



# Innovation in animation-based learning media with local wisdom: a strategy for character education in students in the digital era

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## ABSTRACT

This article examines the need for innovation in animation-based learning media grounded in local wisdom as a strategy to strengthen character education in the digital era. The research problem addressed is the lack of culturally relevant digital learning media that effectively instills character values in students. This study employs a qualitative descriptive approach through a systematic literature review of 15 peer-reviewed journals selected based on relevance, publication credibility, and focus on local wisdom integration in education. Content analysis was used to categorize themes related to the role of animation in enhancing student engagement, cultural identity, and character development. The findings indicate that animation-based learning media incorporating local wisdom can improve students' understanding of cultural heritage while fostering values such as cooperation, mutual respect, and responsibility. Specifically, studies reviewed show that students exposed to culturally relevant animations demonstrate increased interest in learning, stronger emotional connections to the content, and improved retention of moral lessons. Furthermore, this approach supports the preservation of cultural values amidst globalization by reinforcing pride in local traditions and encouraging intergenerational knowledge transfer. Despite these benefits, challenges remain in terms of accessibility, digital literacy among educators, and the need for collaboration between cultural experts and multimedia developers. Future research should explore empirical case studies measuring the direct impact of local wisdom-based animation on students' character formation. This innovation presents a viable solution for developing an academically proficient generation deeply rooted in ethical and cultural values.



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## 1. Introduction

The rapid development of digital technology in this era has brought significant changes to the field of education, both in terms of learning methods and the influence of global culture. In the digital era, human lifestyles are inseparable from various electronic devices such as televisions, computers, and smartphones [1], [2], [3]. The technological advancements in Indonesia have significantly impacted values across various sectors, including economics, politics, society, culture, and education [4], [5], [6]. This is evident from the universal use of technology, enabling individuals of all ages to interact easily. Technology has become a tool that aids humans in completing tasks across different aspects of life. On one hand, digital technology enables the creation of more interactive, flexible, and accessible learning methods. E-learning platforms, technology-based learning applications, and interactive animations allow students to

learn anytime and anywhere while enhancing their understanding through engaging visualizations [7], [8]. On the other hand, the global cultural influence accompanying technological advancements often dominates the digital content accessed by students. This can blur local cultural identities as students are more exposed to foreign cultural values than their own traditions and norms. As Sapan found, one concerning the negative impact of technology in the digital era on children's development is its detrimental effect on their character, respect, and manners. Children at an early age are highly vulnerable to external influences, and without proper management, these effects can persist into adulthood [9]. Given this dual impact of technology, a more targeted approach is needed to ensure that digital learning tools reinforce local cultural values rather than displace them. Future studies should explore effective integration strategies for technology and local wisdom to prevent the dilution of cultural identity while optimizing learning outcomes.

Imawan explained in his research that the biggest challenge in education today is the character issues of students, which are evident from the elementary level. Many elementary school children own smartphones, distancing them from their typical childhood experiences. Negative effects include laziness, antisocial behavior, and dependency on phones, leading to the neglect of character education [10]. Consequently, character education, which should be instilled early, is often overlooked, resulting in a generation lacking moral and social values. Saodah also reported that, alongside its benefits, globalization negatively impacts education, particularly the decline in students' moral quality [11]. Free internet access exposes students to negative content such as pornography and inappropriate material on social media without filters. This threatens Indonesian culture, diminishing nationalism and family values and fostering a Westernized lifestyle. The erosion of local wisdom values among students in the digital and globalized era has become an increasingly urgent issue. The rapid flow of information and global culture through digital technology often displaces the values passed down through traditions, customs, and norms by more popular and instant foreign influences. Children and adolescents, as the primary users of technology, are more exposed to content that does not align with their cultural identity, reducing their appreciation of local wisdom values such as cooperation, courtesy, and respect for ancestors [12], [13], [14]. This situation is exacerbated by the lack of systematic efforts to integrate local cultural values into formal education, depriving students of opportunities to understand and internalize their cultural heritage. Without immediate action, this situation may lead to the erosion of cultural identity and the weakening of students' character in facing global challenges.

This impact underscores the importance of educational strategies that combine technological utilization with learning innovations while preserving local cultural values. Thus, education should focus on developing students' technical skills and strengthening their cultural identity. Through wise technology integration, students can enjoy digital advancements without sacrificing the cultural heritage that forms part of their identity. Therefore, character education becomes essential, as it teaches students to value and preserve local values while preparing them to face global challenges with confidence and self-awareness [15], [16], [17]. Character education plays a crucial role for students, especially in the current digital era. Amid the massive flow of information and the increasingly dominant global culture, character education provides a foundation for building moral values, ethics, and positive attitudes [18]. With strong character education, students can use technology wisely, continue to value local values and maintain integrity and responsibility in their daily lives. It is, therefore, essential to utilize digital-based teaching media that facilitates effective learning and instills character education. Students can develop technical skills by integrating character values into learning through digital media while strengthening their understanding and practice of moral, ethical, and cultural values [19]. This will help students become technologically competent individuals with strong personalities and awareness of their cultural identity.

Given these issues, innovation in education is necessary by developing animation-based learning media rooted in local wisdom. This media aims to reintroduce fading cultural values while building students' character in the digital era. By combining modern technology and local values, this media can effectively attract students' interest, strengthen cultural identity, and address the negative impacts of globalization and unfiltered information flows. Digital-based learning media can be an effective tool to enhance students' learning interests [20]. This media presents materials interactively and engagingly, allowing students to be more involved in

learning. Additionally, the visualizations and animations in digital media can help students understand concepts more easily and deeply, making learning more enjoyable and meaningful. Previous studies have shown that digital-based learning media can effectively increase students' learning interest and engagement. For instance, Melati demonstrated that animation has great potential to enhance students' motivation, engagement, creativity, and personalized learning [16]. Research by Alga emphasized that digital learning media improves students' understanding and enriches their overall learning experience [17]. Digital-based learning has shown improved learning outcomes and motivation compared to conventional methods. Furthermore, it revealed that students' responses to animated video products were overwhelmingly positive, with a rating of "Very Good." Similarly, teacher feedback on the use of animated video media in learning also received excellent ratings. Lastly, subject matter experts' animated video media feasibility assessment also yielded very good results. Thus, implementing animation-based learning media infused with local wisdom presents a viable solution to current educational challenges. By bridging the gap between traditional values and digital innovation, this approach ensures that students develop both academic competence and a strong character rooted in cultural heritage.

## 2.Method

This study employs a qualitative descriptive method with a systematic literature review approach [21] to analyze local wisdom-based animated learning media innovations for strengthening character education in the digital era. Fifteen selected journals were used as primary references based on systematic criteria that focused on animation technology, character education, and local wisdom [22]. The selection process involved peer-reviewed journal articles published between 2019 and 2024, particularly those discussing digital learning media, animation-based approaches, and the integration of local values in education [23]. Data collection was conducted through an in-depth literature review using academic databases such as Google Scholar, Scopus, and Web of Science, Fig 1 Steps of Literature Review. The study employed content analysis techniques to examine patterns, themes, and relationships between animation-based media and the character education approach [24]. The analysis followed several stages, including thematic coding to identify key themes, comparative analysis to find common trends across studies, and synthesis and interpretation to develop a coherent framework explaining how animation-based learning can strengthen students' character. To ensure the validity and reliability of findings, this study implemented source triangulation, reflexivity, and peer review. Triangulation was conducted by cross-referencing multiple studies, while reflexivity involved documenting reflections to minimize bias. Additionally, peer review with education and digital learning media experts was conducted to validate the interpretations and maintain objectivity [25], [26], [27]. As the researcher acted as a human instrument in analyzing and interpreting the data, steps were taken to manage subjectivity and enhance credibility. These included maintaining transparency in data selection, systematically following predefined analytical frameworks, and ensuring that conclusions were grounded in empirical evidence. By employing these rigorous procedures, this study provides a reliable and structured examination of how local wisdom-based animated learning media can contribute to character education in the digital era.

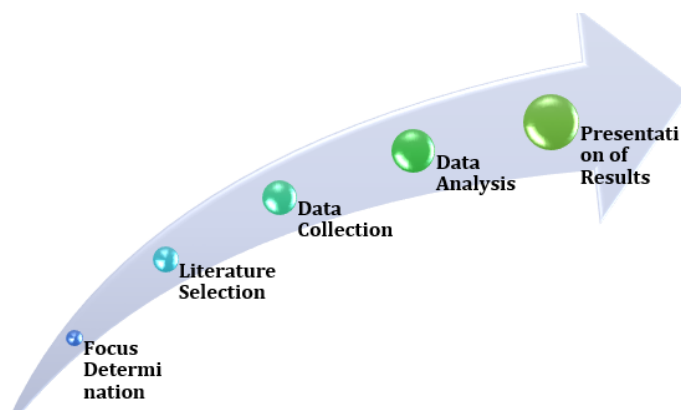


Fig. 1. Steps of Literature Review [28]

### 3. Results and Discussion

#### 3.1 Utilization of Animation in Learning

The use of animation in learning has proven to be effective in increasing student interest and understanding of the material being taught. Animation can present information in a visual and dynamic way, making it easier for students to understand difficult or abstract concepts [29]. In the context of education, animation offers the advantage of simplifying material explanations more interactively and engagingly compared to traditional teaching methods. Students can see visual representations of processes or ideas that may be difficult to explain with words alone, such as in subjects like science, mathematics, or history. Using animation aids in more varied and creative learning, which can enhance student motivation. The use of characters, stories, and attractive visuals in animation can create a more enjoyable and less monotonous learning atmosphere. This is particularly important in the digital age, where students are increasingly accustomed to technology and more interactive media [3]. By utilizing animation in learning, teachers can deliver content efficiently that addresses various learning styles, making the learning experience more effective and impactful. Furthermore, the self-determination theory by Deci & Ryan highlights the importance of motivation in learning, emphasizing that engaging and interactive materials can enhance students' intrinsic motivation [30]. The use of animation, with its compelling narratives, relatable characters, and visually appealing elements, creates a stimulating learning environment that fosters curiosity and sustained attention. Given that modern students are accustomed to digital and multimedia content, animation serves as an effective instructional tool that caters to diverse learning styles, making the learning experience more engaging, efficient, and impactful.

Animation-based learning media can help students understand the material better, as animation can present complex concepts in a visual form that is easier to digest [31]. In learning, media serves as a tool to facilitate the delivery of information, bridge understanding, and increase student engagement. With animation media, students can visualize topics being taught, such as processes or systems that are difficult to explain with text or lectures alone, allowing them to grasp the material in a more comprehensive manner. Animation-based learning media can also facilitate more interactive, engaging, and dynamic learning. This increases motivation and interest in learning, especially in the digital age, where students are more familiar with visual technology. Additionally, animation media can be adapted for various types of material and learning styles, making it an essential element in the learning process that supports understanding and fosters creativity and problem-solving skills. Therefore, animation media plays a vital role in creating effective and enjoyable learning experiences. Based on the literature review results, several conclusions can be drawn, as outlined in Table 1.

**Table 1.** Shows that animation-based learning media

Aspect	Explanation
Visualization of complex concepts	Animation presents difficult-to-understand concepts in a visual form that is easier to digest.
Interactivity	Animation media allows students to actively engage with the material through interactive elements.
Motivation and engagement	The use of animation makes learning more interesting, increasing interest and learning motivation.
Deeper understanding	Animation helps students understand the material more comprehensively, facilitating better comprehension.
Flexibility and variation	Animation can be adapted to various types of material and learning styles, offering diverse approaches.
Dynamic learning	Animation helps deliver material more dynamically, reducing boredom during the learning process.

Table 1 shows that animation-based learning media plays a crucial role in improving students' understanding of the material being taught. This aligns with research that demonstrates animation's ability to transform how students interact with difficult or complex concepts, such as science, mathematics, or history. The visual presentation of information, a hallmark of animation, makes it easier for students to understand topics that may be challenging to grasp through text or verbal explanations. By using moving images and visual illustrations, animation clarifies abstract concepts in a more concrete and fluid way, facilitating deeper understanding. Moreover, animation provides a more interactive and engaging learning



experience. This interactivity boosts students' motivation to learn, creating a dynamic environment that stimulates their curiosity. The visual appeal of characters and stories in animations also reduces boredom in learning, leading to increased student engagement and motivation to learn. This contributes to a better understanding of the material through active involvement in the learning process. The flexibility of animation also allows for adaptation to various types of learning material and student learning styles. Animation can be tailored to meet the needs and abilities of different students, making it an incredibly effective medium for creating inclusive and personalized learning experiences. Therefore, animation supports academic understanding, fosters creativity, enhances problem-solving skills, and boosts critical thinking abilities [32], [33], [34].

In the context of today's digital era, where technology is an integral part of students' daily lives, animation is highly relevant as a medium that aligns with the characteristics of the younger generation's learning style. Animation-based media strengthens the relevance of learning in a fast-paced and interactive digital world. Thus, animation enriches the learning experience and prepares students to face the challenges of an ever-evolving digital world. Overall, this analysis emphasizes the importance of animation in education as a tool that enhances students' understanding, increases motivation, and adapts to the demands of the digital age, making it a valuable element in creating effective and enjoyable learning experiences.

### **3.2 Integration of Local Wisdom in Learning**

Integrating local wisdom in learning is essential for preserving cultural identity and strengthening students' character education. According to constructivist learning theory Piaget and Vygotsky, students actively build knowledge based on their experiences and cultural backgrounds [35], [36]. Integrating local wisdom into learning allows students to connect new knowledge with their existing cultural understanding, making learning more meaningful and personally relevant. The integration of local wisdom in learning is essential for preserving cultural identity and strengthening students' character education. Local wisdom encompasses values, traditions, and policies passed down from ancestors and has become a part of community life. In the context of education, integrating local wisdom can help students better understand and appreciate their own culture while developing a character based on moral and social values that are relevant to their society. Learning media, such as animation based on local wisdom, can present learning materials more engagingly and make it easier for students to understand [37], [38]. Local stories filled with moral messages, ethics, and social values can be used to teach students character. For example, animations depicting stories of heroism or local wisdom can teach values such as cooperation, respect, and responsibility, which are essential in shaping students' character. Furthermore, the integration of local wisdom also makes learning more relevant and meaningful for students, as they can see the connection between what they learn and their daily lives. This fosters a sense of pride in local culture and raises awareness of the importance of preserving these values amidst the forces of globalization. Local wisdom can also serve as a context to link the theories or concepts taught to the realities of students' everyday lives, making learning more meaningful [39], [40], [41]. Local wisdom also functions as an equivalent of national character values, which can be applied in teaching to shape positive student attitudes and behaviors, such as mutual cooperation, respect, and responsibility. Moreover, local wisdom can be applied in the steps of the learning process, such as in the methods, strategies, and media used, to create a more holistic, engaging, and culturally relevant learning experience for students. Thus, integrating local wisdom in learning enriches the learning experience and strengthens the foundation of character education for students.

### **3.3 Character Education through Animation Media**

Character education through animation media effectively teaches students moral, ethical, and social values [42], [43]. Animation media can bring to life stories and concepts related to characters, such as honesty, responsibility, cooperation, and respect, in an engaging and easily understandable way. Animations depicting everyday situations or local stories rich with moral messages can help students see how character values are applied in practical contexts. Animation has strong visual appeal, making it an effective tool for reinforcing students' understanding of character education content. By portraying exemplary characters, animations teach students what should be done and inspire them to imitate good behavior. Additionally, animation media allows students to see different perspectives in dealing with problems, helping

them develop empathy and the ability to make wise decisions. The use of animation media in character education also provides a more dynamic and interactive learning experience, which can enhance students' motivation and engagement [34]. Through engaging visual elements and easily followed storylines, students can more easily connect with the messages being conveyed, making the internalization of character values more effective. Therefore, animation media has become a valuable tool for teaching character education in the digital age. Based on the literature review, several conclusions can be drawn, as outlined in Table 2.

**Table 2.** Illustrates how animation media can teach students various character aspects

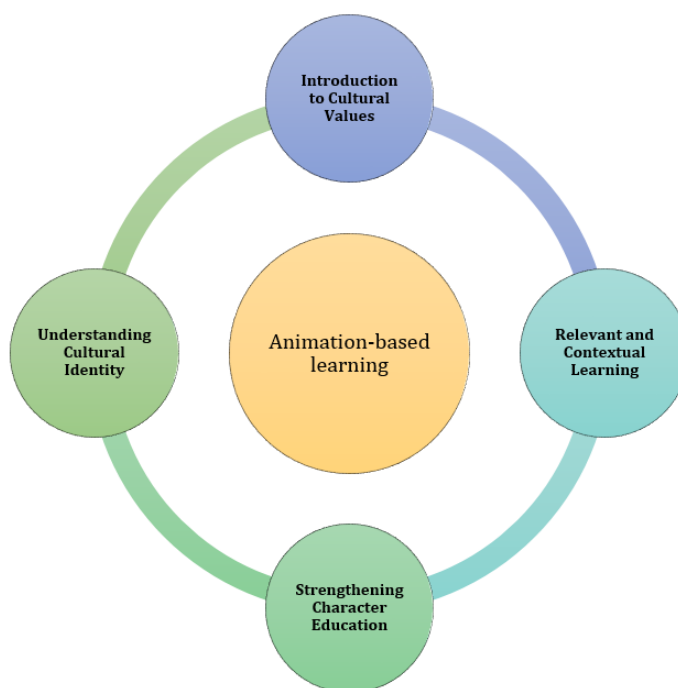
Character Aspect	Example In Animation Media	Learning Outcome
Honesty	A character who always tells the truth, even when facing challenges.	Students understand the importance of speaking truthfully in everyday life.
Responsibility	A character who is responsible for tasks and promises made	Students learn to complete tasks well and on time.
Cooperation	A character who works together with friends to achieve a common goal.	Students can collaborate and work together in groups or teams.
Respect	A character who respects differences and treats others kindly.	Students develop mutual respect in school and family environments.
Empathy	A character who shows concern for the feelings of others.	Students understand the importance of empathy and can respond to others' feelings wisely.
Independence	A character who is independent in making decisions and solving problems.	Students learn to become more independent and handle challenges well.
Discipline	A character who follows rules and maintains order in various situations.	Students demonstrate discipline in daily activities and respect rules.

Table 2 illustrates how animation media can teach students various character aspects, with each aspect having expected learning outcomes. Through animation, values such as honesty, responsibility, cooperation, respect, empathy, independence, and discipline can be conveyed engaging and easily understandable. For example, an animation depicting a character who always tells the truth despite facing challenges can help students understand the importance of honesty in daily life. Similarly, responsibility can be taught through animations showing characters who complete tasks effectively. Through stories that depict how characters work together, respect differences, and show concern for others, cooperation, respect, and empathy can be taught. Furthermore, the animation also effectively teaches values of independence and discipline, with characters showing how to overcome challenges independently and follow rules with discipline. Overall, the use of animation media in character education makes learning more engaging and more effective in shaping positive attitudes and behaviors in students.

### 3.4 Benefits of Animation-Based Learning with Local Wisdom

Animation-based learning with local wisdom offers various important benefits in educating students. First, animations that integrate local wisdom can introduce cultural values and traditions that have been passed down through generations to the younger generation [33], [44]. Through local stories rich with moral and ethical messages, students can understand and appreciate the importance of preserving and safeguarding their cultural heritage. Second, animation media based on local wisdom provides a more relevant and contextual learning experience for students, as they can see the direct connection between the learning material and the every day Benefits of Animation-Based Learning with Local Wisdom lives, see Fig. 2. Additionally, the use of animation allows students to learn more interactively and engagingly, which can boost their motivation and involvement in learning. Animations depicting character values, such as cooperation, mutual respect, and responsibility, can strengthen character education for students [2]. Learning based on local wisdom also encourages students to better understand their cultural identity, which fosters pride in their local culture. Another benefit of animation-based learning with local wisdom is its ability to create a more comprehensive and holistic learning experience. Animation can convey messages visually, audibly, and narratively, facilitating students' understanding and reinforcing the teaching of critical social values essential for building national character [32], [45]. Thus, animation-based learning with local wisdom becomes an effective tool in supporting holistic education, enriching cultural

awareness, and shaping a strong character in the younger generation. Here are some benefits that highlight the advantages of animation-based learning with local wisdom:



**Fig. 2.** Animation Based Learning

- **Introduction to Cultural Values:** Animation based on local wisdom plays a vital role in introducing students to cultural values and traditions passed down by their ancestors. Students can more easily understand and appreciate this cultural heritage through stories or visual images depicting cultural aspects. In this way, they learn about their culture and begin to appreciate and preserve it. This type of learning helps instill pride in their local cultural identity and the importance of its preservation amid the growing influence of globalization.
- **Relevant and Contextual Learning:** Students can see how the material being taught directly relates to their daily lives by integrating local wisdom into learning. This makes the learning more relevant, as they can link the theories or concepts they learn to real-life experiences or situations they encounter. This contextual learning deepens students' understanding of the material and increases the meaning and value of each lesson, making learning more applicable and beneficial.
- **Strengthening Character Education:** Animation can effectively teach character values, such as cooperation, mutual respect, and responsibility, in an engaging and easily understandable way for students. Through animated stories depicting real-life situations, students can see how the characters apply these values in their daily actions. This makes it easier for students to understand and internalize moral concepts, as they can see real examples in a fun and memorable form. In this way, animation educates and inspires students to adopt positive behaviors in their lives.
- **Understanding Cultural Identity:** Learning based on local wisdom plays an important role in encouraging students to better understand and recognize their cultural identity. By studying the values, traditions, and wisdom embedded in local wisdom, students can better appreciate and realize the importance of the culture around them. This enriches their knowledge of local culture and fosters pride in their cultural heritage. As a result, students become more connected to their culture and more motivated to preserve and pass on these traditions to the next generation.

Animation media based on local wisdom is vital in strengthening character education among students, particularly in today's digital era. Interactive and engaging animation allows students to understand and internalize local cultural values that are part of their identity [46], [47], [48]. By integrating local wisdom into the learning materials, animation can depict stories that carry

moral and ethical messages relevant to students' daily lives. This helps them see the direct connection between these cultural values and their actions or behaviors in their social contexts. Additionally, the use of animation based on local wisdom also contributes to enriching students' knowledge of their culture and fostering pride in their cultural identity. Such learning helps students become more familiar with their culture and encourages them to preserve and maintain it. In this way, animation media does not just function as a tool for delivering information but also as an effective means of shaping students' character based on strong local cultural values, which in turn can strengthen their love for their homeland and pride in their cultural heritage. The use of animation based on local wisdom in education focuses on cultural recognition and shaping students' character. Animations that contain moral and ethical messages, such as cooperation, respect, and responsibility, can effectively teach character values. Through stories that depict real-life situations, animation provides concrete examples of how these values are applied in everyday life. This makes it easier for students to understand and relate character values to their own experiences. The values taught in animations become easier to grasp and internalize because animation provides appealing visual representations. The visuals, in the form of images and dynamic movements, reinforce students' understanding of the messages being conveyed. Furthermore, by using story elements that trigger empathy and reflection, students can more easily absorb the moral values embedded in the story [49], [50], [51].

Animation also makes learning materials more relevant and meaningful in the context of students' daily lives. By depicting situations they encounter in real life, animation helps connect learning with their experiences, making students feel more engaged and motivated. This also makes learning more enjoyable and engaging, enhancing its effectiveness in teaching character and positive values necessary for forming a virtuous generation. Therefore, animation based on local wisdom does not only serve as a medium for delivering information but also as an effective tool for shaping strong and culturally grounded student characters. Students learn the material through animation and receive important moral messages for their character development. Animations that highlight local wisdom can shape positive student attitudes, such as a sense of responsibility, cooperation, and appreciation for the cultural values present in society [7], [52], [53], [54], [55], [56]. Furthermore, learning based on local wisdom plays a crucial role in preserving local culture amidst the increasingly strong forces of globalization [57]. In the face of modernization and rapid technological advancement, many cultural values are beginning to erode under the influence of global culture. By integrating local wisdom into education through animation media, local cultures can remain relevant and be passed on to future generations. This type of learning helps students better recognize and understand their culture, positioning them as agents of change who can preserve cultural heritage. Integrating cultural values into animation-based education also encourages students to better appreciate diversity and build positive relationships with the surrounding community. By understanding and appreciating local culture, students become more attuned to their cultural environment and are better prepared to interact harmoniously with society. Through this process, character education based on local wisdom can produce a knowledgeable generation that possesses positive attitudes to contribute to societal progress and the preservation of culture.

#### 4. Conclusion

Based on the research conducted through a literature study, the findings indicate that using animation media based on local wisdom has significant potential to strengthen student character education. Integrating local cultural values into learning materials helps students understand and appreciate their cultural heritage and fosters pride in their cultural identity. Through animations that depict stories with relevant moral messages, students can more easily understand character values such as cooperation, respect, and responsibility. Moreover, animation media's engaging and interactive nature makes the material more meaningful and relevant to students' daily lives. The importance of learning based on local wisdom is also evident in its role in preserving local culture amid the influence of globalization. By ensuring that cultural values are passed down through enjoyable and easily understood learning experiences, students are encouraged to maintain and preserve these traditions. Learning that integrates local wisdom also strengthens cultural knowledge and contributes to character development by promoting positive attitudes such as responsibility and empathy toward the



surrounding community. However, it is important to recognize the limitations of this study. The effectiveness of local wisdom-based animation in character education may vary depending on factors such as the quality of animation production, the level of student engagement, and the learners' cultural context. Additionally, while animation can be an effective supplementary tool, it should be integrated with other pedagogical approaches to achieve comprehensive character education. Therefore, although local wisdom-based animation shows promise as an educational medium, further empirical studies are needed to evaluate its long-term impact on students' character development and cultural awareness.

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