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The Effect of Student Character on Critical Thinking Skills and Mathematics Learning Outcomes of Fisrt Grade Elementary School Students

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Abstract

The study aims to examine the effect of students' character on critical thinking skills and mathematics learning outcomes among first-grade elementary school students. The study aims to examine the effect of students' character particularly discilpine, responsibility, and independence on critical thinking skills and mathematichs learning outcomes among fisrt-grade elementary school students'. The research employed a quantitative approach using simple linear regression analysis. The sample consisted of 28 students. Character data were collected through a teacher-completed observation questionnaire, while critical thinking skills and mathematics learning outcomes were measured using written tests. Data were analyzed using regression assumption tests and hypothesis tests in SPSS. The results revealed that students' character did not have a significant effect on critical thingking skills (Sig. = 0.991 > 0.05; R^2 = 0.000). Substantively, the R2 value of 0.000 indicates that character variabels did not contribute to explaining the variance in students' critical thinking skills. However, character had a positive and significant effect on mathematics learning outcomes (β = 0.195; Sig. = 0.010 < 0.05), accounting for 22.8% of the variance in learning outcomes. These findings indicate that character traits such as discipline, responsibility, and independence support academic achievement but do not directly influence critical thingking skills in early-grade students. Practically, teachers are encouraged to consistently integrate character reinforcement into daily mathematics instruction to improve learning outcomes, while simultaneously applying structured problem-based and reasoning-oriented activities to specifically stimulate students' critical thinking skilss. This study suggests that character education and cognitive skill development should be implemented through complementary instructional strategies at the early elementary level.

Keywords

Character, Critical Thinking Skills, Learning Outcomes, Simple Linear Regression, Elementary Mathematics.

INTRODUCTION

Basic education has a strategic role in forming the foundation of knowledge, skills, and character of students (Anantama, 2024; Weber & Harzer, 2022). Strengthening Character from an early age is an important educational issue because studies show that students' character is related to learning engagement, self-regulation, and academic achievement. Studies conducted by (Khadijah et al., 2021). Through meta-analysis of several studies, it shows that character values such as discipline, responsibility, and independence have a positive contribution to the results of improving Mathematics learning in elementary school students. In addition, the research (Weber & Harzer, 2022) It was also found that character strengths were related to learning satisfaction, academic self-efficacy, and student learning achievement. These findings show that character development not only serves as moral formation but also serves as an internal factor that supports academic success and learning readiness at the primary education level. Therefore, examining the influence of character on critical thinking skills and mathematics learning outcomes among elementary school students is important to enrich empirical evidence regarding the role of character in supporting learning success from the early stages of education.

In the context of learning Mathematics in elementary school, character is closely related to the critical thinking process and learning outcomes. Mathematics requires perseverance, consistency, and the ability to understand concepts gradually and systematically. Meta-analysis studies show that character values such as improved Mathematics learning achievement of elementary school students (Khadijah et al., 2021). In addition, other research shows that learning interventions that emphasize self-regulation strategies, such as planning, monitoring, and self-evaluation, can improve Mathematics achievement as students become more aware of their learning process (Wang & Sperling, 2020). The integration of character education in Mathematics learning has been proven to increase learning motivation, student involvement, and academic achievement (Suzana et al., 2021). Thus, character has the potential to be a serve as a foundation that strengthens understanding of concepts andevement of Mathematics learning outcomes from the beginning of the class.

In addition to learning outcomes, critical thinking skills are 21st-century competencies that need to be developed from a young age. Critical thinking is included in the 6C skills which are an important competency in 21st century education to prepare students to face the challenges of life and learning (Astuti, 2024). Critical thinking includes the ability to analyze, compare, reason, and

draw logical conclusions in solving mathematical problems. Critical thinking skills are the ability of individuals to think logically and rationally by utilizing their knowledge (Nurohman et al., 2014). Research shows that critical thinking skills correlate with mathematics learning outcomes (Saputri et al., 2020). However, the development of critical thinking in early grade students still faces challenges due to the characteristics of cognitive development that are at the concrete operational stage. This condition raises the question of whether students' character directly contributes to the development of critical thinking skills in the early phases of elementary school.

Although various studies have demonstrated a relationship between character education and Mathematics learning outcomes, most research has been conducted with students in upper primary school or advanced education (Wardani et al., 2021). Research specifically examining the influence of character on critical thinking skills and mathematics learning outcomes among grade I elementary school students remains relatively limited. In addition, some studies emphasize more on external factors such as parental support, classroom climate, or learning strategies, while internal factors in the form of student character have not been analyzed simultaneously on two cognitive variables at once, namely critical thinking and Mathematics learning outcomes (Hofer et al., 2023).

The novelty of this research lies in directly testing the influence of students' character on two cognitive aspects simultaneously, namely critical thinking ability and Mathematics learning outcomes in grade I elementary school students as an initial phase of the formation of learning habits and the basis of mathematical logic. This study treats character as the main internal variable, analyzing its contribution quantitatively through simple linear regression in the context of early grades, a context that has rarely been the focus of empirical research. In addition, this study provides a new perspective on the importance of character formation since elementary school rendha as a foundation that can affect the development of critical thinking skills and the success of students' mathematics learning.

Several previous studies have shown that character values and learning attitudes are significantly related to improved learning outcomes and thinking skills, but most have been conducted at the high school level or focused on a single cognitive aspect. Therefore, this study seeks to fill this gap by simultaneously examining the relationships among students' character, critical thinking skills, and Mathematics learning outcomes among early elementary school students. Previous research has shown that strengthening character and positive values in mathematics

learning can improve learning outcomes and shape learning attitudes in elementary school stud (Umar & Lisan, 2025).

Based on this description, the purpose of this research is to analyze; (1) the influence of students' character on critical thinking skills in elementary school grade I Mathematics learning, and (2) the influence of student character on the success of learning Mathematics. This research is expected to make a theoretical contribution to strengthening the literature on the role of character in early-grade Mathematics learning, as well as a practical contribution to teachers in designing integrated learning that combines character strengthening with the development of students' cognitive abilities.

METHOD

This study uses a quantitative approach with an explanatory design (*explanatory research design*). The explanatory design was chosen because this study aims to explain the causal relationship and to test the influence of character variables on two dependent variables, students' critical thinking ability and Mathematics learning outcomes. The quantitative approach is used because the data obtained are numerical and are statistically analyzed to test the research hypothesis object (Nurhayati et al., 2024).

The research was carried out at SDN 1 Pangenrejo, Purworejo District, Purworwjo Regency, Central Java in the odd semester of the 2025/2026 school year. The research population is all grade I students totaling 28 students. The sampling technique uses *total sampling*, meaning the entire population is used as the research sample. Thus, this study involves one free variable and two bound variables: student character (X), the first bound variable (Y1), and Mathematics learning outcomes (Y_2).

Operationally, student character is defined as moral values reflected in student behavior during the learning process, including independence, mutual cooperation, and integ (Lickona, 1991). Character measurement is carried out through a questionnaire of the Mathematics learning process. The instrument uses a four-level likert scale, namely Always (4), Frequent (3), Sometimes (2), and Never (1). The instrument consists of 10 questions developed based on indicators of independence (3 items), mutual cooperation (3 items), and integrity (4 items).

The character instrument validation test is conducted in two stages. First, the validity of the content is carried out through *expert judgment* by two expert lecturers in Elementary Education and

Mathematics Education. Second, empirical validity is tested using item-total correlation (*Corrected Item-Total Correlation*), with the criterion of the item being declared valid if the value of r_hitung is greater than r_tabel at a significance level of 0.05. The results of the reliability test show the value of *Cronbach's Alpha* of 0.82, which means the instrument has high reliability ($\alpha > 0.70$).

Critical thinking skills are defined as the ability of students to analyze comparisons of objects, give reasons for answers, clarify differences, and draw simple conclusions (Azizah et al., 2018). Measurement was carried out through five description questions based on the material comparison of objects, aligned with the Learning Outcomes (CP) Phase A of the Independent Curriculum. The survey uses a scoring rubric ranging from 0-4 to each indicator. The results of the reliability test show the value of *Cronbcah's Alpha* by 0.76, so that the instrument is declared reliable.

Mathematics learning outcomes are defined as the cognitive achievements of students who have participated in learning material comparison of objects. The test instrument consists of 10 multiple-choice questions and 5 description questions. The final score is obtained by summing all question items. The results of the reliability test showed a Cronbcah's Alpha value of 0.97, which indicates that the instrument meets the reliability criteria.

Ordinal-scale character data is transformed into an interval scale using *Method of Successive Interval* (MSI) to meet the requirements of parametric analysis. Data analysis was conducted using descriptive and inferential statistics. Descriptive statistics were used to describe the data distribution of each variable, while inferential analysis was conducted to test the research hypothesis using simple linear regression.

Simple linear regression is used because this study aims to test the influence of one independent variable on one bound variable in each test model. The results tested were predictive and casual, and the data met parametric assumptions. The regression model used is:

$Y1 = a + bX$

$Y2 = a + bX$

Hypothesis testing was conducted at the 0.05 significance level. If the significance value (Sig.) < 0.05, then H_0 is rejected and H_1 is accepted.

Before the hypothesis test, a regression assumption test is conducted to ensure the model meets the analysis requirements. The residual normality test was performed using the Kolmogorov-Smirnov test. The test criteria state that the data is normally distributed if the significance value (Asymo. Sig.) is greater than 0.05. The test results showed a significance value of 0.077 (> 0.05), so it

can be concluded that the residual is normally distributed and the assumption of normality is met. The linearity test was carried out using the ANOVA Test for Linearity. The relationship between variables is stated to be linear if the significance value in the Deviation from Linearity is greater than 0.05. The test results showed that the significance value of Deviation from Linearity was greater than 0.05, so it can be concluded that the relationship between independent and dependent variables is linear.

Furthermore, the heteroscedasticity test was carried out through scatterplot analysis between residual values and predicted values (ZPERD and SRESID). The regression model is declared free of heteroscedasticity symptoms when the points on the graph are randomly spread and do not form a specific pattern. The results of the analysis showed that the points were randomly spread above and below the zero axis without a clear pattern, so it can be concluded that the regression model did not experience symptoms of heteroscedasticity.

All research procedures are carried out in accordance with the principles of research ethics. The research has obtained permission from the principal as well as the consent of the students' parents. Student data is kept confidential and the implementation of research does not interfere with the learning process in the classroom.

FINDINGS AND DISCUSSION

Findings

Research Planning Stages'

The research process began on October 3, 2025, starting with applying for a permit to the Principal of SDN 1 Pangenrejo and coordination with the homeroom teacher of grade I. After the permit was obtained, learning outcome tests were given to all students included in the research sample. Data collection is conducted in the classroom under direct supervision of researchers and homeroom teachers to ensure orderly implementation. All students were present during the data collection, so that the data obtained represented the condition of the population as a whole.

Statistics Descriptive

Descriptive analysis was carried out to provide an overview of the research data which included student character variables, critical thinking ability, and Mathematics learning outcomes. Based on the results of data processing using SPPS on 28 respondents, an idea was obtained that student character scores were in the category of sufficient to good. Students' critical thinking skills

show relatively diverse variation in scores, while Mathematics learning outcomes are in the range of values that show differences in achievement between students.

Descriptive analysis was carried out to provide a quantitative overview of each research variable, namely student character (X), critical thinking skills (Y1), and Mathematics learning results (Y2). The results of the analysis of 28 respondents are presented in Table 1.

Table 1. Descriptive Statistics of Research Variables

Variabel	N	Minimum	Maximum	Red	Std. Deviation
Student Character	28	27,00	44,00	36,61	4,48
Critical Thinking Skills	28	1,00	5,99	4,75	0,80
Mathematics Learning Outcomes	28	9,00	15,00	12,86	1,82

Source: processed using SPSS

Based on Table 1, the study included 28 students. The student character variable has a minimum value of 27.00 and a maximum of 44.00 with a mean of 36.61 and a standard deviation of 4.48. This shows that in general, the character of students is in the category of sufficient to good with a moderate level of variation.

The critical thinking ability variable has a minimum value of 1.00 and a maximum of 5.00 with an average of 4.75 and a standard deviation of 0.80. An average score close to the maximum score indicates that most students have relatively high critical thinking skills in the material tested, with low score variation.

Meanwhile, the Mathematics learning outcome variable showed a minimum score of 9.00 and a maximum of 15.00 with an average of 12.86 and a standard deviation of 1.82. This indicates that in general, student learning outcomes are in the good category with relatively moderate grade variations between students.

Overall, all three variables showed a fairly good distribution of data and did not show extreme deviations, making it feasible to proceed with an inferential analysis using simple linear regression.

Regression Assumption Test

Before the hypothesis test using simple linear regression, an assumption test was first carried out to ensure that the data met the requirements of parametric analysis.

a. Normality Test

The normality test was carried out using the Kolmogrov-Smirnov test on residual regression.

Table 2. Normality Test Results

Variabel	N	Test Statistic	Sig	Remarks
Resisudal	28	0,157	0,077	Normal

The results of the analysis show the value of Asymp.Sig. (2-tailed) by 0.077. Since the significance value is greater than 0.05 (0.077 > 0.05), it can be concluded that the residual data is normally distributed. Thus, the assumption of normality in regression analysis is met.

b. Linearity Test

The linearity test was carried out to find out whether the relationship between character variables and critical thinking skills and learning outcomes was linear.

1. Character to Critical Thinking Ability

Table 3. Character to Critical Thinking Ability

Source of Variation	F	P
Linearity	0.000	.991
Deviation of Linearity	.523	.859

The results of the linearity test showed that the significance value of *Deviation of Linearity* was 0.895 (> 0.05) indicating that the relationship between character and critical thinking ability is linear. However, the significance value on the *linearity* line of 0.991 (> 0.05) indicates that there is no significant linear relationship between the two variables.

2. Character to Learning Outcomes

Table 4. Character to Learning Outcomes

Source of Variation	F	P
Linearity	20,635	.013
Deviation of Linearity	1.109	.417

The results of the linearity test showed a *Linearity significance value* of 0.013 (< 0.05) indicating the presence of Significant linear relationships between character and learning outcomes Mathematics. *Deviation value from Linearity* of 0.417 (> 0.05) indicates no deviation from linearity. Thus, the assumption of linearity is met.

c. Heteroscedasticity Test

The Heteroscedasticity test was carried out using a scatterplot of the residuals versus the predictions. The graph shows that the dots are randomly distributed and do not form a specific

pattern. Thus, it can be concluded that there are no symptoms of heteroscedasticity in the regression model.

d. Uji Hypothesis

1. The Influence of Character on Critical Thinking Skills

The results of simple linear regression analysis showed a correlation coefficient value (R) of 0.003 with a determination coefficient value (R^2) of 0.000. The significance value obtained was 0.990 (> 0.05).

Table 5. The Influence of Character on Critical Thinking Skills

Model	Unstandarlized B	Coefficients Std. Eror	Standardized Coeffiecients Beta	t	Say.
(Constant)	4,733	1,289		3,671	,001
Character Questionnaire	,000	,035	,003	,013	,990

A significance of 0.990 (> 0.05), indicates that character has no significant effect on critical thinking skills. An R2 value of 0.000 indicates that the character's contribution to the variation in critical thinking skills is very small (0%). Thus, the first hypothesis is rejected.

2. The Influence of Character on Mathematics Learning Outcomes

The results of the regression analysis showed a coefficient value (R) of 0.477 with a determination coefficient (R^2) of 0.228. A significant value of 0.010 (< 0.05) on Mathematics learning outcomes.

Table 6. The Influence of Character on Mathematics Learning Outcomes

Model	Unstandarlized B	Coefficients Std. Eror	Standardized Coeffiecients Beta	t	Say.
(Constant)	5,755	12,598		2,215	,036
Character Questionnaire	,195	,070	,477	,2,768	,010

A significance value of 0.010 (< 0.05) shows that character has a positive and significant effect on Mathematics learning outcomes. A regression coefficient of 0.195 means that every increase of one character will increase the learning outcome score by 0.195. The R^2 value of 0.228 showed that character contributed 22.8% to the variation in Mathematics learning outcomes, while 77.2% was influenced by other factors outside the study. Thus, the second hypothesis is accepted.

Discussion

The results of simple linear regression analysis showed that students' character had a positive and significant influence on Mathematics learning outcomes with a significance value of 0.010 ($p < 0.05$). These findings show that character contributes to improving the academic achievement of elementary school students. The results of the regression analysis showed that character contributed 22.8% to the variation in Mathematics learning outcomes, indicating that internal dispositions such as responsibility, discipline, and independence support student learning performance.

The results of descriptive statistics also reinforce these findings. The average student character score of 36.61 indicates that in general students have a good level of character during the learning process. Similarly, the average Mathematics learning outcome of 12.86 indicates relatively good academic achievement. The positive relationship between the two variables indicates that character serves as an internal foundation that supports academic success in learning Mathematics in elementary school.

On the other hand, the results of the study showed that the character of students did not have a significant influence on the critical thinking ability of grade I elementary school students (Subroto et al., 2025). Psychological traits such as independence and integrity seem to affect students' learning attitudes and discipline, but the character is not yet strong enough to directly encourage higher-level thinking skills (Eloff et al., 2024). Critical thinking skills in learning Mathematics according to students not only remember concepts, but also understand, analyze, and solve problems systematically (Pratiwi & Bramantha, 2022).

Positive characters such as independence and integrity appear to have an effect on students' learning attitudes and discipline, but are not strong enough to encourage high-level thinking skills directly (Brutu, 2024). In addition, learning can be understood as an individual process in acquiring knowledge, skills, and shaping changes in behavior, attitudes, and ways of thinking in dealing with various situations (Rohmani et al., 2023 : 13). Therefore, the development of critical thinking skills in the early grades requires explicitly designed learning, such as simple open-ended questions, reasoning activities and guided discussions in class. These findings are in line with the literature that emphasizes that cognitive stimulation through active learning design is more determinative of critical thinking development in early childhood (Priyanti & Warmansyah, 2021).

These findings are in line with several previous studies that emphasized the role of character education in improving learning outcomes. (Khadijah et al., 2021) conducted a meta-analysis of sixteen studies at various levels of primary education and found that important character attributes such as discipline, responsibility, religiosity, and independence have an important role in improving academic achievement in Mathematics. The study emphasizes that the application of character education not only shapes the moral aspects of students, but also strengthens students' motivation, concentration, and perseverance in understanding the basic concepts of Mathematics. The development of character values that focus on caring for the environment from an early age plays a vital role in realizing the young generation who have responsibility in environmental conversion efforts (Angely et al., 2024).

Other empirical evidence also supports the relationship between character education and academic prestige. (Wardani et al., 2021) found a strong relationship between the implementation of the Character Education Strengthening (PPK) program and the learning outcomes of Matemtaika elementary school students. These various studies show that character education not only shapes moral behavior, but also contributes to students' motivation, perseverance, and responsibility in completing learning tasks. Quality character education is also seen as an effective form of education, as various findings show that educational interventions that focus on character development can have a positive impact on the effectiveness of the learning process (Benninga et al., 2003). Similarly, research by (Endalina, 2023; Susilo et al., 2022; Mufidah, 2021) shows that the integration of character values in Mathematics learning contributes to improved students' learning attitudes, perseverance, and responsibility, which ultimately underpins improved academic achievement. (Mufidah, 2021) explained that the development of morals in teaching mathematics can increase students' perseverance so that it has an impact on improving learning outcome scores.

The influence of character on learning outcomes can be explained through the perspective of educational psychology which views character as an internal factor that affects students' readiness and quality of learning. Students with social characteristics such as independence, equal work, and integrity tend to exhibit consistent learning behavior, stronger motivation, and better time management skills. These findings are also supported by (Sakban & Sundawa, 2023) which states that character makes a positive contribution to learning outcomes through the formation of responsibility, motivation to achieve, and learning independence. However, the results of this study also show that student character does not have a significant effect on critical thinking skills in grade

I elementary school students. The results of the regression analysis showed a significance value of 0.990 (> 0.05) with a determination coefficient value (R^2) of 0.000, which shows that the character variable does not contribute to explaining the variation in students' critical thinking skills. These findings suggest that although character plays a role in shaping learning attitudes, character has not directly influenced high-level thinking skills in early grade students.

These findings can also be explained through social-cognitive learning theory that emphasizes the interaction between behavior, cognition, and the learning environment. When character values such as responsibility and perseverance are developed consistently, students tend to develop self-regulatory abilities in learning (*self-regulated learning)* (Istiqama et al., 2023). Students who have good self-regulation skills are able to manage learning strategies, monitor understanding, and correct mistakes independently so that it has an impact on improving Mathematics learning outcomes (Wang & Sperling, 2020). However, the absence of a significant influence on critical thinking skills can be explained by the stage of cognitive development of early elementary school students who are still in the concrete operational stage, where reasoning skills are still developing and are greatly influenced by the learning strategies used by teachers (Arviat et al., 2023). Meaningful learning approaches and contextual learning models that integrate character values can strengthen the relationship between learning experiences and student character development (Suzana et al., 2021).

The findings of this study have important implications for educational practice in elementary schools. The integration of character education in Mathematics learning activities can support students' academic success while forming a positive learning attitude. (Benninga et al., 2003; Susilo et al., 2022) Programs such as Strengthening Character Education and contextual learning approaches can create a learning environment that supports students' cognitive and affective development. In addition, initiatives such as the Pancasila Student Profile Strengthening Project (P5) in the Merdeka curriculum aim to develop student character that is in line with national education goals (Mulyani et al., 2024). Character strength, which is defined as a positive personality trait that has moral value and contributes to well-being and meaningful life experiences, can also increase students' involvement and motivation in the learning process (Weber & Harzer, 2022; Eloff et al., 2024).

Although this study shows a significant influence between Mathematics character and learning outcomes, it is important to understand that academic achievement is influenced by a

variety of factors. Variables such as learning methods, family support, early abilities, and learning environment also contribute to student performance. Therefore, character needs to be seen as one of the important factors that support learning success, but not as the only determinant. Further research is recommended to enter additional variables and involve a larger sample in order to provide a more comprehensive understanding of the factors that affect the learning outcomes of Mathematics in primary education.

CONCLUSION

This study shows that students' character, which includes independence, cooperation, and integrity, has a positive and significant effect on the mathematics learning outcomes of fisrt-grade elementary school students in the topic of comparing objects. The regression analysis indicates that character contributes 22,8% to the variance in students' mathematics learning outcomes. The findings suggest that strengthening character can support discipline, learning engagement, and stucents' readiness to participte in learning activities, which in turn impacts their academic achivment. Conversely, students' character does not have a significant effect on the critical thinking skills of fisrt-grade elementary school students. This finding indicates that the development of critical thonking skils at the early elementary level requires more specific and structured instructional strategies. Therefore, teacher are encouraged to consistently integrate character education into mathematics learning while implementing learning activities that promote reasoning and discussion to stimulate students' critical thinking skills. Future research is recommended to involve a large sample size and include additional variables such as instructional strategies, intial numeracy ability, and family support in order to provide a more comprehensive understanding of the factors influencing learning outcomes and critical thinking skills.

REFERENCES

Anantama, R. (2024). Character Development of Elementary School Students Trhough Vakues Education: A Literatur Riview. *SMART: Journal of Multidisciplinary Educational*, *2*(1), 167–186. https://doi.org/10.61677/smart.v2i1.585

Angely, M., Suyoto, & Nurhidayati. (2024). Implementation of Environmental Care Character Values through the Adiwiyata Program for Grade IV Students at SDN 1 Gintungan. *Journal of Basic Education*, *5*(2), 2746–1211. http://jurnal.umpwr.ac.id/index.php/jpd

Arviani, F. P., Wahyudin, D., & Dewi, L. (2023). Role of Teaching Strategies in Promoting Students' Higher Order Thinking Skills and Critical Thinking Dispositions. *International Journal of Learning, Teaching and Educational Research*, *22*(9), 332–349. https://doi.org/10.26803/ijlter.22.9.19

.

Astuti, M. L. (2024). The Role of 6C Skills in 21st Century Learning of Elementary School Students. *Journal of Elementary School Education*, *7*(2), 154–161. https://journal.uny.ac.id/index.php/didaktika

Azizah, M., Sulianto, J., & Cintang, N. (2018). Analysis of Critical Thinking Skills of Elementary School Students in Mathematics Learning Curriculum 2013. *Journal of Educational Research*, *35*(1), 61–70. https://journal.unnes.ac.id/nju/index.php/JPP/article/view/13529

Benninga, J. S., Berkowitz, M. W., Kuehn, P., & Smith, K. (2003). The Relationship of Character Education Implementation and Academic Achievement in Elementary Schools. *Journal of Research in Character Education*, *1*(1), 19–32.

Brutu, Y. (2024). *The Impact of Character Education on Student Discipline and Learning Achievement*. *2*(2), 431–435. https://doi.org/https://doi.org/10.65311/jkp.v2i3.1050

Eloff, E. M., Merwe, M. Van Der, & Karsten, I. (2024). *An Evaluation of The Use of Character Strengths as an Asset-based Approach to Learner Support*. *44*(3), 1–9. South African Journal of Education

Endalina. (2023). Character Education with Thematic Learning for Grade 1 Students in Medan City. *World Journal of Education*, *3* (November), 67–78. https://jurnal.stokbinaguna.ac.id/index.php/JURDIP

Hofer, S. I., Reinhold, F., & Koch, M. (2023). Students Home Alone—Profiles of Internal and External Conditions Associated with Mathematics Learning From Home. In *European Journal of Psychology of Education* (Vol. 38, Issue 1). Springer Netherlands. https://doi.org/10.1007/s10212-021-00590-w

Istiqama, N., Musawwir, M., & Nurhikmah, N. (2023). Overview of Self Regulated Learning in Students of the Faculty of Psychology, Bosowa University. *Journal of Character Psychology*, *3*(2), 568–574. https://doi.org/10.56326/jpk.v3i2.2343

Khadijah, K., Suciati, I., Khaerani, K., Manaf, A., & Sutamrin, S. (2021). Schools' Character Education Values and Students' Mathematics Learning Achievement: a Meta-Analysis. *Cakrawala Pendidikan*, *40*(3), 670–683. https://doi.org/10.21831/cp.v40i3.39924

Lickona, T. (1991). *Educating for Character : How Our Schools Can Teach Respect and Responsibility*. Bantam Books.

Mufidah. (2021). A Comparative Study of the Basic Education System in Indonesia and Finland. *Journal of Obsession: Journal of Early Childhood Education*, *6*(3), 1146–1156. https://doi.org/10.31004/obsesi.v6i3.1696

Mulyani, D., Sejiaji, C. A., & Widoyoko, S. E. P. (2024). *The Effectiveness of the Pancasila Student Profile Strengthening Project (P5) Theme of Democracy Voice Class XI State High School 4 Purworejo*. *1*. https://ebook.umpwr.ac.id/suryaedunomics/article/view/5014/2161

Nurhayati, N., Angelina Br T, N., Alamsyah, N., & Razali, I. A. (2024). The Influence of Character Values on Student Learning Achievement at SMP Negeri 31 Medan. *EGYPT: Journal of Management Education Social Sciences Information and Religion*, *1*(2), 371–377. https://doi.org/10.57235/mesir.v1i2.2984

Nurohman, A., Ashari, & Nurhidayati. (2014). Improving Critical Thinking Skills in Solving Physics Problems Using a Think Talk Write Model Based on Learning Strategies to Improve Thinking Ability. *Radiation: Periodic Journal of Physics Education*, *5*(Vol 5, No 1 (2014): Vol 05 No 1 September 2014), 15–19. https://jurnal.umpwr.ac.id/radiasi/article/view/398

Pratiwi, V., & Bramantha, H. (2022). Analysis of students' critical thinking skills in mathematics subjects. *Journal of Mathematics and Natural Sciences Education*, *2*(1), 321–332. http://jurnal.sekawansiji.org/index.php/mutiarapgsd/index%0AAnalisis

Priyanti, N., & Warmansyah, J. (2021). Improving Critical Thinking Skills of Early Childhood through Inquiry Learning Method. *Journal of Obsession: Journal of Early Childhood Education*, *5*(2),

2241–2249. https://doi.org/10.31004/obsesi.v5i2.1168

Rohmani, Triyono, Marisa, R., Lubis, L. H., Reni, D. S., Astuti, Muhkishin, H., Uran, M. A. D., Agustini, & Triyono, A. (2023). *Learning Strategies in Elementary Schools PT. DIGITAL INDEPENDENCE*.

Sakban, A., & Sundawa, D. (2023). Character Education : Direction and Priority for National Character Development in Indonesia. *Journal of Education: Journal of Research and Literature Review in the Field of Education, Teaching and Learning*, *9*(3), 794. https://doi.org/10.33394/jk.v9i3.7843

Saputri, R., Nurlela, N., & Patras, Y. E. (2020). *The Effect of Critical Thinking on Mathematics Learning Outcomes*. *Rev. 3*, 38–41. http://journal.unpak.ac.id/index.php/jppguseda

Subroto, D. E., Putri, R. C., Noviantif, W., Putri, S., & Dermawan, N. C. (2025). The Influence of Character Education on Students' Critical Thinking in the Current Era. *Journal of Your Country*, *2*(1), 73–75. https://doi.org/10.69714/sh8hfj06

Susilo, M. J., Dewantoro, M. H., & Yuningsih, Y. (2022). Character Education Trend in Indonesia. *Journal of Education and Learning (EduLearn)*, *16*(2), 180–188. https://doi.org/10.11591/edulearn.v16i2.20411

Susilo, M. J., Dewantoro, M. H., & Yuningsih, Y. (2022). Character Education Trend in Indonesia. *Journal of Education and Learning (EduLearn)*, *16*(2), 180–188. https://doi.org/10.11591/edulearn.v16i2.20411

Suzana, Y., Sabaruddin, Maharani, S., & Abidin, Z. (2021). Mathematics Learning Through Character Education Based on Integrated Thematic Learning: a Development of Learning Materials. *Infinity Journal*, *10*(2), 301–318. https://doi.org/10.22460/infinity.v10i2.p301-318

Umar, H., & Orisan, M. F. (2025). The Influence of Character Education and Learning Discipline on Student Learning Outcomes at the Elementary School Level. *Indo-MathEdu Intellectuals Journal*, *6*(1), 1296–1309. https://doi.org/10.54373/imeij.v6i1.2657

Wang, Y., & Sperling, R. A. (2020). Characteristics of Effective Self-Regulated Learning Interventions in Mathematics Classrooms: A Systematic Review. *Frontiers in Education*, *5*(May). https://doi.org/10.3389/feduc.2020.00058

Wardani, M. K., Suarjana, I. M., & Renda, N. T. (2021). The Relationship of Strengthening Character Education (PPK) Towards Mathematics Learning Outcomes in Class IV. *Proceedings of the 2nd International Conference on Technology and Educational Science (ICTES 2020)*, *540*(Ictes 2020), 374–380. https://doi.org/10.2991/assehr.k.210407.267

Weber, M., & Harzer, C. (2022). *Relations Between Character Strengths , School Satisfaction , Enjoyment of Learning , Academic Self-Efficacy , and School Achievement : An Examination of Various Aspects of Positive Schooling*. *October*, 1–15. https://doi.org/10.3389/fpsyg.2022.826960