Literasi Nusantara
vol.6 no. 1, November 2025 – February 2026
https://journal.citradharma.org/index.php/literasinusantara/index
ISSN 2746 8208 (Online)
ISSN 2746 3575 (Print)

The Influence of Students' Learning Styles on Independent Character in Grade II of Elementary School

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DOI : *https://doi.org/10.56480/jln.v6i1.1621*

Received: November 14, 2025
Revised: November 22, 2025
Accepted: December 27, 2025

Abstract

This study aims to empirically examine the influence of learning styles (visual, auditory, and kinesthetic) on the formation of independent character of grade II elementary school students. This study uses a quantitative approach with the explanatory survey method. The research population was all 62 grade II students at SD Muhammadiyah 1 Bangkalan, which were taken as a saturated sample (total sampling). Data were collected using two types of questionnaires. The learning style questionnaire (15 items) measures visual, auditory, and kinesthetic preferences, while the independent character questionnaire (10 items) measures aspects of initiative, discipline, responsibility, confidence, and ability to overcome difficulties. The data was analyzed with descriptive and inferential statistics. Prerequisite tests include the Kolmogorov-Smirnov normality test and the Lack of Fit linearity test. Hypotheses were tested using simple linear regression analysis for each learning style. The results of the study showed that the three learning styles had a significant effect on independent character. Kinesthetic learning style had the most dominant influence with a contribution of 47.2%, followed by auditory (26.8%) and visual (13.8%). These findings confirm the theory that active learning that fits into students' learning modalities, particularly kinesthetics, creates a sense of competence and autonomy that promotes independence. Learning style significantly affects the formation of independent character of grade II elementary school students, with kinesthetic learning style as the strongest predictor. The implications of the study emphasize the importance of implementing differentiated learning that accommodates a diversity of learning styles, especially kinesthetic approaches, to optimize the formation of independent character from an early age.

Keywords– *Learning Style, Character, Independence.*

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1. Introduction

Education in the 21st century has undergone a fundamental paradigm shift, where the orientation is no longer limited to achieving cognitive competence alone, but also focuses on the formation of students' character (Rahim & Ismaya, 2023). Global demands in the world of education emphasize the importance of developing life skills and attitudeal values (affective domain) to prepare the younger generation to face complex societal dynamics (Ali, 2018). In response to this, the Independent Curriculum implemented in Indonesia places the development of Pancasila student profiles as the core, which includes character dimensions such as critical reasoning, creativity, and independence (Purnawanto, 2022). Independence, in this context, is seen as a crucial foundation that allows learners to manage their own learning process, have intrinsically motivated, and take responsibility for their achievements. This ability will ultimately equip them to become lifelong learners or lifelong learners, an indispensable competence in this era full of changes and uncertainties (Kurnia et al., 2023).

Elementary School (SD), especially in the phase of low grades such as grade II, is a critical period in laying the foundation of character values, including independence (Cahyani & Yustitia, 2020). At this stage of development, students experience a significant transition from the learning pattern in the early grades that is still highly dependent on teacher-centered guidance to a form of learning that begins to prioritize self-initiative (Fatonah, 2024). According to Erikson's theory of psychosocial development, children of this age are at the stage of industry vs inferiority, where confidence and the ability to complete tasks independently begin to form (Maridah et al., 2023). If in this phase independent character is successfully developed, then students will have a solid foundation to face increasingly complex academic and social demands at the next level of education (Maryono et al., 2018). Conversely, failure to instill independence can cause students to experience sustained dependence, which ultimately has the potential to hinder their achievement and self-adjustment process in the future (Jannah et al., 2021).

In practice in the field, the phenomenon that is often encountered actually shows that many elementary school students still have a high level of dependency on teachers and parents in completing their learning tasks (Simanjutak et al., 2024). This symptom is manifested in various behaviors, such as the tendency to give up easily when faced with slightly complex problems, as well as the habit of asking for help instantly without being preceded by adequate independent efforts (Tresnaningsih et al., 2019). In addition, the lack of initiative to do tasks proactively and always wait for orders from teachers is also another indicator that is widely observed (Bukit et al., 2022). This reality confirms that the internalization of the value of independent character in students at this level has not been fully realized optimally. The findings of the study by Sulistyani (2020) further reveal that this low learning independence not only has an impact on the task completion process, but also has the potential to inhibit the development of students' confidence and problem-solving skills, which are key components in long-term learning success.

In analyzing the factors that affect the formation of learning independence, one of the internal aspects of students that is suspected of having a strong role is learning styles. Learning style refers to an individual's distinctive way of absorbing, managing, and processing information during the learning process (DePorter, 2019). Theories that are widely used as references, as expressed by Fleming (in Saputra, 2023), classify learning styles into visual, auditory, and kinesthetic. Visual learning style is an individual learning style that tends to think in the form of images, has a good photographic memory of the text or illustrations seen, and is easier to capture information from whiteboards, picture books, or presentations with strong visual elements (Mahadi et al., 2022). Auditory learning style is an individual learning style that has a high sensitivity to tone, rhythm, and timbre of voice, and often needs to pronounce or re-listen to material to understand it (Mahadi et al., 2022). Kinesthetic learning style is an individual learning style that understands concepts best when they can manipulate objects, conduct experiments, role-play, or learn while moving (Mahadi et al., 2022). Each of these learning styles affects the preferences and

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effectiveness of the way students understand the subject matter. A student with a kinesthetic learning style, for example, will find it easier to understand concepts through simulations or educational games rather than just listening to lectures. If these learning style preferences are well accommodated in the learning design, students will experience ease in understanding the material, which in turn will increase their confidence and activeness in the classroom (Rintani et al., 2025). This positive psychological condition is the initial trigger for the growth of an independent attitude, because students feel more competent and encouraged to explore knowledge more independently.

In the framework of this research, independent character is understood as a psychological construct that is reflected in the ability of students to regulate, control, and take responsibility for their own learning process with minimal dependence on external figures such as teachers or parents (Suryani et al., 2023). Independent character can help children's development in social roles in society (Rindiyanto et al., 2023). Fitriana et al (2021) emphasized that learning independence is an aspect of self-regulated learning where individuals become proactive actors in their own cognition, motivation, and behavior processes. In the context of elementary school children, this independence can be operationalized through a number of observed indicators. According to Fadhilah (2020), these indicators include: (1) having the initiative to start and completing tasks without being asked, (2) showing discipline in managing study time, (3) taking full responsibility for the obligations and tasks given, (4) having the confidence to try and solve problems, and (5) having the ability or strategy to overcome learning difficulties faced before deciding to ask for help. The appearance of these indicators consistently indicates that students are not just compliant, but have internalized the value of independence as part of their learning character.

The results of previous research provide empirical support for the alleged relationship between learning style and learning independence. Research by Kurnia (2023) revealed that there is a positive and significant influence of the three learning styles, with kinesthetic learning styles making the most dominant

contribution. These findings indicate that understanding of students' dominant learning styles can be a predictor for their independent development. Furthermore, research from Pratama (2024) shows that learning that accommodates learning styles can improve students' self-regulation skills, which is the core of learning independence. Their study concluded that students whose learning matched their learning style showed improvements in terms of initiative, time management, and responsibility for tasks. Complementing the two findings above, research by Novianto et al. (2025) explored teachers' strategies in accommodating learning styles to foster independence. They found that differentiation strategies of products and learning processes significantly reduced students' dependence on teachers. Although these three studies have examined the relationship between learning style and independence, the current study seeks to fill the gap by specifically highlighting grade II elementary school students as subjects, who are in a critical transition phase, so as to provide a deeper picture of the initial foundations of the formation of learning independence.

Based on the description above, this study specifically aims to empirically examine the influence of learning style on the formation of independent character of grade II elementary school students. The existence of this research is expected to make a meaningful contribution, both theoretically and practically. Theoretically, the findings of this study are expected to function as empirical evidence that strengthens and develops a theoretical framework regarding the relationship between learning style as an internal factor and the formation of independent character in the context of low-grade students, which is still limited in study (Mursari, 2019). In addition, the results of research can enrich the treasures of education, especially in the field of elementary school educational psychology. Practically, this research is expected to be a credible consideration for educators, especially elementary school grade II teachers, in designing and implementing more differentiated learning by facilitating a variety of student learning styles (visual, auditory, kinesthetic).

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2. Method

This study uses a quantitative approach with the explanatory survey method. Creswell (2009) defines explanatory survey as a research method that aims to explain the causal relationship between variables through hypothesis testing. The explanation is carried out by analyzing numerical data collected from samples representing the population (Arikunto, 2010). This approach was chosen because it is in accordance with the purpose of the research, which is to test the influence between independent variables (learning styles) and bound variables (independent characters).

The population in this study refers to the entire subject or unit of analysis that meets certain criteria set by the researcher (Sugiyono, 2016). In the context of this study, the population is all grade II students of SD Muhammadiyah 1 Bangkalan Elementary School in the 2025/2026 school year, which totals 62 students and is divided into three groups. A sample is a part of a population whose characteristics are considered to be representative of the population being studied (Arikunto, 2010). Given the relatively limited population (N= 62), this study used a saturated sample technique (total sampling). According to Sugiyono (2016), saturated samples are a sample determination technique when all members of the population are used as samples. The consideration of using this technique is the population size ≤ 100, so that it is possible to make the entire population a sample (Arikunto, 2010).

The main data collection technique is to use questionnaires, which are efficient data collection techniques to collect data from a large sample by providing a series of questions or written statements (Arikunto, 2021). In this study, two types of questionnaires were used: (1) Learning style questionnaire: This instrument was developed based on visual, auditory, and kinesthetic learning style theories (Fleming in Saputra, 2023), which consists of fifteen statements (five for each learning style) arranged in simple language so that it is easy for grade II elementary school students to understand; and (2) Independent character questionnaire: This instrument is compiled based on independent character indicators according to Zuliani et al. (2017), namely initiative, discipline,

responsibility, confidence, and ability to overcome difficulties, which consists of ten statements. To ensure that the instruments can be understood by the children's subjects, the questionnaire will be read by the researcher in the classroom with clear guidance.

In this study, data analysis will be carried out in stages using the help of Statistical Package for the Social Sciences (SPSS) software version 25 to ensure the accuracy of the calculation.

The first is descriptive statistical analysis. According to Menatur Ghozali (2018), descriptive statistics function to describe or provide an overview of the research subject based on the variables studied. This analysis presents the mean, median, mode, and standard deviation values, of each variable, namely learning styles (visual, auditory, kinesthetic) and independent characters.

Second, the analysis prerequisite test. Before conducting hypothesis testing, a prerequisite test is first carried out to ensure that the data meets the basic assumptions of the parametric statistical model to be used, namely (1) Normality test: Aims to test whether the data derived from the bound variable is normally distributed or not. The test will be carried out using the Kolmogorov-Smirnov test (Zulmaulida et al., 2021). The data is declared to be normally distributed if the significance value (p) > 0.05; and (2) Linearity test: Used to find out whether the independent variable (learning style) and the bound variable (independent character) have a linear relationship. The test was carried out with the Lack of Fit test (Santoso, 2019). The relationship is expressed as linear if the significance value at Deviation from Linearity > 0.05.

The third is inferential analysis (hypothesis testing). Once the prerequisites are met, an inferential analysis is carried out to test the research hypothesis. The analysis technique to be used is simple linear regression analysis. This technique is suitable for predicting how much an independent variable (X) affects a bound variable (Y) (Kadir, 2019). The regression equation used is $Y = a + bX$, where Y is a standalone character, X is a learning style (which has been converted into interval data through scoring), a is a constant, and b is a regression coefficient. The decision to accept or reject a hypothesis is based on:

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t-test: To test the significance of the influence of variable X on Y partially. The hypothesis is accepted if the significance value (p) < 0.05. Coefficient of termination (R^2): To find out how much of a percentage of the contribution of learning style variables to independent character, while the rest is influenced by other variables that were not studied in this study.

3. Result and Discussion

Based on data from 62 respondents, it shows interesting variations in the profile of learning styles and independent character of grade II elementary school students.

Table 1. Descriptive Statistics of Learning Style

Learning Style	Mean	Median	Modus	Std. Deviasi	Min	Max	Maximum Score
Visual	3.27	3	4	0.89	1	5	5
Auditorium	3.85	4	4	0.76	2	5	5
From Kines	4.12	4	5	0.71	2	5	5

In terms of learning style, kinesthetic style emerged as the most dominant style with the highest average score (Mean = 4.12; SD = 0.71), followed by auditory style (Mean = 3.85; SD = 0.76), and finally visual style (Mean = 3.27; SD = 0.89). Mean values close to a maximum score of 5 on kinesthetic and auditory styles, as well as modes valued 4 and 5, indicate that most students tend to learn more effectively through physical activity, hands-on practice, discussion, and verbal explanation. In contrast, visual styles showed greater variation (characterized by the highest standard deviation) and relatively lower means, suggesting that learning preferences through pictures and writing were not uniform and tended to be lower among these samples.

Table 2. Descriptive Statistics of Independent Characters

Independent Character	Mean	Median	Modus	Std. Deviasi	Min	Max	Maximum Score
Initiatives	6.02	6	7	1.15	3	8	8
Discipline	5.71	6	6	1.08	3	8	8
Responsibilities	6.45	7	7	0.94	4	8	8
Confidence	5.23	5	5	1.22	2	8	8
Overcoming difficulties	5.58	6	6	1.05	3	8	8
Total Score	**28.99**	**30**	**31**	**3.87**	**15**	**40**	**40**

Meanwhile, the self-portrait character profile shows varying levels of development among the five indicators. The responsibility indicator recorded the highest average score (Mean = 6.45; SD = 0.94), which indicates that most students have shown consistency in completing and taking care of their assignments and belongings. This is followed by the initiative indicator (Mean = 6.02). However, two indicators that need more attention are confidence (Mean = 5.23; SD = 1.22) and ability to overcome difficulties (Mean = 5.58). Both not only have the lowest mean, but also a relatively high standard deviation, especially in confidence. This indicates that in this sample, there are a number of students who still lack confidence in expressing opinions and completing assignments, and tend to give up quickly or ask for help when facing learning challenges. Overall, the total score of independent characters (Mean = 28.99 out of a maximum of 40) was in the "medium" and close to "high" categories, with a not very wide distribution of data (SD = 3.87), suggesting that the level of student independence in general was in a fairly even range. These descriptive findings provide a solid basis for further analysis to test whether the dominance of certain learning styles, particularly kinesthetics, is related to observed variations in the level of independent character, especially in aspects of confidence and resilience in the face of adversity.

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Table 3. Normality Test Results

Variable	Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)	Verdict
Visual learning style	0.891	0.408	Normal
Auditory learning style	0.945	0.335	Normal
Kinesthetic learning style	1.032	0.239	Normal
Standalone characters (total)	1.032	0.584	Normal

The results of the normality test with Kolmogorov-Smirnov on all research variables resulted in an Asymptotic Significance (p) value greater than 0.05. Specifically, significance values for the variables of visual learning style (p=0.408), auditory (p=0.335), kinesthetic (p=0.239), and total independent character (p=0.584) were all above the critical limit of 0.05. This indicates that the distribution of data from all variables does not deviate significantly from the normal distribution. Thus, the assumption of data normality is acceptable, which is a fundamental prerequisite for the use of linear regression analysis techniques.

Table 4. Results of the Linearity Test

Variabel	F Calculate (Lack of Fit)	Sig. (Lack of Fit)	Verdict
Visual learning style -> independent character	1.124	0.352	Linier
Auditory learning style -> independent character	0.987	0.447	Linier
Kinesthetic learning style -> independent character	1.453	0.192	Linier

The results of the linearity test using the Lack of Fit method for the three relationships between learning style variables and independent character also showed a consistent pattern. The three relationships, namely between visual learning style with independent character (p=0.352), auditory learning style with independent character (p=0.447), and kinesthetic learning style with independent character (p=0.192), resulted in a significance value (Sig.) of Lack of Fit that was much greater than 0.05. The statistical implication of these results is that linear models are quite precise to describe the relationship between individual learning styles and independent characters. In other words, there was no significant

deviation in the pattern of non-linear relationships in the data. The fulfillment of this linearity assumption validates the use of simple linear regression analysis as an appropriate technique to test the influence of each learning style on independent character.

Overall, the fulfillment of these two classical assumptions, data normality and relationship linearity, provides a strong and methodologically valid basis for continuing inferential analysis in the form of linear regression tests. These results guarantee that the findings from the hypothesis test will be reliable and avoid biases that may arise due to violations of basic statistical assumptions.

Table 5. Linear Regression Test Results

Variabel	B	a	R	R^2	Adjusted R^2	t hitung	Sig. (p)
Visual learning style -> independent character	1.245	24.802	0.372	0.138	0.124	3.115	0.003
Auditory learning style -> independent character	1.892	21.543	0.518	0.268	0.256	4.742	0.000
Kinesthetic learning style -> independent character	2.541	18.674	0.687	0.472	0.464	7.389	0.000

The results of simple linear regression analysis showed that the three learning styles significantly affected the independent character of grade 2 elementary school students, but with different levels of influence and contribution.

First, visual learning style had a significant influence on independent character ($t = 3.115$; $p = 0.003 < 0.05$). The value of a positive regression coefficient ($B = 1.245$) indicates that every one score increase in visual learning style will be followed by an increase of 1,245 points in independent character. However, the contribution was relatively lowest among the three learning styles, with a coefficient of determination (R^2) of 0.138. This means that visual learning styles were only able to explain 13.8% of independent character variations, while the remaining 86.2% were explained by factors outside of the study.

Second, auditory learning styles showed a stronger and more significant influence ($t = 4.742$; $p = 0.000 < 0.05$). A higher positive regression coefficient ($B = 1,892$) showed that each increase in one auditory learning style score

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contributed to a 1,892 increase in independent character points. The contribution was also more substantial, with auditory learning styles explaining 26.8% of independent character variations ($R^2 = 0.268$), while 73.2% were influenced by other factors.

Third, kinesthetic learning style has been proven to be the strongest predictor of independent character. The t-test results were very significant ($t = 7,389$; $p = 0.000 < 0.05$) with the highest regression coefficient ($B = 2,541$), meaning that each increase in one kinesthetic learning style score could improve independent character by 2,541 points. More importantly, the coefficient of determination (R^2) reached 0.472, indicating that kinesthetic learning styles were able to explain 47.2% of the variation in independent character in students. This constitutes a very substantial contribution in educational research, although 52.8% is still determined by other variables.

Based on the hypothesis acceptance criteria ($p < 0.05$), all three research hypotheses are acceptable. However, there is a clear gradation of influence: kinesthetic learning styles have the dominant influence, followed by auditory, and finally visual. These findings are consistent with previous descriptive statistics that show the highest kinesthetic learning style preferences among students. From a practical perspective, these results reinforce the need for active-kinesthetic learning to optimize independent character formation, while visual approaches need to be enriched with other methods to increase their effectiveness. The still relevant Adjusted R^2 (0.464 for kinesthetics) confirms that while learning style is an important predictor, there is room to explore other factors such as parenting, intrinsic motivation, or learning design in advanced research.

The Influence of Learning Style on Independent Character

The findings of this study confirm that learning style significantly affects the formation of independent character of grade II elementary school students. The results of simple linear regression analysis showed different gradations of influence, where kinesthetic learning style contributed the most ($R^2 = 0.472$), followed by auditory style ($R^2 = 0.268$), and finally visual style ($R^2 = 0.138$). This pattern is consistently in line with the characteristics of cognitive and motor

development of children aged 7-8 years who are in the concrete operational stage, where learning through physical activity and direct experience is easier to understand and internalize (Santrock, 2019).

Visual learning styles show a comparatively lower influence. This can be explained through two perspectives. First, the learning materials for grade II elementary school that are still very concrete may not be optimally accommodated through static visual media without being accompanied by explanations or supporting activities. Second, self-sufficient characters involving affective and behavioral aspects may require multimodal stimulation that is not fully fulfilled through visual approaches alone. These findings are consistent with Mursari's (2019) research which states that the effectiveness of visual learning styles in building independence is highly dependent on the quality of media and the context in which it is used. In field observation, students with visual preferences appeared to be more independent in structured tasks such as taking notes or tidying up stationery, but showed less initiative when faced with problems that required active exploration.

The significant influence of auditory learning styles indicates the importance of social interaction and verbal communication in building independence. According to Vygotsky (in Salsabila et al., 2025), learning occurs through social interaction before being internalized individually. Students with auditory learning styles tend to develop independence through the process of discussion, verbal explanation, and verbal feedback from teachers and peers. This mechanism facilitates the development of metacognitive abilities, in which students learn to reflect and regulate their own learning process. These results are in line with Kurnia's (2023) research which found that students who were actively involved in group discussions showed a faster increase in indicators of initiative and responsibility compared to students who learned individually.

The dominance of kinesthetic learning style influence on independent character can be explained through the theory of embodied cognition which states that cognitive processes are inseparable from physical experience (Iryanto, 2025). Students who learn through movement and touch are actively involved in the

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construction of knowledge, thus developing a sense of ownership over the learning process. This condition psychologically fosters confidence and responsibility, which are key indicators of independent character. Previous research by Pratama (2024) also found that physical activity-based learning significantly improves students' self-regulation, including the ability to manage time and complete tasks independently. These findings are further strengthened by the results of observations in this study, where students with kinesthetic preferences were seen to be more enthusiastic, persistent, and proactive in completing practical tasks compared to purely visual tasks.

The finding that the three learning styles contribute positively to independent character strengthens the theory of differentiated instruction which emphasizes the importance of accommodating the diversity of students' learning styles (Purnamasari et al., 2024). The results of this study show that when students' learning preferences are accommodated, especially through kinesthetic approaches, psychological conditions that support independence develop, namely a sense of competence, autonomy, and relatedness as stated in the theory of self-determination (Ryan & Deci, 2024). Students feel more in control of their learning process, which in turn encourages the emergence of independent behaviors such as initiative, discipline, and perseverance in the face of difficulties.

This finding has important practical implications for learning in grade II of elementary school. First, teachers need to diagnose students' dominant learning styles on a regular basis to design more personalized learning. Second, the learning design should integrate the three learning modalities with a larger portion of kinesthetic activities, without neglecting the reinforcement of visual and auditory aspects. Third, the assessment of independence needs to be carried out holistically by considering students' learning preferences, so that there is no bias in the evaluation of character development.

The study has limitations in terms of generalization due to the limited sample of one school and a specific age range. Future research is suggested to: (1) expand the sample with more diverse sociodemographic characteristics, (2) explore mediator variables such as intrinsic motivation or parental support, and

(3) develop specific differentiated learning designs based on findings of different contributions from each learning style.

4. Conclusion

Based on the results of the analysis and discussion of the research on the influence of learning style on the formation of independent character of grade II elementary school students, it can be concluded that the following things can be concluded: (1) There is a positive and significant influence between overall learning styles (visual, auditory, and kinesthetic) on the formation of students' independent character. All three research hypotheses are accepted, which indicate that students' learning preferences or tendencies are an important internal factor in encouraging the development of independent attitudes and behaviors in academic contexts; (2) The influence varies quantitatively and qualitatively among the three learning styles. Kinesthetic learning styles contributed the most dominant and substantive (R^2 = 0.472 or 47.2%), followed by auditory learning styles (R^2 = 0.268 or 26.8%), and then visual learning styles (R^2 = 0.138 or 13.8%). This variation shows that learning that involves physical activity, movement, and hands-on experience has the strongest impetus in fostering initiative, responsibility, discipline, confidence, and resilience in facing difficulties in grade II elementary school students; and (3) These findings confirm that independent character is not an entity that develops automatically, but can be facilitated through a learning design that is responsive to individual characteristics of students. Accommodation to learning styles, especially for kinesthetic students, creates a supportive psychological condition, namely a sense of competence and autonomy, which is a prerequisite for the emergence of self-regulation and learning independence.

Practically, the results of this study confirm the urgency for educators to conduct an assessment of students' learning styles from an early age and integrate differentiated learning principles, with a special emphasis on active, contextual, and experiential learning methods and media. This is important not only for the effectiveness of cognitive learning, but also as a long-term investment in the

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formation of independent character as the foundation for becoming a lifelong learner.

Thus, it can be concluded that optimizing the learning process by considering students' learning styles, especially through kinesthetic approaches, is an effective and essential strategy in building students' independent character at the elementary school level, especially in the early grade phase.

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