

Integration of *Asta Cita* Values into Character Education through Mathematics Learning in Elementary Schools

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Abstract: This research examines how the four principles of *Asta Cita* can be incorporated into mathematics education to enhance character development among elementary school students in Tobelo City. A qualitative methodology was employed, utilizing a case study format in three primary schools with nine class teachers and fifty-one students from grades IV and V selected through purposive sampling. Data were gathered through classroom observations, detailed interviews, and document analysis, and then processed using the interactive model proposed by Miles, Huberman, and Saldaña, which involves data condensation, presentation, and drawing and verifying conclusions. Findings indicated that *Asta Cita* values were embedded through cooperative learning, contextual problem-solving, reflective discussions, and the reinforcement of classroom culture, fostering students' discipline, responsibility, teamwork, honesty, and social awareness, while also enhancing their involvement in mathematics education. The uniqueness of this research lies in the development of a mathematical teaching approach grounded in *Asta Cita* principles that merges conceptual understanding with character enhancement within a singular contextual educational framework for elementary schools.

Keywords: *Asta Cita*, character education, elementary schools, mathematics learning



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A. Introduction

Character education stands out as a key focus in shaping 21st-century education, addressing the growing moral, social, and cultural challenges that students encounter in the digital age. The development of information technology, changes in social interaction patterns, and ease of access to various information influence the development of students' character, so that education is no longer oriented solely to academic achievement, but must also be able to form discipline, responsibility, honesty, social awareness, and mutual respect (Berkowitz, 2022; Ryan & Deci L, 2017). At the elementary school level, character strengthening becomes increasingly important because this phase is a fundamental period in the formation of students' values, attitudes, and behavior (Lickona, 2019; Pike et al., 2021). Therefore, the learning process needs to be designed holistically by integrating cognitive, affective, and social dimensions in each subject (Hammond et al., 2017; M. Wang, 2024).

One subject that has great potential for integrating character education is mathematics. Apart from developing logical thinking and problem-solving abilities, mathematics learning also provides space for students to develop discipline, persistence,

cooperation, honesty, responsibility, and problem-solving abilities through problem-solving activities and collaborative learning (Muhamad Fadzil & Osman, 2025; Setiawan et al., 2025). However, mathematics learning practices in elementary schools are still dominated by an orientation towards mastering concepts, procedures, and academic achievement so that the affective and character dimensions are not yet optimally integrated (Hayati et al., 2024; Hubbard et al., 2026).

In implementing the Independent Curriculum, teachers have been encouraged to implement contextual, collaborative, and student-centered learning. However, practice in the field shows that mathematics learning is still more directed at solving problems, procedural exercises, and achieving academic targets rather than developing student character. As a result, learning activities that encourage reflection, collaboration, decision-making, and internalization of character values have not become a planned part of mathematics learning (Musthofa et al., 2025; Nurizka & Gunawan, 2022). This condition shows that the potential of mathematics as a vehicle for strengthening character has not been utilized optimally.

In the context of national policy, this need is in line with the fourth principle of *Asta Cita*, the strategic development framework of the Indonesian government comprising eight interconnected national priorities that guide public policy, governance, economic transformation, human capital development, social welfare, environmental sustainability, and national resilience to achieve inclusive and sustainable national development. *Asta Cita* places human resource development through education, science, and technology based on moral, ethical, cultural, and character values as a national development priority. This orientation is also in line with the implementation of the Independent Curriculum, which emphasizes holistic, contextual learning and strengthening the Pancasila Student Profile (Purnomo et al., 2022; Ratnawati et al., 2024). Therefore, integrating the fourth principle of *Asta Cita* into mathematics learning is a relevant strategy for strengthening character education in elementary schools.

Much research has been conducted on character education in mathematics learning. Sunarni et al. (2024) found that story problem-solving activities foster independence, critical reasoning, and creativity. Harefa & Hulu (2024) reported that contextual, collaborative, and reflective learning strategies strengthen students' character while improving mathematical understanding. Darmayanti (2024) showed that character-integrated digital comics support mathematical critical thinking and problem-solving skills. Salafudin et al. (2021) found that ethnomathematics-based realistic mathematics learning promotes creativity, independence, curiosity, and nationalism. Kholil & Usriyah (2020) reported that mathematics textbooks integrating Islamic values effectively support character development among elementary school students.

However, previous studies have primarily examined character education in mathematics through instructional strategies, digital media, ethnomathematics, problem-solving activities, and the integration of religious values. Although these approaches have demonstrated positive contributions to students' character development, they have not investigated how the values embodied in the fourth principle of *Asta Cita* can be integrated into mathematics learning as a strategy for strengthening character education. Furthermore, empirical evidence regarding the implementation of this approach in elementary schools, particularly in Eastern Indonesia, remains limited.

This study contributes to the literature in three ways. First, it extends the discussion of character education in mathematics by examining the integration of the values embodied in the fourth principle of *Asta Cita*. This perspective has received limited

attention in previous studies. Second, it provides empirical evidence on how these values are implemented in mathematics learning through lesson planning, classroom activities, assessment, and classroom culture. Third, it explains how this approach contributes to strengthening character education within the implementation of the Merdeka Curriculum in elementary schools.

Based on these research problems and gaps, this research aims to analyze the integration of the fourth principle of *Asta Cita* in mathematics learning as a strategy to strengthen character education in Tobelo City elementary schools. Specifically, this research identifies forms of implementation of *Asta Cita* values in mathematics learning, analyzes the character that develops through the learning process, and explains the contribution of this approach to strengthening character education in the implementation of the Merdeka Curriculum.

B. Method

This research uses a qualitative approach with a case study design to explore the implementation of the fourth principle of *Asta Cita* in mathematics learning as a strategy to strengthen character education in elementary schools. This design was chosen because it allows researchers to gain a deep understanding of phenomena in real contexts through various data sources (Cresswell & Clark, 2018). The research was carried out in 2025 at SD GMIH 1 Tobelo, SD GMIH 4 Tobelo, and SD Hein Namotemo, Tobelo City, North Halmahera Regency. The three schools were chosen purposively because they have implemented the Independent Curriculum, integrated character education in learning, and have diverse mathematics learning characteristics. The research participants consisted of nine grade IV and V teachers, fifty-one grade IV and V students, and three school principals as supporting informants.

Participants were selected using a purposive sampling technique to obtain informants who had direct experience with the implementation of character-based mathematics learning (Sugiyono, 2018). The teachers involved have a minimum of three years of teaching experience, teach mathematics learning, and understand the implementation of the Merdeka Curriculum, while the students were selected based on their active involvement in learning. The researcher acts as the main instrument supported by observation guidelines, semi-structured interview guidelines, document analysis guidelines, field notes, and audio and visual documentation. Data were collected through classroom observations, in-depth interviews, and document analysis. Observations focused on the implementation of the fourth principle of *Asta Cita*, learning activities, teacher-student interactions, and developing character values. At the same time, interviews and document analysis were used to confirm learning strategies, participant experiences, and implementation of the Merdeka Curriculum.

Data were analyzed using the interactive model of Miles et al. (2018) through the stages of data condensation, data presentation, and drawing and verifying conclusions. Data from observations, interviews, and documentation were coded, grouped based on research focus, then organized into themes that describe the implementation of the fourth principle of *Asta Cita*, mathematics learning strategies, and strengthening character education. Analysis was carried out iteratively from the data collection process until consistent themes were obtained.

The validity of the data is guaranteed through source triangulation and technical triangulation, member checking, and peer discussions in accordance with the trustworthiness criteria proposed by Denzin & Lincoln (2018). The research was carried

out after obtaining permission from the school and the consent of all participants. The confidentiality of participants' identities is maintained through anonymization, while all data is used only for academic purposes and is reported objectively in accordance with research ethical principles.

C. Results and Discussion

Result

This research was conducted in three elementary schools in Tobelo City, North Halmahera Regency: GMIH 1 Tobelo Elementary School, GMIH 4 Tobelo Elementary School, and Hein Namotemo Elementary School. All three schools have implemented the Independent Curriculum and demonstrated a commitment to integrating character education into the learning process. Based on initial observations and a review of school documents, mathematics learning is still dominated by academic competency achievement. However, teachers are beginning to develop more contextual, collaborative, and reflective learning. The distribution of research locations across the three schools is shown in Figure 1, which illustrates the research context as the basis for analyzing the implementation of *Asta Cita* values in mathematics learning.



Figure 1. Research Location

Planning the Integration of *Asta Cita* Values in Mathematics Learning

The analysis of learning documents indicates that the integration of the four *Asta Cita* principles was planned from the beginning of the learning materials. The teaching modules, learning objectives, and student worksheets (LKPD) were structured in an integrated manner, ensuring that learning was not only oriented toward mastering mathematical concepts but also guided students to develop the values of discipline, responsibility, cooperation, honesty, and social awareness through learning experiences. The mathematical problems used in the LKPD were developed from everyday life contexts. At the same time, learning activities were designed in the form of group discussions, contextual problem-solving, presentations of results, and reflection. The integration between the learning materials, learning activities, and learning objectives is demonstrated in Figure 2, which shows the relationship between the teaching modules, LKPD, and the values-based learning design.

Teacher interviews reinforced these documentation findings. One teacher explained, "We try to connect math problems to students' everyday lives so that they not only understand numbers but also learn responsibility and cooperation in solving problems." Another teacher added that "Learning becomes more active when students are

encouraged to discuss and find solutions collaboratively in groups." These two statements demonstrate that teachers have designed learning strategies that integrate academic goals and character building since the planning stage. Thus, character education is not positioned as an add-on, but rather becomes an integral part of goal setting, problem context selection, and learning activity design.

Elementary School Mathematics Teaching Module	STUDENT WORKSHEETS
A. GENERAL INFORMATION	Group Name : Members Group :
Subject : Mathematics	
Phase/ Class : Phase B/ Class IV Elementary School	
Time Allocation : 2 x 35 minutes	
Learning Model : <i>Problem based Learning</i>	
Approach : Contextual	
B. LEARNING OUTCOMES	A. Activity Objectives
Participant educate capable understand and complete problem mathematics simple related with life daily through activity counting , discussing and collaborating .	B. Instructions Activity
C. LEARNING OBJECTIVES	C. Activity 1
After follow learning participant educate able to : 1) count need daily use operation count , 2) Solve problem based environment around . 3) Collaborate in discussion group , 4) Delivering results discussion with believe self .	Mother buys :
D. LEARNING ACTIVITIES	1. 2 kg of rice for Rp. 15,000/kg
1. Activity Introduction	2. 1 kg of sugar costs Rp. 18,000/kg
a. The teacher opens learning with greetings and prayers	3. 2 liters cooking oil costs Rp. 20,000/liter
b. The teacher relates material with life daily	Question :
c. The teacher gives question lighter "If mother bought 2 kg of rice, 1 kg of sugar and 2 liters cooking oil, how method calculate the total shopping?"	1. How much is the total price? rice ?
2. Core activities	2. How much is the total shopping ?
Activity 1: Counting need daily	Answer :
Student requested count question shopping need House ladder based on the price list provided by the teacher.	
Activity 2: Solving Problem based Environment	D. Activity 2
a. The teacher gives problem related environment school	School has 30 flower plants , Plants the will shared to in 5 groups For treated .
Example : " School will planted 30 flower plants . If the plant the will shared to 5 groups For treated , how much amount cared for plants every group ?"	Question
b. Student discuss For find answer	How many amount cared for plants each and every group ?
Activity 3: Discussion Group	Answer
a. The teacher gives problem related environment school	
b. The teacher gives reflection	
c. The teacher gives strengthening character of cooperation and responsibility	E. Reflection
E. ASSESSMENT	What are you learn day This ?
1. Evaluation Attitude	Answer :
a. Cooperation	
b. Responsibility	
c. Activity discussion	
2. Assessment Knowledge	
a. Accuracy count	
b. Ability finish problem	
3. Evaluation Skills	
a. Ability presentation results discussion	



Figure 2. Teaching Modules, Students' Worksheets, and Collaborative Learning Activities

Overall, the research results indicate that the successful integration of the four *Asta Cita* principles begins with the quality of learning planning. Internalization of character values has been systematically designed through the formulation of learning objectives, the selection of contextual problems, and the organization of learning activities that provide space for students to construct knowledge while developing character. These findings demonstrate that planning is the primary foundation for ensuring consistent implementation of character education in subsequent learning stages.

Implementation of the Integration of Asta Cita Values in Mathematics Learning

Observations showed that the teacher's learning plan was consistently implemented throughout the mathematics learning process. The learning process began with the presentation of a contextual problem, followed by group discussions, presentations of results, and group reflection. Throughout the activity, students actively exchanged opinions, shared assignments, helped friends experiencing difficulties, and confidently

presented their discussion results. These activities are documented in Figure 3, which shows students' collaborative interactions during the mathematics learning process.



Figure 3. Observation of Classroom Teaching and Learning Activities

Teacher and student interviews reinforced these observations. One teacher stated, "When students work in groups, they learn to respect others' opinions and take responsibility for their own work." This experience aligns with a student's statement, "We enjoy working together because we can help each other when someone does not understand the material." The congruence between teacher and student perspectives suggests that collaborative learning is not only a strategy for solving math problems, but also a way for students to practice the values of responsibility, cooperation, and respect for others' opinions in real-life learning situations.

Table 2. Observation Results of the Implementation of *Asta Cita* Values in Mathematics Learning

Character Value	Observed Indicators	Observation Findings
Discipline	Punctuality in completing assignments and adherence to classroom rules	Most students completed their assignments within the allocated time and followed the learning procedures in an orderly manner.
Responsibility	Completion of individual and group assignments	Students completed their assigned tasks according to their respective roles and demonstrated responsibility for the outcomes of their group work.
Collaboration	Participation in discussions and problem-solving activities	Students actively participated in discussions, shared ideas, assisted their peers, and made collective decisions while solving contextual problems.
Honesty	Behavior during task completion and willingness to acknowledge mistakes	Students demonstrated openness in admitting their mistakes and completed assignments independently without relying on their classmates' answers

Observation findings also show that changes in student behavior appear consistently during the implementation of learning. Observation records show that more

and more students complete assignments on time, participate actively in group discussions, and show responsibility and honesty when solving mathematics problems (Table 2). The data is not intended as a measure of effectiveness, but as empirical evidence regarding behavior observed during learning. Overall, the research results show that the implementation of the fourth principle of *Asta Cita* is realized through learning experiences that enable students to practice character values directly in every learning activity.

Mathematics Learning Assessment Based on Asta Cita Values

Documentation analysis shows that assessments in mathematics learning are designed to evaluate both academic competency achievement and student character development. In addition to assessing the accuracy of math problem solving, teachers use observation sheets, learning journals, group presentations, student worksheets (LKPD), and student reflection journals as sources of information regarding the development of discipline, responsibility, cooperation, and honesty. The integration between learning tools and assessment instruments is evident in Figure 2, which indicates that character assessments have been designed since the lesson planning stage.

This finding is reinforced by a teacher interview, who stated, "In mathematics learning, students are trained to be disciplined in completing assignments and responsible in the problem-solving process." Consistent with this statement, observations indicate that teachers not only evaluate students' final answers but also observe their engagement in group discussions, their ability to work together, their punctuality in completing assignments, and their honesty when admitting mistakes during problem-solving. These observations are then used as the basis for providing feedback, allowing students to evaluate both academic and character aspects simultaneously.

Overall, these findings indicate that assessments in mathematics learning based on the fourth principle of *Asta Cita* apply the principle of authentic assessment, which assesses the learning process and outcomes in an integrated manner. Assessment not only measures mastery of mathematical concepts but also serves as a mechanism to monitor, reinforce, and foster character values through ongoing feedback. Thus, assessment maintains continuity between planning, implementation, and character-strengthening objectives throughout the learning process.

The Impact of Integrating Asta Cita Values on Strengthening Character Education

Analysis of student reflection journals, group work results, and learning documentation indicates that the integration of the four *Asta Cita* principles has an impact on the development of student learning behavior. Documentation shows that students are increasingly accustomed to completing assignments responsibly, respecting the opinions of their peers, working collaboratively in groups, and demonstrating honesty throughout the learning process. These changes are also reflected in Figure 3, which shows students' active involvement in discussions, group presentations, and collaborative assignment completion. These findings indicate that character values develop through ongoing learning experiences throughout the mathematics learning process.

The documentation findings are reinforced by interviews with informants not previously used in the previous section. One teacher stated that "Character integration makes students more respectful of peers' opinions," while another teacher explained that "Students develop greater confidence in expressing ideas." These perceptions align with the experiences of students who said, "We become more active and confident when learning mathematics with classmates." These statements indicate that the integration of *Asta Cita* values not only influences individual behavior but also fosters more positive social interactions, fosters mutual respect, and encourages students' courage to participate in learning.

Observation results further strengthen these findings. During the learning process, students appeared to be more proactive in expressing their opinions, helping friends who were having difficulties, sharing responsibilities within the group, and openly accepting teacher feedback. Overall, the triangulation of observations, interviews, and documentation shows that the integration of the four principles of *Asta Cita* has expanded the function of mathematics learning from merely mastering concepts to becoming a vehicle for character building. The impacts that emerged were not only the development of discipline and responsibility, but also increased cooperation, social awareness, communication, and self-confidence, so that mathematics learning contributed to strengthening character education more holistically.

Discussion

Planning the Integration of Asta Cita Values in Mathematics Learning

The research findings indicate that the integration of the four principles of *Asta Cita* has begun since the planning stage through the development of learning objectives, teaching modules, student worksheets (LKPD), and contextual and collaborative activities that integrate mathematical competencies with character building. This finding aligns with the research of Sholeh (2022) and Ibrahim et al. (2024) which emphasized the importance of planning learning tools as a foundation for the successful implementation of the Independent Curriculum. These results also reinforce the findings of Suardin, et al. (2023), Panggabean (2022), and Maisyaroh, et al. (2023) that character education must be designed from the learning planning stage. The difference is that this study shows more specifically how the four principles of *Asta Cita* are translated into mathematics learning design, thus providing a more contextual framework for character integration.

These findings occurred because teachers designed learning activities that, from the outset, provided space for students to practice discipline, responsibility, cooperation, and honesty through solving mathematical problems. According to Law & Liang (2020), learning design must be understood as an integral part of the implementation process. From a character education perspective, values are more easily internalized when they are part of the learning experience (Lickona, 2022). This approach also aligns with the concept of transformative education, which emphasizes the integration of academic competencies and character in the learning process (Paul & Quiggin, 2020).

Implementation of the Integration of *Asta Cita* Values in Mathematics Learning

The research findings indicate that the implementation of the fourth principle of *Asta Cita* is carried out through contextual learning, group discussions, problem-solving, presentations, and reflection. These results are consistent with research by Alzubi et al (2024) and Camacho-Minuche et al. (2021), which shows that collaborative learning increases students' engagement and social competence. These findings also support research by Sukestiyarno et al. (2019), Wakit & Kusumodestoni (2021), and Tyaningsih et al. (2020) recommendation that mathematics learning should develop both academic competence and character. The contribution of this research lies in the integration of all these strategies within the framework of the fourth principle of *Asta Cita*.

Practically, learning activities provide opportunities for students to learn through interaction, shared responsibility, and collaborative problem-solving. These conditions encourage the development of learning motivation as well as positive social behavior. According to Ryan & Deci (2017), a learning environment that meets the needs for autonomy, competence, and connectedness will increase intrinsic motivation. This finding is reinforced by Järvelä et al. (2023), who explain that social regulation develops through ongoing collaborative experiences.

Mathematics Learning Assessment Based on *Asta Cita* Values

The research findings indicate that assessments not only measure mastery of mathematical concepts but also character development through observations, reflective journals, group presentations, and learning documentation. These findings align with Ratnawati et al. (2024), Berkowitz & Bier (2022), and Komalasari & Masyitoh (2022) which emphasize the importance of authentic assessment in character education. These findings also support the findings of Mertasari & Yudana (2022) that character evaluation needs to be integrated with the learning process. This study extends previous findings by demonstrating that academic and character assessments can be implemented in an integrated manner in mathematics learning.

These findings occur because teachers use observations, reflections, and presentations as the basis for providing feedback on student progress. This approach allows for ongoing character evaluation throughout the learning process. According to Wang et al. (2024), character is more accurately assessed through actual behavior than simply test scores. Furthermore, Žerovnik (2024) explains that ongoing feedback strengthens students' self-regulation and responsibility for learning.

The Impact of Integrating *Asta Cita* Values on Strengthening Character Education

Research findings indicate that the integration of the four *Asta Cita* principles impacts the development of discipline, responsibility, cooperation, honesty, social awareness, and increased student participation and self-confidence. These findings are consistent with research by Huang et al.(2024), Vettriselvan (2025), Lessy et al.(2024), and Joshi (2026), which concluded that values-based learning can strengthen character through meaningful learning experiences. The contribution of this research is to demonstrate that mathematics learning based on the four *Asta Cita* principles is an

effective pedagogical framework for integrating academic achievement and character education in elementary schools.

Practically, character change occurs because students repeatedly practice these values during discussions, problem-solving, presentations, and reflections on learning. This habituation process allows the values to develop into everyday behavior. This aligns with Lickona's (2022) character education theory, which states that character is formed through habituation in the learning environment. This finding also supports the view of Khotimah et al. (2025) and Sanjani (2024) that meaningful learning experiences are the main foundation for character formation of students.

D. Conclusion

This research demonstrates that the four principles of *Asta Cita* can be systematically integrated into mathematics learning through lesson planning, the implementation of contextual and collaborative activities, authentic assessments, and the strengthening of classroom culture. This integration not only supports the achievement of mathematical competencies but also strengthens discipline, responsibility, cooperation, honesty, social awareness, and increases student participation and engagement in the learning process. These findings produce a pedagogical framework that integrates conceptual learning with character building in the context of implementing the Independent Curriculum in elementary schools.

Theoretically, this research expands the study of character education by demonstrating that mathematics learning can function as a vehicle for internalizing values through contextual, collaborative, and reflective learning experiences. Practically, the research findings provide alternatives for teachers, schools, and curriculum developers in designing mathematics learning that integrates conceptual mastery with character development. The uniqueness of this research lies in the integration of the four principles of *Asta Cita* into mathematics learning as a contextual framework that connects the cognitive, social, emotional, and moral dimensions within a single learning process.

This study has several limitations because it was conducted in only three elementary schools in Tobelo City using a qualitative approach, so the findings are not intended to be generalized to a broader context. Furthermore, the study focused only on mathematics and was conducted over a relatively short period of time, thus not being able to describe the long-term development of student character. Therefore, further research is recommended involving schools with more diverse characteristics, using mixed methods or longitudinal designs to test the sustainability of character formation, and developing and testing learning models based on the four principles of *Asta Cita* in other subjects to strengthen the implementation of character education in the Merdeka Curriculum.

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