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The Effect Of Teaching Style And Parental Support On Academic Achievement Through Learning Motivation As An Intervening Variable Among State Elementary School Students In Serang Regency

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ABSTRACT

The decline in PISA 2022 achievement indicates fundamental problems in the quality of learning in elementary schools. Teachers' teaching styles and parental support are believed to be the main determinants of student motivation and achievement. However, previous research has generally focused on student perceptions, thus underutilizing the perspectives of fourth-grade teachers. This study aims to analyze the influence of teachers' teaching styles and parental support on learning motivation and academic achievement, either partially, simultaneously, or through learning motivation as an intervening variable, among public elementary school students in Serang Regency. This quantitative study, using an explanatory survey design, involved a population of 707 fourth-grade teachers of public elementary schools in Serang Regency, with a sample of 247 respondents determined using the Slovin formula and cluster random sampling techniques. Data were collected through a five-point Likert-scale questionnaire and analyzed using Partial Least Squares-based Structural Equation Modeling (SEM-PLS) with the help of SmartPLS version 4. The results of the measurement model test showed that all 40 indicators were valid and reliable. The results of the structural model test indicate that teacher teaching style and parental support have a significant positive effect on learning motivation (β = 0.313 and 0.401) and on academic achievement (β = 0.220 and 0.246); learning motivation has a significant effect on academic achievement (β = 0.397) and partially mediates both paths of influence (indirect effect = 0.124 and 0.159). The simultaneous effect on learning motivation produces R^2 = 0.282, while on academic achievement R^2 = 0.422 (p = 0.000). All nine research hypotheses (H1–H9) are accepted. Improving student academic achievement requires synergy between optimizing teacher teaching style, strengthening parental support, and fostering learning motivation in an integrated manner.

Article Information

Kata Kunci:
Gaya mengajar guru; dukungan orang tua; motivasi belajar; prestasi akademik; SEM-PLS

ABSTRACT

Penurunan capaian PISA 2022 mengindikasikan persoalan mendasar pada kualitas pembelajaran di sekolah dasar. Gaya mengajar guru dan dukungan orang tua diyakini menjadi determinan utama motivasi dan prestasi belajar siswa, namun penelitian terdahulu umumnya bertumpu pada persepsi siswa sehingga perspektif guru kelas IV belum banyak dimanfaatkan. Penelitian ini bertujuan menganalisis pengaruh gaya mengajar guru dan dukungan orang tua terhadap motivasi belajar dan prestasi akademik, baik secara parsial, simultan, maupun melalui motivasi belajar sebagai variabel intervening, pada siswa SD Negeri di Kabupaten Serang. Penelitian kuantitatif dengan desain survei eksplanatori ini melibatkan populasi 707 guru kelas IV SD Negeri di Kabupaten Serang, dengan sampel 247 responden yang ditentukan melalui rumus Slovin dan teknik cluster random sampling. Data dikumpulkan melalui kuesioner skala Likert lima poin dan dianalisis menggunakan Structural Equation Modeling berbasis Partial Least Square (SEM-PLS) dengan bantuan SmartPLS versi 4. Hasil pengujian model pengukuran menunjukkan bahwa seluruh 40 indikator valid dan reliabel. Hasil pengujian model struktural menunjukkan bahwa gaya mengajar guru dan dukungan orang tua berpengaruh positif signifikan terhadap motivasi belajar (β = 0,313 dan 0,401) serta terhadap prestasi akademik (β = 0,220 dan 0,246); motivasi belajar berpengaruh signifikan terhadap prestasi akademik (β = 0,397) dan memediasi secara parsial kedua jalur pengaruh (indirect effect = 0,124 dan 0,159). Pengaruh simultan terhadap motivasi belajar menghasilkan R^2 = 0,282, sedangkan terhadap prestasi akademik R^2 = 0,422 (p = 0,000). Seluruh sembilan hipotesis penelitian (H1–H9) diterima. Peningkatan prestasi akademik siswa memerlukan sinergi antara optimalisasi gaya mengajar guru, penguatan dukungan orang tua, dan penumbuhan motivasi belajar secara terintegrasi.

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1. Introduction

The fourth Sustainable Development Goal (SDG), launched by the United Nations in 2015, affirms a global commitment to equitable access to and quality education by 2030, encompassing the quality of learning processes and outcomes, the adequacy of educational infrastructure, and teacher professional competence. Within this framework, the quality of learning at the elementary school level holds a strategic position because it is at this level that the foundation of students' basic competencies is formed to support the continuity of learning at the next level.

These normative ideals have not fully matched actual achievements in Indonesia. The results of the 2022 Programme for International Student Assessment (PISA) show a worrying trend: Indonesian students' reading, mathematics, and science literacy scores have declined compared to 2018, even reaching one of the lowest levels in Indonesia's history of participation in this assessment (OECD, 2023). Indonesian students aged 15 years only achieved an average score of 359 in reading literacy, far below the OECD average of 476, and a score of 366 in mathematics, compared to the OECD average of 472. This condition indicates that the problem of learning quality in Indonesia is structural, rooted in the quality of classroom learning interactions as well as in the conditions of students' learning ecosystems, both at school and at home.

In response to these conditions, the Ministry of Education, Culture, Research, and Technology continues to promote the strengthening of the Independent Curriculum, which emphasizes differentiated learning, strengthening literacy and numeracy, and fostering students' intrinsic motivation (Warsihna et al., 2023). This policy requires teachers to move away from uniform teaching patterns and toward a more adaptive approach. However, several studies have revealed that its implementation in the field is still hampered by limited facilities and infrastructure, gaps in teacher competency, and heterogeneity in student and family conditions. These findings point to one consistent conclusion: successful curriculum transformation requires synergy between ongoing teacher training and strengthened school-family collaboration, so that teacher teaching style and parental support are not merely two independent variables, but two pillars that support each other in creating a productive learning climate.

The specifics of the fourth grade of elementary school require special attention. According to Piaget's (1952) theory of cognitive development, children aged 9–10 are in the concrete operational stage, which is also the threshold between simple thematic learning in lower grades and the demands of independent learning in higher grades. At this threshold, the teacher's role becomes crucial, as they are the ones most closely involved in the daily dynamics of students' learning motivation and the support patterns they receive from their families.

Teachers' teaching styles, reflected in their delivery methods, interaction patterns, and strategies for building a learning environment, have been shown to contribute to student motivation in various national studies. However, findings by Maulana Sidik et al. (2024) provide a critical note that the influence of teacher teaching styles on learning motivation tends to weaken if not accompanied by support from other learning environment factors, particularly family support. Similarly, the family remains the primary learning ecosystem that shapes a child's readiness and enthusiasm for learning before entering the classroom; parental involvement, whether in the form of academic mentoring, communication with the school, or emotional support, plays a crucial role in a child's motivation and learning outcomes (Castro et al., 2022).

Previous research on teacher teaching styles, parental support, learning motivation, and academic achievement has utilized a variety of data sources, including student perceptions and learning outcomes. In this context, the perspectives of fourth-grade teachers offer a unique perspective because they interact regularly with students and can observe learning behavior, student engagement during learning, and patterns of parental support learned through communication with families. This information can help explain how teachers perceive the relationships between the learning process, family environment, motivation, and student academic achievement. However, teacher reports do not always reflect students' internal experiences, such as their personal interests, feelings, and motivations. Teacher assessments are also potentially influenced by subjectivity, a tendency to provide consistent assessments across constructs, and limited information about students' learning conditions at home. Unlike teacher reports, student perceptions can provide a snapshot of the learning experience from the student's perspective, while objective data, such as report card grades or test scores, can provide a more direct measure of academic achievement. Therefore, teacher perspectives are not intended to replace other data sources but rather provide an additional perspective that should be interpreted with caution.

Based on these considerations, this study examines the relationship between teacher teaching style, parental support, learning motivation, and academic achievement through a structural model tested using Structural Equation Modeling–Partial Least Squares (SEM-PLS). The novelty of this study lies in the use of fourth-grade teacher reports from public elementary schools in Serang Regency to simultaneously test the direct and indirect relationships between these constructs in a single model. Thus, the contribution of this study lies not in the assumption that teacher perspectives are superior to student perceptions or objective academic achievement data, but rather in the addition of empirical evidence from teachers' perspectives that can complement other measurement approaches.

Based on the description, this study aims to analyze: (1) the influence of teacher teaching style and parental support on learning motivation; (2) the influence of teacher teaching style, parental support, and learning motivation on academic achievement; (3) the role of learning motivation as an intervening variable in the relationship between teacher teaching style and parental support on academic achievement; and (4) the simultaneous influence of these three exogenous and intervening variables on the academic achievement of students at Public Elementary Schools in Serang Regency. This study is expected to provide theoretical contributions to the development of an integrative model of the determinants of elementary school students' academic achievement, as well as practical contributions for teachers, educational units, and parents in formulating learning and mentoring strategies based on empirical evidence.

1.1 Research Hypothesis

This research is based on the theoretical assumption that teacher teaching style and parental support are factors related to student learning motivation and academic achievement. A teacher's teaching style that is communicative, varied, and responsive to student needs can create a learning environment that supports student engagement. Meanwhile, parental support,

whether in the form of attention, learning assistance, educational facilities, or emotional support, can help build student learning motivation. This view aligns with the self-determination theory developed by Ryan and Deci (2020), which emphasizes the importance of the social environment in supporting individual motivation. Based on this foundation, the research hypothesis is formulated as follows.

H1: Teachers' teaching style is positively and significantly related to students' learning motivation.

H2: Parental support is positively and significantly related to students' learning motivation.

H3: Teachers' teaching style is positively and significantly related to students' academic achievement.

H4: Parental support is positively and significantly related to students' academic achievement.

H5: Learning motivation is positively and significantly related to students' academic achievement.

Learning motivation is also thought to act as an intervening variable linking teacher teaching style and parental support to academic achievement. Teaching styles that support student engagement and adequate parental support are thought to be associated with higher learning motivation, which in turn is related to academic achievement. Thus, the relationship between these two factors and academic achievement may occur through an indirect pathway involving learning motivation. Based on this framework, the following hypothesis is formulated.

H6: Learning motivation mediates the relationship between teacher teaching style and student academic achievement.

H7: Learning motivation mediates the relationship between parental support and students' academic achievement.

In addition to direct and indirect relationships, this study examines the simultaneous relationships between constructs in the structural model. Teacher teaching style and parental support are viewed as complementary learning environment factors in relation to learning motivation. Furthermore, teacher teaching style, parental support, and learning motivation are predicted to be jointly related to student academic achievement. Therefore, the simultaneous hypothesis is formulated as follows.

H8: Teacher teaching style and parental support are simultaneously significantly related to students' learning motivation.

H9: Teacher teaching style, parental support, and learning motivation are simultaneously significantly related to students' academic achievement.

The nine hypotheses were tested using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) approach. The test was conducted to assess the direction, magnitude, and significance of direct and indirect relationships between constructs, while simultaneous relationships were assessed based on the constructed structural model. Because the research data were collected cross-sectionally through teacher reports, the hypotheses tested statistical relationships based on teacher perceptions and were not intended to provide evidence of temporally verified causality.

2. RESEARCH METHOD

This study employed a quantitative approach with an explanatory survey design, aiming to test statistical relationships and predictive pathways between variables based on a previously established theoretical framework (Creswell & Creswell, 2023). This study employed a cross-sectional design, meaning data collection was conducted at a single point in time, thus focusing the analysis on the direction, strength, and significance of the relationships between variables, rather than on establishing temporal causality. The structural model tested placed teacher teaching style (X1) and parental support (X2) as exogenous variables, learning motivation (Z) as an intervening variable, and academic achievement (Y) as an endogenous variable. Using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) approach, this study examined direct relationships between variables, indirect relationships through learning motivation, and simultaneous relationships within the structural model based on the perceptions of fourth-grade teachers at public elementary schools in Serang Regency.

The study population included all fourth-grade teachers at public elementary schools in Serang Regency, Banten Province, totaling 707 people spread across 29 sub-districts (Dapodik Kemdikbudristek, 2025). The study sample consisted of 247 fourth-grade teachers selected using cluster random sampling techniques based on sub-district area. The sample size was determined using the Slovin formula with a 5.13% error rate. The sampling resulted in nine selected sub-districts: Carenang, Cikande, Cikeusal, Ciruas, Kibin, Kragilan, Pontang, Tanara, and Tirtayasa.

Fourth-grade teachers were selected as respondents because they have experience interacting regularly with students during learning activities and can provide assessments based on observations of the student learning process. In this study, the operational unit of analysis is the fourth-grade teachers as respondents who provide assessments of all research constructs. Meanwhile, students are the subjects referred to in the teachers' assessments of learning motivation and academic achievement, not the respondents who provide the data directly. Therefore, the research data represent teachers' perceptions of the teaching style, parental support, learning motivation, and academic achievement of the students they teach.

The determination of the unit of analysis limits the interpretation of the research results. The statistical relationships found through the SEM-PLS analysis describe relationships between constructs based on teacher assessments, not relationships verified through direct measurement at the student level. Specifically, academic achievement in this study was measured based on teacher perceptions and not report card grades, exam results, or standardized tests. Therefore, the research results cannot be directly interpreted as evidence of each student's objective achievement level. The findings are more appropriately understood as a description of the relationships between constructs from the perspectives of fourth-grade teachers at public elementary schools in Serang Regency.

The research instrument used a closed-ended questionnaire with a five-level Likert scale to measure four constructs: teacher teaching style (X1), parental support (X2), learning motivation (Z), and academic achievement (Y). Each construct consisted of 10 statements, resulting in a total of 40 items. The questionnaire was completed by fourth-grade elementary school teachers based on their assessment of the learning process and the learning conditions of the students being observed.

The operational definition of each construct is based on the theoretical concepts underlying the research and adapted to the context of elementary school learning. Teacher teaching style refers to the teacher's approach to delivering material, implementing learning interactions, and engaging students in learning activities. Parental support refers to the family's support for students' learning activities, whether through attention,

mentoring, provision of facilities, or emotional support. Learning motivation refers to the encouragement related to student involvement, persistence, and willingness to participate in learning activities. Meanwhile, academic achievement refers to the teacher's assessment of students' learning achievements in academic activities.

Each statement item was scored using a five-level Likert scale, ranging from 1 to 5, with a score of 1 for strongly disagree, 2 for disagree, 3 for neutral, 4 for agree, and 5 for strongly agree. For negative items, if present in the instrument, scoring was done in reverse before data analysis. The score for each construct was obtained from responses to the 10 items that measure it. In the SEM-PLS analysis, responses to these items were used as indicators of the construct according to the specifications of the established measurement model.

Before being used in the main research, the instrument needs to be evaluated to ensure the appropriateness of the content, clarity of language, and understandability of the statements by respondents. The instrument development and initial testing procedures, including expert assessment or limited trials, are described based on the actual stages. Next, the quality of the measurement model is evaluated through outer loading values, construct reliability, convergent validity, and discriminant validity using SEM-PLS. This evaluation is used to assess the quality of construct measurement based on the research data.

3. RESULTS AND DISCUSSION

3.1 Data Description

The research data came from 247 fourth-grade elementary school teachers in Serang Regency. A summary of descriptive statistics for the four research variables is presented in Table 1.

Table 1. Summary of Descriptive Statistics of Research Variables

Variables	Mean	Median	Std. Dev	Range
Teacher Teaching Style (X1)	41.15	42.00	8.07	17–50
Parental Support (X2)	40.29	41.00	8.55	16–50
Learning Motivation (Z)	36.93	39.00	7.30	12–50
Academic Achievement (Y)	38.24	40.00	7.50	12–50

The average scores for all four variables were in the moderate to high category, with considerable inter-respondent variability (standard deviations ranging from 7.30 to 8.55). The highest score was found for the Teacher Teaching Style variable, while the highest variability was found for the Parental Support variable.

3.2 Evaluation of the Measurement Model (Outer Model)

All 40 indicators had outer loading values above the ideal threshold of 0.70 (ranging from 0.744 to 0.901) with a t-statistic well above 1.96 and a p-value <0.001, thus each indicator was proven to reflect its latent construct strongly and significantly. The results of the construct reliability and validity evaluation are presented in Table 2.

Table 2. Construct Reliability and Convergent Validity

Construct	Cronbach's Alpha	Composite Reliability	AVE
Teacher Teaching Style (X1)	0.962	0.967	0.745
Parental Support (X2)	0.964	0.969	0.756
Learning Motivation (Z)	0.937	0.946	0.637
Academic Achievement (Y)	0.944	0.952	0.668

The Cronbach's Alpha and Composite Reliability values of the four constructs are far above the ideal threshold of 0.70, while the AVE values of all constructs are above the threshold of 0.50. Discriminant validity testing through the Heterotrait-Monotrait Ratio (HTMT) shows that all pairs of constructs are far below the threshold of 0.90 (ranging from 0.093 to 0.613), and is strengthened by the Fornell-Larcker criteria, where the AVE root of each construct (0.798 to 0.870) is greater than its correlation with other constructs. Thus, the measurement model of this study has good psychometric quality and is suitable for use in testing structural models.

3.3 Structural Model Evaluation and Hypothesis Testing

The R^2 value for Learning Motivation of 0.282 (weak to moderate category) indicates that Teacher Teaching Style and Parental Support together explain 28.2% of the variance in Learning Motivation. The R^2 value for Academic Achievement of 0.422 (moderate category) indicates that the three independent variables explain 42.2% of the variance in Academic Achievement. The results of the direct effect hypothesis testing are presented in Table 3.

Table 3. Results of Direct Influence Tests (Path Coefficients)

Path of Influence	β	t-statistic	p-value	Information
Teacher Teaching Style → Learning Motivation	0.313	6,318	0,000	Significant (H1 accepted)
Parental Support → Learning Motivation	0.401	7,145	0,000	Significant (H2 is accepted)
Teacher Teaching Style → Academic Achievement	0.220	4,049	0.0001	Significant (H3 accepted)
Parental Support → Academic Achievement	0.246	4,227	0,000	Significant (H4 accepted)
Learning Motivation → Academic Achievement	0.397	6,495	0,000	Significant (H5 accepted)

All five direct influence pathways were positive and significant. Parental support was the strongest direct predictor of learning motivation (β = 0.401), while learning motivation was the strongest direct predictor of academic achievement (β = 0.397), significantly greater than the direct influence of teacher teaching style or parental support on academic achievement.

Testing the mediation effect shows that learning motivation acts as a partial mediator in both indirect influence paths, as presented in Table 4.

Table 4. Results of the Mediation Effect Test

Mediation Path	Indirect (β)	t-statistic	p-value	Types of Mediation
Teacher Teaching Style → Learning Motivation → Academic Achievement	0.124	4,345	0,000	Partial Mediation (H6 accepted)
Parental Support → Learning Motivation → Academic Achievement	0.159	4,590	0,000	Partial Mediation (H7 accepted)

The results of the total effect analysis in this study should be interpreted with caution. The coefficient values obtained through SEM-PLS indicate a statistical relationship between variables consistent with the constructed research model. Similarly, the results of the indirect effect analysis through learning motivation indicate a statistical relationship linking teaching style and parental support to academic achievement through learning motivation. However, these results cannot be directly interpreted as evidence of a causal relationship that persists over time. This is because the study used a cross-sectional design, i.e., data collection at a single point in time, and relied on reports from a single source, namely the teacher. Therefore, the percentages of direct and indirect effects obtained represent relative contributions based on the statistical model, not definitive measures of the magnitude of changes in academic achievement caused by each variable.

3.4 Discussion

The results of this study indicate a positive relationship between teaching style and student learning motivation. This finding indicates that teachers' assessments of their teaching style are related to their assessments of student learning motivation. However, this relationship cannot be directly interpreted as meaning that teaching style leads to increased learning motivation, given that this study used a cross-sectional design and the data were sourced from teacher assessments. Other possible explanations should also be considered, for example, teachers who positively assess their teaching style tend to give more positive assessments of student learning motivation. Thus, the results of this study indicate a relationship between the variables in the tested model, but cannot yet confirm the direction of the causal relationship between the two.

Parental support proved to be the strongest direct influence on learning motivation (β = 0.401), greater than the influence of teacher teaching style. Parents who provide attention, learning facilities, and emotional support to their children tend to foster self-confidence and enthusiasm for learning. This finding is consistent with research by Pamungkas, Wahyudi, and Rokhmaniyah (2022) and Eriwaty (2025), which confirmed the significant role of parental support in elementary school students' learning motivation.

Based on the analysis, the path coefficients for parental support on learning motivation and academic achievement were greater than those for teaching style. This finding indicates that parental support has a relatively stronger statistical relationship with both variables in the tested research model. However, these results should be interpreted cautiously and cannot be directly used to conclude that family factors are generally more dominant than school factors. The research data were collected at a single point in time, and all variables were assessed based on teacher reports. Therefore, differences in coefficients may be influenced by respondent perceptions and the possibility of shared-source variance or halo effects. For example, teachers who rate parental support positively may also tend to give more positive assessments of student motivation and academic achievement. Therefore, the results of this study are more appropriately understood as an indication that parental support has a relatively stronger relationship in the tested model, rather than as evidence that family factors are always more determinant than school factors. The role of learning motivation as a partial mediator in both influence paths (teacher teaching style and parental support on academic achievement) indicates that the influence of these two exogenous factors on academic achievement operates both directly and indirectly through increasing learning motivation first. The implication is that strengthening students' learning motivation is relevant to be used as an intervening strategy, both when the intervention is focused on improving teachers' teaching styles and on strengthening parental support at home. The R^2 value of 42.2% on academic achievement indicates that this research model has quite good predictive power, however, 57.8% of the variance in academic achievement is still explained by other factors outside the model, such as students' cognitive abilities, family socio-economic conditions, school climate, and teachers' pedagogical competence in more detail, which opens up space for further research.

This study has several limitations that should be considered when interpreting the SEM-PLS analysis results. First, student academic achievement was assessed based on teacher perceptions, not test scores, report cards, or objective academic records. These assessments are potentially influenced by teachers' subjective perspectives and may not fully reflect students' actual academic achievement. If teachers positively assess their teaching style, parental support, or students' motivation to learn, these assessments may also be reflected in the academic achievement scores. This situation has the potential to strengthen or alter the statistical relationships between variables compared to those that might be found if academic achievement were measured objectively.

Second, all variables in this study were measured using the same source, namely teacher reports. Using a single measurement source can introduce common method variance, which is variation in responses that stems from the measurement method or source, rather than solely from the substantive relationships between variables. For example, teachers' tendency to provide consistent or positive ratings for multiple aspects simultaneously can increase correlations between variables and potentially produce larger path coefficients. However, common method bias does not always increase coefficients; under certain conditions, it can also weaken or alter the observed pattern of

relationships.
Third, respondents' tendencies in responding, such as their tendency to agree with statements, give perceived positive ratings, or use specific score ranges repeatedly, can influence the variation in the analyzed data. If these tendencies occur systematically across multiple constructs, estimates of the relationships between variables can be distorted. Therefore, the path coefficients, direct effects, indirect effects, and total effects in this study should be understood as estimates of statistical relationships based on the data and models used, not as definitive measures of the actual relationships.
Fourth, cross-sectional designs collect data at a single point in time and therefore cannot ascertain the temporal order between variables. The possibility of reverse causality cannot be ruled out. For example, high learning motivation may be associated with more positive teacher assessments of teaching style, or good academic performance may lead students to be more motivated and teachers to assess parental support more positively. Therefore, the modeled paths from teaching style and parental support to learning motivation and academic performance do not necessarily prove that the relationships operate in the assumed causal direction. Future research is recommended to combine teacher assessments with student perceptions, independent observations, and documented academic achievement data, and to use a longitudinal design to better examine the temporal order and stability of the relationships between variables.

4. CONCLUSION

Based on the results of the SEM-PLS analysis, teaching style and parental support showed a positive relationship with learning motivation as assessed by teachers. Teaching style, parental support, and learning motivation also showed a positive relationship with academic achievement as assessed by teachers. The results of the indirect path analysis also showed that learning motivation acted as an intermediary pathway in the relationship between teaching style and parental support with academic achievement in the research model.
The test results indicate that the nine proposed hypotheses are supported by statistical analysis. However, these findings need to be interpreted in accordance with the study's measurement source, namely teacher reports, and the cross-sectional study design. Therefore, the results indicate statistical relationships between variables based on teacher perceptions, not definitive proof that these variables cause changes in student academic achievement. This study provides insight into the relationship between teaching style, parental support, learning motivation, and teacher assessments on academic achievement, but cannot confirm that the same relationships would be found if academic achievement were measured using grades or objective academic records.
Practically, improving elementary school students' academic achievement requires integrated synergy between optimizing teachers' teaching styles through interactive teaching method training, strengthening parental support through parenting programs and regular school-family communication, and fostering students' learning motivation through reward systems and the setting of clear learning goals. Further research is recommended to expand the scope of regions and types of schools, use direct data sources of student learning outcomes, and examine other variables outside this model such as students' cognitive abilities, family socio-economic conditions, and school climate, in order to enrich understanding of the determinants of elementary school students' learning motivation and academic achievement.

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