

Development of A Technology-Based Storybook Model for Moral Intelligence in Early Childhood

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Abstract:

This research is motivated by the low interest in reading in children today. Children prefer watching TV and playing with gadgets because they display more moving images to attract attention. This study aims to produce a digital-based storybook product to improve the moral intelligence of early childhood that is valid, effective, and practical. This research is a research and development methodology following the development of the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). The subjects of this study consisted of validators, namely two material experts and one media expert, and testing the practicality of product use on 8 ECE teachers. The product trial was conducted on 20 group B children at Ar Rehan Kindergarten. Data were collected through observation, interviews, and documentation, as well as using a questionnaire. The research results were obtained from validating two material experts by 93%, media expert validation by 87%, eight teacher respondents by 93%, and the child's response by 88%. The product trial obtained a value of $0.004 < 0.05$, which shows that digital-based storybooks can significantly and effectively increase children's moral intelligence in Ar Rehan Kindergarten.

Keywords: storybook; moral intelligence; technology

INTRODUCTION

Early childhood education (ECE) is a level of education prior to basic education, which is a coaching effort aimed at children from birth up to the age of six which is carried out through the provision of educational stimuli to help physical and spiritual growth and development so that children have the readiness to enter further education, which is held in formal, non-formal, and informal channels (Rofiki et al., 2022).

Early childhood education focuses on laying the foundation for growth and the six aspects of development: religion and morals, physical-motor, cognitive, language, social-emotional, and art, according to their uniqueness and stages of development (Chalie, 2020). This is stated in the important components of school readiness, which are supported in ECE

units (TK/RA/BA, KB, SPS, TPA), including sufficient emotional maturity to deal with everyday problems, good social skills to interact with peers with healthy, qualified cognitive maturity to be able to concentrate while playing and learning, and the development of good motor skills to be able to participate in school activities independently (Intan et al., 2022).

One of the problems of early childhood that deserves attention is that the environment around the child does not play a good role, such as impolite talk, negative words, and other bad habits that children can easily imitate, even leading to deviant behavior in children (Miguel et al., 2019).

Based on the observations of researchers in kindergarten, the researchers see that children experience problems caring for their friends. For example, when a friend cleans up toys, other children do not want to help clean them up and choose to leave. Another problem is children who do not want to lend their belongings when other friends need them. Another thing is also shown when children are working on worksheets, and there are friends around them who cannot do it and ask them, but the child chooses to ignore it. Moreover, the children here also often make fun of other friends with words that hurt feelings.

Moral values are indeed one of the basic aspects that are important to improve their abilities early so that children can become virtuous individuals in the future (Carr, 2020). Especially at this time, apart from environmental factors, many negative behaviors also arise as a result of activities in the digital world, especially through gadgets (Setiani, 2020). Early childhood is elementary to capture information and various things around them, even information they only get from gadgets or digital forms (Roberts & Brown, 2020). This also needs special attention because gadgets allow them to explore many things from various regions to foreign countries that allow them to imitate and contradict the local culture (Yani et al., 2022). In addition, using gadgets in early childhood can have an addictive effect which then causes attention deficit disorder and causes hyperactivity (Latuheru et al., 2023).

The importance of achieving an educational goal is hoping for existing educational systematics and competent educators who are needed to develop creative, innovative, and exciting learning systems to motivate students to learn (Rusilowati & Wahyudi, 2020). One of the efforts to realize exciting learning is that educators can develop learning media that attract children's attention (Usova, 2002). In the learning process, some children also experience boredom quickly because learning is less exciting or the material contained in the

reading seems boring. So that the delivery of material is not optimal because children have difficulty reading and understanding learning material.

Technological developments at this time are very influential in life, especially in education (Haleem et al., 2022). The rapid development of the globalization era requires the world of education to adapt information technology developments to improve education quality (Reviews, 2019). Information technology can be used to access knowledge easily and quickly, so the existence of information technology in education can produce quality human resources that determine the success of education in Indonesia (Collins & Mauri, 2017).

In education, teachers must be creative educators, especially in making learning media. The existence of education levels makes teachers think about suitable media for kindergarten children. Changing times, especially in technology, requires teachers to innovate in making media to become creative educators (Fukuda-parr, 2003). The selection of media and material that is easy to understand is something that must be considered by the teacher so that the material can be conveyed to the students themselves. Using learning media is one means that can advance education (Rosenstock et al., 2020).

Learning media itself has an essential role in stimulating early childhood development, including thinking skills, emotional control, and child focus, so that the quality of learning increases (Rosenstock et al., 2020). According to Rogers & Scaife (2020), learning media is everything in the form of physical or methods that aim to facilitate teachers and children in a learning process to achieve learning goals. The benefits of learning media, according to Cairncross (2001), are as follows: 1) make it easier to convey learning material, 2) teaching and learning activities are more attractive, 3) teaching and learning activities are more interactive, 4) shorten the process (time) of learning, 5) improve the quality of teaching and learning, 6) learning activities can be carried out whenever and wherever 7) increase the positive attitude of children towards the material and the learning process, 8) increase the role of the teacher in a positive direction.

Clark (2007) defined learning media as a tool that conveys messages in learning. This definition explains that learning media is a tool that carries messages in learning (Sari, 2019). Learning media helps teachers convey material so children understand it more easily (Sari, 2019). Besides that, another function of learning media is to help concretize abstract material so that children can understand the material better (Haleem et al., 2022). Besides being in

charge of teaching, teachers are also required to develop skills in making learning media that will be used for the learning process (Sirojuddin et al., 2022).

The characteristics of the books developed by researchers are different from books in general, where researchers develop digital-based storybooks that present the learning process following the subject matter and learning strategies, where the material presented is in the form of a learning video link that can be accessed using an Android cellphone with a scan code on Google. So that it can give interest children, the contents of this picture storybook can be adjusted accordingly with the material to be taught according to the needs and can be understood by children. Papers (2018) explains that the storyline in children's literature is intended to be accessible and understood by readers. Also, in line with Harpiyani et al. (2022) explained that teaching materials are an important part of the implementation of education. Teachers will be assisted in learning, and children can quickly obtain learning materials using teaching materials (Kristanto & Mariono, 2017).

The development of teaching materials provides positive things, where learning will be more fun, effective, efficient, and not deviate from the learning objectives. Therefore, using teaching materials in class is appropriate because they are the most important part of education. They can build students' interest in reading, especially in kindergarten children, and are easy to use or obtain. However, this picture storybook has drawbacks, including teaching material that is too broad or too little and children's different understanding of the story.

METHOD

This type of research is research and development (R&D). The development model used is the ADDIE model (Analyze, Design, Development, Implementation, Evaluation) as a guide in producing products and testing their validity. The ADDIE model implementation plan can be seen in Figure 1



These stages must be carried out systematically. This research was conducted in class B in the even semester of the 2022/2023 academic year at Ar Rehan Kindergarten Pekanbaru. Data collection methods used in this development research were observation, interviews, validation, and teacher and student response questionnaires. This research develops a product, namely a digital-based storybook for moral intelligence in early childhood. In this study, the media will be tested by experts (media experts), language experts, and ECE experts. The data analysis used in this study was descriptive analysis. The data were obtained from a questionnaire given to media experts, material experts, and teacher and student responses.

RESULTS AND DISCUSSION

Developing technology-based storybooks for children aged 4-5 refers to the stages of developing the ADDIE model, including (Analyze, Design, Development, Implementation, and Evaluation). The results of the elaboration of the development of digital-based storybooks are as follows:

1. Analysis Phase (Analyze)

In this step, the researcher conducts a field study to understand the problem's scope. In the analysis phase, the researcher conducted preliminary research, namely interviews and observations of the teacher's learning process at Ar Rehan Kindergarten. The aim is to obtain analysis data on the material characteristics of children, as well as an analysis of children's needs. In the analysis of children's characteristics during thematic learning, there is a lack of teachers utilizing learning media and lecture methods that teachers often carry out. The lack of use of learning media makes children bored quickly, especially when learning to develop language aspects. Students cannot think abstractly when listening to a teacher tell a story, so they need creative media.

2. The Design Stage

At the design stage, the researcher determines and develops material according to the early childhood curriculum, the theory of stages of moral development from Kohlberg, and the moral intelligence scale from Borba and pays attention to the elements that must be considered when making reading picture book readings for pre-reading children from the Ministry of Education and Culture in the development and coaching agency language. The following will explain the details of the flow of the process of developing pictures storybook media, as follows:

No	Development Details	Description
1	Content Material	<p>At this stage, the researcher made a story concept based on the early childhood curriculum reference, the theory of the stages of moral development, the moral intelligence scale made by reading picture story books for pre-reading children from the Ministry of Education and Culture, the contents of the story were designed for children's morals, then began to determine the goals and objectives of the book media picture story, after the basic concept has been determined, a storyline is made.</p> <p>The initial design in this study began with a book design process adapted to the characteristics of early childhood so that it was easy to understand, which was checked by material experts.</p>
2	Create illustrations or concept stories	<p>At this stage, the researcher creates an illustration or story concept to determine the basic steps in designing a children's storybook are as follows:</p> <ol style="list-style-type: none"> 1. Layout every children's storybook that is made certainly has a very varied characteristic or style, composition, and design. Some common points that can be found in children's story books include: boxed, vignette, full bleed, and spot. 2. The size of the illustration uses the illustration style of small pictures and then gradually becomes one full page until the end of the story, or vice versa. The function of a small image is to show a more detailed or clear illustration of the image. 3. Rhythm and Pattern, Children's storybooks generally have a pattern or storyline that tells the whole story with a rhythm that flows dynamically. These patterns and rhythms can be seen in the depiction of strong stories or text support contained in a storybook. 4. Typography in a children's storybook must pay attention to the elements of ease and clarity to make it easier for children to read. In addition to the points mentioned above, Trapani (2013) states that most children's storybooks have an average size of 20.32 x 25.4 cm.
3	Product specifications	<p>At stages, product, and specifications designed to create a book design:</p> <ol style="list-style-type: none"> 1. The resulting product is a technology-based storybook 2. A digital-based storybook consisting of a cover, story content, and moral messages 3. Digital-based storybooks are equipped with guidebooks 4. Digital-based storybooks are made based on the theory of moral intelligence.
4	User Manual	<p>At this stage, the researcher makes a digital-based storybook media guidebook to make it easier for teachers to use or explain it to children:</p> <ol style="list-style-type: none"> 1. Guidebooks are arranged systematically in learning activities 2. Guidebooks are written and designed for the benefit of early childhood 3. The guidebook lists and explains the learning objectives 4. The contents of the book are based on the needs of early childhood 5. The book is packaged as instructional, so it is accompanied by a children's guide to explain how to learn it. 6. The contents of this manual include: a). title b). Introductory word c). Learning Instructions d). Material description e). Conclusion

3. Stages of Development (Development)

Development or product manufacturing and testing stages, the product design development results of digital-based storybook media are then validated to obtain an assessment from material and learning media experts. Several things must be considered in making a learning media, including the following: 1) in terms of the concept of truth, 2) accuracy (does not result in conceptual errors), 3) durability, 4) resilience, 5) security, 6) size

suitability, 7) flexibility. Products that have been printed in physical form and digital form will then be validated by experts, namely material experts and media experts so that researchers can determine the feasibility of the developed media products. Where the results obtained are as follows:

Table 1. Results of Analysis of Media and Material Expert Assessments

Validators	Total Score	Percentage	Information
Media Expert	32	87%	Very good
Material Expert	60	93%	Very good

Based on the material expert assessment analysis results in Table 1, it is carried out through one stage of assessment. The validator provides assessments, input, and suggestions. Based on the table of validator test results conducted by media experts, obtaining 87% of results indicate that the media is perfect for early childhood use. images and buttons, cover, background, navigation) Moreover, programming aspects include (convenience, button functions, complete identity of the book, and not changing the settings on the PC).

The validation test stage carried out by material experts obtained results of 93%, showing that in the validator test carried out by material experts in digital-based story books, it was feasible to do trials in early childhood. This was feasible because it fulfilled two aspects of language which include (simplicity of language, appropriate terms, using PUEBI, and writing layout) and content aspects, which include (easy-to-understand story titles according to children's daily life and an appropriate number of pages). However, improvements were made on pages 6 and 8 at this validation test stage, where the sentences were still not simple.

4. Stages of Implementation (Implementation)

In this implementation phase, trials were carried out on media experts and material experts to validate the feasibility of storybooks in the form of questionnaires. Material expert questionnaires are used to analyze the feasibility of storybooks in terms of their contents. The aspects assessed are 1) cover design and 2) content suitability.

The implementation of digital-based storybook media was carried out well as a whole, and the researchers carried out a series of activities as follows:

- a. The researchers introduced media products to children through product presentations in front of the class using an LCD projector that displayed picture storybook media.
- b. The researchers distributed questionnaires to children's responses after the introduction of picture storybook media products was completed.

- c. The researchers introduced digital-based storybook media products to ECE teachers by viewing media using smartphones.
- d. The teacher's response questionnaire was assessed after the teacher examined the media that was made.

The implementation phase was carried out through two stages, namely pretest, and posttest, which were limited to 20 children in Ar Rehan Kindergarten. This study used the Wilcoxon test in statistical testing. The Wilcoxon test was taken because this study used two interrelated variables, and this research looked for a relationship between These variables. In Kadir's (2015, p. 505) opinion, the Wilcoxon test is used for two related or dependent samples (correlated). The significance level in this study is 0.05. If the p-value < 0.05 , then H_a is accepted, and H_o is rejected, which means there is an influence between the two variables and vice versa. If the p-value is $> 0, 05$, then H_o is accepted, and H_a is rejected, which means there is no relationship between the two variables. This study obtained a value of 0.039 on the Wilcoxon test, where the value is less than 0.05, which means that H_a is accepted and H_o is rejected, where there is the influence of digital-based storybooks for early childhood moral intelligence.

In the implementation of this study, it can be seen that children who only understand digital media as entertainment media play YouTube after they read children's storybooks. They know the use of digital media other than as a medium of entertainment. The use of digital media is more focused. They understood the impacts and benefits of using digital media, but the children were less enthusiastic when reading printed storybooks. However, when the children read digital-based storybooks, the children were more enthusiastic and interested. Even though some children at their reading level were still less competent, they were able to understand the contents of the story conveyed from the book through the pictures presented in the book, adding the effect of turning over the book adds to the attractiveness of the child and train children's eye and finger coordination.

This follows the opinion of Kazakoff (2014, p. 12). Digital media is not entirely bad for children. Parents do not make digital media a medium for childcare, so the bad effects of digital media cannot be avoided by children, and supervision and assistance from the family environment, school, and community have an essential role in early childhood digital literacy skills.

5. Evaluation Stage

At this stage, the researcher evaluates the results of the questionnaire filled in by the teacher and the children. If the response to the learning media is not optimal, then revisions are made to produce the final product. The effectiveness of learning media in digital-based storybooks can be seen from a survey of children and teachers.

a. Assessment Results Pick up the teacher's response

Table 2. Results of Teacher Response Assessment

No	Rated aspect	Total score
1	Conformity Aspect	3
2	Language Aspect	3
3	Study Aspects	3
4	Aspects of effectiveness for children	3
5	The feasibility aspect	2
Score		15
Max Score		15
Percentage		93%
Criteria		Very good

Based on Table 2, the teacher's response questionnaire results can be seen to get a percentage of 93% in the "very good" category. From these results, it can be concluded that digital-based storybook learning media can improve the moral intelligence of early childhood and can be used.

b. Assessment Results Raise Child's Response

Table 3. Results of Assessment of Children's Responses

No	Rated aspect	Score	Max Score	Percentage	Criteria
1	Ease of Understanding	70	75	93%	Very good
2	Independent Learning	44	50	88%	Very good
3	Learning Activeness	45	50	90%	Very good
4	Digital-based Storybook for Moral Intelligence	45	50	90%	Very good
5	Presentation of Digital-Based Storybook Media	22	25	88%	Very good

Based on Table 3, the child's response questionnaire results can be seen to get a percentage of 88% in the "very good" category. From these results, it can be concluded that digital-based storybook learning media is practical to use. From these results, it can be said that picture storybook learning media can be used practically and efficiently for the learning process and is able to educate children's morals.

A good storybook must meet standards in making storybooks, including: 1) the content and themes contained in a storybook contain character values related to children's daily

activities, 2) storybooks have attractive colors and pictures and have little writing, 3) storybooks can increase children's creativity and imagination, 4) storybooks contain messages that children can understand, 5) storybooks can increase children's curiosity. Digital-based storybooks are storybook innovations packaged in digital form for early childhood moral intelligence. The results obtained by digital-based storybooks are feasible and effective for early childhood moral intelligence.

This is in accordance with the research results conducted by Rizkiyah & Ningrum (2022). Digital media cannot be separated from children's lives, so it is necessary to instill digital literacy from an early age by providing children with an understanding of the wise and appropriate use of digital media, digital literacy in early childhood. Although digital media has an influence on children after an early age, children are not may be separated from parental supervision and decision-making must be in the hands of parents. According to Sumiati & Tirtayani (2021), the use of audio-visual-based digital picture story books can stimulate the abilities of early childhood.

In digital-based storybook products, they obtained very good qualifications. Regarding digital-based storybook products based on stimulating moral intelligence. The digital-based storybook product that has been developed is suitable for use in learning. Teacher readiness in teaching will affect on the smoothness and success of the learning process. suitability of the material with the developed media, images, audio, aspects of operation, aspects of accuracy and clarity. From the results obtained by the media expert test that with learning media that are appropriate to the material and characteristics of the child, it will be able to help teachers and students in the learning process.

Learning media plays a big role in the success of a lesson because learning media is useful as a means of transferring information to children (Laurillard, 2020). Well-organized learning will assist teachers in implementing effective learning (Tafonao, 2018). Teacher readiness in teaching will affect the smoothness and success of the learning process. The suitability of the material with the developed media, images, audio, aspects of operation, aspects of accuracy and clarity (Kuntadi & Hidayat, 2023). From the results obtained by the media expert test that with learning media that are appropriate to the material and characteristics of the child, it will be able to help teachers and students in the learning process.

Digital-based story media can be applied in the learning process to stimulate the moral aspects of children's religion. With learning media, teachers can provide stimulus to children

so that they are facilitated in learning (Arika, 2023). With the right stimulus can increase motivation to learn in children. This finding is reinforced by previous findings which state that this picture story media can be a reference for learning media and can support the learning process. In addition, with the media of this picture story can make learning more varied.

CONCLUSION

From the discussion and research results, it can be concluded that the development of digital-based storybooks is to educate early childhood morals because at this time the development of globalization is very rapid. so as to enable and facilitate foreign culture to enter Indonesia and make the nation's next generation forget their own culture. Including early childhood, who as the nation's next generation, must have learning media that is balanced with the times to educate morals in early childhood.

The development of digital-based storybooks is very appropriate for educating early childhood morals because they contain lots of interesting pictures for children, have a variety of colors, and packaging that is in line with the times, related to technology. The development of digital story books was stated to be very valid by the validator, the teacher. This digital story book is suitable for use as a medium for early childhood learning to educate morals. The research results were obtained from the validation of the two material experts by 86%, media expert validation by 87% and from 8 teacher respondents by 93% and the child's response by 88%. From the product trial, it obtained a value of $0.004 < 0.05$ which shows that digital-based storybooks can have a significant and effective effect on increasing the moral intelligence of children in Ar Rehan Kindergarten.

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