

Development of DUMADYA Learning Application: Bullying Prevention Efforts Through Strengthening High School Students' Characters

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ABSTRACT

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Introduction: The phenomenon of bullying among high school students has become a serious problem that impacts character development, psychological well-being, social skills, and academic performance. Bullying can create an uncomfortable school environment, hindering students' ability to learn effectively.

Objectives: This study aims to (1) test the feasibility of a learning application through expert and practitioner validation, (2) assess student responses to the use of the application, and (3) identify character values necessary to prevent bullying behavior.

Methods: This research and development study involved teachers, students, and experts. Data were collected using validation sheets from experts and students. Descriptive statistical analysis was conducted using SPSS to evaluate the data.

Results: The study resulted in the development of a learning application called DUMADYA (Digital Understanding Character, Morality, and Anti-Bullying Youth Application). Validation by media experts yielded an average score of 95.38, and material experts gave an average score of 88.5, indicating high feasibility. Student questionnaire results also showed positive responses toward the application's effectiveness in character building and bullying prevention education.

Conclusions: The DUMADYA application is a feasible and effective tool for strengthening student character and promoting anti-bullying education. The character values identified as essential for preventing bullying behavior are integrity, empathy, tolerance, communication, and friendship.

Keywords: character strengthening, learning app, prevent bullying.

INTRODUCTION

Technology, information, and communication have brought significant changes in various aspects of life, including education. On the one side, progress opens opportunities for an increase in quality learning, but on the other hand, it also gives rise to challenges, especially in matter behaviour social students. The characteristics of students faced by schools today tend to be dominated by Gen Z, who grew up in a digital era full of technological advances and high-speed access to information [1]. Although they are known as a generation that is technologically literate and creative, they are also vulnerable to bullying both directly and through social media (cyberbullying). One of the factors that influence Gen Z to be susceptible to becoming victims or perpetrators of bullying is their dependence on social media (Rothman et al., 2014). They spend much time on digital platforms, where social interactions are often uncontrolled and risky. Negative comments, body shaming, or even exclusion from social groups can easily occur, leaving a profound psychological impact.

In addition, schools tend to focus too much on cognitive aspects such as marking exams, ranking classes, and achievement academic other as indicators of success student than aspect affective tend to create significant pressure on students to compete educationally and often ignore the development of academic elements like

character, morals, and skills social. Education should form not only intelligent individuals in an intellectual way but also individuals of character, kindness, and empatheticness to fellows. Strengthening character becomes more critical Because academic ability is just not enough To face real challenges (Dewantara et al., 2021). A good character, like religion, integrity, responsibility answer, work, and empathy, is the foundation For building connections, healthy social, solving problems in a creative way, and contributing positively to the Community [4]. Without strengthening character, students at risk become individuals who only take importance alone, are less capable of adapting to change and are vulnerable to negative behaviour like bullying, cheating, or even acting asocial others. So it is essential to balance focus on education and achievement development of character. System education must integrate values into the curriculum and activities daily [5]. Approach holistic This will help students achieve academic success and become people with integrity and care ready to face the dynamics of life in the future.

One of the problems in Indonesia that is getting worse is the phenomenon of bullying among students, especially at the level school intermediate above. Bullying affects not only negatively the victim but also the perpetrator and the environment of school [6]. The impact can be in the form of academic decline in academic performance, psychological disturbance, and problems in more social areas. Based on data from The Federation of Indonesian Teachers' Unions (FSGI) stated that bullying cases in schools in 2023. From January to September, there were 23 cases of bullying. Of the 23 cases, 50% occurred at the junior high school level, 23% at the elementary school level, 13.5% at the high school level, and 13.5% at the vocational school level carried out by fellow students or by educators [7]. This fact indirectly shows the unsafe environment.

Handling of acts of violence in educational units in Indonesia has been regulated in the Regulation of the Minister of Education and Culture, Research and Technology No. 46 of 2023 concerning the Prevention and Handling of Violence in the School Environment. This regulation guarantees legal certainty for educational units and protects all citizens in the academic unit, including teachers and students. The Violence Handling and Prevention Team was formed as part of the implementation of the regulation. The task of the Violence Handling and Prevention Team is to handle cases of violence in accordance with established procedures, ensure support and protection for victims, and make preventive efforts to reduce the risk of violence in the school environment [8]. When violence occurs, the Violence Handling and Prevention Team must be ready to provide support to victims and carry out appropriate interventions. Effective handling of bullying requires the involvement of all parties, including the Violence Handling and Prevention Team (Widyaningtyas & Mustafa, 2023).

The Violence Prevention and Response Team should encourage creating a positive and inclusive school environment, working with the school to ensure a clear and firm policy regarding bullying. The policy may include educational materials on bullying, reporting procedures and consequences for perpetrators of bullying. Programs such as extracurricular activities, support groups, and anti-bullying campaigns can help create a school climate that supports and values differences [10]. These activities can also strengthen relationships between students and reduce the likelihood of bullying.

Efforts to prevent bullying in Indonesia have been made through various approaches, from strengthening the program's educational character to intervening in the psychological aspect. However, the effectiveness effort is often hampered by limitations and methods that are less conventional and interesting for the younger generation, who are already very familiar with the technology. So that required innovation in the form of learning media that can integrate values and characters in a better way of interacting and appropriate to interest students. Research This aims to explore the potential of DUMADYA applications in strengthening the character of high school students and reducing bullying behaviour. Research results. This expectation can create an environment of safe, inclusive and supportive schools to develop positive students.

OBJECTIVES

This study aims to develop and validate the DUMADYA mobile learning application to integrate character education and anti-bullying values among high school students. Specifically, it seeks to assess the application's feasibility through expert evaluations, examine student responses regarding its usability and effectiveness, and

identify core character values—integrity, empathy, tolerance, communication, and friendship—that are critical for fostering a safe, inclusive educational environment.

METHODS

This research is a research and development project. The primary focus is to develop learning applications for bullying education, strengthen student character, and test learning applications' feasibility and effectiveness. This research uses the Alessi & Trollip model with three steps: planning, design, and development. The research and development procedure can be seen in Figure 1.

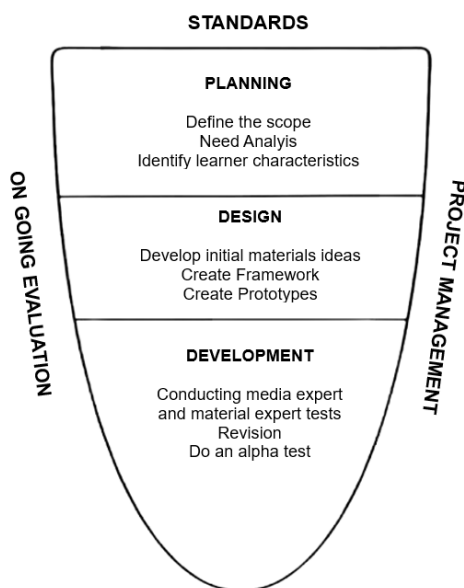


Figure 1. The Procedure of DUMADYA Learning App Development

Sample and Data Collection

This research was conducted in Denpasar City, Bali, Indonesia. The study subjects were 2 experts in educational technology and character education and 15 high school students as users of learning applications. Consultations were conducted with material experts, media experts, and practitioners to analyze the level of media suitability. The data collection technique used was an instrument in the form of a validation sheet and a questionnaire with a Likert Scale ranging from 1 to 5 [29]. The instrument was validated and tested for validity and reliability so that it was declared valid.

Analyzing Data

The data obtained through validation sheets from experts and users were analyzed using descriptive statistical analysis, with an average (mean) and percentage approach, and calculated using the following formula:

$$Percentage = \frac{Score}{expectedscore} \times 100\%$$

The following table presents the calculation results that have been interpreted into various eligibility categories.

Table 1. Media suitability categories

Category	Percentage (%)
Highly Qualified	82-100

Qualified	63-81
Not Eligible	44-62
Very Unqualified	25-43

The percentage of the calculation results will determine the validation and feasibility categories based on expert and user assessments: very feasible, feasible, not feasible, and very not feasible. This criterion is used for evaluation and reference in media revision or improvement.

RESULTS

Strengthening Character

Character is a series of traits, values, attitudes and behaviours that characterize or identify a person. Good character education must involve not only aspects of good knowledge (moral knowing) but also feeling good or loving the good (moral feeling) and good behaviour (moral action) [11]. Strengthening character education is an effort made by educational institutions such as schools and other academic institutions to form, develop and maintain positive character in individuals. Strengthening character education involves an educational process that aims to form moral values, ethics, attitudes and behaviours considered positive in everyday life (Fikri et al., 2023). Character education not only focuses on developing cognitive aspects such as academic knowledge but also on developing affective and psychomotor aspects. The goal is to form individuals who have integrity, empathy, responsibility, honesty, cooperation and other positive values needed to succeed in social, personal and professional life. Based on the above explanation of strengthening character education, it can be concluded that it plays a vital role in forming students with noble morals and good character values.

The scope of strengthening character education includes various aspects, including the school environment and outside the school. Strengthening character education through various aspects aims to create an environment that supports and encourages the development of good and positive character in students so that they can become responsible individuals, have integrity, and contribute positively to society. The scope of strengthening character education, or what is commonly called the three centres of education, is as follows: 1) Formal education is structured and systematic education such as that implemented in schools from elementary to college. Formal education implements character education through a curriculum integrating moral values in subjects, extracurricular activities, and school programs. 2) Character education is crucial not only in formal education but also in non-formal education. Non-formal education includes various educational activities outside the traditional school system, such as courses, training, religious activities, and other activities that help to form children's character. 3) Informal education is education that takes place in everyday life and is unstructured but is very influential in forming individual character, including education provided by the family, interaction with peers and life experiences [13]. Character education can be strengthened in formal education environments and non-formal and informal education. By effectively utilizing these various venues, strengthening character education can be a holistic and comprehensive effort to help individuals with strong moral values, ethics, and social skills succeed.

Thomas Lickona's Character Education Theory

Thomas Lickona is a psychologist and educator who is widely recognized as one of the leading figures in the field of character education. The theory of character education that he developed focuses on the formation of good moral character in individuals through an educational process consisting of three components: moral knowing (moral knowledge), moral feeling (moral feeling), and moral action (moral action) [14]. Each of the three components is related and forms the foundation for character development. Moral knowing refers to understanding individuals about moral values. Lickona emphasizes that moral knowledge covers understanding theory and the ability To apply it in a daily context [15]. Without understanding this, individuals may have difficulty Differentiating between right and wrong, hindering the formation of good character.

Moral feeling or moral feeling is a component of the second, which focuses on aspects of character. Lickona explains that moral feelings include empathy, guilt, shame, and appreciation of moral values (Lickona, 1996). These

emotions are an internal motivator that drives individuals to act according to moral principles. Components Third, moral action is a manifestation concrete from the knowledge and deep moral feelings from the action. Lickona emphasizes that character is not only about what is known or felt but also about What is being done. Moral action involves courage, perseverance, and the ability to overcome challenges by applying moral values. Lickona argues that the third aspect must developed in a way simultaneous through holistic education. For example, schools can integrate lessons about moral values, stimulating activities, empathy, and the chance to practise moral action in a safe and supportive environment.

Application Learning

Application learning has become an important innovation in education, especially in the digital era. Application learning can increase accessibility and flexibility in teaching learning [16]. Mobile-based application learning enables students to study When anywhere and everywhere, supporting independent learning (Widiastuti, 2018). In addition, the application is often equipped with features like quizzes, videos, and simulations, which can increase student involvement in the learning process.

Diversity features in application learning also become a factor in increasing learning effectiveness. Application-equipped learning with gamification (application element game) can increase motivation and interest in Study students [18]. Features such as leaderboards, badges, and levelling make learning fun and competitive. Gamification design must be customized to users' needs and characteristics so as not to cause distraction [19].

On the other hand, application learning also faces several challenges, especially in the digital divide. A study by UNESCO (2021) revealed that No student has equal access to adequate devices and internet connection [20]. This can widen the education gap between students with access to technology and those without access. In addition, some application learning is also assessed as insufficient notice aspect pedagogical. Hence, the content presented is not always in accordance with the curriculum or needs of Study students.

Thus, the potential application of learning to support inclusive and personalized learning education is still huge. Application learning that uses technology intelligence artificial intelligence (AI) can give recommendation material customized learning with level understanding and style each student's learning [21]. With The ongoing development of technology, applications learning can become a solution for overcoming various challenges in education and, at the same time, increasing the quality of learning overall.

Bullying Behavior

Bullying in Indonesian is called oppression/perunungan. Bullying is defined as extreme, violent behaviour; although many children experience daily teasing or exclusion that does not meet the standard definition of extreme behaviour, this behaviour is still considered a form of bullying [22]. According to Olweus (1993), bullying is a form of intimidation or victimization behaviour. Meanwhile, according to Schot, bullying is social violence that bullying does not only start from the situation in the classroom but also the dynamics that occur in the classroom [23]. Bullying is an expression of power that exists in individuals because they have authority at a social level, for example, gender or bureaucratic authority in the form of an act of violence.

Bullying actions not only include the roles of perpetrators and victims, which are important elements in the process of occurrence, but also the roles of others. Bullying often occurs in group situations, where several members of the group participate in bullying actions; even those who do not participate directly are usually aware of what is happening [24]. Bullying can also be seen as a reflection of violence in society in general and does not focus on individual aggression, which usually stems from within the family. This approach to bullying as social violence can also look at the social causes of bullying, including economic factors and social media (Anzwar, 2005).

Bullying is aggressive behaviour that is carried out repeatedly by one or more individuals against someone who is weaker or less powerful physically, emotionally or socially. Bullying can take the form of insults, harassment, threats, or physical actions intended to hurt, humiliate, or dominate the victim [26]. This often occurs in school environments in various forms including verbal (in the form of teasing or teasing), physical (such as hitting or kicking), or even online known as cyberbullying). Bullying is not an ordinary conflict between two balanced individuals, but rather the exploitation of power by one party to harm the other (Freire, 1970). Based on the

definitions of bullying above, it can be concluded that bullying is harmful, aggressive, or degrading behaviour carried out repeatedly against someone who has difficulty defending themselves. This often occurs in schools, workplaces, social environments, or online. Bullying can be physical, verbal, or social treatment, and the goal is to scare, humiliate, or dominate someone who is the victim.

According to Dupper, there are 4 types of bullying that are often found in school environments, namely 1) Physical bullying is a form of physical bullying where the perpetrator uses physical force to hurt, intimidate or dominate others. 2) Verbal bullying is a form of verbal bullying. Although it does not cause direct physical injury, verbal bullying can have a profound impact on the mental and emotional health of the victim and leave a mark on the mind and feelings of the victim of bullying. 3) Relational bullying is where the perpetrator's negative actions are not directly given to the victim. The perpetrator carries out These negative actions secretly to isolate or ostracize the victim from the social group. 4) Cyberbullying is a form of bullying that is carried out online on social media. Cyberbullying is bullying that is carried out repeatedly with the aim of hurting, harassing, embarrassing, threatening or damaging the victim's reputation and is carried out through social media through the use of computers, cell phones or other electronic devices [28].

Planning Stage

At the stage of planning the application of Dumadya, the first step is to do analysis needs analysis based on the Alessi & Trollip model. Analysis This covers identifying objective learning, characteristics of users, and context-use applications. Based on the results of the questionnaire regarding the condition of the learning environment in schools, 3.9% of respondents stated that the learning environment was less safe. This statement is based on the conditions of violence that occur between students in the school environment, which tends to be dominated by violence in the form of verbal violence. Thus creating an unsafe learning environment for students who become victims. In addition, the need will be interactive and interesting learning media as well points main. The condition of learning media in schools tends to be dominated by textbooks (printed) and PowerPoint points, even though the characteristics of students tend to have visual and auditory learning styles that will attract more students' attention if the existing learning media is by the latest technological developments. Analysis results. This becomes the basis for formulating an objective application that increases users' understanding of values, character, morality, and manner, preventing and facing bullying.

Designing Stage

Next, conceptual design is done, including determining the application's content, structure, and flow learning. Content applications are designed to cover three main pillars: understanding character, morality, and anti-bullying. The material is presented in text, images, videos, and interactive quizzes to ensure involvement. The application's structure is designed with a user-friendly interface and intuitive navigation. In addition, the flow of learning is arranged gradually, starting from the introduction draft base until implementation in a real situation. This stage also involves making a framework and prototype to visualize the appearance and function of the application. Framework on the application learning can be seen in the following Figure 2.

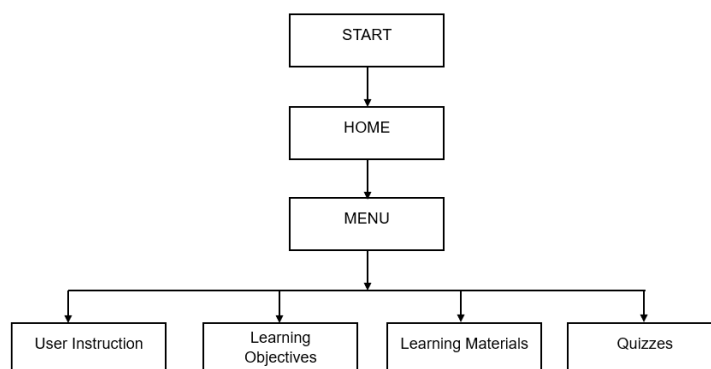


Figure 2. The Framework of DUMADYA

Following is an explanation of each component:

- Start: This page is the opening screen that displays the logo and name of the application.
- Home: This page summarises the app's main features, including quick access to learning materials, quizzes, and usage instructions.
- Menu: This section provides a list of the main features that the user can access.
- User Instruction: This section contains instructions on how to use the application, including how to navigate between menus, follow learning materials, and complete quizzes.
- Learning Material: The main feature of the application is the learning material, which contains various learning modules related to character, morality, and anti-bullying.
- Quizzes: This section is designed to test the user's understanding after studying the available materials.



Figure 3. Learning Application Prototype

Development Stage

At the stage of final planning, compilation plan implementation and evaluation. Plan implementation covers a selection of development platforms, technologies used, and timetable Implementation. Application Dumadya designed can be accessed through mobile devices (Android and iOS) with hybrid app development technology to ensure broad compatibility. The evaluation plan was done through trial limited (alpha testing) involving several small users to gather bait and return early. Trial results: This is used to do repairs before the application is launched in a way wide. Thus, the stage planning has compiled comprehensive work for the development application Dumadya, which is expected to become an effective solution for educating character and preventing bullying among teenagers.

At the development stage, media and material experts carry out an initial evaluation to assess various aspects such as content quality, ease of use, and product suitability. This testing aims primarily to detect and minimize the possibility of errors in the product before students can use it. In addition, expert validation also plays a role in ensuring that the product can operate optimally.

The Results of Expert Validation

The table below presents the results of media expert validation.

Table 2. Media Expert Validation

Media Indicators	Percentage (%)
User Interface	88.45
Usability	100
Efficiency	100
Content Accuracy	88.45
Interactivity	100
Average Value	95.38

Validation is shown in Table 2 based on the results. Media Expert Validation: it can concluded that the application of Dumadya obtains very high value in various aspects of assessment by media experts. Usability, Efficiency and Interactivity indicators achieved a score maximum of 100%, which shows that the application Is rated as very easy to use and efficient in its operations, as well as its own level of high interactivity for users. In addition, the User Interface and Content Accuracy indicators each received 88.45%. This shows that the appearance interface application is already good and accurate in serving content, although it can still be improved. With an average value of 95.38%, the application entered the Very Qualified category, meaning it has fulfilled standard quality and is ready to be used with A bit of repair.

Table 3. Material Expert Validation

Material Indicators	Percentage (%)
Suitability of materials	90
Clarity of Learning Objectives	86.25
Clarity and Simplicity of Language	90
Accuracy of Information	86.25
Clarity of Instructions and Engagement of Learners	90
Average Value	88.5

Based on the Material Expert Validation Table results, the evaluation of the material aspects in the Dumadya application shows that all indicators obtained high scores. The indicators of material suitability, clarity, and simplicity of language obtained a score of 90%, indicating that the content in the application is by the learning objectives and is presented in a language that is easy for users to understand. The clarity of learning objectives and the accuracy of the information each obtained a score of 86.25%, indicating that the material in the application is quite explicit and accurate, although it can still be improved further. In addition, the clarity of instructions and user involvement also received a score of 90%, indicating that the application has been designed with clear instructions and is able to attract user involvement in the learning process. The average score from the material expert validation test was 88.5%, which is included in the Very Qualified category. This shows that the Dumadya application has excellent material quality and is by the established learning standards. However, there is still room for improvement so that the application can provide users with a more optimal learning experience.

The image below compares the results of the validation test by media and material experts.

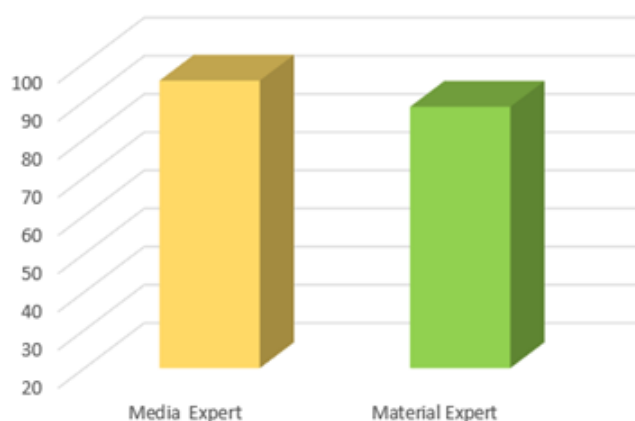


Figure 3. Expert Validation

Alpha Test

Stage This is a comprehensive testing product involving the students as the main user. Testing This aims to evaluate the product's functionality and gather bait feedback from students. After getting agreement from media experts and

expert material, the product was tested directly on users, particularly SMA N 3 Denpasar students. Testing was done against 15 selected students in a way cluster To represent various levels of ability in learning practice, namely high, medium, and low. The results of the testing user are served in the following table.

Table 4. User Test Result

Media Indicators	Percentage (%)
User Interface Usability	90
Functionality and Performance	88
Presentation of Teaching Materials	89.25
Ease of Navigation	95
Visual Design Appeal	90
User Satisfaction	95
Average Value	91.20

Based on test results displayed by users in Table 4. User Test Result: It is known that the application Dumadya obtained an average value of 91.20%, which was in the Very Qualified category. Indicators with the highest are Ease of Navigation and User Satisfaction, each reaching 95%, which indicates that users feel the application Is easy to use and are very satisfied with experiencing its use. Meanwhile, user interface usability and visual design appeal obtained a value of 90%, indicating that appearance and interface application are rated as interesting and easily understood by the user. In addition, Functionality and Performance get a value of 88%, indicating that the application walks with Good, although there is still room for improvement in technical aspects. Presentation of Teaching Materials scored 89.25%, indicating that the material presented Enough effectively supports learning. Based on the evaluation of the results, this shows that the application Dumadya has excellent quality and is worth using as a learning medium interactive about character, morality, and anti-bullying.

DISCUSSION

Media expert test on the DUMADYA application shows that the application obtained an average value of 95.38%. With the score said, DUMADYA entered the category Very Qualified, which means the application has excellent quality in aspect design, functionality, and convenience. High rating: This shows that the application has fulfilled the required standards for becoming an effective digital learning medium to teach students about character, morality, and anti-bullying. The results of the expert test material show that the application obtained an average value of 88.5%, which places it in the "Very Qualified" category. Assessment This is excellent material in conveying understanding about character, morality, and prevention of bullying to users, especially teenagers. With the score said, it can be concluded that the content in the application already fulfils high standards in aspects of accuracy, relevance, and understanding of the material presented. Thus, the developer can still repair more carry-on based on suggestions from experts and users to order the application. This is increasingly optimal in giving interactive and impactful learning positive for its users. The results of user testing for the DUMADYA application show the average value is 91.20%, which indicates that the application includes the Very Qualified category. High score This shows that the application has fulfilled standard good quality in functionality, usability, and effectiveness in increasing understanding of character and morality and preventing bullying. Users feel that the features provided are easy to use, the content is educational and relevant, and the attractive interface design makes the experience more fun and valuable.

The feasibility of the DUMADYA learning application shows the ability of digital comics to educate bullying in Denpasar City High Schools so that the learning application can be used as a preventive measure to prevent bullying in the school environment. In the development of the DUMADYA learning application, character formation occurs in students through three aspects, namely moral knowledge (moral knowing), moral feelings (moral feeling) and moral actions (moral action) (Lickona, 2004: 121). These three aspects are interrelated and contribute to forming a complete character in students.

Moral Knowing

The first aspect of character formation is moral knowledge or moral knowing. Effective character education must ensure that students understand moral principles and how to apply them in various situations. Moral knowing includes knowledge of moral values, awareness of ethical standards, and recognition of moral issues in everyday life [31]. In education, moral knowing is the foundation for students to understand the difference between right and wrong and helps them make ethical decisions. In the development of learning applications, moral knowing refers to students' understanding of the moral and ethical values contained in the material. Presented as empathy, justice and tolerance. This is also in line with the teachings of Hinduism, namely Ahimsa, which means not to hurt or kill others.

Moral Feeling

Moral feeling is an essential component in character development that motivates individuals to act according to moral values. Moral feelings include empathy, respect, awareness of justice and guilt when making mistakes. Applying moral feelings in education aims to build moral sensitivity to prevent actions that harm others, such as bullying. In the context of learning applications, the moral feeling is integrated as a key element to avoiding bullying behaviour among students. The DUMADYA application is designed to foster emotional awareness so that students not only know moral values but also feel them through learning videos presented in the learning material. Hindu teachings about Ahimsa also emphasize the importance of compassion and affection for all beings through empathy, which can be the basis for developing application features that encourage users to feel the suffering of others.

Moral Action

The last aspect of character education is a moral action, namely implementing moral knowledge and feelings in everyday behaviour. Moral action reflects how a person can apply moral principles in real and consistent actions, including decisions and behaviours that demonstrate integrity and commitment to moral values [31]. Character education should encourage students to understand moral values and implement them in their actions how students implement moral values in real action. The moral knowledge and feelings that have been embedded must be manifested in positive attitudes and behaviours, such as helping friends, being honest, and rejecting all forms of bullying. The DUMADYA application provides various interactive activities and simulations that encourage students to practice moral behaviour, which can be accessed through the interactive quiz feature. This aligns with Ahimsa's teachings, which teach not to hurt but to encourage acts of compassion and kindness to others.

Character Values to Prevent Bullying Behavior

Integrity

Integrity is a fundamental value that teaches students to behave honestly and responsibly and uphold truthfully [32]. In the DUMADYA application, integrity is realized through materials and interactive scenarios that invite students to bravely report acts of bullying and take the right attitude in various social situations. With their integrity, students avoid bullying and become agents of change that enforce justice in the school environment.

Empathy

Empathy is the ability to understand and feel the feelings of others, which is key to preventing bullying. DUMADYA develops empathy through feature simulation and study cases that show the impact of emotional bullying towards the victim. By understanding other people's feelings, students become more sensitive to the suffering of their friends and are encouraged to behave more carelessly and support one another [33].

Tolerance

In diverse schools, tolerance becomes vital to avoid conflict and discrimination that can lead to bullying. DUMADYA teaches tolerance through educational content about diversity, culture, religion, ethnicity, and the background behind society so that students can study the value of difference. With an attitude of tolerance, students can create an environment that is more harmonious and inclusive.

Friendly Communication

The ability to communicate with kindness and friendliness is very important in building healthy social connections. DUMADYA provides training in assertive communication so that students can express their feelings and opinions without hurting others. Through interactive feature discussions, students are invited to understand the method of communicating politely, avoid harsh words, and finish conflicts in a positive way.

CONCLUSION

This research and development resulted in the DUMADYA learning application, which aims to instil character values to prevent bullying, such as integrity, empathy, tolerance, good communication and friendly attitudes. The results of validation by media and material experts show that the DUMADYA application is very suitable for learning. As application users, some students responded positively to using this application to instil character values and prevent bullying in schools. These results indicate that the DUMADYA application has the potential to be an innovative solution in supporting character education and creating a safer and more conducive school environment for student's academic and social development.

SUGESSTION

For the development of the DUMADYA application, it is vital To increase the interactive feature that encourages the participation of active users. One method is adding module gamification, such as interactive quizzes, daily or system points and badges to push the understanding of character, morality, and bullying prevention. In addition, integration with social media or discussion forums in the applications can give users room to share their experiences and gain support from community peers. This feature will make the users more involved in learning and reflect the values to be embedded in the application.

Apart from interactivity, DUMADYA development can also focus on the personalization of experienced users. With artificial intelligence (AI), applications can adapt material learning according to emotional users' level of understanding and needs. For example, the application can give recommendation content based on user responses in quizzes or surveys about emotional conditions. This feature increases the effectiveness of education in forming character and morals and helps users feel emotionally supported when facing social challenges, including bullying.

LIMITATIONS

Several limitations need to be considered when developing the DUMADYA application. One is the limited accessibility for users with technological limitations, such as limited devices or unstable internet connections. In addition, the application's effectiveness in shaping users' character and morals still depends on the level of involvement and awareness of individuals in using it actively. Another challenge is the need for continuous updates and maintenance to keep the content relevant and interesting to the younger generation. No less important, the development of interactive and artificial intelligence-based features requires considerable resources, both in terms of time, expertise, and funding.

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