

ARTICLE

The Influence of Teacher Competence, Parental Attention, On Student Learning Motivation at Vocational Schools in Makassar

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Abstract

Vocational education plays a pivotal role in preparing competent graduates; however, students' success is highly dependent on their learning motivation. Teacher competence and parental support are widely recognized as key factors that shape this motivation. Therefore, this study aims to examine the influence of pedagogical competence, professional competence, and parental attention on learning motivation among Class XI students specializing in Electrical Installation Engineering at State Vocational Schools in Makassar City. This research employed a quantitative approach using an ex post facto design. The population consisted of 279 students, from which a sample of 164 respondents was selected through proportional random sampling. Data were collected using structured questionnaires and analyzed using descriptive statistics and multiple linear regression techniques. The findings indicate that pedagogical competence, professional competence, and parental attention each have a positive and significant partial effect on learning motivation, as well as a significant simultaneous effect. Together, these three variables contributed 18.5% to the variance in student learning motivation, with professional competence emerging as the strongest predictor. The study concludes that enhancing teacher quality and strengthening parental engagement are critical for improving learning motivation and, consequently, student success in vocational education. It is recommended that schools provide continuous professional development opportunities for teachers and promote closer collaboration with parents to cultivate a more supportive learning environment.

Keywords: Teacher Competency, Student Motivation, Vocational Education.

1. Introduction

Vocational education—particularly that delivered through vocational high schools in Indonesia—plays a strategic role in preparing competent workers capable of competing in an increasingly globalized labour market [1, 2]. The success of this educational process depends strongly on students' internal psychological factors, especially their motivation to learn [3, 4]. Motivation functions as an internal driving force that encourages students to engage actively, persistently, and enthusiastically in

learning activities, ultimately influencing their academic achievement and work readiness [5, 6]. According to [7], motivation among vocational students is dynamic and highly dependent on learning environments that fulfill their fundamental psychological needs for autonomy, competence, and relevance.

Among the various environmental factors, teachers represent the most influential in-school determinant of student motivation. In the Indonesian context, teacher quality is reflected through two core competency domains mandated by national education standards: pedagogical competence and professional competence [8, 9]. Students in vocational education frequently encounter pressure to meet high academic and practical performance standards, which can contribute to emotional exhaustion, anxiety, and decreased motivation [10, 11]. A study by [12] demonstrates that interventions grounded in positive psychology effectively enhance vocational students' well-being as well as their intrinsic and extrinsic learning motivation.

Beyond school factors, parental attention also exerts a substantial influence on students' motivation to learn [13]. Support, guidance, and consistent supervision from parents create a conducive psychological climate that encourages students to engage more actively in the learning process [14, 15]. Research [16, 17]. Research in Indonesia further indicates that the implementation of the Merdeka Curriculum in vocational schools remains relatively low, and this condition has a strong positive correlation with teachers' pedagogical and professional competencies. This finding is particularly significant because the Merdeka Curriculum fundamentally requires a shift toward a student-centered learning paradigm, which aligns with fulfilling students' psychological needs for autonomy and competence [18, 19, 20]. However, when teachers' competencies—both pedagogical, in managing differentiated classrooms, and professional, in mastering specialized vocational content—are not yet optimal, the effective implementation of this curriculum becomes constrained [21, 22]. This has the potential to become a rigid, irrelevant learning environment that fails to motivate students [23, 24]. Therefore, this condition indicates that there is a significant gap between the teacher competency standards expected by regulations and the psychological reality experienced by students in the classroom [25, 26].

However, preliminary observations conducted in several public vocational schools in Makassar City reveal a substantial gap between policy expectations and actual classroom conditions. Many students appear passive, unfocused, easily bored, and exhibit low levels of discipline. This diminished motivation does not arise spontaneously; rather, it is believed to be closely related to two primary environmental factors that shape students' learning behavior: the school environment, reflected through teacher quality, and the family environment, reflected through parental support.

Teacher competence and parental attention are considered the most critical variables in addressing this issue. Teachers, in particular, represent the most influential in-school factor. As defined by [27] and [28], pedagogical competence encompasses the ability to manage learning effectively and understand students' needs, while professional competence refers to deep mastery of vocational subject matter [29, 30, 31]. When students appear bored, [32] suggest it often signals a lack of pedagogical skill or professional depth. Secondly, external support is equally vital. [13] emphasize that parental attention creates the psychological safety needed for students to persist. Without the synergy of engaging teachers and supportive parents, [14] warn that student motivation in vocational settings inevitably declines.

Despite the extensive literature on student motivation, a specific research gap remains to exist. To date, no studies in vocational schools in Makassar have simultaneously examined the influence of teacher pedagogical competence, teacher professional competence, and parental attention on student motivation within the specific context of the Electrical Power Installation Engineering program. Previous research has generally explored these variables either in isolation or within broader general

education settings. This study seeks to address this research gap by providing a comprehensive analysis of how these three predictors collectively shape student motivation in vocational education. Accordingly, the following research questions were formulated to guide the investigation: What is the description of the pedagogic competency of teachers, professional competency of teachers, parental attention, and student learning motivation at SMK Negeri Kota Makassar?

1. To what extent does the pedagogical competency of teachers influence student learning motivation in vocational schools in Makassar City?
2. To what extent does the professional competency of teachers influence student learning motivation in vocational schools in Makassar City?
3. To what extent does parental attention influence student motivation at vocational schools in Makassar City?
4. To what extent do pedagogical competency, professional competency of teachers, and parental attention simultaneously influence student learning motivation in vocational schools in Makassar City?

Based on these gaps, the purpose of this study is to examine the extent to which Teacher Pedagogical Competency, Teacher Professional Competency, and Parental Attention influence Student Learning Motivation. This study focuses on students majoring in Electrical Installation Engineering at vocational education in Makassar city.

2. Methods

2.1 Types of research

Here is a polished and academically improved version of your text: This study employed a quantitative approach with an associative design using the ex post facto method, aimed at examining the relationships among variables. Specifically, the research investigates the influence of teacher pedagogical competence, teacher professional competence, and parental attention on students' learning motivation. The ex post facto design was selected because it enables the identification of causal relationships without manipulating the independent variables, allowing the researcher to examine or trace the causal factors underlying events that have already occurred [32, 10].

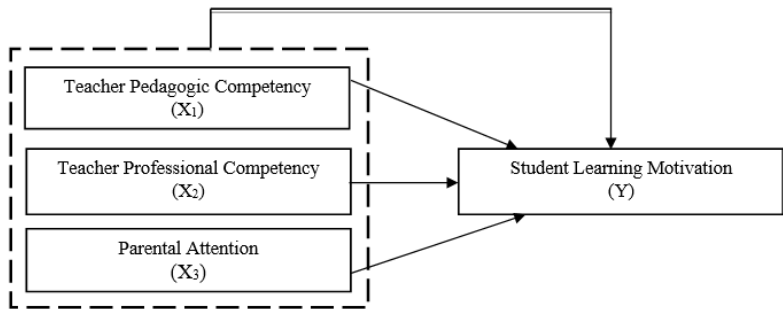


Figure 1. Conceptual Model of the Study.

2.2 Time and location of the study

This research was implemented on first semester of the 2025/2026 academic year in four public vocational schools in Makassar City that specialize in Electrical Power Installation Engineering.

2.3 Targets and objectives of the study

This research was implemented on first semester of the 2025/2026 school academic year at four public vocational high schools in Makassar City specializing in Electrical Installation Engineering. The total population of this study was 279 students. The research subjects (sample) were selected using the Slovin formula with a 5% margin of error, resulting in a final sample of 164 students. This sample was distributed using proportionate stratified random sampling to ensure that each school was proportionally represented [1, 2].

2.4 Research Procedure

The research procedure is as follows:

1. Coordinate with the school to obtain support and feedback.
2. The research questionnaire was given to students, and the process of filling it out was supervised by teachers.
3. The collected data underwent coding, review, and verification.
4. Analysis of statistical data using SPSS [28, 20].

2.5 Instruments

The main research instrument used in this study was a questionnaire. This questionnaire was designed in a closed (structured) form and used a 1-5 Likert scale. This instrument was developed to measure four main variables, consisting of three independent variables, namely Teacher Pedagogical Competency, Teacher Professional Competency, and Parental Attention, as well as one dependent variable, namely Student Learning Motivation. The development of the questionnaire items was based on an instrument grid derived from the theoretical indicators for each variable [5, 13]. Before use, this questionnaire was tested through a Validity Test to ensure the accuracy of the instrument in measuring what it was supposed to measure and a Reliability Test using the Cronbach Alpha formula. The instrument was declared reliable if the Cronbach Alpha value obtained was greater than 0.70 [1, 31].

Table 1. Summary of Validity Test Results

Variable	Number Of Items	r-table (N=30)	(5%.	Range of r-count (Min - Max)	Result
Teacher Pedagogic Competency	15	0.361		0.387 - 0.770	Valid
Teacher Professional Competency	15	0.361		0.377 - 0.817	Valid
Parental Attention	16	0.361		0.387 - 0.770	Valid
Student Learning Motivation	15	0.361		0.387 - 0.770	Valid

Based on the summary presented in Table 1, the validity test was conducted with 30 respondents at a 5% significance level, yielding a critical r-table value of 0.361. The results indicate that all items across the four variables—Teacher Pedagogical Competence, Teacher Professional Competence, Parental Attention, and Student Learning Motivation—obtained calculated correlation coefficients (r-count) ranging from 0.377 to 0.817. Since each item's r-count exceeds the r-table value ($r\text{-count} > 0.361$), all 61 items in the instrument are deemed valid and therefore appropriate for use in data collection [25, 9].

Table 2. Instrument Reliability Test Results

Variable	Number Of Items	Cronbach Alpha	Critical Value	Result
Teacher Pedagogic Competency	15	0.836	0.70	Reliable
Teacher Professional Competency	15	0.886	0.70	Reliable
Parental Attention	16	0.855	0.70	Reliable
Student Learning Motivation	15	0.771	0.70	Reliable

The reliability test results presented in Table 2 further demonstrate the consistency of the research instrument. Using Cronbach's Alpha with a minimum acceptable threshold of > 0.70 , all variables were found to exhibit high reliability. Teacher Professional Competence recorded the highest reliability coefficient (0.886), followed by Parental Attention (0.855), Teacher Pedagogical Competence (0.836), and Student Learning Motivation (0.771). These findings confirm that the instrument possesses strong internal consistency and is therefore reliable for measuring the variables in this study [30, 3].

Table 3. Instrument Reliability Test Results

Variable	Indicators	Number of Items
Teacher Pedagogic Competency	1. Understanding student characteristics and potential.	15
	2. Designing structured and relevant learning.	
	3. Executing interesting and interactive learning methods.	
	4. Integrating technology in the learning process.	
	5. Facilitating the development of student potential.	
Teacher Professional Competency	1. Mastery of electrical installation concepts and theories.	15
	2. Teaching according to curriculum learning objectives.	
	3. Developing creative materials relevant to current issues.	
	4. Connecting subject matter with industry needs and practices.	
Parental Attention	1. Parental autonomy support.	16
	2. Emotional support and appreciation.	
	3. Home-based involvement (monitoring & discussion).	
	4. Provision of a conducive learning environment.	
Student Learning Motivation	1. Desire and drive to succeed.	15
	2. Interest and curiosity in the subject matter.	
	3. Persistence in facing learning difficulties.	
	4. Future career aspirations and hopes.	

The research instrument was developed based on a comprehensive blueprint consisting of 61 items distributed across four primary variables to ensure strong content validity [27, 26]. Teacher pedagogical competence was measured using 15 items designed to capture indicators such as understanding student characteristics, designing structured learning activities, implementing interactive instructional methods, integrating educational technology, and facilitating the development of student potential. Teacher professional competence was assessed through 15 items focusing on mastery of electrical engineering concepts, alignment with the curriculum, creative development of instructional materials, and the ability to link theoretical content with industry-based practices [33, 17].

Parental attention was measured using 16 items that evaluate dimensions such as parental autonomy support, emotional encouragement, home-based involvement, and the provision of a conducive learning environment [18, 14]. Finally, student learning motivation was assessed through 15 items reflecting students' desire to succeed, interest in the subject matter, persistence when encountering difficulties, and aspirations related to future career pathways [7, 15].

2.6 Data Collection Techniques

Data collection was carried out using a questionnaire technique. The questionnaire consisted of structured items administered to respondents via Google Forms. The researcher visited the study site and distributed the questionnaire to the students who had been selected as participants. Prior to completing the instrument, respondents were provided with a clear explanation of the research objectives and instructions for filling out the questionnaire to ensure the accuracy and reliability of the data obtained [34, 22].

2.7 Data Analysis Techniques

Data analysis was carried out in several stages, including:

1. Descriptive statistics to obtain the level of teacher competence, parental attention and student learning motivation [8, 29]
2. The Assumption test, which is separate from the:
 - Normality test [4, 20]
 - Multicollinearity test [24]
 - Heteroscedasticity test [12]
3. Multiple linear regression analysis to understand changes in teacher competency, parental attention and student motivation [6, 16].
4. Determination of the coefficient (R^2) to calculate the coefficient of the independent variable [3].
5. Test F and t to determine the effect of simultaneous and partial. In addition to statistical analysis performed using SPSS software [21, 11].

3. Results and Discussion

3.1 Results

3.1.1 Description of Teacher pedagogic Competencies

Based on the results of descriptive statistical analysis for the Teacher Pedagogical Competency variable, whose data was obtained from a Likert scale questionnaire distributed to students, is as follows: (1) mean value with a score 60.46. (2) Median value with a score 60, (3) Mode value with a score 57. (4) Standard deviation value with a score 6.724, (5) Minimum value with a score 39. (6) Maximum value with a score 74.

The reality of teachers' pedagogical competency at vocational schools in Makassar City can be determined by interpreting the average scores obtained. These scores range from over 60, with a total frequency of 78 people and a percentage of 47.6%, indicating that teachers' pedagogical competency is in the very good category, as interpreted from the data in Table 4.

Table 4. interpretation of variable X1

Category	Interval	Frequency	Percentage (%)
Very Good	61-75	78	47,6
Good	51-60	76	46,3

Fairly Good	41-50	9	5,5
Not Good	31-40	1	0,6
Very Less Than Good	≤ 30	0	0,0
Total		164	100

The data analysis indicates that teacher pedagogical competency (X1) was rated as very good by the 164 respondents. This is clear from the average (mean) score of 60.46, which falls into the "Very Good" category (score > 60) as in Table 4. This finding is also supported by the data distribution, where most respondents fell into the top two categories: 47.6% (78 people) rated it "Very Good" and 46.3% (76 people) rated it "Good." Combined, almost 94% of respondents agree that the teachers' competency is at a "Good" or "Very Good" level. On the other hand, very few respondents gave "Fairly Good" (5.5%) or "Not Good" (0.6%) ratings, and no one (0%) rated it "Very Less Than Good."

3.1.2 Description of Teacher Professional Competencies

Table 5. interpretation of variable X2

Category	Interval	Frequency	Percentage (%)
Very Good	61-75	130	79,3
Good	51-60	32	19,5
Fairly Good	41-50	2	1,2
Not Good	31-40	0	0,0
Very Less Than Good	≤ 30	0	0,0
Total		164	100

Results of data analysis from 164 respondents, students' perceptions of Teacher Professional Competency (X2) showed a very high level. The frequency distribution shows that the absolute majority of respondents, namely 130 people (79.3%), were in the "Very Good" category (interval score ≤ 60). This category was followed by 32 respondents (19.5%) who gave ratings in the "Good" category (interval score 51-60). Meanwhile, only a small number of respondents were in other categories, with 2 respondents (1.2%) in the "Fairly Good" category (interval score 41-50).

3.1.3 Description of the Parental Attention

Table 6. interpretation of variable X3

Category	Interval	Frequency	Percentage (%)
Very Good	65-80	90	54,9
Good	54-64	71	43,3
Fairly Good	43-53	3	1,8
Not Good	33-42	0	0,0
Very Less Than Good	≤ 30	0	0,0
Total		164	100

Table 6 shows data analysis, in which the interpretation for the Parental Attention (X3) variable shows that out of a total of 164 respondents, students' perceptions were dominated by the "Very Good" category. This category included 90 respondents, or 54.9% of the total. The second category is "Good," which includes 71 respondents (43.3%). The remaining 3 respondents (1.8%) fall into the "Fairly Good" category. There were no respondents (0%) who fell into the "Not Good" or "Very Less Than Good" categories.

3.1.4 Description of the Student Learning Motivation

Table 7. interpretation of variable Y

Category	Interval	Frequency	Percentage (%)
Very Good	61-75	140	85,4
Good	51-60	23	14,0
Fairly Good	41-50	1	0,6
Not Good	31-40	0	0,0
Very Less Than Good	≤ 30	0	0,0
Total		164	100

Table 7 shows data analysis, the interpretation for Student Learning Motivation variable can be described as follows: out of a total of 164 respondents, student perceptions were dominated by the “Very Good” category. This category included 140 respondents, equivalent to 85.4% of the total. The second category is “Good,” which includes 23 respondents (14.0%). Only one respondent (0.6%) falls into the “Fairly Good” category. Meanwhile, there were no respondents (0%) who fell into the “Not Good” or “Very Less Than Good” categories.

3.1.5 Multiple Regression Analysis

Multiples regression analysis was applied to measure the strength of influence and indicate the direction of the multiple variable in this paper. This analysis produced data, which is presented in the table below:

Table 8. Multiple Regression Analysis Results

Variable	Unstandardized B	Std. Error	Standardized Beta	t-value	Sig.	Result
(Constant)	28.472	6.522		4,365	0,000	
Teacher Pedagogic Competency	0.132	0.059	0.176	2.237	0.027	Positive and Significant
Teacher Professional Competency	0.280	0.082	0.272	3.436	0.001	Positive and Significant
Parental Attention	0.168	0.076	0.162	2.229	0.027	Positive and Significant

The results of multiple linear regression analysis in Table 8 indicates that a constant value (a) of 28.472 was obtained. The regression equation shows that the three independent variables have a positive effect on Student Learning Motivation, as indicated by the positive coefficient (B) value. The regression coefficient for the Pedagogical Competency variable (X1) is 0.132, the Teacher Professional Competency variable (X2) is 0.280, and the Parental Attention variable (X3) is 0.168. This indicates that each one-unit increase in Teacher Professional Competency (X2) will provide the greatest increase in Student Learning Motivation (by 0.280), followed by Parental Attention (0.168) and Pedagogical Competency (0.132), assuming the other independent variables remain constant.

3.1.6 Partial Analysis

Based on the partial test results, the author adopted two decision criteria: (1) the significance value must be lower than the probability threshold of 0.05, and (2) the calculated t-value must exceed the critical value from the t-table. Given that the t-table value is 1.975, it can be concluded that all three variables exhibit a statistically significant effect. The results are presented as follows:

1. The pedagogical competency variable (X1) obtained a t-value of 2.237, which is greater than the t-table value of 1.975, and a significant value of 0.027, which is less than 0.05.
2. Teachers' Professional Competency (X2) showed the strongest influence with a t-value of 3.436 > T-table (1.975) and a significance value of $0.001 < 0.05$. This means that professional competency have a positively significant effect on student learning motivation.
3. Parental Attention (X3) also had a significant effect with a calculated T of 2.229 > calculated t-table 1.975 and a significant value of $0.027 < 0.05$.

Therefore, all three hypotheses were accepted, which means that each independent variable have a significant positive effect on student learning motivation.

3.1.7 Simultaneous Analysis and Coefficient of Determination

Table 9. Multiple Regression Result

Model	Sum of Squares	df	Mean Square	F	Significant
Regression	771.401	3	257.134	12.132	.000
Residual	3391.160	160	21.195		
Total	4162.561	163			

The results of the simultaneous analysis (F-test) indicate that the calculated F-value of 12.132 exceeds the F-table value of 2.661, with a significance value of 0.000, which is lower than the 0.05 threshold. These findings demonstrate that Teacher Pedagogic Competency, Teacher Professional Competency, and Parental Attention collectively (simultaneously) exert a significant influence on Student Learning Motivation in vocational schools in Makassar City.

3.1.8 Analysis of Predictive Power

Table 10. Model Summary R Square

R	R Square	Adjusted R Square	Std. Error of the Estimate
,430	,185	,170	4,604

The coefficient of determination obtained in this study is 0.185, indicating that the variables of teacher competence (pedagogic and professional) and parental attention simultaneously contribute 18.5% to students' learning motivation. While this contribution is significant ($\text{Sig. } 0.000 < 0.05$), it suggests that 81.5% of the variance in student motivation is explained by other factors not examined in this model. This result is understandable given the multidimensional nature of motivation in vocational education. As noted in the observation and previous studies, other potential determinants likely include peer influence, self-efficacy, learning environment, and school leadership. However, the 18.5% contribution remains crucial because it represents the specific variables (teachers and parents) that can be directly intervened by school policy, unlike external environmental factors which are harder to control.

3.2 Discussion

3.2.1 Influence of teacher pedagogic competency on student learning motivation

The results of the first hypothesis testing (H1) indicate that Teacher Pedagogical Competency (X1) have a significant positive influence on student learning motivation (Y). This finding is based on multiple regression analysis data showing a t-value of 2.237 with a significant value of 0.027. Because the significant value 0.029 is less than 0.05 and the t-value of 2.237 is greater than the t-table value 1.975, then Hypothesis H1 is accepted.

These findings are in line with various previous studies that emphasize the crucial role of pedagogical competency in building learning motivation. For example, research by [35] and [36] specifically found that pedagogical competency have positive and significant effect on student learning motivation. This is also supported by [34] who state that teachers' pedagogical competency greatly influences learning motivation.

3.2.2 Influence of teacher professional competency on student learning motivation

The results of the second hypothesis (H2) test indicate that Teacher Professional Competency (X2) has a positive and significant effect on Student Learning Motivation (Y). The data analysis shows a t-value of 3.436 with a significance value of 0.001. Since the significance value of 0.001 is substantially lower than 0.05, and the t-value of 3.436 exceeds the t-table value of 1.975, hypothesis H2 is accepted. Notably, among the three independent variables, Teacher Professional Competency exhibits the highest standardized Beta coefficient (0.272), indicating that it is the strongest predictor of student learning motivation in this research model.

This finding are consistent with and reinforce various previous studies. This study also supports the findings of [37] and [38] who explicitly state that professional competency have a positive effect on learning motivation. This finding is also relevant to the vocational school context, as per the study by [33], which found that "teacher expertise" (the core of professional competency) have a significant effect on learning outcomes mediated by motivation.

3.2.3 Influence of parental attention on student learning motivation

The results of the third hypothesis (H3) test reveal that Parental Attention (X3) has a positive and significant effect on Student Learning Motivation (Y). This finding is supported by the multiple regression analysis, which produces a t-value of 2.229 with a significance value of 0.027. Since the significance value of 0.027 is less than 0.05, and the t-value of 2.229 exceeds the t-table value of 1.975, hypothesis H3 is accepted.

These findings align with the theoretical framework of the study, which identifies parental attention as a key external factor influencing student learning motivation. The results also corroborate prior research cited in this proposal, including studies by [39] and [40], which reported a positive correlation between parental support and learning motivation in vocational schools. Similarly, the works of [41] and [42] found a significant relationship between parental involvement and learning motivation in vocational education settings.

3.2.4 Theoretical Implications

The findings of this study align with established motivational theories, specifically Self-Determination Theory (SDT) and Expectancy-Value Theory. From the perspective of Self-Determination Theory, motivation flourishes when the basic psychological needs for competence, autonomy, and relatedness are met [7, 43]. In this study, high pedagogic and professional competency of teachers likely fulfills the students need for competence by providing clear, structured, and expert instruction. Meanwhile, parental attention fulfills the need for relatedness and emotional security, creating a supportive environment that fosters intrinsic motivation.

Furthermore, the results can be explained through Expectancy-Value Theory, which posits that motivation depends on students' expectation of success and the value they place on the task [37, 44]. Teachers with high professional competence (mastery of electrical engineering material) increase students' expectancy of success because students feel confident they are being taught by experts. Simultaneously, parental attention reinforces the subjective value of education, signaling to students that their schooling is important and worth the effort. The synergy between competent teachers

(increasing expectancy) and supportive parents (increasing value) thus creates a robust framework for sustaining student motivation in vocational settings.

4. Conclusion

Following an analysis of the data and discussion, the following conclusions can be reached:

1. Pedagogic competence of teachers proved to be a significant positive partial effect on student motivation Study Program electrical power installation engineering Makassar city state vocational school.
2. Teachers' professional competency has been proven to have significant positive partial effect on student learning motivation. This variable is the predictor with the most dominant influence.
3. Parental attention has been proven to have significant positive influence partial on student learning motivation.
4. Simultaneously (together), teacher pedagogical competency, teacher professional competency, and parental attention have a positive and significant effect on student learning motivation.

The findings imply that schools must prioritize continuous professional development programs to ensure teachers remain update with the latest expertise. Additionally, schools are advised to design programs that increase parental awareness, as support and supervision at home significantly contribute to student motivation.

4.1 Limitations and Future Research

Despite these significant findings, this study has several limitations that warrant acknowledgment. First, the data were collected through self-reported questionnaires, which may be subject to social desirability bias, whereby respondents provide answers they perceive as "correct" rather than reflecting their actual experiences. Second, the scope of the study was limited to four vocational schools in Makassar City, which may constrain the generalizability of the results to other regions with differing educational contexts. Third, the study employed a purely quantitative research design, which although effective for identifying statistical relationships does not capture the deeper qualitative nuances underlying how these competencies influence students' psychological processes.

To address these limitations and enhance the model's explanatory power, future research should consider expanding the range of variables examined. Internal psychological factors such as self-efficacy, as well as external environmental variables such as the learning environment and school leadership style, could be incorporated. The inclusion of these factors would contribute to a more holistic understanding of the complex determinants shaping learning motivation among vocational students.

References

- [1] S. Rahmawati, S. Prestridge, A. G. Abdullah, and I. Widiaty. "Unpacking the digital competence challenge in vocational education: A case from Indonesia". In: *Social Sciences and Humanities Open* 12 (2025). DOI: 10.1016/j.ssaho.2025.101803.
- [2] I. Tobback, D. Verhaest, and K. De Witte. "The impact of work-based versus school-based learning on cognitive and non-cognitive outcomes in vocational secondary education". In: *Economics of Education Review* 107 (2025). DOI: 10.1016/j.econedurev.2025.102673.
- [3] R. Lozano et al. "Improving sustainability teaching by grouping and interrelating pedagogical approaches and sustainability competences: Evidence from 15 Worldwide Higher Education Institutions". In: *Sustainable Development* 31.1 (2023), pp. 349–359. DOI: 10.1002/sd.2396.

- [4] E. Tadesse, C. Gao, J. Sun, S. Khalid, and C. Lianyu. "The impact of socioeconomic status on self-determined learning motivation: A serial mediation analysis of the influence of Gaokao score on seniority in Chinese higher vocational college students". In: *Children and Youth Services Review* 143 (2022). DOI: 10.1016/j.childyouth.2022.106677.
- [5] A. Habibi, R. W. Attar, Q. Zhao, T. T. Wijaya, R. Hendra, T. M. Alharmali, and A. H. Alhazmi. "Validating the determinants of teachers' performance in vocational education: Indonesian perspectives". In: *Acta Psychologica* 259 (2025). DOI: 10.1016/j.actpsy.2025.105332.
- [6] M. Njenga. "Continuing professional development of vocational teachers in Kenya: Motivations, practices and teacher profiles". In: *International Journal of Educational Research Open* 5 (2023). DOI: 10.1016/j.ijedro.2023.100282.
- [7] T. Held and M. Mejehe. "Students' motivational trajectories in vocational education: Effects of a self-regulated learning environment". In: *Heliyon* 10.8 (2024). DOI: 10.1016/j.heliyon.2024.e29526.
- [8] K. Chen and H. Zhang. "The influence of parental involvement on the development of rural children: A comparative study of left-behind children and non-left-behind children". In: *Children and Youth Services Review* 177 (2025). DOI: 10.1016/j.childyouth.2025.108481.
- [9] Krisnawati, S. Yulaeha, and K. Budiastara. "Pengaruh Kompetensi Pedagogik dan Profesional Guru Terhadap Motivasi Belajar Peserta Didik Sekolah Dasar". Indonesian. In: *Jurnal Basicedu* 6.1 (2022), pp. 1116–1124. DOI: 10.31004/basicedu.v6i1.2181.
- [10] P. Lewis. "Innovation, technician skills, and vocational education and training: connecting innovation systems and vocational education and training". In: *Journal of Vocational Education and Training* (2023). DOI: 10.1080/13636820.2023.2215749.
- [11] C. D. Vallotton, H. J. Yoon, H. E. Brophy-Herb, L. Knoche, J. Nord, and A. M. Stacks. "How are Early Head Start teachers' professional development experiences associated with their work-related stress and qualities of teacher-child interactions?" In: *Early Childhood Research Quarterly* 73 (2025), pp. 14–26. DOI: 10.1016/j.ecresq.2025.05.002.
- [12] R. Wang and H. Zhang. "Integrating positive psychology principles in vocational education: A new approach to boosting student well-being and academic motivation". In: *Acta Psychologica* 254 (2025). DOI: 10.1016/j.actpsy.2025.104834.
- [13] A. E. Rodríguez-Bravo and M. Á. Murga-Menoyo. "Analysis of parental goals according to family variables. Implications for quality education in secondary education". In: *Heliyon* 9.9 (2023). DOI: 10.1016/j.heliyon.2023.e19740.
- [14] J. Jun, K. Meissel, M. Cooper, and G. Rudd. "A systematic review: Parental perspective on school readiness during the pre- and post-transition periods". In: *International Journal of Educational Research Open* 9 (2025). DOI: 10.1016/j.ijedro.2025.100486.
- [15] J. Waid, K. Abusaleh, and S. Marsalis. "Approaches to strengthen parental self-efficacy: An umbrella review of systematic reviews". In: *Children and Youth Services Review* 177 (2025). DOI: 10.1016/j.childyouth.2025.108483.
- [16] M. Roll and D. Ifenthaler. "Learning Factories 4.0 in technical vocational schools: can they foster competence development?" In: *Empirical Research in Vocational Education and Training* 13.1 (2021). DOI: 10.1186/s40461-021-00124-0.
- [17] Umar, Y. Ockta, and P. Mardesia. "A Correlational Study: Pedagogical and professional competence of physical education teachers in relation to the implementation of the Merdeka curriculum". In: *Journal of Physical Education and Sport* 23.12 (2023), pp. 3325–3331. DOI: 10.7752/jpes.2023.12380.
- [18] S. Alam and R. A. Hamzah. "The role of parental involvement in promoting education for sustainability in primary schools". In: *Asian Education and Development Studies* 14.3 (2025), pp. 563–578. DOI: 10.1108/AEDS-07-2024-0151.

- [19] E. Lee, M. Young, and C. Cole. "Grand rounds: Inclusive pedagogy for empowering nurse practitioner education". In: *Journal of Professional Nursing* 61 (2025), pp. 77–83. DOI: 10.1016/j.profnurs.2025.09.009.
- [20] R. Yan, B. Liu, and L. J. Zhang. "Effects of pedagogical intervention on Chinese EFL learners' use of motivational regulation strategies and oral English proficiency improvement". In: *Heliyon* 10.19 (2024). DOI: 10.1016/j.heliyon.2024.e38355.
- [21] J. Huo. "Vocational-technical teachers' mindfulness: Does it matter for teachers' well-being and motivation?" In: *Heliyon* 9.6 (2023). DOI: 10.1016/j.heliyon.2023.e17184.
- [22] R. Mufanti, D. Carter, and N. England. "Outcomes-based education in Indonesian higher education: Reporting on the understanding, challenges, and support available to teachers". In: *Social Sciences and Humanities Open* 9 (2024). DOI: 10.1016/j.ssaho.2024.100873.
- [23] H. Jang, H. Park, H. Son, and J. Kim. "The Asymmetric Effects of the Transitions Into and out of Bullying Victimization on Depressive Symptoms: The Protective Role of Parental Education". In: *Journal of Adolescent Health* 74.4 (2024), pp. 828–836. DOI: 10.1016/j.jadohealth.2023.11.007.
- [24] Z. Xie, Y. Yao, and X. Zhu. "A longitudinal study of job crafting among Chinese inclusive education teachers: The influence of attitudes, perceived principal leadership, and motivation". In: *Teaching and Teacher Education* 167 (2025). DOI: 10.1016/j.tate.2025.105194.
- [25] W. Cheng and P. N. T. Nguyen. "Academic motivations and the risk of not in employment, education or training: university and vocational college undergraduates comparison". In: *Education and Training* 66.10 (2024), pp. 91–105. DOI: 10.1108/ET-05-2024-0203.
- [26] S. Ranta, J. Kangas, H. Harju-Luukkainen, T. Ukkonen-Mikkola, M. Neitola, J. Kinon, N. Sajaniemi, and A. Kuusisto. "Teachers' Pedagogical Competence in Finnish Early Childhood Education—A Narrative Literature Review". In: *Education Sciences* 13.8 (2023). DOI: 10.3390/educsci13080791.
- [27] M. L. Medina Vásquez, L. C. Campos Ramírez, M. L. Yataco Bernaola, J. R. Yataco Torrealva, Z. M. Ramos Torrealva, D. M. Castro Cárdenas, and S. F. S. Altamirano. "Inclusive pedagogy and active learning in higher education: Cluster and dimensional insights into teaching competency integration". In: *Social Sciences and Humanities Open* 12 (2025). DOI: 10.1016/j.ssaho.2025.102060.
- [28] K. Tzafilkou, M. Perifanou, and A. A. Economides. "Assessing teachers' digital competence in primary and secondary education: Applying a new instrument to integrate pedagogical and professional elements for digital education". In: *Education and Information Technologies* 28.12 (2023), pp. 16017–16040. DOI: 10.1007/s10639-023-11848-9.
- [29] K. M. Korous, A. Surachman, C. R. Rogers, and A. G. Cuevas. "Parental education and epigenetic aging in middle-aged and older adults in the United States: A life course perspective". In: *Social Science and Medicine* 333 (2023). DOI: 10.1016/j.socscimed.2023.116173.
- [30] E. Kulju, E. Jarva, A. Oikarinen, M. Hammarén, O. Kanste, and K. Mikkonen. "Educational interventions and their effects on healthcare professionals' digital competence development: A systematic review". In: *International Journal of Medical Informatics* 185 (2024). DOI: 10.1016/j.ijmedinf.2024.105396.
- [31] A. Sweeney, J. Burke, and T. Meehan. "The impact of mindful pedagogy on creativity in higher education students, a systematic review". In: *International Journal of Educational Research Open* 9 (2025). DOI: 10.1016/j.ijedro.2025.100504.
- [32] A. Bentri, A. Hidayati, and M. Kristiawan. "Factors supporting digital pedagogical competence of primary education teachers in Indonesia". In: *Frontiers in Education* 7 (2022). DOI: 10.3389/educ.2022.929191.
- [33] L. Guerrero Puerta and R. Lorente García. "Exploring the professional's perceptions on dual vocational education and training (dual VET) process of implementation in Spain". In: *Higher Education, Skills and Work-Based Learning* 15.7 (2024), pp. 16–32. DOI: 10.1108/HESWBL-07-2023-0203.

- [34] S. Abele, D. Vogel-Blaschka, A. Leon, M. Beck, and B. Fürstenau. "General pedagogical knowledge among pre-service vocational teachers: Measurement and development during teacher education". In: *Teaching and Teacher Education* 165 (2025). DOI: 10.1016/j.tate.2025.105155.
- [35] E. Vandevelde, E. Claes, and O. Agirdag. "Teachers' perceived professional competences in citizenship education: Developing and validating a survey instrument for pre-service teachers in a European context". In: *International Journal of Educational Research* 134 (2025). DOI: 10.1016/j.ijer.2025.102812.
- [36] M. Lackéus, J. S. Hyldegård, and H. M. Færgemann. "Value creation pedagogy across disciplines in higher education: Approaches and motivations". In: *International Journal of Management Education* 23.3 (2025). DOI: 10.1016/j.ijme.2025.101270.
- [37] M. Evli and Z. Su Topbaş. "The relationship between professional self-concept and innovative behaviors in nursing students: The mediator role of intrinsic motivation and extrinsic motivation". In: *Teaching and Learning in Nursing* 20.3 (2025), e689–e696. DOI: 10.1016/j.teln.2025.01.031.
- [38] Y. R. Shi, K. F. K. Sin, and Y. Q. Wang. "Teacher professional development of digital pedagogy for inclusive education in post-pandemic era: Effects on teacher competence, self-efficacy, and work well-being". In: *Teaching and Teacher Education* 168 (2025). DOI: 10.1016/j.tate.2025.105230.
- [39] H. Yu, Y. Chen, and I. M. bin Ismail. "From scaffolding to success: How instructor pedagogical support and collaborative classroom interaction drive scholastic motivation in programming education". In: *Acta Psychologica* 259 (2025). DOI: 10.1016/j.actpsy.2025.105289.
- [40] L. I. S. Rohmawati, H. Indreswari, and E. Flurentin. "Dukungan Orang Tua, Ekspektasi Karier dan Hubungannya dengan Motivasi Belajar Siswa di SMK Negeri 5 Malang". Indonesian. In: *Jurnal Pembelajaran, Bimbingan, Dan Pengelolaan Pendidikan* 3.3 (2023), pp. 252–262. DOI: 10.17977/um065v3i32023p252-262.
- [41] X. Gu, S. Hua, T. McKenzie, and Y. Zheng. "Like father, like son? Parental input, access to higher education, and social mobility in China". In: *China Economic Review* 72 (2022). DOI: 10.1016/j.chieco.2022.101761.
- [42] Saifullah, H. Abbas, and A. Purwanto. "The role of professional leadership and learning motivation in shaping citizenship behavior". In: *Social Sciences and Humanities Open* 12 (2025). DOI: 10.1016/j.ssaho.2025.102105.
- [43] Q. Xia, T. K. F. Chiu, M. Lee, I. T. Sanusi, Y. Dai, and C. S. Chai. "A self-determination theory (SDT) design approach for inclusive and diverse artificial intelligence (AI) education". In: *Computers and Education* 189 (2022). DOI: 10.1016/j.compedu.2022.104582.
- [44] C. Kuhn, G. Hagenauer, and A. Gröschner. "'Because you always learn something new yourself!' An expectancy-value-theory perspective on mentor teachers' initial motivations". In: *Teaching and Teacher Education* 113 (2022). DOI: 10.1016/j.tate.2022.103659.