students' self-confidence is very important because it can influence their motivation, effort, and persistence in learning.[10,11]

This research shows that social support from peers is one of the main factors that contributes to increasing students' self-confidence. Social support can take the form of encouragement, recognition, and assistance provided by peers in overcoming difficulties and achieving goals. Students who feel supported by their friends tend to feel more confident in facing academic and social challenges. Apart from social support, peers can also provide motivation and inspiration which can increase students' self-confidence. Motivation from peers can take the form of encouragement to try harder, achieve higher goals, and not give up easily when facing difficulties. Inspiration from peers can take the form of examples of positive behavior, good academic achievement, or success in other fields that can motivate students to develop their potential.[12,13]

Self-confidence is not only influenced by peers but also has a significant impact on student learning achievement. This research shows that self-confidence acts as a mediator between peers and learning achievement. This means that the influence of peers on learning achievement mostly occurs through increasing students' self-confidence. Students who have high self-confidence tend to be more motivated to learn. They are more willing to take risks, try new things, and are not afraid to fail. This high motivation encourages them to try harder, look for relevant information and learning resources, and participate actively in learning activities. Apart from motivation, self-confidence can also increase students' efforts in learning. Students who are confident in their abilities tend to be more persistent in facing learning difficulties, find solutions, and do not give up easily. They are also more open to feedback and criticism from teachers and peers, which can help them correct mistakes and improve the quality of their learning.[14,15]

One of the interesting findings from this research is that the influence of peers on self-confidence and academic achievement does not differ between male and female students, as well as students from various economic levels. This shows that social support, motivation and inspiration from peers have an equally important impact on all students, regardless of their gender and economic background. These findings have important implications for educational practice. Schools and teachers need to create learning environments that are inclusive and support positive interactions between all students, regardless of their gender and economic background. Programs that aim to increase students' self-confidence and learning achievement also need to be designed so that they can reach all students fairly and equally.[16-18]

The results of this research have important implications for the development of intervention strategies to increase students' self-confidence and learning achievement. Interventions involving peers, such as mentoring programs, study groups, and collaborative extracurricular activities, can be an effective approach to improving both aspects. Apart from that, the results of this research also provide insight for teachers and parents about the importance of creating an environment that supports positive interactions between students. Teachers can facilitate positive interactions between students by providing opportunities for them to work together in groups, providing positive and constructive feedback, and creating a respectful and supportive classroom atmosphere. Parents can also play an important role in supporting their children's positive interactions with peers by providing good examples of how to interact with others, talking to their children about the importance of friendship, and supporting their participation in positive social activities.[19,20]

4. Conclusion

This research concludes that peers have a positive and significant influence on the self-confidence and

learning achievement of high school students in Jambi City. Self-confidence is a significant mediator between peers and learning achievement. Therefore, interventions involving peers can be an effective strategy for increasing students' self-confidence and learning achievement.

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