

An Exploration of Elementary School Students' Experiences in Using Educational Game Apps to Increase Empathy

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ABSTRACT

Instilling empathy values from an early age is an important aspect in children's social-emotional development, especially at the elementary school level. Along with the advancement of digital technology, educational game applications are beginning to be used as learning media that are not only informative, but also emotionally transformative. This study aims to explore how the experience of elementary school students in using educational game applications can contribute to increased empathy. The method used is a qualitative approach through literature review of various relevant previous studies. The results of the study showed that educational games designed with strong narratives, role-play features, and social interaction in the game, were able to build emotional attachment of players to the characters, as well as facilitate perspective taking. This study concludes that interactive and meaningful educational games are effective in increasing the empathy of elementary school students by building emotional connectedness and social sensitivity, so that it becomes an important learning medium in character formation from an early age.

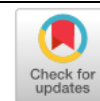
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INTRODUCTION

Education not only serves as a means of transferring knowledge, but it also plays an important role in shaping students' character and personality from an early age. Education is a means to instill moral values and the growth of individual social-emotional competence. One of the characteristics that individuals with social-emotional competence possess is empathy. Empathy is defined as the ability to recognize, understand, and feel emotions felt by others. (Susanti, 2024)

Empathy is an important foundation in creating a healthy, mutually respectful, and caring social environment. Empathetic skills are considered an important aspect in the formation of children's character so that they have the skills to identify other people's emotions which are subsequently related to cognitive abilities, such as taking a role in the situation they are facing (Aulia et al., 2024).

Empathy has a crucial role in elementary education because it helps students understand the feelings and perspectives of others, build healthy social relationships, and create a safe and inclusive learning environment. Children who are trained to empathize tend to exhibit prosocial behavior, avoid bullying, and are better able to work together in groups. Research shows that teachers who instill the value of empathy in the classroom can improve students' emotional well-being and create a positive learning climate, which has an impact on increased engagement and academic achievement.

However, in reality, there are still many students who show a lack of ability to understand the feelings of friends, behave rudely, or lack of concern for their social environment. In 2023, a total of 2,355 cases of violations against children occurred in Indonesia, of which 26% occurred at the elementary level, 25% at the junior high school level, and 18.75%

at the high school level (Fahham, 2024). From this data, as many as 285 cases of bullying occurred in 2023 and increased to 573 cases in 2024.

Developing empathy in children is not an instant process, but rather faces a number of challenges, especially in the primary education environment. One of the main challenges is the child's limited ability to recognize and manage his own emotions, which is a prerequisite for understanding the feelings of others. In addition, a less supportive family and social environment, such as a lack of empathetic role models from adults or exposure to verbal and physical violence, can hinder the development of empathy. In schools, the pressure of a curriculum that focuses on academic achievement often makes social-emotional aspects such as empathy less noticeable. Teachers also face difficulties if they do not have special training in social-emotional education, so strategies to cultivate empathy do not work optimally.

Based on research conducted by (Aulia et al., 2024), one of the indicators that must be a serious concern for the increase in bullying cases in the educational environment is the low empathy of students. Individuals who have low empathy will tend to have difficulty recognizing and understanding what victims of bullying or other violence are feeling. At elementary school age, children's understanding of other people's feelings or viewpoints begins to develop. Therefore, it is important to build empathy in children as a good character formation from an early age.

Research conducted by Rina Susanti (2024) shows that students who have empathy for others will excel academically, as well as become a generation that cares, has integrity and has responsibility for the welfare of those around them. In addition, life that is increasingly complex in the modern era increasingly demands that every individual have empathy from an early age. Likewise, elementary school-age children are very vulnerable to external influences. Therefore, it is important for the world of education to integrate the value of empathy into the learning of elementary school-age children so that it can equip students to interact socially in community life.

Therefore, both students and educators are expected to find the right solution to prevent and deal with the bad effects of low empathy possessed by students. This is an indicator that the educational approach applied needs to be evaluated and developed in order to be able to encourage the increase of student empathy effectively. Through the right educational approach, students will more easily internalize the importance of empathy in daily life.

Educational approaches that can increase the empathy of elementary school students are influenced by learning strategies that can guide children to understand the value of empathy. Currently, modernization has brought great influence in the world of education. One of them is the emergence of various digital technologies that support the teaching and learning process. Rapid developments in the field of information and communication technology open up great opportunities in education, including in the form of the use of applications (Susanti, 2024) *Game Education* as an innovative learning medium.

Modernization supports the integration of technology into the education system, which makes the learning process more interesting and contextual (Widowati & Suryaman, 2024). Through educational *game apps*, students can learn actively, independently, and in a fun atmosphere. In addition, educational *game* applications also allow for personalized learning, where materials can be tailored to individual ability levels and learning styles.

Modernization also affects the mindset and expectations of today's students. Generations that grow up in the digital era tend to be more responsive to visual, interactive, and technology-based learning. Educational game applications answer this need by presenting educational content in a format that suits the characteristics of the times. The learning process becomes more dynamic, collaborative, and experience-oriented, not just memorized.

Games are defined as complex activities that have rules, games, and culture (Najuah, Sidiq, & Simamora, 2022). In a game there are artificial conflicts and competitions where players have the opportunity to interact so that communication occurs. In the era of modernization, games lead to games that use electronic media, such as gadgets and

computers. Games that are used as learning media and intended as educational tools are known as educational games.

Educational games have instructions, tools, and game status that aim to provide learning with a learning by doing pattern (Najuah, Sidiq, & Simamora, 2022). Educational games tend to be made specifically in which they contain subject matter with the aim of improving students' skills. Through the use of educational games, teachers can convey material in a fun way so that students can receive the material well.

The development of technology in the modern era in such a way needs to be used to provide education that can develop a sense of empathy in children. Therefore, educational games can be used by teachers as a learning medium that is able to integrate the value of empathy in it. For elementary school-age children, learning packaged in the form of games is not only interesting, but also easier to absorb because it suits their cognitive and emotional characteristics.

Technology and educational games can be potential solutions in developing empathy in children, especially in today's digital era. Through interactive simulations, experiential narratives, and virtual role-playing, children can learn to understand other people's perspectives more deeply and emotionally. Educational games designed with a social-emotional approach allow children to deal with various social situations safely, reflect on their feelings, and make choices based on the values of empathy and care. In addition, technology provides broad and flexible access for teachers to integrate empathic learning into everyday classroom activities. Research shows that the proper use of digital media can improve children's social awareness and emotional skills, an effective tool to support character education from an early age.

However, according to (Najuah, Sidiq, & Simamora, 2022) educational games also have drawbacks that must also be considered. First, playing games at a frequent frequency can lead to addiction and dependency so that children can become lazy to do other activities. Second, playing games in the long run can also lead to health problems. Third, playing games with great intensity can have a psychological impact where children cannot distinguish between right and wrong behavior in real life. Fourth, the possibility of social isolation because children are too comfortable playing games so they perceive others as a nuisance.

Although empathy has been recognized as an important competency in primary education, there is still a gap in research on effective strategies to foster empathy, particularly through technology-based approaches and educational games. Many studies still focus on conventional interventions such as class discussions or counseling guidance, while the use of digital media as a means of social-emotional learning has not been explored optimally, especially in the context of basic education in Indonesia. In addition, there are still limited studies that integrate the perspectives of teachers, students, and technology developers holistically. Therefore, this literature study is needed to explore in depth the potential of educational technology in fostering empathy, as well as to identify challenges, opportunities, and future directions of research.

Based on this background, the researcher was interested in analyzing the experiences of elementary school students in using educational game applications to improve empathy. This study aims to explore in depth the experiences of elementary school students in using educational game applications to improve students' empathy. In addition, this study also aims to provide an overview of the effectiveness of educational technology approaches in the formation of students' character, especially empathy. This research is expected to contribute to the development of more holistic learning methods and oriented towards character formation of elementary school students.

METHOD

This study uses qualitative methods to gain an in-depth understanding of the experiences of elementary school students in using educational game applications to increase their empathy. The qualitative approach was chosen because it is able to explore the meaning

behind students' behaviors, interactions, and perceptions in a more contextual and comprehensive manner. The data collection technique used in this study is a literature study, namely by studying, reviewing, and analyzing various relevant literature sources. These sources include scientific journals, academic articles, reference books, and research reports that discuss topics related to student experience, the use of educational games, and the development of empathy in elementary school-age children. Literature search is carried out systematically, both manually through libraries and digitally through scientific databases.

This study uses a type of systematic literature study, which is characterized by a structured and criteria-based search process for library sources. The inclusion criteria in this study include articles discussing empathy, the use of educational games, and the experiences of elementary school students, published in the last five to ten years (2015–2024), and derived from credible academic sources. Meanwhile, articles that are irrelevant, unscientific, or unaccountable are excluded from the analysis. Literature sources are searched through various databases such as Google Scholar, Scopus, as well as manual searches through libraries. The data analysis process refers to the interactive analysis model of Miles and Huberman which consists of three main stages, namely: (1) data reduction, which includes the selection and simplification of relevant information; (2) data presentation, which systematically compiles information so that patterns and conceptual relationships are clearly visible; and (3) drawing conclusions or verification, namely formulating the meaning and checking the consistency and validity of the findings. This approach allows researchers to identify thematically and descriptively important themes from the literature studied in depth.

FINDINGS AND DISCUSSION

Narrative and Storyline

The modernization era encourages the rapid development of science and technology so that educators must be able to combine technological sophistication with learning strategies applied in schools. One of them is through educational games as a modern educational tool by utilizing gadgets, computers and laptops. It is undeniable that the existence of educational games makes the learning process more interesting and interactive so that students can more easily understand the material presented by teachers at school.

According to Wandah Wibawanto (Najuah, Sidiq, & Simamora, 2022), rapid technological advances have caused elementary school-age children in this modern era to become increasingly familiar and close to the use of gadgets in daily life. This not only impacts their social interaction patterns, but also affects the way they absorb information and receive learning. Children now tend to be more interested in media that are visual, interactive, and provide a hands-on experience through physical or kinesthetic activities. Thus, they began to expect learning methods that not only convey information in one direction, but also actively engage them through interesting visualizations, dynamic interactions, and movements or actions that stimulate bodily activity.

In this context, educational games are present as an alternative learning method that suits the characteristics and needs of today's children. Educational games are not only able to grab students' attention with attractive visual displays and animations, but also provide a fun and challenging learning experience through interactive features and game elements that engage emotions and critical thinking skills. In other words, educational games have the potential to be a learning medium that is able to bridge the needs of children's development in the digital era and meaningful educational goals, including in terms of strengthening character values, such as empathy, cooperation, and perspective taking.

Digital educational games have great potential in supporting the improvement of students' emotional and mental development, which in turn can strengthen cognitive skills as well as strategic thinking skills. These skills are essential in the decision-making process, especially when students are faced with complex situations or social problems that require critical thinking and appropriate solutions (Kougiomtsidou et al., 2023). Through active involvement in educational *games*, students are trained to consider a variety of options, predict

the consequences of their actions, as well as develop an understanding of the social dynamics that exist around them.

This is possible because educational *games* are generally designed not only as passive learning tools, but also as interactive platforms that involve communication, collaboration, and cooperation between players. In the process of playing, students often have to discuss, strategize together, and solve challenges collectively. Social interactions built through these mechanisms can enrich students' learning experiences emotionally and socially, while reinforcing values such as empathy, tolerance, and responsibility. Thus, digital educational games not only function as an entertainment medium, but also as an effective means of forming children's social-emotional skills and thinking intelligence holistically.

In his book, Najuah, Sidiq, & Simamora (2022) wrote several types of games, including: *First Person Shooter*

A type of *game* that displays a game screen based on the player's eye view. This *game* carries a first-person perspective as a character in the *game* and tends to be related to battle.

Role Play Games (RPG)

A type of *game* where players play a character and the majority are adventure games. There is a storyline that players must follow in this *genre*.

Arcade

A type of *game* that is aimed at chasing high points and tends to have no storyline in it. A type of *game* that is designed to provide a fast, simple, and addictive gaming experience, usually with a focus on reflexes, high scores, and gradual challenges.

Adventure

A type of *game* that focuses on story, exploration, and problem-solving. Players usually control one or more characters to explore the game world, follow the storyline, interact with other characters, and complete challenges to continue the story.

Simulation

The type of *game* is made as similar as possible to real life and is simulator for the player. This *genre* provides an experience that players may encounter in the real world.

Based on a literature review conducted by researchers, it was found that all types can be applied in the learning process in schools. A study titled "Games as a Bullying Prevention Intervention in Children Aged 6-18 Years: A Scoping Review" by (Kurniawan et al., 2024) shows some of the effectiveness of *educational games* in preventing bullying at the age of 6 to 18 years. First, a *game* application called "School of Empathy Game" which is a *simulation-type* *game* that provides an experience for players to witness and handle bullying scenarios directly. In addition, there is also a *game* called "Conectado" which is a combination of *first person shooter*, *adventure* and *simulation* where the player will play the character as a victim of bullying in the *game* so that he can feel what the victim of bullying feels.

Role-Play and Character Perspective

The positive impact of both *games* can prevent bullying because of the emergence of empathy. It was proven that there were changes in behavior, social interaction, and increased student empathy in 120 students in 10 schools after playing both *games* (Kurniawan et al., 2024). Therefore, it can be said that the *game* applications "School of Empathy Game" and "Conectado" are quite effective in raising awareness of bullying so that it causes empathy and affection in students.

Second, "The Galaxy Rescuers" which is an arcade-type *game* to increase children's knowledge and attitudes towards bullying. In this *game*, players take on the role of a potential galaxy savior who must complete various challenges related to bullying situations. A total of 66.8% of the 328 5th grade elementary school students in northern Taiwan enjoyed the *game* and proved that there was an increase in their empathy and understanding of bullying, as well as encouraging behavior to defend victims of bullying (Nieh & Wu, 2018).

Third, various types of Role Play Games have also been proven to be quite effective in increasing the empathy of elementary school-age children. Research conducted by Bages et al. in 2020 (Kurniawan et al., 2024) showed a decrease in bullying and an increase in empathy levels among 86 elementary school students. Role Play Games encourage students to role-play

so that they can interact with other characters in the game. This causes students to improve social interaction in the real world.

Another study entitled "Instilling Empathy Values Through the Friend of Disability Application at SD Islamic Leader School" (Rahmatika, Hidayat, & Muharram, 2023) also showed the results of data analysis of an increase in empathy value in 5th grade elementary school students at SD Islamic Leader School after playing the Teman Handicap application. The app is designed to help students understand and experience the life experiences of people with disabilities, so they can develop a sense of empathy and concern for others who may have different challenges or difficulties. In addition, the study also shows that through in-app interactions, students not only learn about the concept of empathy theoretically, but also feel it emotionally by living real-life relevant experiences. Therefore, the use of applications such as Friends of Disabilities is expected to be an effective method to instill important social and emotional values, especially in supporting the formation of children's character at elementary school age. The app has a storyboard that can be seen in Figure 1.

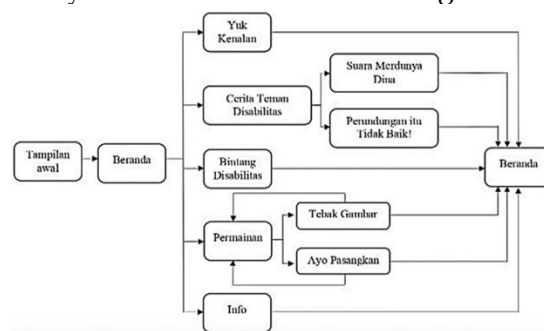


Figure 1. Storyboard "Friends with Disabilities"

Source: (Rahmatika, Hidayat, & Muharram, 2023)

In Figure 1, it can be seen that there are various features that can provide players with an understanding of people with disabilities. There are also games "Let's Pair" and "Guess the Picture". This game is quite effective in increasing students' empathy for people with disabilities. The results of this study support that educational games based on social situations can have a positive impact on the development of human values, especially empathy, in children. This is shown through the average of *pre-tests* and *post-tests* which can be seen in Figure 2.

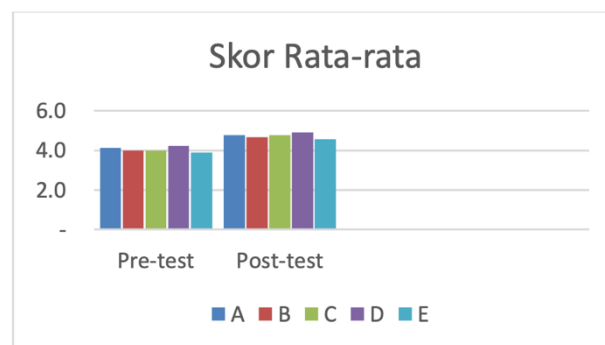


Figure 2. Average Score Comparison

Source: (Rahmatika, Hidayat, & Muharram, 2023)

In Figure 2, it can be seen that there is an increase in students' average empathy scores after using the "Friends with Disabilities" application compared to before use. The 5 indicators used in measuring students' empathy values include the ability to play an imaginative role, being aware of the influence of individuals on other individuals, skills in recognizing other people's motives and attitudes, the ability to evaluate other people's motives, and having a sense of understanding or understanding of other people's conditions (Rahmatika, Hidayat, & Muharram, 2023).

Social Interaction in Games

In a study conducted by (Farber, 2018), it was stated that *games* can be an *empathy machine* for their players, namely a medium that is able to evoke and foster a sense of empathy through

an immersive gaming experience. One of the games used as an example in the study is the application "Darfur is Dying", a *serious game* that puts players in the position of a Sudanese resident who is facing a humanitarian crisis, especially severe drought. In this game, players are faced with real challenges, such as finding water for themselves and their families, while facing risks and pressures that reflect the reality on the field. Through this experience, players not only understand cognitively about the crisis that occurred, but also feel it emotionally.

The app manages to create deep emotional reactions, such as feelings of guilt, sadness, and a desire to help, which then encourages players to take real action or reflect on similar humanitarian issues in their own environment. This proves that *educational games* designed with a strong narrative and relevant context are able to break through the boundaries between entertainment and learning, as well as being an effective means of building social awareness. In addition, interactive experiences like this also provide an opportunity for players to do perspective taking, i.e. trying to see the world from the perspective of others, which is an important component in the development of empathy.

According to (Farber, 2018), *educational games* in such a way provide the same experience as *the field trip* learning method. The difference is that *educational game* applications are easier to do anywhere and do not require as much money as a *field trip*. Thus, Farber's research strengthens the argument that educational games can not only increase knowledge, but also have power in shaping human character and values, especially in the younger generation growing up in the midst of the digital age. This also opens up great opportunities for educators and game developers to create learning media that is meaningful, contextual, and has a positive emotional impact on their players.

The results of Matthew Farber's research are also in line with the results of the research (Emond, 2018) stating that *educational games* are one of the most effective learning media because they have a very high appeal, especially for the younger generation who live in the midst of the rapid development of digital technology. In his research, Emond emphasized that stimulation games are very important to include in the learning process because they can increase students' motivation to learn while building empathy through experiences that involve emotions and social interactions. *Educational games* not only make learning more interesting and fun, but also create a learning environment that allows students to actively engage, think critically, and experience from different perspectives.

In today's era, traditional learning methods, such as one-way lectures or memorization of material without visual and interactive context, are considered less relevant for students, as they grow up in a social environment that has been shaped and influenced by various technological tools, ranging from social media to digital applications that are full of visual and audio stimulation. Therefore, the integration of technology through *educational games* is not only a complement, but an important need so that the learning process remains relevant and meaningful.

In addition, (Emond, 2018) also highlights the importance of global collaboration in the development and distribution of educational games. He mentioned the need for cooperation between countries in terms of technology transfer, especially related to copyright and intellectual property for *educational game* applications. This collaboration is aimed at ensuring that countries that do not have the capacity or infrastructure to develop *educational games* independently can still gain access to these digital learning media. With cross-border collaboration, internationally produced educational games can be applied and adapted in the local context of education in various countries, including in elementary schools. This is expected to expand the positive impact of educational games globally, while supporting equitable access to inclusive and transformative learning innovations.

Farber and Emond's statements are also supported by other researchers. Research conducted by (Rueda & Cerero, 2021) shows that *educational games* that integrate moral choices and social simulations can encourage self-reflection and form caring attitudes towards others. Children who play these kinds of games tend to show improvements in prosocial behaviors, such as helping friends and showing sympathy for others. Thus, these findings indicate that the use of educational game applications, when designed with an appropriate

narrative approach and focus on social values, has great potential as a medium for empathy learning in the primary education environment.

Gaming apps that were originally intended only for entertainment have now become the most effective tools for connecting the social, cognitive and emotional dimensions of their players. Some of the educational games that have been mentioned above are dominated by narrative-based games or moral choices. In addition, *the game* also involves a storyline that touches on the theme of humanity. The combination of powerful stories, real interactions, and mental challenges makes *games* more than just entertainment, but also a means to build life skills and a deeper understanding of yourself and others.

In his research on 11 educational *games* in the educational environment, (Amashi, Baligar, & Vijayalakshmi, 2024) identified eight important elements that must be carefully considered in the game design process that aims to instill and develop empathy in students. This research was conducted by analyzing various characteristics of educational *games* that have been proven to be able to evoke emotional responses, strengthen social engagement, and encourage active perspective taking by players. The results of the analysis show that the effectiveness of an educational game in forming empathy does not only depend on the content or story, but also on how the game is designed as a whole, both from technical and pedagogical aspects. The eight elements identified include:

Scenario or Narrative

The narrative of the story in an educational game is related to a specific situation or context in which the player must make a decision. In it there is a storyline, characters, and *progress* of the players themselves. A strong and relevant narrative that is able to evoke the player's feelings and create an emotional bond with the characters in the game

Character Identification

The existence of characters is crucial in educational *games* because the player's emotional connection will be established through the character he plays in a *game*. Players are given the role to experience situations from the perspective of other people with different backgrounds. Therefore, players will try to recognize the identity, characteristics and behavior of the characters they are living with as the game progresses. Therefore, emotional bonds will be built from *educational games*.

Decision Making

Refers to how players consider various things before making decisions in their game. After that, they will also evaluate the choices they make because it has an impact on the sustainability of the *games* they play.

Interaction

In educational *games*, interaction can be interpreted in many ways. Interaction not only occurs when *the game* involves many players, but also the player's relationship with the environment, characters, and other objects in the *game*

Feedback

Feedback provides information to players regarding their *progress* in the *game*. Feedback, both verbal and visual, that reinforces the consequences of the player's actions in the *game*.

Challenge

Refers to the obstacles experienced by players in their game progress. Challenges encourage players to think critically and consider the emotional impact of their decisions.

Duties or regulations

In educational *games*, there are specific tasks or rules that must be fulfilled by players. In this case, players will learn to be responsible and disciplined so as not to fail in fulfilling the tasks or rules that have been determined in the *game*.

Immersion

It refers to how players are fully connected to the *game world* they are currently playing.

Through these eight elements, (Amashi, Baligar, & Vijayalakshmi, 2024) it is concluded that game design that aims to form empathy should be holistic and focus not only on entertainment, but also on creating learning experiences that touch the emotional and social side of learners. By considering these elements, developers and educators can create

educational games that are more meaningful and effective as a medium for character education in today's digital era.

Furthermore, elements such as an emotional story, immersive and touching game environment, and meaningful interactions are key to forming an emotional attachment between players and the world in the game. When players feel emotionally connected to the story and characters they meet, the learning process becomes more profound and has a long-term impact. Each of these elements synergistically contributes to the development of various dimensions of empathy, such as cognitive empathy by understanding the other person's point of view, emotional empathy by feeling what the other person feels, to prosocial empathy through the urge to help or care.

Thus, based on the description above, it can be seen that educational games have been proven to increase empathy in elementary school-age children. This is shown by various studies on educational games dominated by the type of Role Play Games and simulation. Research shows that various elements in game design play a crucial role in fostering empathy. These elements include strong narrative, decision-making, role-playing, character identification, interaction with other characters, feedback from the game system, challenges presented, certain rules or tasks, and immersive experiences.

CONCLUSIONS

Based on the results of literature exploration and analysis of various previous studies, it can be concluded that the use of educational game applications has great potential in fostering and increasing empathy in elementary school students. Through interactive, narrative, and immersive gaming experiences, students not only gain knowledge, but also engage emotionally with the characters and situations presented in the game. Elements such as role-play, perspective taking, and social interaction in games have been shown to build emotional connectedness, encourage reflection, and develop sensitivity to the feelings and conditions of others. A play experience designed with a humanistic approach and oriented towards social values can make educational games a transformative learning medium, especially in shaping children's characters from an early age. Therefore, it is important for educators and game developers to design applications that are not only fun, but also full of meaning, relevant to real life, and capable of fostering human values, including empathy. As a practical implication, schools can begin to integrate social-emotionally-themed educational games into the curriculum as part of character learning activities, especially in PPKn subjects or local content. Teachers also need to be trained on how to choose and facilitate the use of educational games that are appropriate for their age and learning goals. In addition, local game developers are advised to collaborate with educators and child development experts to create content that is contextual, culturally based, and reflects empathic values that are relevant to students' daily lives. With the collaboration between the worlds of education and technology, educational games are not only a means of entertainment, but also a strategic tool to form a more caring, sensitive, and socially responsible generation.

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