

Development of Animated Video Learning Media to Improve the Cognitive Abilities of Early Childhood Children in Class A at TKIT Baitusshalihin Banda Aceh.

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Abstract

This study aimed to develop an animated video learning media that is valid, practical, and effective in improving the cognitive abilities of early childhood students in Group A1 at TKIT Baitusshalihin, Banda Aceh. This research employed the Research and Development (R&D) method using the ADDIE development model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. The research subjects were 20 children aged 4–5 years. Data were collected through observation, interviews, questionnaires, pretests, and posttests. The data were analyzed using qualitative and quantitative descriptive analysis, as well as the Shapiro–Wilk normality test and the Paired Sample t-Test with the assistance of IBM SPSS Statistics 26. The results showed that the animated video media achieved a very high level of validity, obtaining 100% from the media expert, 93.75% from the material expert, and 95% from the language expert. The practicality test result reached 100%, categorized as very practical. The effectiveness test demonstrated an increase in the average cognitive ability score of children from 31 in the pretest to 90 in the posttest. The normality test indicated that the data were normally distributed, with significance values of 0.550 for the pretest and 0.583 for the posttest. Furthermore, the Paired Sample t-Test yielded a significance value of 0.000 (< 0.05), indicating that the animated video media was effective in improving the cognitive abilities of early childhood children. Therefore, the developed animated video media is feasible to be used as an alternative learning medium to enhance early childhood cognitive development.

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1. INTRODUCTION

Early Childhood Education (ECE) is a very important stage of education in preparing children to enter the next level of education. Children aged 0–6 years experience very rapid growth and development, therefore this period is often referred to as the **golden age**. This is in line with the opinion of Pratama (2022), who states that early childhood children experience the most rapid development both physically and mentally. Brain development as the center of intelligence occurs very rapidly because brain development in early childhood reaches approximately 80% of adult brain development; therefore, this period is called the golden age. Therefore, early childhood is the appropriate phase to provide various developmental stimulations. At this stage, appropriate

stimulation is needed to support children's physical, social, emotional, language, and cognitive development.

Cognitive development is one of the important aspects that enables children to think, remember, understand, and solve simple problems encountered in everyday life. According to Martini and Sitorus (2023), cognitive development is a thinking process that involves children's ability to connect, evaluate, remember, and understand various events occurring in their surrounding environment. Optimal cognitive development helps children build logical thinking skills and problem-solving abilities from an early age. In addition, Nasution and Sit (2024) state that early childhood cognitive development is a gradual process related to children's ability to understand, process, and construct knowledge based on the experiences they acquire. Cognitive development at each stage serves as the foundation for development at the next stage; therefore, appropriate stimulation must be provided according to children's age and characteristics. According to Mupida (2024), the use of learning media that are appropriate to the characteristics of early childhood children can help improve their cognitive abilities, especially in recognizing number concepts, classifying objects, and completing simple tasks related to thinking activities. Dewi, Hibana, and Ali (2023) also argue that early childhood cognitive development needs to be stimulated through various learning media and engaging learning activities so that children's thinking, memory, and problem-solving abilities can develop optimally.

Based on the **Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 137 of 2014**, indicators of cognitive development for children aged 4–5 years include the ability to recognize number concepts, count objects, classify objects, arrange objects based on size or color, and match number symbols with the corresponding quantities of objects. However, achieving these developmental indicators requires learning strategies and media that are appropriate to the characteristics of early childhood children. Lilawati (2025) explains that early childhood cognitive development includes learning and problem-solving skills, logical thinking, and symbolic thinking. These three aspects need to be continuously stimulated through learning activities that are appropriate to children's developmental stages. This is in line with the opinion of Munafiah, Uminar, Pralikka, and Munir (2025), who state that the early childhood period, particularly at the age of 4–5 years, is a very important stage in forming the foundation of children's cognitive abilities. During this period, children are in an active exploration and learning phase, where they begin to show interest in various activities that stimulate thinking skills and introduce concepts of numbers, shapes, and patterns.

According to Cholik (2021), information technology is an important factor in the advancement of the modern era and influences various fields of life, including education. The rapid development of technology has affected many aspects of life, including the field of education. Today's children are already very familiar with digital devices, animated content, colorful images, and various forms of audio-visual stimulation. Woga and Juita (2023) state that cognitive development is the foundation of children's intelligence development. Early childhood children actively construct their knowledge through learning experiences and interactions with their environment; therefore, learning media that can provide concrete and meaningful learning experiences are needed. Nilawarti, Fitriah, Anwar, Wati, and Mardiana (2024) explain that cognitive development is a fundamental aspect that shapes children's logical thinking, problem-solving, and observation skills. Therefore, the learning

process should provide opportunities for children to actively explore various interesting and enjoyable learning experiences.

Therefore, technology-based learning media such as **animated videos** have great potential to attract children's attention and improve their learning outcomes. Animated videos combine moving images, sound, text, and attractive visual elements, making the learning process more enjoyable and meaningful for early childhood children. This is supported by the research of Dewi and Handayani (2021), who state that animated video learning media can increase students' interest in learning because they present material visually, attractively, interactively, and in an easily understandable manner. The use of animated videos can also help make the delivery of information more effective compared to learning that only uses lecture methods. Zahra and Maghfirah (2025) explain that animated videos can be an effective learning medium because they provide attractive visual and auditory stimuli for children. The use of animated videos helps children retain information longer in their memory, thereby supporting the development of early childhood cognitive abilities.

Based on the results of preliminary observations conducted at **TKIT Baitusshalihin Banda Aceh**, it was found that some children in Class A1 had not yet achieved optimal cognitive development, particularly in recognizing number concepts, counting objects, and matching number symbols with the corresponding quantities of objects. In addition, the learning media used were still conventional and had not maximally utilized technology. This condition resulted in children's attention and involvement in the learning process not being optimal.

Several previous studies have shown that animated video learning media are effective in improving early childhood cognitive abilities. Research by Rahayu, Trisnantari, and Asrori (2025) showed that the developed technology-based learning media had high levels of validity, practicality, and effectiveness in improving children's cognitive abilities. Research by Putri, Sofyan, and Muazzomi (2025) also showed that the developed learning video obtained very good validation results from both material experts and media experts. In addition, research by Swari and Ambara (2022) proved that animated videos can help improve the cognitive and language abilities of early childhood children through activities involving letter and number recognition. In line with these studies, Mely (2025) found that the development of animated videos using the Canva application was proven to improve early childhood cognitive abilities. Animated video media provide a more engaging learning experience, making it easier for children to understand the learning concepts presented by teachers.

Although various studies have developed animated video learning media, most of these studies focus on cognitive development in general. The **novelty** of this study lies in the development of an animated video specifically designed to improve the cognitive abilities of children aged 4–5 years in recognizing number concepts among Class A1 children at TKIT Baitusshalihin Banda Aceh using the ADDIE development model.

Research conducted by Norita and Hadiyanto (2021) showed that the developed multimedia-based cognitive learning media met the criteria of being valid, practical, and effective. The results of the study proved that the use of interactive multimedia could improve the numeracy skills of early childhood children aged 5–6 years. These findings indicate that the utilization of technology in learning can be an effective alternative for optimizing children's cognitive development.

Based on the description above, this study aims to develop animated video learning media and to examine its validity, practicality, and effectiveness in improving early childhood cognitive

abilities. The research questions of this study are: (1) How valid is the developed animated video in improving children's cognitive abilities? (2) How practical is the animated video for use in the learning process? and (3) How effective is the animated video in improving the cognitive abilities of Class A1 children at TKIT Baitussalihin Banda Aceh?

2. METHOD

This study employed the Research and Development (R&D) method aimed at developing animated video learning media and examining its validity, practicality, and effectiveness in improving early childhood cognitive abilities. The development model used was ADDIE, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation.

At the **Analysis** stage, the researcher conducted observations and interviews with teachers to identify learning problems in Group A1 at TKIT Baitussalihin Banda Aceh. The results indicated that some children still experienced difficulties in recognizing number concepts, counting objects, and matching number symbols with the corresponding quantities of objects.

The **Design** stage involved planning the animated video learning media. At this stage, the researcher prepared learning materials, created storyboards, and designed the animated videos using Canva and CapCut applications, adjusted to the characteristics of children aged 4–5 years.

The **Development** stage involved producing the animated video that had been designed and validating it through media experts, material experts, and language experts. The validation results were used as the basis for revising and improving the product before the trial implementation.

The **Implementation** stage was conducted by applying the animated video in the learning process in Group A1 at TKIT Baitussalihin Banda Aceh. Before using the media, the children were given a pretest to determine their initial cognitive abilities. After participating in learning activities using the animated video, they were given a posttest to measure improvements in their cognitive abilities.

The **Evaluation** stage involved analyzing all data obtained from expert validation results, teacher response questionnaires, observations, pretests, and posttests to determine the quality and effectiveness of the developed media.

This research was conducted at TKIT Baitussalihin Banda Aceh, located on T. Iskandar Street, Baitussalihin Mosque Complex, Ceurih Village, Ulee Kareng District, Banda Aceh City, Aceh Province. The research subjects consisted of 20 children in Group A1 aged 4–5 years.

Data collection techniques included observation, interviews, questionnaires, pretests, and posttests. Observation was used to assess children's cognitive development, while questionnaires were used to obtain data regarding media validity, material validity, language validity, and teachers' responses to the developed media.

Data analysis techniques consisted of qualitative descriptive analysis and quantitative descriptive analysis. Qualitative descriptive analysis was used to process suggestions and feedback from the validators, whereas quantitative descriptive analysis was used to analyze validation scores, practicality, and effectiveness of the media. The effectiveness test was conducted through the Shapiro–Wilk normality test and hypothesis testing using the Paired Sample t-test with the assistance of IBM SPSS Statistics 26. The decision criterion was that if the significance value was less than 0.05, H_a was

accepted and H_0 was rejected, indicating that the animated video media was effective in improving children's cognitive abilities.

3. RESULTS AND DISCUSSION

This study aims to develop animated video learning media to improve the cognitive abilities of early childhood children in Group A1 at TKIT Baitusshalihin Banda Aceh. The media development process uses the ADDIE model, which consists of five stages, namely Analysis, Design, Development, Implementation, and Evaluation. After the media has been developed, a series of tests are conducted, including media expert validation, material expert validation, language expert validation, practicality testing, and effectiveness testing through pretest and posttest activities. The results of the study show that the developed animated video learning media has a very high level of validity, practicality, and effectiveness, making it suitable for use in early childhood learning activities.

a. Media Expert Validation Results

Media validation was conducted by a media expert to assess the feasibility of the developed animated video. The evaluated aspects included video appearance, audio clarity, text readability, duration suitability, ease of use, image clarity, and the usefulness of the media in the learning process. The validation results indicated that the animated video obtained a score of 100%, which falls into the **very valid** category. Therefore, the media was considered feasible for use in the learning process.

b. Material Expert Validation Results

Material validation was carried out to assess the suitability of the video content with the learning objectives and the developmental level of early childhood learners. In the first validation stage, the media obtained a score of 75%, categorized as **fairly valid**. The validator suggested adding numbers to the object-counting activities. After revision, the validation score increased to 93.75%, which falls into the **very valid** category. These results indicate that the content presented is appropriate for the learning needs of early childhood children.

c. Language Expert Validation Results

Language validation was conducted to evaluate the language used in the animated video. The assessed aspects included compliance with Indonesian spelling rules, sentence clarity, language simplicity, and language suitability to the learning material. The validation results showed a score of 95%, categorized as **very valid**. Therefore, the language used in the video is easy for young children to understand.

d. Implementation Results

The animated video learning media that had been declared valid was then implemented in Group A1 at TKIT Baitusshalihin Banda Aceh. The implementation was conducted from May 6 to May 16, 2026. Of the 25 registered children, 20 participated in the learning activities until completion, while 5 children were unable to attend all sessions due to illness or personal leave. During the learning process, the children showed enthusiasm and actively participated in learning activities using the animated video.

e. Pretest and Posttest Results

The pretest results showed that children's cognitive abilities before using the animated video achieved an average score of 31, categorized as **Beginning to Develop (BD)**. After the

implementation of the animated video, the average posttest score increased to 90, categorized as **Very Well Developed (VWD)**. This improvement indicates a significant enhancement in children's cognitive abilities after using the animated video learning media.

f. Normality Test Results

The normality test was conducted using the Shapiro–Wilk method. The results showed a significance value of 0.550 for the pretest data and 0.583 for the posttest data. Since both significance values were greater than 0.05, the pretest and posttest data were considered normally distributed and therefore met the requirements for further hypothesis testing using a t-test.

g. Paired Sample t-Test Results

The hypothesis testing using the Paired Sample t-Test revealed a significance value (Sig. 2-tailed) of 0.000. Since this value was less than 0.05, H_0 was rejected and H_a was accepted. Therefore, the developed animated video was proven to be effective in improving the cognitive abilities of Group A1 children at TKIT Baitusshalihin Banda Aceh.

h. Discussion

This study successfully developed animated video learning media using the ADDIE model, which consists of the Analysis, Design, Development, Implementation, and Evaluation stages. The validation results from media experts, material experts, and language experts indicated that the developed media was categorized as **very valid**, making it suitable for implementation in the learning process. In addition, the practicality test yielded a score of 100%, categorized as **very practical**, indicating that the media was easy for teachers to use during classroom instruction.

The increase in the average score from 31 in the pretest to 90 in the posttest demonstrates that the use of animated video media effectively improved children's abilities in recognizing numbers, counting objects, and matching number symbols with the corresponding quantities of objects. This finding was further supported by the Paired Sample t-Test results, which showed a significance value of 0.000 (< 0.05), confirming that the animated video media was effective in enhancing early childhood cognitive abilities.

4. CONCLUSION

This study successfully developed an animated video learning media to improve the cognitive abilities of early childhood children in Group A1 at TKIT Baitusshalihin Banda Aceh using the ADDIE development model. The results showed that the developed media achieved a very high level of validity based on assessments from the media expert (100%), material expert (93.75%), and language expert (95%). In addition, the media obtained a practicality score of 100%, which falls into the very practical category. Therefore, the objective of this study to produce an animated video learning media that is valid, practical, and suitable for use in learning activities has been achieved. The effectiveness test results indicated an improvement in children's cognitive abilities, as evidenced by the increase in the average pretest score from 31 to 90 in the posttest. Furthermore, the normality test results showed that the data were normally distributed, while the Paired Sample t-Test produced a significance value of 0.000 (< 0.05). Therefore, it can be concluded that the developed animated video learning media is effective in improving the cognitive abilities of early childhood children, particularly in recognizing number concepts, counting objects, and matching number symbols with the corresponding quantities among Group A1 children at TKIT Baitussalihin Banda Aceh.

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