

Development of Comic Drawing Material Application for Class VIII Junior High School Students

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Abstract

Education in the technological era requires innovation in teaching methods to enhance student interest and understanding. One effective method is to utilize animation-based media, which can capture students' attention and facilitate a more enjoyable learning experience. In this context, the development of an animation application for drawing comics is expected to meet that need. This research aims to develop engaging and interactive learning media to enhance students' understanding of comic drawing material. The method used is the 4D model (Define, Design, Develop, Disseminate), which begins with the definition stage to identify the needs and learning objectives, followed by the design stage to design the content and application format, the development stage to produce and test the application, and the dissemination stage to distribute the application to students. The research results show that the developed animation-based application has high validity based on assessments by media and material experts, with a percentage above 85%. Field trials also showed a significant increase in students' interest in learning the comic drawing material, with an average test score improvement of 20% after using the application. Overall, this application has proven effective in supporting the comic drawing learning process in eighth-grade junior high school classes. This research plays a significant role in creating creative and interactive learning tools, as well as opening up opportunities for further research in the field of art education.

Keywords: Learning Media, Application Development, Comic Drawing



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INTRODUCTION

Education is an effort to prepare the younger generation to face and embrace the changes of the times in the global era. Therefore, education must be organized as optimally as possible to enable the improvement of education quality and human resources (Nurrita, 2018). In the current digital era, art education, particularly drawing, faces significant challenges in attracting students' interest. The advancement of technology in the current digital era has produced a wide variety of digital-based products. Similarly, education has made rapid progress in terms of digital media, where technology continues to emerge and compete to be the best. Currently, the world of education has also begun to develop in the digital field by using interactive media to increase student interest in learning (Pratiwi, 2022).

One of the common challenges faced in education is the lack of effectiveness in the learning process. During the learning activities, students usually pay more attention to understanding concepts theoretically. Classroom learning activities are more focused on students' ability to understand the subject matter. Meanwhile, the theories studied by students are not applied in real life. This causes students to have a less profound understanding of the subject matter. In the learning activities, the presence of educators is expected to help in developing students' abilities and imagination. Thus, students can acquire knowledge that goes beyond mere theory, enabling them to apply it for the future in facing the developments of the times. Students often find it difficult to understand the material, especially comic drawing, which can be caused by a lack of interactive and engaging learning media. The monotonous traditional teaching methods are no longer effective in increasing student engagement. Moreover, many students feel less confident in their drawing skills, which results in low motivation to learn further. Therefore, an innovative approach is needed that can facilitate comic drawing learning in a more enjoyable and interactive manner. To address this issue, this research plans to develop an animation-based application specifically designed for comic drawing material. This application is expected to provide a more engaging and interactive learning experience for students. By using animation technology, students can learn in a more visual and practical way, thereby enhancing their understanding of drawing techniques. This problem-solving plan includes several stages, starting from analyzing student needs, designing application content, developing the application itself, to evaluating the application's effectiveness through classroom trials.

To address the issue, this research plans to develop an animation-based application specifically designed for comic drawing material. This application is expected to provide an interactive and enjoyable learning experience for students. By utilizing animation technology, students can learn drawing techniques through engaging visualizations, which makes it easier for them to understand the concepts being taught. This problem-solving plan includes several stages of development, starting from analyzing student needs, designing application content, developing the application itself, to evaluating the application's effectiveness through classroom trials.

The theoretical review related to this research includes several important aspects, among others, multimedia learning theory and learning motivation theory. According to Mayer (2017), the application of multimedia in the learning process can enhance students' understanding by effectively combining text, images, and sound. This is in line with cognitive theory, which states that individuals learn better when information is presented through various sensory channels. Research by Moreno and Mayer (2018) emphasizes that the integration of multimedia elements can help students organize new information in a way that Research by Moreno and Mayer (2018) emphasizes that the integration of multimedia elements can help students organize new information in a more meaningful way. more meaningful. Furthermore, the learning motivation theory by Deci and Ryan (2020) shows that the use of engaging media can enhance students' intrinsic motivation to learn. In the context of comic drawing, animation-based applications are expected to provide an enjoyable learning experience and encourage students to participate more actively in the learning process. Research by Liu et al. (2021) also revealed that technology-based learning methods can enhance student participation and improve their learning outcomes.

From this research, it is expected to obtain results in the form of an effective learning application to improve comic drawing skills among eighth-grade junior high school students. This application is designed to provide an interactive and enjoyable learning experience, which will help students better understand drawing techniques. Through the use of animation-based applications, students can learn in a more visual and practical way, thereby enhancing their understanding of comic drawing concepts. The benefits of this research are not only limited to improving students' technical skills but are also expected to foster their interest and love for drawing art in general. Drawing comics is a fun way to express ideas and emotions, as well as to develop students' creativity (Widiantoro & Fatoni, 2021). With this application, students will have a tool that makes it easier for them to create and innovate in drawing, thereby boosting their confidence in their work.

The aim of this research is to develop an effective animation-based application as a learning medium for comic drawing at SMP Islam Sultan Agung Sudimoro. By integrating multimedia technology, this application is expected to provide an interactive and engaging learning experience for students, thereby enhancing their interest and motivation in drawing. In addition, this research aims to provide clear and structured guidance on comic drawing techniques, from character creation to plot development, which often pose challenges for students.

RESEARCH METHODS

The method applied in this development is research and development, which is often known as Research and Development (R&D). This approach is applied to produce certain products and evaluate how effective they are (Sugiyono, 2017). Qualitative data was collected through direct observation in the field, interviews, and input from expert validation. The results obtained from these sources were then processed into a detailed description. Meanwhile, quantitative data is in the form of numbers obtained from the results of validation tests by material experts, validation tests by media experts, product practicality tests, and effectiveness tests. The research and development model applied in this study is the 4D model developed by Thiagarajan. The 4D model consists of four stages, namely Define, Design, Develop, and Disseminate. Research and development with the 4D model has a clear structure, making it easier for researchers to create and develop new products. The following is the structure of the 4D research model. Researchers chose to use this 4D model in product development, namely applications about drawing comics. The goal is to determine the process and effectiveness of the resulting product.

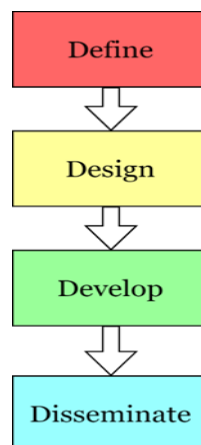


Figure 1. Stages of the 4D RnD Model (Source: Thiagarajan et al., 1974)

In the development of an animation-based application to improve comic drawing skills among eighth-grade students at SMP Islam Sultan Agung Sudimoro, this research uses the 4D development model, which includes four stages: Define, Design, Develop, and Disseminate. The research design begins with the (1) Define stage. At this stage, the researcher examines the need to identify various obstacles faced by students when learning to draw. To gain better insights, the

researcher engaged in conversations with experienced art teachers and conducted surveys among the students. Through interviews, the researcher can explore information about the teaching methods used and the challenges faced by the students. After the Define stage is complete, the research proceeds to the (2) Design stage. At this stage, the researchers carefully design the application content, including the creation of storyboards and interactive elements that will be used within the application. This design includes various drawing tutorials aimed at helping students better understand drawing techniques. In addition, the researchers also integrated interactive exercises and engaging features aimed at enhancing student engagement during the learning process. After the content design is complete, the research enters the (3) Develop stage. In this stage, researchers develop the application using software such as Adobe Illustrator and PowerPoint. The selection of this software is based on its ability to produce high-quality visual content and a user-friendly interface. It is important to ensure that learners can use the application well without encountering problems. Finally, the research moves on to stage (4) Disseminate. At this stage, the application that has been created will be given to the eighth-grade students who have been selected as the research sample.

In this study, researchers applied both qualitative and quantitative data analysis. The quantitative analysis method was used to test the validity and practicality of the product by utilizing a Likert scale. Meanwhile, to measure the effectiveness of the product, researchers used N-Gain (Normalized Gain). The following is the formula used in analyzing the results of the validation test and product practicality test.

Table 1. Media Validity Criteria

Percentage	Validity Level	Description
81% - 100%	Very valid	High category effective
61% - 80%	Quite valid	Medium category effective
41% - 60%	Less valid	Low category effective
21% - 40%	Not valid	Unusable
0% - 20%	Very invalid	Very unusable

(Source: Arikunto, 2016:89)

Meanwhile, to measure the ability based on the learning outcomes of understanding knowledge material, pre-test and post-test were conducted. After obtaining the value, the data that has been collected is then analyzed using the N-Gain (Normaized Gain) formula.

$$N \text{ Gain} = (S \text{ Posttest} - \text{Score Pretest}) : (\text{Score Ideal} - \text{Score Pretest})$$

Table 2. Criteria For Determining The Level Of Knowledge Effectivi

Percentage	Description
$g \geq 0,7$	Efektif kategori tinggi
$0,3 \leq g < 0,7$	Efektif Kategori sedang
$g < 0,3$	Efektif kategori rendah

RESULTS AND DISCUSSION

Research and Development Results

Stage 1: Define

At this stage, the researcher collected information about the needs by interviewing and surveying students and art teachers. Through interviews with teachers, information was obtained about the challenges faced by students in learning to draw comics, such as the lack of interesting media and limited time for practice. In addition, a survey of students showed that many of them find it difficult to understand the concept of drawing comics and have low confidence in their drawing ability. These results indicate the need for an application that can overcome these problems by

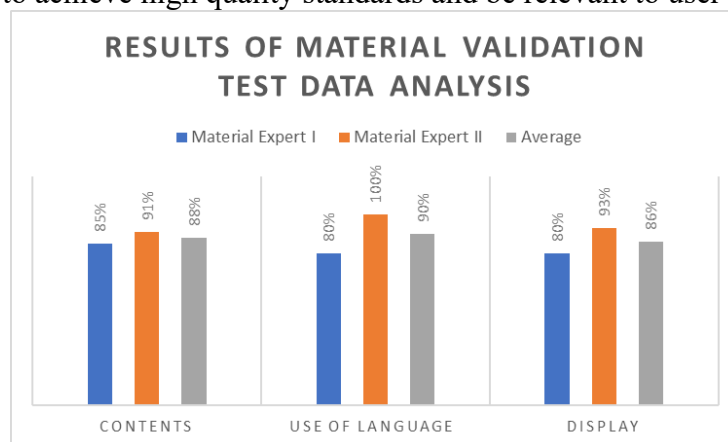
providing interactive and interesting learning media. In addition to the interviews, a survey conducted to students revealed significant results. Most students found it difficult to understand the basic principles of drawing comics, as well as facing challenges in applying the techniques that had been taught. In addition, many of them also expressed low confidence in their drawing abilities. This often caused them to hesitate to actively participate in drawing activities and interact with their peers.

Stage 2 : Design

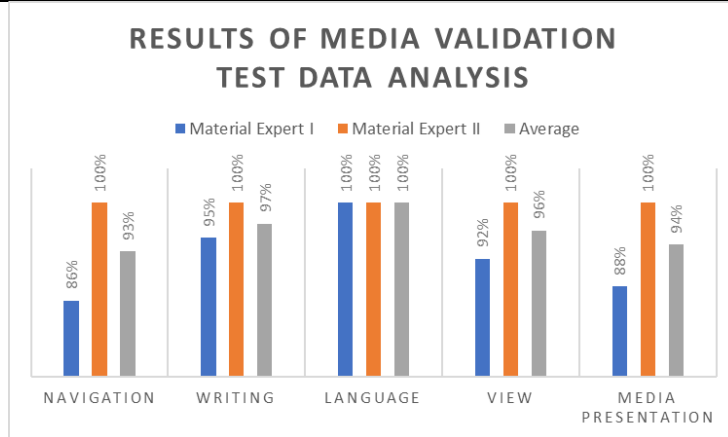
In the design stage, researchers started with the development of learning applications using Microsoft PowerPoint as the main platform. PowerPoint was chosen because of its ease in creating interactive and visual presentations. The researcher designed the graphical elements of the app using Adobe Illustrator, which allows the creation of more complex and high-quality visuals. In this process, various graphic elements such as characters, backgrounds, and other objects were designed to support the comic drawing material. After the graphic elements were created in Adobe Illustrator, the next step was to integrate and animate the elements in PowerPoint. The researcher used PowerPoint's animation features to provide interesting effects, such as smooth transitions between slides, entry and exit animations for graphic elements, as well as interactions that students can perform, such as clickable buttons to start tutorials or drawing exercises. The purpose of this is to build an engaging and interactive educational experience, so that students not only get information without being engaged, but also actively participate in the learning process. The following chart is used in planning the design of the Animation-based Application.

Stage 3 : Develop

At the development stage, it is important to test the validity of the product after preparation based on a predetermined design. The purpose of this step is to produce a product that is expected to have advantages over previous products (Wijaya et al., 2023). The validity test serves to obtain the final form of the product through suggestions and recommendations provided by experts, as well as to assess the feasibility and quality of the product tested by the validator before testing it to users. This validation process involves the use of questionnaires addressed to experts, which are divided into two categories: material experts and media experts. Each category involved two experts in accordance with their fields. The first material validator was a cultural arts teacher at SMP Islam Sultan Agung Sudimoro, while the second material validator was a lecturer from the art and design department at the State University of Malang. For media validators, this product involves lecturers from the Visual Communication Design department and also lecturers from Educational Technology at the Faculty of Education. Through this approach, it is expected that the resulting product will be able to achieve high quality standards and be relevant to user needs.



Graph 1. Results of Data Analysis of Validation Test of Materials I and II (Source: Personal Document)



Graph 2 Data Analysis Results of Media Validation Test I and II (Source: Personal Documents)

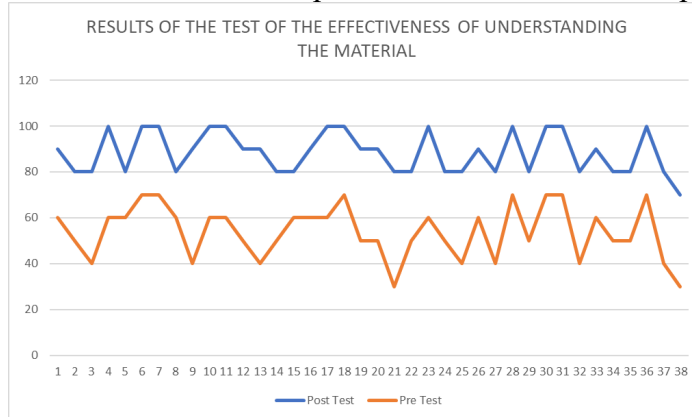
Based on the graph that has been presented, the total average of material experts I got 83% and media experts II got 93% with a total of 88% and the total average of media experts I got 91% and media experts II got 100% with a total of 95% so that from the results of media validation it can be classified that this media is very suitable for use in the learning process.

Table 4. Product Modification Result

Media	Materials
	
Adding a video source	Add more material
	
Music volume reduced slightly	Comic drawing tutorial video adapted to junior high school level

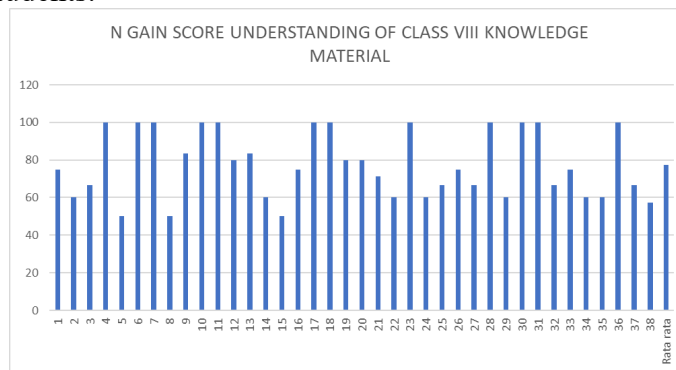
Table 4 above is the result of revision of animation-based application products by material and media expert validators. The product revisions include first, adding more material, comic image video tutorials adjusted to junior high school level, video tutorial source links, and slightly reduced background volume so as not to dominate too much. After revising the product, the next step is to carry out an effectiveness test of understanding the material in class VIII students to find out how

much students understand the material in the product that has been developed.



Graph 3. Data Analysis Results of Knowledge Effectiveness Test (Source: personal documents)

Based on the graph showing the effectiveness test data of students' knowledge understanding, for the pre-test, the lowest score obtained was 30, which was achieved by 2 students, while the highest score reached 70, which was achieved by 7 students. In contrast, in the post-test, the lowest score recorded was 70, which was achieved by 1 student, while the highest score reached 100, achieved by 12 students.



Graph 4. Results of Knowledge Effectiveness Test Data Analysis(Source: personal document)

Based on the graph of the data analysis results of the effectiveness test of students' knowledge of comic drawing material, which is calculated using the N-Gain formula, it can be concluded that the average obtained is 0.773308271, which can be rounded to 0.77. If we refer to the table of criteria for determining the level of effectiveness of N-Gain, the value of 0.77 is included in the category $g > 0.7$, which indicates that this score is classified as effective in the high category. The criteria that have been obtained indicate that the application of animation-based applications works well and has a significant positive impact on students' understanding of knowledge in the context of drawing comics.

Stage 4 : Disseminate

The product that has been developed in this study in the form of an animation-based application is disseminated by researchers on a limited basis, namely by distributing the final product to cultural arts teachers and grade VIII students at Wahid Hasyim Junior High School in Malang. Researchers conducted training sessions for students and teachers so that they understood how to use the application effectively.

Discussion

The results showed that the development of an animation application for drawing comics at SMP Islam Sultan Agung Sudimoro successfully achieved its objectives. The research focused on developing effective and engaging learning media. The initial stage involved interviews with art

teachers and student surveys, which identified challenges such as difficulty understanding comic drawing and low self-confidence. The researcher then designed the application using Microsoft PowerPoint and graphic elements from Adobe Illustrator, creating interactive content such as tutorials and quizzes. Pilot testing of the app showed students felt excited to learn, with positive feedback and validation from experts reaching above 85%. After training for both students and teachers, students' learning outcomes improved by 20%, and they reported increased confidence. The app also showed high validity, with an average of 88% from material experts and 95% from media experts, proving the appropriateness of content and design. This research makes a significant contribution in improving the quality of art education and opens up opportunities for the development of technology-based learning media in the future.

CONCLUSIONS

Based on the findings of this research, it can be concluded that this study successfully developed an animation-based application to enhance students' understanding and skills in comic drawing at SMP Islam Sultan Agung Sudimoro, following the 4D development model which includes the Define, Design, Develop, and Disseminate stages. In the Definition step, a needs analysis was conducted through interviews with art teachers and surveys of students, which revealed various difficulties faced by students, such as challenges in understanding drawing concepts and low levels of self-confidence. These findings emphasize the importance of developing interactive learning media. At the design stage, the application was designed using Microsoft PowerPoint as the main platform and Adobe Illustrator for graphic elements, with a focus on creating engaging and interactive content, such as tutorials and drawing exercises, aimed at increasing student engagement. The development process involved initial trials that provided constructive feedback, where the validation results showed a validity level above 85%, indicating that the application meets the expected quality standards. At the deployment stage, the distribution of the application to students and the training sessions provided contributed to a better understanding of the application's use. Field trials showed a significant increase in student interest and drawing skills, with an average learning outcome score improvement of 20%. This research offers an important contribution to the advancement of creative teaching media in the arts education sector, demonstrating that animation-based applications not only enhance drawing skills but also create enjoyable and interactive learning experiences. Thus, it is recommended that schools consider the implementation of this application in their curriculum and conduct further research to explore the potential of other technologies in art education. Consequently, the development of this innovation can continue and provide greater benefits to students in the future.

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