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# The Effect of Parental Involvement on Stuents' Academic Achievement Through Independent Learning Ability

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**Abstract:** This research examines the impact of parental engagement on children's academic development. Parental involvement is conceptualized through three primary dimensions: attendance at school-related meetings, provision of educational support within the home environment, and active participation in school-based activities. The study seeks to investigate how these facets of involvement influence students' academic performance, aiming to test a set of predetermined hypotheses through a structured questionnaire-based survey. To assess the interrelationships among the variables, the study utilizes the Partial Least Squares Structural Equation Modeling (PLS-SEM) technique. The analytical model delineates the association between parental engagement and students' scholastic achievement, while also illustrating the influence of structured learning processes and the underlying factors driving parental involvement on academic outcomes. Furthermore, anecdotal evidence pertaining to students' academic attainment substantiates the theoretical framework, emphasizing the interconnected roles of parental involvement, academic performance, and the mediating function of students' self-regulated learning capabilities. The findings of this research are anticipated to yield valuable insights for enhancing educational outcomes. The primary aim is to investigate the determinants of parental involvement and its effect on academic achievement, with a specific focus on the mediating role of students' self-regulatory learning skills, as assessed through the PLS-SEM methodology.

**Keywords:** Children's Academic Achievement, Conference Homeschooling, Engagement Home Based, Engagement Based on School, Parental Involvement.

## INTRODUCTION

Student academic achievement is a key indicator of success in children's development, influencing their access to higher education, duration of schooling, and future career prospects. In today's era, academic performance has gained increasing attention as a crucial developmental outcome with lasting implications for an individual's future (Nurmasari et al., 2023). Academic success is shaped not only by individual factors but also by environmental influences, particularly interactions with family. Parents play a vital role in supporting children from early childhood through adolescence (Mullan, 2016). Research shows that early learning experiences have long-term effects on academic achievement throughout life (Craig & Mullan, 2011). Thus, parental involvement both at home and at school becomes a critical factor that can enhance children's motivation, self-esteem, and academic abilities (Driessen & Jones, 2016).

In fact, the consistency and emotional quality of parental support have been positively associated with students' academic persistence and resilience (Group, 2020) (Gottlieb et al., 2005) also emphasized the importance of early childhood education in reducing achievement gaps and fostering a generation capable of contributing positively to society (Wang et al., 2022) Parental involvement should not be viewed as a supplementary activity, but rather as a core element in a holistic education system. A strong home-school partnership creates a supportive learning environment, highlighting the need for programs that empower parents as strategic partners in the child's learning journey (Erdem & Kaya, 2020) (Erdem & Kaya, 2020) This view aligns with (*Journal of Family Theory and Review, 5 (6), 243–258.*, 2013) ecological theory, which underscores the role of interactions between individuals and their family, school, and community in shaping developmental and learning outcomes (Höfelmann & Garcia, 2014).

Recent studies further support this perspective, indicating that multi-level collaboration between school stakeholders and families improves students' academic engagement and self-regulation (Garbacz et al., 2019). However, the level and quality of parental involvement are influenced by various factors, including socioeconomic status, educational background, and cultural values that shape parenting practices and academic expectations (Hornby & Hornby, 2015). Therefore, an inclusive and culturally responsive approach is essential to ensure meaningful and equitable parental participation across diverse family contexts (Goodall, n.d.). For instance, digital tools and school communication platforms are emerging as key mediators of parent-school interaction, especially in underrepresented communities (Ma & Exploring, 2023).

Equally important is the development of reliable instruments to measure the quality and frequency of parental involvement in children's learning processes. Moreover, this involvement enhances children's ability to manage their learning independently, which in turn contributes to improved academic performance (Watts & Zimmerman, 2002). These results highlight the importance of active parental engagement in fostering a positive learning environment not only through direct academic involvement but also by nurturing constructive expectations and supportive communication. Self-regulated learning serves as a mediating factor that links parental involvement to academic success. (Hill & Tyson, 2009). Self-regulation, which includes metacognitive awareness and intrinsic motivation, has been recognized as a key component of academic achievement across diverse educational systems (Ma & Exploring, 2023).

Therefore, education policies and family-based interventions should focus on strengthening children's self-regulatory capacities, including planning, time management, emotional regulation, and self-evaluation (Online, 2025) This approach aligns with the demands of 21st-century education, which emphasizes lifelong learning skills. Self-regulated learning is not only predictive of immediate academic outcomes but is also essential for navigating the evolving landscape of future education (Järvenoja et al., 2018) Thus, the synergy between family support and the development of cognitive and metacognitive strategies should be central to curriculum design and educational policy, aiming to cultivate independent and high-achieving learner.

Household et al. (2008) also emphasized that early childhood education plays an important role in reducing the achievement gap and forming a generation that is able to make positive contributions to society (Verma, 2020) Parental involvement is not just an additional activity, but a fundamental element in a comprehensive education system. A close relationship between school and family creates a supportive and stable learning ecosystem, so intervention programs are needed that empower parents as strategic partners in the child's learning process (Boonk et al., 2018). This approach is in line with (*Journal of Family Theory and Review, 5 (6), 243–258.*, 2013) developmental ecology theory, which emphasizes

the importance of interactions between individuals and the family, school, and community environments in influencing children's development and learning outcomes.

However, parental involvement is influenced by various factors such as socioeconomic conditions, education levels, and cultural values that shape parenting patterns and educational expectations (Hornby & Hornby, 2015). Therefore, an inclusive approach that is responsive to the diversity of family backgrounds is needed so that parental participation can take place broadly, deeply, and meaningfully (Version, 2017)In addition, the development of effective measuring instruments is essential to evaluate the quality and frequency of parental involvement in children's learning. This study aims to evaluate the influence of determinant factors of parental involvement on students' academic achievement by utilizing the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach and integrating the mediating role of self-regulated learning ability. (From & Buhovac, n.d.) The results showed that parental expectations, frequency and quality of communication, and support for learning activities at home have a significant influence on the intensity of parental involvement.

This involvement strengthens children's capacity to manage the learning process independently, which ultimately improves their academic achievement. These findings underscore the importance of active parental involvement in creating a conducive learning ecosystem, not only through direct participation in academic activities, but also by building adaptive expectations and supportive communication. In addition, independent learning ability acts as a mediating variable that links parental contributions to student academic achievement. (Li et al., 2023). Therefore, family-based educational policies and interventions should be directed at strengthening children's self-regulatory capacities, including planning, time management, emotional control, and self-evaluation in the learning process (Online, 2025).

This approach is in line with the 21st century education paradigm that demands students have lifelong learning skills. Independent learning is not only a predictor of short-term academic success, but also an important competency in facing the dynamics of future learning (*Journal of Family Theory and Review, 5 (6), 243–258.*, 2013) (Ebbes et al., 2024) & (Zeidner et al., 2005) Therefore, the synergy between family social support and strengthening students' cognitive and metacognitive strategies must be the main focus in curriculum design and education policies to produce students who excel and are able to manage learning independently and sustainably.

## METHODS

This study uses a quantitative approach because this approach allows researchers to measure and analyze the relationship between variables objectively and systematically. This approach also allows the generalization of results to a wider population if done correctly, the research design used is a quantitative survey with an instrument in the form of a closed questionnaire, the sampling technique used is purposive sampling or deliberate sampling and participants in this study were parents of students in an elementary school. This study uses a quantitative approach because this approach allows researchers to measure and analyze the relationship between variables objectively and systematically. This approach also allows the generalization of results to a wider population if done correctly, the research design used is a quantitative survey with an instrument in the form of a closed questionnaire, the sampling technique used is purposive sampling or deliberate sampling and participants in this study were parents of students in an elementary school.

**Research Subject**

The subjects in this study were parents of elementary school students who were involved in assisting their children's education process. This study used a quantitative approach with a survey method using a closed questionnaire. Participants were selected through a purposive sampling technique, namely the deliberate selection of respondents who were considered to have relevance to the research objectives. In this case, the subjects were parents of elementary school students who responded to instruments that measured their involvement in school, their children's academic achievement, and their children's independent learning abilities. The number of respondents in this study was 240 parents of students, who were then analyzed using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach to determine the relationship between research variables in more depth. > "The participants in this study were parents of students in an elementary school." (Assessing PLS-SEM Results, p. 3).

**Data Analysis Techniques**

The data obtained through a questionnaire to measure emotional intelligence in elementary school students were analyzed using the Partial Least Squares Structural Equation Modelling (PLS-SEM) approach with the support of the latest version of SmartPLS software With R-square Value Path analysis, Path Coefficients, Path Coefficients- List, Total Effects- List, Total Effects- List, F-Square List, Discriminant Validity- Fornell-Larcker Criterion, Boostraping.

## RESULT AND DISCUSSION

**Result**

This study aims to explore school involvement in relation to students' academic achievement and their ability to manage self-directed learning. School involvement is positioned as one of the external determinants that significantly influence learning success, particularly at the elementary school level. In addition, the mastery of self-regulated learning skills by students is considered a crucial component in shaping independent, consistent, and goal-oriented learning habits. Based on this rationale, the study seeks to examine the relationship between school involvement, academic performance, and self-regulated learning among elementary school students.

The research was conducted at four elementary schools, namely SDN Luwung 2, SDN Pulasaren 5, SDN Pulasaren 4, and SDN Luwung 1. These schools were selected based on the diversity of students' backgrounds and institutional characteristics deemed representative. The sampling technique employed was purposive sampling, as the selected schools were considered to have high relevance to the objectives of the study. A total of 240 students from the four selected schools participated as respondents. The sampling method used was proportional stratified random sampling, to ensure a proportional and representative distribution from each school. Data were collected using a validated questionnaire, which covered indicators of school involvement, students' academic performance, and their self-regulated learning capabilities. The collected data were analyzed using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach, which is suitable for testing relationships among variables in the proposed structural model. The analysis was carried out using the latest version of SmartPLS software, which is capable of handling complex model structures even with a relatively limited sample size.

**Involvement Based on School**

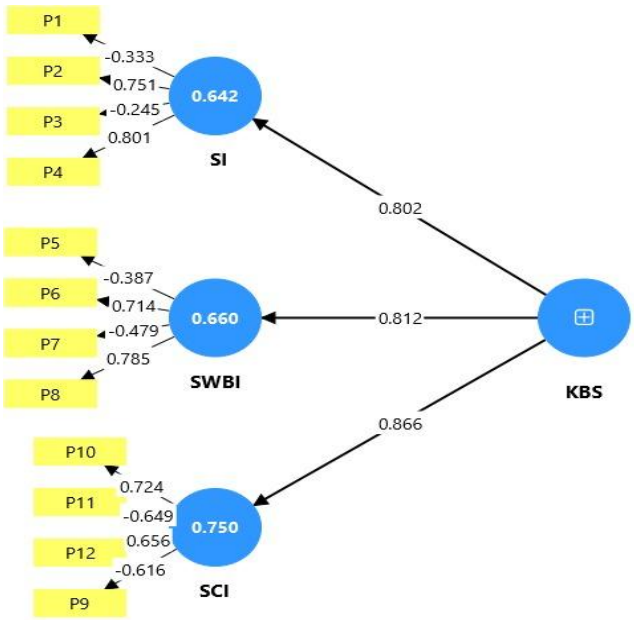
Instrument Involvement Based on School contains Aspects, Indicators, Favourable and Unfavourable Statements as well as amount statement, this will make it easier moment making the questionnaire that will be shared to student.

**Table 1. Instrument of School-Based Engagement**

| Aspects School Based Engagement | Indicator | Item Number | | Amount Question |
|---|---|---|---|---|
| | | Favourable | Unfavourable | |
| Student Involvement | Consistent Student Attendance In Class | 1 | 2 | 2 |
| | Timely Completion Of Assisgnments, Exams And Projects | 3 | 4 | 2 |
| Student Well Being Involvement | Participate In Cleaning Activities Or Maintaining The School Environment | 5 | 6 | 2 |
| | Don't Like To Tease Or Bully Friends | 7 | 8 | 2 |
| School Culture Involvement | Participate In Routine School Activities, Such As Morning Literacy | 9 | 10 | 2 |
| | Follow The Flag Ceremony In An Orderly Manner | 11 | 12 | 2 |

Of the 12 statements that received student responses as many as 240, then tested validity use SmartPls . following Validity test results use SmartPls.

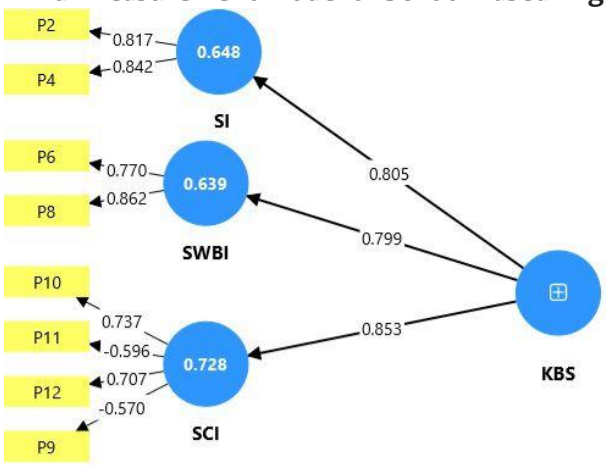
**Figure 1. Measurement Model of School Based Engagement**




This result is results First from testing Validity through SmartPls , because There is a number of invalid and untrue statements used . As in the Student Involvement aspect in P1

with statement "With present in a way regular, students own chance more for participate active in discussions and activities class" the result is 0.333. Then P3 with statement "Habit finish task appropriate time strengthen character discipline and encouragement achievement good academic" the result is 0.245. Then in the aspect of Student Well-Being Involvement P5 with statement "Involvement student in activity cleanliness reflect concern to Shared health and comfort school" the result is 0.387. Then P7 with statement " Students who like help, not mocking, usually liked his friends and easy cooperate in group" the result is 0.479 is removed.

**Figure 2. Final Measurement Model of School Based Engagement**




Validity test results Involvement Based on School with use SmartPls after less results from 0.500 is removed. In the Student Involvement aspect there is P2 "Students who rarely present at risk experience left behind material, which can hinder involvement they in learning" the result is 0.817. Then P4 "Children who often late do task Can So not enough Spirit for Study at school " the result is 0.842. The Student Well-Being Involvement aspect contains P6 " Students who do not follow activity cleanliness show low sense of responsibility answer to environment school" the result is 0.770. Then P8 "Students who often mocking Friend Can make atmosphere class become No fun and make Friend feel sad" the result is 0.862. School Culture Involvement Aspect P9 "Students who are involved in school routine activities means He feel happy and comfortable is at at school" the result is 0.570. Then P10 "Did not participate as well as in school routine activities Can to signify child Not yet feel like or comfortable is at at school" the result is 0.737. Then P11 "Students who follow ceremony flag with orderly show attitude discipline and appreciation to values nationality" the result is 0.596. Then P12 "Students who often joking or chatting at the moment ceremony means Not yet Can guard attitude in activity school" the result is 0.707.

**Children's Academic Achievements**

Instrument Children's Academic Achievement contains Aspects, Indicators, Favourable and Unfavourable Statements as well as amount statement, this will make it easier moment making the questionnaire that will be shared to student.

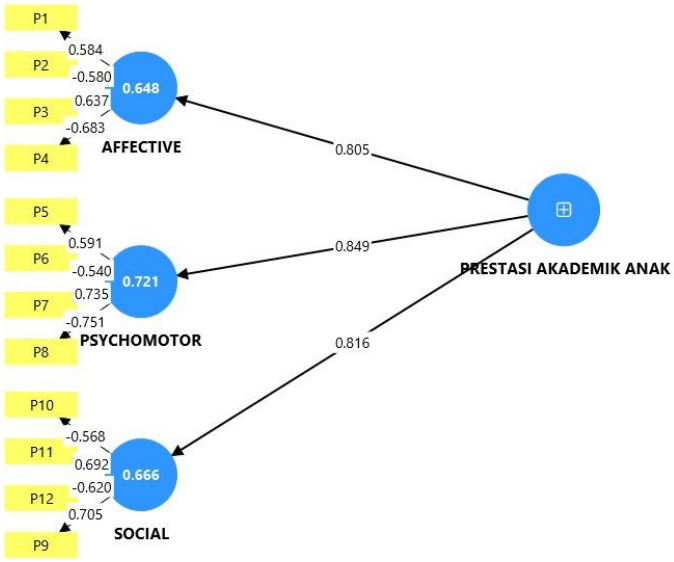
**Table 2. Instrument of Children's Academic Achievements**

| Aspects Of Children's Academic Achievement | Indicator | Item Number | | Amount Question |
|---|---|---|---|---|
| | | Favourable | Unfavourable | |
| | Discipline In Learning | 1 | 2 | 2 |

| | | | | |
|---|---|---|---|---|
| Affective | Responsibility For Schoolwork | 3 | 4 | 2 |
| Psychomotor | Speed And Accuracy In Completing Tasks | 5 | 6 | 2 |
| | Physical Readiness To Support Academic Activities | 7 | 8 | 2 |
| Social | Ability To Work Together In A Group | 9 | 10 | 2 |
| | Have Empathy and Tolerance Towards Classmates | 11 | 12 | 2 |

Of the 12 statements that received student responses as many as 240, then tested validity use SmartPls. following Validity test results use SmartPls.

**Figure 3. Measurement Model of Children's Academic Achievements**




This result First from validity test through SmartPls all valid statement. From the Affective, Psychomotor, Social aspects. For Affective aspect includes P1 " Students" utilise time Study with good and bad postpone task school" the result is 0.584. Then P2" Student often postpone task so that results academic not optimal" the result is 0.580. Then P3 "Students inspect return results task before collected so that the results are maximum" the result is 0.637. Then P4 "Students tend copy task from friends without understand contents" the result is 0.683. For Psychomotor aspect P5 "Students No in a hurry but finish task with appropriate time and correct" the result is 0.591. Then P6 "Students No capable finish task in accordance according to the specified time limit" the result is 0.540. Then P7 "Students bring equipment Study complete every day as form readiness physical" the result is 0.735. Then P8 "Students show Posture body that is not Ready or often sleepy in class " the result is 0.751. In the Social aspect P9 " Students capable Work The same with his group For produce work or quality assignments" the result is 0.705. Then P10 "Students often at odds or difficult to weave Work same good in group" the result is 0.568. Then P11 "Students show concern to a friend in trouble in learn and be willing help him" the result is 0.692. Then P12 "Students often mocking or belittle friends who experience difficulty study" the result is 0.620.

**Self-Regulated Learning**

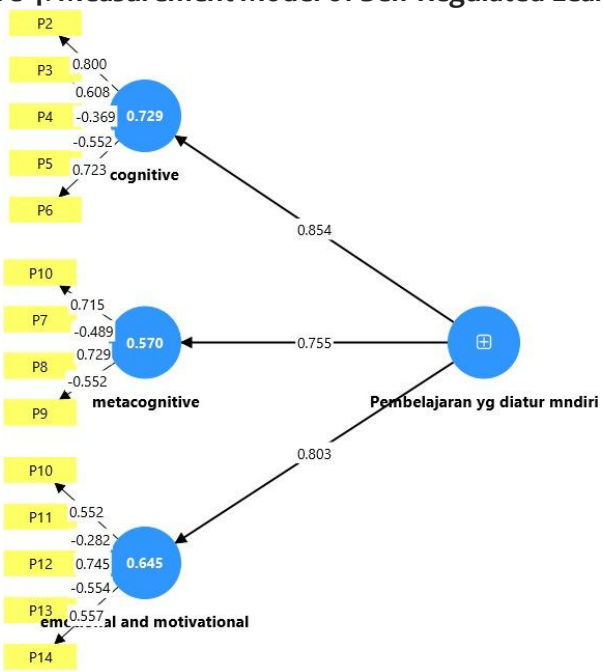
Instrument organized learning independent contains Aspects, Indicators, Favourable and Unfavourable Statements as well as amount statement, this will make it easier moment making the questionnaire that will be shared to student.

**Table 3. Instrument of Self-Regulated Learning**

| Aspects Self-Guided Learning | Indicator | Item Number | | Amount Question |
|---|---|---|---|---|
| | | Favourable | Unfavourable | |
| Cognitive | Strategic Rehearsal | 1 | 2 | 2 |
| | Control | 4 | 3 | 2 |
| | Organization of Learning | 5 | 6 | 2 |
| Metacognitive | Study Planning | 7 | 8 | 2 |
| | Monitoring of Monitoring Understanding While | 9 | 10 | 2 |
| Emotional And Motivational | Ability to Regulate Emotions While Studying | 11 | 12 | 2 |
| | Self Efficacy | 13 | 14 | 2 |

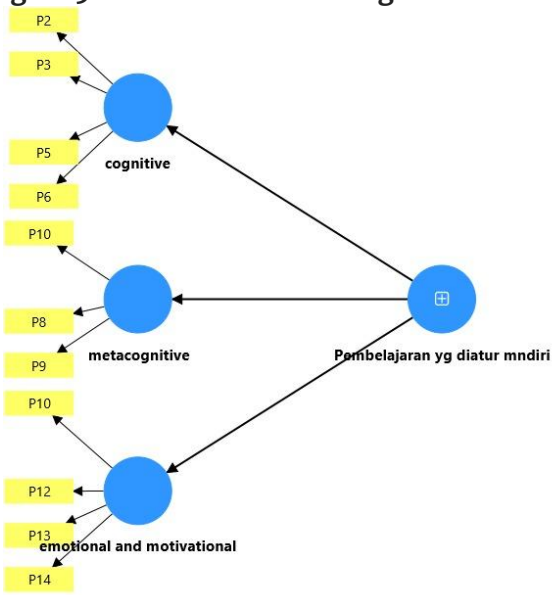
Of the 12 statements that received student responses as many as 240, then tested validity use SmartPls. following Validity test results use SmartPls.

**Figure 4. Measurement Model of Self-Regulated Learning**




This result is results First from testing validity through SmartPls , because There is a number of an invalid statement that is not used . As in aspect Cognitive P4 "I can avoid disturbance moment learning, such as play mobile phone or watch TV, so you can more focus on the lesson" the result is 0.369. Then P7 "Usually before study, i prepare time special for think What should I learn For day this" the result is 0.489. Then P11 "When I feel I'm bored, I try change method Study I want to be more exciting and not boring" the result 0.282 is removed

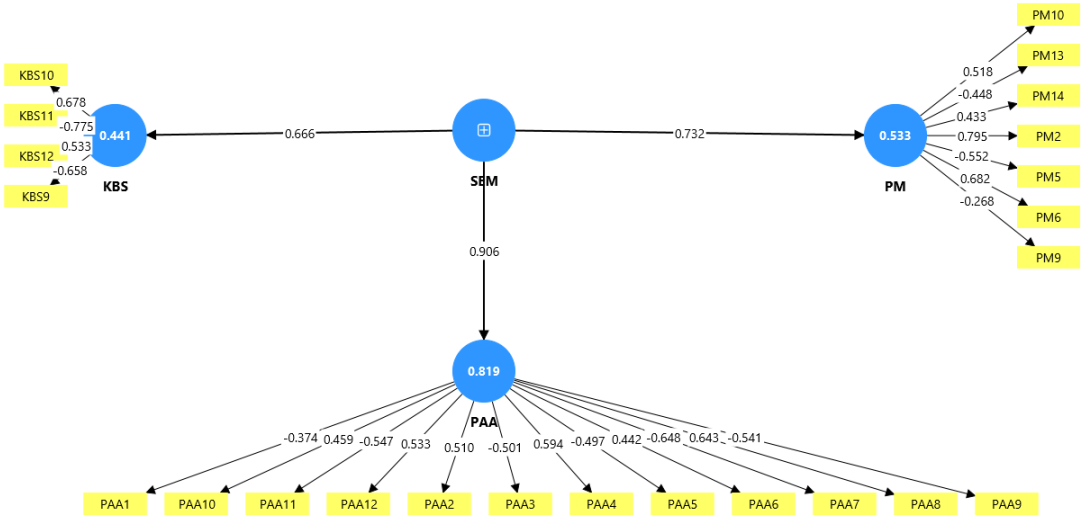
**Figure 5. Final Model of Self-Regulated Learning**




Validity test results Organized Learning Independent, with use SmartPls after less results from 0.500 is removed. In the Cognitive aspect there is P2 "I just read once and not Want to repeating the lesson, even though Not yet understand" the result is 0.800. Then P3 "Sometimes I feel confused and not Can stop play moment learn, so I difficult finish task" the result is 0.608. Then P5 "I always prepare books and tools write before start learning" the result is 0.552. Then P6 "Students No own Home lesson schedule and often forget do task appropriate time" the result is 0.723. Metacognitive Aspect P10 "If I confused, i silent just and continue his task" the result is 0.552. Then P8 "I learned only when parents or the teacher tells I For study" the result is 0.729. Then P9 "When I feel confused, i often ask to the teacher or Friend I" the result is 0.552. Emotional and Motivation Aspect P12 "When I currently learn and be there things that make I I'm annoyed, I direct stop study" the result is 0.745. Then P13 "I feel Can do question test Because I Already study" the result is 0.554. Then P14 "I don't Want to try difficult task Because I must be wrong" the result is 0.557.

## Graphical Output Analysis

**Figure 6. Graphical representation of SEM results showing relationships between constructs and indicators**



The image shown is representation graphic from results Structural Equation Modeling (SEM) analysis, which illustrates relatedness between latent variables and indicators the meter. In the structure of this model, there are a number of construct main visualized through symbol circle colored blue, namely KBS, SEM, PM, and PAA. Each construct own mark coefficient determination ($R^2$) which reflects proportion variance construct those that can explained by other constructs in the model. As illustration, the PAA construct has The $R^2$ value is 0.819, which indicates that amounting to 81.9% variability in PAA construct is influenced by SEM variables. Constructs the represented by a number of marked indicators with box colored yellow, such as KS10, KS11, PM1, PM2, up to PAA1, PAA2, and soon. Beside each indicator stated loading factor value that measures to what extent the indicators the reflect the construct it represents. High loading values show that indicator the own significant contribution in explain latent construct.

Interaction between construct visualized via the accompanying arrowed line mark coefficient path coefficient, which shows direction and strength influence between construct. As example, relationship from KBS construct to SEM has mark coefficient of 0.666, which indicates existence influence positive. In addition, the influence SEM construct against PAA achieved mark coefficient 0.906, which indicates connection which is very strong and significant. Based on modeling this, can concluded that SEM construct plays a role as variable mediation that connects influence from KBS and PM to PAA with level high significance in a way statistics.

**Table 4. R-square Value Path Analysis**

| | R-square | R-square adjusted |
|---|---|---|
| KBS | 0.443 | 0.441 |
| PAA | 0.820 | 0.819 |
| PM | 0.535 | 0.533 |

Based on results analysis indicated path through R-Square value, known that PAA variable shows level coefficient determination the highest, namely of 0.820 with the adjusted R-square value is 0.819. Findings This indicates that the model can explain 82 % of the variability that occurs in the variables dependent consequence influence from PAA. On the other hand, the PM variable has the R-square value is 0.535 and the adjusted value is 0.533, which indicates level contribution model explanation of 53.5%. While that, the KBS variable shows coefficient the lowest determination among the three, namely 0.443 and adjusted 0.441, which represent model capabilities in explain variability variable dependent by 44.3%. In general overall, whole variable in the model has R-square value is above 0.4, which indicates that the model has strength adequate explanation and sufficient relationship significant between variable independent and dependent in context study.

**Table 5. Path Coefficients- Matrix**

| | KBS | PAA | PM | SEM |
|---|---|---|---|---|
| KBS | | | | |
| PAA | | | | |
| PM | | | | |
| SEM | 0.666 | 0.906 | 0.732 | |

Referring to data visualization in form matrix coefficient path (Path Coefficients Matrix), shown representation relatedness intervariable in a analysis model framework path. The variables analyzed covering Ability Think Systematic (KBS), Mastery Academic Analysis (PAA), Material Understanding (PM), and Student Self-Efficacy (SEM). Based on results matrix, found that KBS variable gives contribution against PAA with coefficient of 0.666. Furthermore. PAA influences PM by mark coefficient of 0.906, and PM has an impact on SEM with coefficient of 0.732. The coefficients the nature positive and approaching number

maximum (1), which indicates that connection intervariable in this model nature strong and have high significance in a way statistics.

**Table 6. Path Coefficients- List**

| | Path coefficients |
|---|---|
| SEM -> KBS | 0.666 |
| SEM -> PAA | 0.906 |
| SEM -> PM | 0.732 |

Referring to the data displayed in coefficient list form path (path coefficients list), can identified existence relation causal between variables in structural model framework. Student Self-Efficacy (SEM) variables were detected give contribution to three construct others. namely Ability Think Systematic (KBS), Mastery Academic Analysis (PAA), and Material Understanding (PM). Each relationship indicated by the value coefficient consecutive of 0.666 for KBS, 0.906 for PAA, and 0.732 for PM. The coefficients the indicates correlation strong positive, so that can concluded that SEM plays role significant in influence aspects cognitive and academic student in the context of this model.

**Table 7. Total Effects-List**

| | Total effects |
|---|---|
| SEM -> KBS | 0.666 |
| SEM -> PAA | 0.906 |
| SEM -> PM | 0.732 |

Based on visualization F-SQUARE matrix, can interpreted that table the represent magnitude influence between construct in a conceptual model. In the matrix mentioned, it is seen that SEM construct provides contribution influence of 0.796 against KBS construct, 4,561 against PAA construct, and 1.153 against PM construct. These F-SQUARE values reflect intensity the latent effect exerted by the SEM construct on other endogenous variables. In general theoreticall , the more tall F-SQUARE value , then the more significant role construct the in explain variability the influenced construct . Therefore that, can concluded that SEM construct has the most dominant influence to PAA constructs compared with KBS and PM constructs.

**Table 8. F-Square Matrix Analysis and F-Square List**

| | KBS | PAA | PM | SEM | | f-square |
|---|---|---|---|---|---|---|
| KBS | | | | | SEM -> KBS | 0.796 |
| PAA | | | | | SEM -> PAA | 4,561 |
| PM | | | | | SEM -> PM | 1.153 |
| SEM | 0.796 | 4,561 | 1.153 | | | |

The image displays two similar data representations, namely in F-Square Matrix and F Square List forms. Both of these formats serve information about effect size value ($f^2$) which reflects degrees contribution SEM construct against three construct others, namely KBS, PAA, and PM in structural model framework. Based on the F-Square Matrix, it is known that SEM provides contribution of 0.796 against KBS, 4.561 against PAA, and 1.153 against PM. The same information is also listed in F-Square List with order the influence of SEM on KBS, PAA, and PM sequentially. Referring to the classification proposed by Cohen (1988), the $f^2$ value can be used for measure strength influence a construct predictor to construct bound. Therefore that, can concluded that the most dominant SEM influence to PAA construct, followed by PM and KBS, which indicates role significant SEM in explain variation PAA construct.

**Table 9. Discriminant Validity-Fornell -Larcker Criterion**

| | KBS | PAA | PM | SEM |
|---|---|---|---|---|
| KBS | 0.667 | | | |
| PAA | 0.445 | 0.530 | | |
| PM | 0.324 | 0.472 | 0.551 | |
| SEM | 0.666 | 0.906 | 0.732 | 0.450 |

The image serve Discriminant Validity table based on Fornell-Larcker criteria, which are used for test to what extent the constructs in the research model own validity discriminant, namely ability For differentiate One construct from construct others. In the table said, the diagonal value printed thick (KBS = 0.667; PAA = 0.906; PM = 0.732; SEM = 0.450) indicates root square from the Average Variance Extracted (AVE) of each construct, while values below the diagonal indicate correlation between construct. Validity discriminant stated fulfilled if diagonal value (√AVE) is greater tall than mark correlation between constructs in the respective columns and rows. Based on table this, all construct fulfil Fornell-Larcker criteria because √AVE value of each construct more big than correlation between construct others, which indicates that every construct own uniqueness is adequate and not experience overlap overlap in a way conceptual.

**Table 10. Bootstrapping output of indicator significance in the SEM model**

| Aspect | T Statistik | P Value |
|---|---|---|
| PAA9 | 50.644 | 0.008 |
| PAA10 | 39.938 | 0.007 |
| PAA11 | 55.738 | 0.008 |
| PAA12 | 32.567 | 0.006 |
| PAA1 | 63.613 | 0.028 |
| PM2 | 30.075 | 0.003 |
| PAA3 | 64.315 | 0.014 |
| PAA4 | 30.994 | 0.004 |
| PM5 | 58.494 | 0.003 |
| PM6 | 39.368 | 0.003 |
| PAA7 | 52.601 | 0.006 |
| PAA8 | 29.018 | 0.004 |
| PM13 | 54.628 | 0.015 |
| P14 | | |

Aspect is the code or label for the variables being analyzed (e.g.: PAA9, PAA10, PM2, PM5, etc.). T Statistic is the T statistic value from the bootstrapping results for each aspect. P Value is the significance value (p-value) of the statistical test. The findings of this study indicate that parental involvement exerts a significant influence on students' academic achievement, both directly and indirectly through the mediating role of self-regulated learning. This aligns with Bronfenbrenner's (1979) ecological systems theory, which emphasizes that child development is profoundly shaped by interactions between individuals and their immediate environments, such as family and school. The R-square value of 0.820 suggests that the combined effect of parental involvement and self-regulated learning accounts for a substantial proportion of the variance in students' academic performance, thereby reinforcing the robustness of the proposed structural model. Moreover, self-regulated learning emerged as a strong mediating variable in explaining how parental engagement translates into academic success.

This supports prior research (Zimmerman, 2002; Järvenoja et al., 2018), which highlights that components of self-regulated learning such as planning, time management,

and self-evaluation are essential in fostering student autonomy and academic excellence. The high f-square value associated with the self-regulated learning to academic achievement pathway further underscores the critical role of these competencies as foundational to educational resilience and lifelong learning. Nevertheless, the extent and quality of parental involvement vary considerably, influenced by socioeconomic conditions, educational attainment, and cultural norms within families. Therefore, an inclusive and context-sensitive approach is essential in designing effective intervention programs. The integration of digital communication platforms between schools and families may serve as a practical strategy to bridge participation gaps, particularly in under-resourced communities. Consequently, fostering active collaboration between parents and schools, alongside strengthening students' self-regulatory learning abilities, becomes a pivotal strategy for enhancing overall educational quality.

## CONCLUSION

This study concludes that both parental involvement and self-regulated learning significantly contribute to improving children's academic performance. The majority of the hypotheses proposed were empirically supported, indicating a positive and statistically significant association between these variables and students' academic outcomes. The structural model applied underscores the essential role of parental engagement and autonomous learning strategies within the educational framework. The results further reveal that parental involvement influences academic achievement both directly and indirectly, with self-regulated learning acting as a mediating factor. High-quality parental engagement whether at home or in school-related activities plays a critical role in enhancing students' capacity to manage their own learning processes. In turn, well-developed self-regulated learning skills are positively associated with better academic performance. From a statistical perspective, the high R-square value for the academic achievement variable ($R^2 = 0.820$) demonstrates that the model accounts for a substantial portion of the variance in student achievement.

Additionally, the significant path coefficients and a large f-square value in the SRL→ Academic Achievement path ($f^2 = 4.561$) highlight the dominant influence of self-regulated learning on academic success. Nevertheless, this study is subject to certain limitations. The scope of the research was restricted to four elementary schools within a specific geographic area, which may limit the generalizability of the findings. Moreover, the reliance on self-report questionnaires introduces the potential for bias, especially in measuring variables such as parental involvement and self-regulated learning. Future studies are encouraged to broaden the sample by including schools from diverse regions and educational settings. Incorporating longitudinal designs and employing a variety of data collection methods such as interviews, classroom observations, and teacher assessments could provide a more holistic understanding of how these factors influence academic outcomes over time. These findings suggest that education policies at the primary level should prioritize strategies that promote active parental involvement and foster the development of students' independent learning abilities as key components of long-term academic success.

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