

LOCAL WISDOM AS A MEANS TO FOSTER INDEPENDENCE IN MATHEMATICS LEARNING

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Abstrak

Pembelajaran matematika seringkali dianggap sulit dan abstrak oleh siswa, sehingga menimbulkan ketergantungan pada bimbingan guru dan menghambat pengembangan kemandirian belajar. Penelitian ini mengkaji peran kearifan lokal sebagai sarana untuk membangun kemandirian dalam pembelajaran matematika, khususnya di SMA Negeri 1 Teluk Dalam, Nias Selatan. Melalui kajian pustaka, ditemukan bahwa integrasi nilai-nilai dan budaya lokal ke dalam proses pembelajaran matematika tidak hanya meningkatkan pemahaman konsep secara kontekstual, tetapi juga memotivasi siswa untuk belajar secara mandiri. Kearifan lokal seperti pola geometris pada tenun tradisional, filosofi kehidupan adat, dan struktur bangunan tradisional dapat dijadikan media pembelajaran yang relevan dan menarik bagi siswa. Pendekatan ini membantu siswa mengembangkan kemampuan berpikir kritis dan kreatif, sekaligus meningkatkan rasa percaya diri dalam memecahkan masalah matematika. Selain itu, pembelajaran berbasis kearifan lokal memperkuat identitas budaya siswa dan menumbuhkan rasa bangga terhadap warisan lokal. Penelitian ini merekomendasikan pengembangan modul pembelajaran yang mengintegrasikan kearifan lokal dan pelatihan guru sebagai upaya mendukung kemandirian belajar siswa secara optimal. Implikasi dari kajian ini menunjukkan bahwa kearifan lokal dapat menjadi strategi efektif dalam meningkatkan kualitas pembelajaran matematika dan karakter mandiri siswa di lingkungan sekolah.

Kata Kunci: Kearifan Lokal; Kemandirian Belajar; Pembelajaran Matematika; Etnomatematika

Abstract

Mathematics learning is often perceived by students as difficult and abstract, leading to dependence on teacher guidance and hindering the development of independent learning. This study examines the role of local wisdom as a means to build independence in mathematics learning, specifically at SMA Negeri 1 Teluk Dalam, South Nias. Through a literature review, it was found that integrating local values and culture into the mathematics learning process not only enhances conceptual understanding contextually but also motivates students to learn independently. Local wisdom, such as geometric patterns in traditional weaving, indigenous life philosophies, and traditional building structures, can serve as relevant and engaging learning media for students. This approach helps students develop critical and creative thinking skills while boosting their confidence in solving mathematical problems. Furthermore, learning based on local wisdom strengthens students' cultural identity and fosters pride in their local heritage. This study recommends the development of learning modules that integrate local wisdom and teacher training as efforts to optimally support students' independent learning. The implications of this review suggest that local wisdom can be an effective strategy to improve the quality of mathematics



education and the development of students' independent character within the school environment.

Keywords: Local wisdom; Independent learning; Mathematics learning; Ethnomathematics

A. Introduction

Education in the era of globalization demands not only cognitive mastery but also the development of strong student character and competencies. One critical character trait receiving significant attention is learning independence, defined as the ability of students to initiate, organize, monitor, and evaluate their own learning process (Fitriani & Purnamasari, 2024). In the context of mathematics education, learning independence is particularly crucial because mathematics is not merely about memorization but involves thinking processes, problem-solving, and reflection (Son, 2023). However, in many regions of Indonesia, especially remote areas, meaningful mathematics learning still faces considerable challenges. These include low student interest, lack of relevance to local contexts, and insufficient character development that supports autonomous learning (Harefa, D. 2025). Addressing these challenges requires innovative approaches that integrate local wisdom and cultural contexts to foster both understanding and independent learning skills among students.

On the other hand, the rich local cultural heritage throughout Indonesia represents an underutilized potential in the educational process (Harefa, D. 2025). The concept of local wisdom, which encompasses the values, practices, and cultural norms that live within communities, provides an important bridge to connect learning with students' real-life environments, thereby making education more meaningful and relevant (Lusiana, 2022). In the South Nias region, for example, there are distinctive traditions, philosophies,

and cultural practices that can be effectively incorporated as contextual learning materials (Harefa, D. 2025). These cultural elements not only enrich the learning experience but also serve as a vital medium for character development. By integrating local wisdom into the curriculum, educators can foster a deeper understanding of subject matter while simultaneously nurturing students' cultural identity and personal growth (Sarumaha et al., 2023). This approach is particularly valuable in promoting contextualized and autonomous learning, especially in areas where conventional teaching methods may fall short (Telaumbanu, T., Dkk 2025).

Specifically, in South Nias, local wisdom can serve as a strategic educational resource. For instance, research conducted in Nias reveals that the cultural values of the Nias community, as reflected in the text "*Hikaja Duada Hiya*", embody principles such as responsibility, discipline, independence, and a strong sense of togetherness. These values can serve as a solid foundation for character education. Therefore, integrating local wisdom into mathematics learning holds the potential not only to enhance the relevance of the material for students but also to strengthen key character traits, including learning independence. By connecting mathematical concepts with culturally embedded values, students are likely to develop a deeper understanding and appreciation of both the subject matter and their own heritage. This approach supports the cultivation of autonomous learners who are confident and motivated to take charge of their own educational journey, thereby contributing



positively to their overall personal and academic growth.

Theoretically, mathematics learning that incorporates local cultural contexts can enhance students' motivation and interest in learning. For example, mathematics modules based on local wisdom have been proven to improve students' numeracy skills. In addition, the implementation of character education rooted in local wisdom has shown effectiveness in strengthening values such as independence, mutual cooperation, and integrity within schools (Harefa, D. 2025). Therefore, utilizing local wisdom as a medium for mathematics learning is not merely an additional contextual element but can serve as a vital strategy for fostering students' independent character. By embedding cultural values and practices into mathematics instruction, educators can create a more engaging and meaningful learning experience that supports both cognitive and character development. This approach helps students to develop autonomy in their learning process, making them more self-reliant and responsible learners, which ultimately contributes to their academic success and personal growth.

Nevertheless, several gaps and challenges remain. First, in many schools including those in remote areas like South Nias mathematics learning is still abstract and insufficiently connected to students' local realities. As a result, students tend to rely heavily on teachers or textbooks and are not yet accustomed to becoming independent learners. Second, although local wisdom is recognized as a valuable potential, its concrete implementation in mathematics education including the development of teaching materials, teacher training, and utilization of cultural contexts

remains limited. Third, there is a lack of specific research that directly links local wisdom in South Nias with students' learning independence in mathematics. Addressing these gaps is essential to optimize the role of local wisdom in fostering meaningful and autonomous mathematics learning. Therefore, further studies and practical initiatives are needed to explore effective strategies for integrating cultural heritage into mathematics education to support student autonomy.

In light of these considerations, this study aims to explore how local wisdom in South Nias can be utilized as a means to develop mathematics learning that supports student independence. The goal is to transform mathematics education from merely an academic requirement into a space for cultivating independent character that aligns with students' local culture. By integrating cultural values and practices into the learning process, this approach is expected to enhance the quality of mathematics education while fostering students who are more autonomous, confident, and capable of lifelong learning. Furthermore, leveraging local wisdom as a foundation for character and cognitive development can help bridge the gap between abstract mathematical concepts and students' everyday experiences. Ultimately, this research seeks to contribute to educational strategies that not only improve academic outcomes but also nurture self-reliant learners equipped to face future challenges.

B. Research Method

This study employs a library research (literature review) approach as the primary method to explore how local wisdom can function as a means to foster student independence in mathematics learning at



SMA Negeri 1 Teluk Dalam, South Nias. This method was chosen because it allows for an in-depth examination of theoretical concepts, implementation models, and relevant previous research related to mathematics education, the character of independence, and local wisdom. By reviewing and synthesizing existing literature, the study establishes a conceptual foundation that can be adapted or proposed for practical application in the specific school context. This approach enables a comprehensive understanding of how cultural values and educational strategies intersect to support autonomous learning, providing valuable insights for educators and policymakers aiming to enhance both academic achievement and character development through culturally relevant pedagogy.

1. Type and Research Approach

This study employs a qualitative research design with a library research (literature review) approach. Library research involves the collection, reduction, analysis, and synthesis of data obtained from secondary sources such as books, scholarly articles, research reports, and other relevant documents. This method allows for a comprehensive understanding of the existing body of knowledge related to the research topic. For example, in studies examining the internalization of local wisdom values in mathematics learning, library research is used to analyze findings from national journal reviews and other academic sources. Through systematic evaluation of secondary data, this approach facilitates the identification of theoretical frameworks, best practices, and gaps in the literature. Consequently, it provides a solid foundation for developing or proposing strategies that integrate local cultural values

into mathematics education, aiming to foster student independence and character development.

2. Data Sources

This study utilizes secondary literature sources relevant to three main focuses: (a) local wisdom, (b) mathematics learning through ethnomathematics and contextual approaches, and (c) student learning independence or independent character development. Data were collected through a review of various reliable references, including national and international journals, academic books, and previous research reports. The selected literature was chosen based on its relevance to efforts to integrate local wisdom values into the mathematics learning process and its impact on fostering students' independent character development. By analyzing these sources, the study aims to build a comprehensive understanding of how cultural values can be effectively incorporated into educational practices to enhance both academic achievement and personal growth. This approach provides a solid foundation for proposing strategies to improve mathematics learning outcomes and promote learner autonomy in culturally rich contexts.

Several examples of literature referenced in this study include research on the internalization of local wisdom values in mathematics learning, studies on the integration of local values into character education in schools, and reviews on the effectiveness of contextual approaches based on local wisdom in improving students' mathematics learning outcomes. The analysis of these literatures provides both theoretical and empirical foundations for designing relevant and contextual learning models. Additionally, it



strengthens the argument for the importance of linking local culture with the educational process to develop students' independent character rooted in their cultural heritage. This integration supports the cultivation of critical and reflective thinking skills among learners. By grounding educational practices in local wisdom, educators can create more meaningful learning experiences that promote autonomy and character development, ultimately contributing to holistic student growth.

3. Data Collection Techniques

Data collection in this study was conducted through a library research approach using documentation methods and the *simak bebas libat cakap* technique (free attentive reading without interaction). This technique involves carefully reading, noting important information, and classifying relevant literature based on predetermined inclusion criteria. The reviewed literature includes various scientific sources such as national and international journals, reference books, and research reports related to the main themes of the study. By systematically organizing and analyzing these materials, the study ensures a comprehensive and focused examination of existing knowledge concerning local wisdom, mathematics learning, and student independence. This meticulous documentation process allows for the extraction of critical insights that serve as the foundation for developing relevant educational models. The chosen data collection techniques provide a structured and effective means of gathering and synthesizing secondary data to support the study's objectives.

The process of searching and selecting literature was conducted systematically

using specific keywords, including local wisdom, mathematics learning, ethnomathematics, learning independence, independent character, contextual learning, South Nias, and senior high school. These keywords were employed in searches through scientific journal portals, digital library repositories, and academic databases such as Google Scholar, DOAJ, Garuda, and others. This technique aims to obtain relevant data sources that support the study of integrating local wisdom values into mathematics learning and their impact on strengthening character and student learning independence at the senior high school level, particularly in the South Nias region. By using a systematic and targeted search strategy, the study ensures that the selected literature is both comprehensive and directly relevant to the research objectives. This approach facilitates a thorough understanding of how cultural values can be effectively incorporated into educational practices to promote autonomous learning and character development.

4. Data Analysis Techniques

Data analysis in this study was conducted qualitatively on the collected literature. The first stage involved data reduction, which is the process of selecting the most relevant literature aligned with the research focus. Literature that did not meet the inclusion criteria such as those lacking elements of local wisdom or unrelated to the context of mathematics learning was excluded to maintain a focused and in-depth analysis. Following reduction, the selected literature was thoroughly examined to identify key themes, patterns, and insights related to the integration of local wisdom into mathematics education and its impact on fostering student independence. This



qualitative analysis ensured that only pertinent information was synthesized to build a coherent conceptual framework. The systematic approach provided clarity and depth in understanding how cultural values can support the development of autonomous learners through contextualized mathematics instruction.

The next stage is data presentation, where information from various sources is organized and grouped according to emerging main themes. These themes include the forms of local wisdom application in mathematics learning, strategies for fostering student learning independence, and the supporting as well as inhibiting factors that influence the integration of local cultural values in the teaching and learning process. By categorizing the data thematically, the study provides a clear and structured overview of how local wisdom can be effectively incorporated into mathematics education. This approach highlights practical methods and challenges related to character building and autonomous learning. Presenting the data in this manner facilitates a comprehensive understanding of the interplay between cultural values and educational practices, which is crucial for designing learning models that are both culturally relevant and pedagogically effective.

The final stage is drawing conclusions and verification. At this stage, the analyzed data are interpreted to formulate conclusions regarding the relationship between the integration of local wisdom and the strengthening of learning independence in mathematics education. Data validation is carried out through cross-checking between sources to ensure consistency, credibility, and accuracy of the information. The results

of this analysis are then related to the learning context at SMA Negeri 1 Teluk Dalam, South Nias, which serves as the study's research setting. This process ensures that the conclusions are well-grounded and relevant to the specific educational environment. By systematically verifying the data, the study enhances the reliability of its findings and offers meaningful insights into how local cultural values can effectively support the development of autonomous learners in mathematics, particularly within this unique cultural context.

5. School Context Focus

Although this study employs a literature review approach, the primary focus is specifically directed toward the context of SMA Negeri 1 Teluk Dalam, South Nias. The aim is to examine how the unique local wisdom values of South Nias such as local traditions, the spirit of mutual cooperation (gotong royong), independence values, and the customs and culture of Nias can be identified through relevant literature and subsequently integrated into mathematics learning at the school. By concentrating on this specific school context, the study seeks to bridge theoretical insights with practical applications that resonate with students' cultural backgrounds. This focus allows for a deeper understanding of how culturally grounded educational strategies can support both academic achievement and character development, particularly fostering student autonomy. Ultimately, this approach highlights the importance of contextualizing mathematics education within the rich cultural heritage of South Nias.

By examining literature discussing educational practices based on local culture, this study aims to connect these findings



with the educational situation and needs at SMA Negeri 1 Teluk Dalam. The primary focus is on how mathematics learning can serve as a means to instill local cultural values while simultaneously shaping students' independent character. Through this approach, the research seeks to demonstrate that mathematics education is not merely about academic content but also an opportunity to embed cultural heritage into the learning process. Integrating local wisdom into mathematics instruction helps create a more meaningful and relevant learning experience, fostering students' autonomy, responsibility, and critical thinking. Ultimately, this study emphasizes the importance of culturally responsive pedagogy in supporting both intellectual and character development, aligning educational goals with the unique cultural context of the school and its community.

The literature analysis was conducted to explore learning models, ethnomathematics approaches, and contextual strategies that align with the cultural characteristics of Nias. This comprehensive review aims to identify methods that integrate local wisdom into mathematics education effectively. By understanding these culturally responsive approaches, the study seeks to offer practical insights into how schools can develop meaningful and culturally relevant learning experiences. Such learning not only enhances students' academic understanding but also supports the strengthening of their character, particularly fostering independence and responsibility within the unique local context. The findings are expected to provide applicable guidance for educators at SMA Negeri 1 Teluk Dalam and similar schools in incorporating cultural values into the curriculum. Ultimately, this

research contributes to promoting education that respects and reflects the cultural heritage of the community while encouraging student growth in both knowledge and character.

6. Methodological Limitations

This study employs a literature review method, which, while strong in thoroughly examining existing theories and prior findings, also has several limitations. One primary limitation is the reliance on the availability of relevant literature. Specifically, literature focusing on the integration of South Nias local wisdom such as customs, culture, and community values of independence into mathematics learning remains relatively limited. This scarcity may affect the comprehensiveness and depth of analysis regarding the local context. As a result, certain nuances or specific practices unique to the South Nias community might not be fully captured or explored. Despite these limitations, the study attempts to provide meaningful insights by synthesizing available sources. Future research incorporating field studies or empirical data could complement and expand upon these findings, offering a more complete understanding of culturally integrated mathematics education in this region.

Furthermore, this study does not involve primary data such as direct observations, interviews with teachers or students, or empirical data collection at SMA Negeri 1 Teluk Dalam. Consequently, the findings are conceptual and theoretical in nature and do not fully represent the on-the-ground realities of the school environment. The absence of firsthand data limits the ability to capture the dynamic interactions and practical challenges that may arise during the integration of local



wisdom into mathematics learning. While the literature review provides valuable foundational insights, it cannot substitute for empirical evidence that reflects students' and teachers' actual experiences. Therefore, to gain a comprehensive understanding of the effectiveness and practical implementation of culturally based mathematics education, future research should incorporate qualitative or quantitative fieldwork within the specific school context.

Therefore, although this study provides an important theoretical foundation regarding the integration of local wisdom values into mathematics learning to foster independent character development, its findings still require further follow-up. Field-based research is highly recommended to test and implement these findings in real school contexts. Such empirical studies would offer deeper insights into the practical challenges and opportunities involved in applying culturally grounded approaches within the classroom. Moreover, they could evaluate the actual impact on students' learning autonomy and character growth. By bridging theory and practice, subsequent research can contribute to developing more effective, contextually relevant educational strategies tailored to the unique cultural environment of SMA Negeri 1 Teluk Dalam and similar schools. This approach ensures that theoretical concepts are translated into meaningful and sustainable improvements in teaching and learning processes.

C. Research Findings and Discussion

Research Findings

1. Integration of Local Wisdom in Mathematics Learning

The research indicates that integrating local wisdom into mathematics learning can

enhance the relevance of the material for students. For example, the development of mathematics modules based on local wisdom in Bima successfully improved students' numeracy skills, with an average class score of 16.41 and a classical learning completeness of 82.08%. Similarly, the implementation of local wisdom-based learning through an online system at SMP Negeri 5 Singaraja demonstrated improved mathematics achievement among eighth-grade students. These findings suggest that culturally grounded learning approaches not only contextualize mathematical concepts but also increase student engagement and understanding. By connecting educational content with students' cultural backgrounds, local wisdom integration proves to be an effective strategy to support both academic success and the development of meaningful learning experiences.

2. Influence on Interest and Learning Motivation

Mathematics learning based on local wisdom also has a positive impact on students' interest and motivation. One study found that 76.16% of students demonstrated high interest in mathematics lessons that integrated local wisdom, with all students achieving learning mastery. This approach helps reduce students' negative perceptions of mathematics and increases their engagement in the learning process. By connecting mathematical concepts to familiar cultural contexts, students find the material more relatable and meaningful, which fosters a more positive attitude toward the subject. Increased motivation, in turn, encourages active participation and persistence in overcoming challenges. These results underscore the importance of culturally relevant pedagogy as a means to



not only enhance academic achievement but also nurture students' enthusiasm and self-directed learning behaviors in mathematics.

3. Development of Learning Independence

The integration of local wisdom into mathematics learning can foster students' learning independence. By linking mathematical concepts with local culture, students are expected to develop critical and creative thinking skills, as well as increase their confidence in solving mathematical problems. This approach aligns with findings that ethnomathematics-based methods enhance students' problem-solving abilities. When students see the relevance of math in their cultural environment, they become more engaged and willing to take initiative in their learning process. This increased autonomy not only supports deeper understanding but also nurtures a sense of responsibility and self-regulation in learning. Consequently, integrating local wisdom serves as a meaningful strategy to build independent learners who are capable of applying mathematical reasoning in both academic and real-world contexts.

4. Implications for SMA Negeri 1 Teluk Dalam

At SMA Negeri 1 Teluk Dalam, Nias Selatan, the implementation of mathematics learning based on local wisdom can be tailored to the local cultural context. For example, integrating Nias cultural values into the learning materials such as geometric patterns in traditional weaving or the structure of customary buildings is expected to enhance students' understanding and interest in mathematics. This approach also strengthens students' cultural identity and fosters pride in their local heritage. By making mathematics learning culturally relevant, students can connect academic content with their everyday lives, which

promotes meaningful learning experiences. Additionally, embedding local wisdom into the curriculum supports character development, particularly fostering independence and self-confidence. Thus, this culturally grounded strategy offers a valuable pathway to improve both educational outcomes and cultural preservation within the school environment.

Discussion

1. Integration of Local Wisdom in Mathematics Learning

The integration of local wisdom in mathematics learning can enhance the relevance of the material for students. For example, the development of mathematics modules based on local wisdom in Bima successfully improved students' numeracy skills, with an average class score of 16.41 and a classical learning completeness rate of 82.08%. Similarly, the implementation of local wisdom-based learning through an online system at SMP Negeri 5 Singaraja showed an increase in the mathematics achievement of eighth-grade students. These examples highlight how incorporating cultural elements into mathematics education can contextualize abstract concepts, making them more accessible and engaging. By linking mathematical content with students' cultural backgrounds, this approach not only supports academic achievement but also fosters meaningful connections between learning and local identity, which is crucial for motivation and deeper understanding.

At SMA Negeri 1 Teluk Dalam, Nias Selatan, a similar approach can be adapted to the local Nias culture, such as incorporating geometric patterns found in traditional weaving or the structures of customary buildings. This integration can



make mathematics content more meaningful and easier for students to understand. By connecting mathematical concepts to tangible cultural artifacts familiar to students, the learning process becomes more relevant and engaging. This contextualization helps bridge the gap between abstract math ideas and real-life applications rooted in the students' environment. Additionally, such an approach fosters cultural appreciation and pride, reinforcing students' sense of identity while simultaneously enhancing their mathematical skills. Ultimately, adapting local wisdom in this way offers a promising strategy to improve both comprehension and motivation in mathematics learning at SMA Negeri 1 Teluk Dalam.

2. Impact on Interest and Learning Motivation

Mathematics learning based on local wisdom also has a positive effect on students' interest and motivation. One study found that 76.16% of students showed high interest in mathematics lessons that integrated local wisdom, and all students achieved learning mastery. This approach helps to reduce students' negative perceptions of mathematics and increases their engagement in the learning process. By connecting mathematical concepts with familiar cultural contexts, students find the material more relatable and less intimidating, which fosters a more positive attitude toward the subject. The increased motivation and interest contribute to better participation, persistence, and overall academic success. Such findings suggest that incorporating local cultural elements into mathematics education can be an effective strategy to overcome common challenges in teaching math, especially in areas where students often struggle with

abstract concepts and lack of relevance in the curriculum.

At SMA Negeri 1 Teluk Dalam, this approach can be used to connect mathematical concepts with students' daily lives, such as calculations involved in traditional ceremonies or local arts. By relating math lessons to these familiar cultural practices, students are more likely to develop greater interest and motivation in learning. This contextualization makes abstract mathematical ideas more tangible and relevant, encouraging students to actively engage and see the practical value of what they are studying. Moreover, integrating local traditions into the curriculum helps students appreciate their heritage while simultaneously fostering a positive attitude toward mathematics. Such an approach not only supports academic achievement but also nurtures students' cultural identity and personal motivation, which are essential for meaningful and sustained learning.

3. Development of Learning Independence

The integration of local wisdom in mathematics learning can foster students' learning independence. By connecting mathematical concepts with local culture, students are encouraged to develop critical and creative thinking skills, as well as boost their confidence in solving mathematical problems. This approach allows students to relate abstract ideas to tangible cultural practices, making learning more meaningful and accessible. Research supports that ethnomathematics-based approaches effectively enhance students' problem-solving abilities by encouraging them to explore and apply mathematical concepts within familiar contexts. Such methods not only improve academic performance but also empower students to take ownership of



their learning process, promoting autonomy and self-regulation. Ultimately, incorporating local wisdom into mathematics education helps build independent learners who are capable of thinking deeply and creatively while appreciating their cultural heritage.

At SMA Negeri 1 Teluk Dalam, the implementation of this approach can involve actively engaging students in exploring local culture related to mathematics. For instance, students can study and calculate patterns found in traditional carving arts or analyze the structural designs of customary buildings. By linking these cultural elements with mathematical concepts, students are given the opportunity to learn independently within a meaningful, contextual framework. This hands-on, culturally relevant exploration encourages students to take initiative in their learning, developing autonomy and problem-solving skills as they relate abstract math principles to real-world examples from their own community. Such an approach not only enhances understanding and retention of mathematical concepts but also nurtures students' appreciation of their cultural heritage. Ultimately, this method supports the goal of fostering independent, confident learners who are motivated to engage deeply with both mathematics and their local culture.

4. Implications for SMA Negeri 1 Teluk Dalam

At SMA Negeri 1 Teluk Dalam, the implementation of mathematics learning based on local wisdom can be adapted to the specific cultural context of the region. For example, integrating Nias cultural values into the learning materials such as geometric patterns found in traditional weaving or the

structural designs of customary buildings can enhance students' understanding and interest in mathematics. This culturally relevant approach makes abstract mathematical concepts more tangible and relatable by connecting them with familiar local practices. Moreover, incorporating local wisdom into the curriculum serves not only to improve academic outcomes but also to strengthen students' cultural identity. It fosters a sense of pride in their heritage, encouraging students to appreciate and preserve their community's traditions. Consequently, this approach supports holistic education by simultaneously developing cognitive skills and reinforcing character values rooted in local culture.

Furthermore, the implementation of learning based on local wisdom can significantly enhance student engagement in the learning process, as the material taught becomes more relevant and connected to their daily lives. When students perceive the content as meaningful and relatable, their intrinsic motivation to learn tends to increase, which in turn fosters greater independence in their learning journey. This relevance encourages students to take initiative, manage their own learning, and persist in problem-solving tasks without over-reliance on teachers. Additionally, integrating local cultural contexts into mathematics education helps develop critical and creative thinking skills. By exploring real-world problems rooted in their cultural environment, students are challenged to analyze, reason, and innovate, which not only improves their academic performance but also prepares them for lifelong learning. This holistic approach supports the growth of autonomous learners who are confident, culturally aware, and capable of adapting to complex situations.



D. Conclusion

Based on the results of the literature review, it can be concluded that local wisdom plays a significant role as a means of fostering student independence in mathematics learning. The integration of local cultural values and traditions into mathematics education not only enhances students' understanding of mathematical concepts in a more contextual and meaningful way but also significantly cultivates their motivation and interest in learning. Local wisdom, such as geometric patterns in traditional weaving, customary measurement systems, and the life philosophies of the Nias Selatan community, can serve as rich and relevant learning resources connected to students' everyday experiences. By embedding these elements into the curriculum, educators can create a more engaging and culturally grounded learning environment that supports the development of autonomous learners who are capable of critical thinking and problem-solving, while also nurturing their cultural identity and pride.

Furthermore, the implementation of mathematics learning based on local wisdom encourages students to think critically and creatively while independently honing their problem-solving skills. This approach aligns with the national education goals of developing students' independent character. By understanding and applying mathematical concepts through the lens of local wisdom, students not only master academic content but also cultivate confidence and self-reliance in their learning processes. Integrating culturally relevant materials allows learners to connect abstract mathematical ideas with familiar real-world contexts, fostering deeper comprehension

and engagement. Consequently, this pedagogical strategy not only enhances cognitive abilities but also supports the holistic development of students as autonomous learners who can confidently navigate challenges both within and beyond the classroom.

However, the available literature remains limited specifically within the context of the South Nias region, highlighting the necessity for field research and direct implementation to more thoroughly and comprehensively assess the effectiveness of this approach. This limitation underscores the importance of collaboration among educators, researchers, and local communities to develop authentic learning models that align with the unique cultural characteristics of the area. Such partnerships are essential to ensure that the integration of local wisdom into mathematics education is not only theoretically sound but also practically relevant and sustainable. By engaging stakeholders in the co-creation process, educational strategies can be tailored to address local needs and values, thereby enhancing both the academic outcomes and cultural identity of students. Future studies are therefore encouraged to adopt a participatory approach to validate and refine these pedagogical innovations in real classroom settings.

Recommendations

Based on the conclusions, the following recommendations are proposed:

1. Development of Local Wisdom-Based Learning Modules

SMA Negeri 1 Teluk Dalam is advised to develop and implement mathematics learning modules that integrate the local wisdom of South Nias, such as traditional weaving motifs, customary traditions, and



geometric patterns found in the local culture. These modules should be carefully designed to align with the national curriculum while emphasizing the richness of regional culture as the contextual basis for learning. Incorporating culturally relevant content will not only make mathematics more meaningful and engaging for students but also foster pride in their local heritage. Furthermore, such modules can serve as effective tools for promoting independent learning and strengthening students' critical and creative thinking skills by connecting mathematical concepts to real-life cultural contexts.

2. Teacher Training and Capacity Building

Mathematics teachers at SMA Negeri 1 Teluk Dalam should receive specialized training focused on local wisdom-based teaching methods and how to effectively utilize surrounding cultural resources to support independent and meaningful learning. This capacity building is essential for equipping teachers with the skills and knowledge needed to design innovative and contextually relevant instructional strategies. By understanding how to integrate local cultural elements into mathematics lessons, teachers can create more engaging learning experiences that resonate with students' daily lives and cultural backgrounds. Furthermore, well-trained teachers will be better prepared to foster student autonomy, critical thinking, and creativity, ultimately enhancing the overall quality of mathematics education at the school. Continuous professional development and collaboration among educators are also recommended to sustain and improve the implementation of these culturally responsive teaching practices.

3. Further Research and Implementation Studies

There is a need for field research that focuses specifically on the direct implementation of local wisdom-based mathematics learning at SMA Negeri 1 Teluk Dalam to measure the real impact on students' learning independence. Such research should employ a mixed methods approach, combining both quantitative and qualitative data collection techniques to provide a comprehensive understanding of the outcomes. Quantitative data can offer measurable evidence of improvements in student performance and autonomy, while qualitative data can capture the experiences, perceptions, and challenges faced by both students and teachers during the learning process. This approach will enable researchers and educators to assess the effectiveness of integrating local cultural values into mathematics education and to identify best practices for fostering independent learning. Ultimately, these studies can inform the development of culturally relevant pedagogical models that are both practical and sustainable in the local context.

4. Collaboration with Local Communities

It is recommended that the school establish partnerships with local traditional leaders and cultural communities in Nias Selatan to ensure that the integration of local wisdom into the curriculum is genuinely authentic and sustainable. Active participation from the community can enrich the learning materials by providing firsthand knowledge, stories, and practices that reflect the region's cultural heritage. Such collaboration not only enhances the relevance and depth of educational content but also plays a vital role in preserving and promoting local traditions. By involving cultural custodians and community members, the school can create a dynamic



learning environment where students gain a deeper appreciation for their cultural identity while developing academic skills. This approach fosters a sense of belonging and pride among students, strengthens community ties, and supports long-term cultural sustainability alongside educational development.

5. Development of Independent Character as an Educational Goal

Beyond cognitive aspects, learning should emphasize the development of students' independent character by utilizing the values of local wisdom as a foundation for moral and ethical guidance in both learning and daily life. Integrating local cultural values into education helps students internalize principles such as responsibility, discipline, and cooperation, which are essential for fostering autonomy and self-regulation. These values not only support academic success but also prepare students to face real-world challenges confidently and ethically. By grounding character education in the cultural context familiar to students, the learning process becomes more meaningful and impactful. This holistic approach aligns with national education goals, aiming to cultivate lifelong learners who are not only knowledgeable but also independent, resilient, and socially responsible individuals.

With such a holistic and contextual approach, it is expected that mathematics learning at SMA Negeri 1 Teluk Dalam will not only improve students' academic achievements but also shape individuals who are independent, creative, and possess a strong cultural identity. By integrating local wisdom and cultural elements into the curriculum, the learning experience becomes more relevant and engaging for students, allowing them to connect

mathematical concepts with their everyday lives and heritage. This method fosters critical thinking, problem-solving skills, and self-confidence, which are essential for lifelong learning. Moreover, nurturing a strong cultural identity helps students develop pride in their roots and encourages the preservation of local traditions. Ultimately, this comprehensive educational approach supports the formation of well-rounded individuals who can contribute positively to their communities while succeeding academically and personally.

E. References

Dazrullisa (2023) examines the impact of incorporating local wisdom into mathematics learning on students' interest in the subject. The study, published in *Genta Mulia Journal* (Vol. 9, Issue 2), highlights how cultural integration can enhance student engagement.

<https://doi.org/10.61290/gm.v9i2.547>

Dede Rua, Fono, and Wewe (2023) explore ethnomathematics-based teaching methods within educational institutions, emphasizing culturally relevant approaches to mathematics learning in their article in *Citra Magang dan Persekolahan Journal* (Vol. 3, Issue 1).

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