

INTERACTIVE MULTIMEDIA AS INSTRUCTIONAL MEDIA FOR ELEMENTARY SCHOOL STUDENTS

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Abstract

The purpose of this research is to develop an interactive multimedia as instructional media with Adobe Animate application on computer introduction material. To determine the feasibility of the interactive multimedia requires expert judgment in terms of materials and media as well as students. This is a Research and Development (R&D) which adapted from the ADDIE development model (Analysis, Design, Development, Implementation, and Evaluation), but only carried out until the Implementation. Validation is carried out by material experts, media experts, teachers, and students. Data collection techniques in this development research use a questionnaire. Data obtained from the questionnaire was then analyzed descriptively qualitatively and quantitatively. Based on four assessments which are material expert, media expert, teachers and students' assessment, the level of feasibility of developed interactive instructional media is valid and worthy of being used as a computer introduction instructional media for Elementary school students. Thus, the use of this media helps connect students with enjoyable learning experience. As a result, a positive consequence of utilizing this interactive instructional media is that teacher must keep their materials up to date.

Keywords: *Interactive Multimedia, Instructional Media, Computer Introduction, Adobe Animate, ADDIE.*

INTRODUCTION

A country's standard of living is strongly influenced by its level of education. Education will determine this nation's future course and whether it develops into a great nation that is intelligent, civilized, and able to change with the times (Hakiki et al., 2023). Humans must be aware of the present state of information

development in the globalization period in order to the community to be prepared for the globalization era and for members to be able to receive information rapidly. An approach to creating and producing high-quality resources is through systemic education. In the theory of learning activities, the instructor helps the students comprehend the content so they can

practice it later (Pebrianto et al., 2021). Based on the review for theory learning activities, appropriate learning strategies are needed. Technological developments have had an impact on the world education, especially in the learning process. Previously existed technology as it is today, students assume that learning resources just a teacher. Teachers are always thought to know everything. It's no longer happened again with the invention of technology (Rahman & Nyoman, 2020).

Resources for learning that are not just from the instructor. Thanks to the advancement of technology, students can now learn with anyone, anywhere, and at any time. As a result of these technologies' advancement, numerous schools are offering facilities that enable students to use them. (Septian et al., 2021). With these resources, hopefully, teachers will be able to better explain subjects to their pupils by making use of the facilities already present in schools to aid in the learning process. Science and technology advancements create chances for coordinated research to expand the corpus of knowledge in the future by reproducing the study in multiple academic settings and with a larger sample size (Hakiki et.al, 2023). The computer was one of the cutting-edge technologies that was discovered. Almost every aspect of human life can be made simpler by computers in a variety of sectors. One of these is the integration of computers into the classroom through the creation of educational multimedia to support student learning (Miftah, 2018).

To ensure that learning is meaningful for students, it goes without saying that the selected learning methodologies must be accompanied with relevant learning materials.

(Wibawanto, 2017). Examining educational resources that can aid in the learning process is crucial in light of the issues raised. In this regard, media can aid students in comprehending the material's learning ideas. Combining education with technology—such as computers, laptops, and smartphones—that are owned by educators, students, and schools is one of the advancements in educational media. (Utomo et al., 2016). And one way to lessen the issues that have been mentioned is to create learning materials that are appropriate for the needs. One way to lessen the issues that have been mentioned is to create learning materials that are appropriate for the needs. (Waziana & Anggraeni, 2017). Moreover, a number of studies clarify that interactive media has been shown to be a successful learning tool. It has been demonstrated that interactive learning materials help students learn more effectively. One way to assist teachers in raising the caliber of their students, as evidenced by learning outcomes, is through the use of instructional media. (Suryandaru, 2020).

METHODS

A. Type of Research

The process of creating and validating products for use in the educational process is known as research and development, (R&D). Effective and efficient research products can be produced by choosing the appropriate learning model. Users may benefit from and put the research findings to use if the product model that is developed is chosen wisely. In this study, the research model used is the ADDIE (Analysis; Design; Develop; Implementation; Evaluate) instructional design model that shows in figure 1 (Branch, 2009)

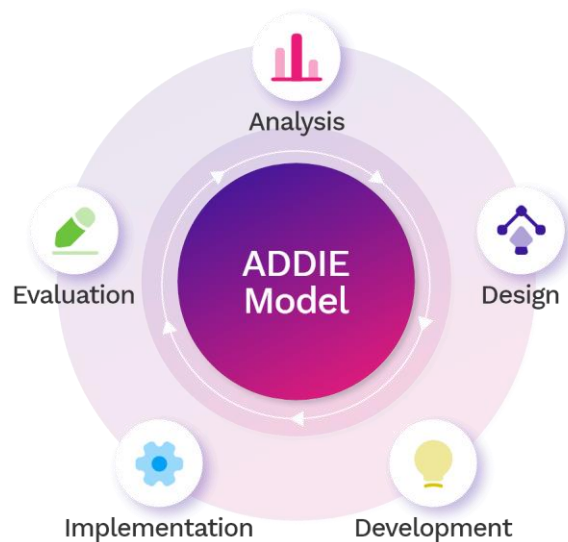


Figure 1. ADDIE Development Procedure

a. Analysis

In the analysis stage, the researcher conducted several analyzes to get an overview of the instructional multimedia that would be developed. The analysis carried out is a needs analysis where in determining the analysis of instructional multimedia needs, it is carried out by observing and interviewing productive subject teachers. It aims to determine the teacher's learning process in the classroom.

b. Design

There are several things to do at this stage, namely, design a flowchart that contains the flow of multimedia learning in a succinct manner. Developed based on the navigation structure that was created earlier, designing a story board is a brief descriptive description that contains the storyline in multimedia learning on subjects from the beginning to the end of the program, create a product assessment instrument that aims to assess the instructional multimedia products that have

been made and measure the validity of the product.

c. Development

The development step includes activities to create or modify appropriate media to be used in delivering learning materials. In addition to the process of translating the instructional multimedia design in the actual display, at this stage a validation process is also carried out by experts.

d. Implementation

The implementation step is to implement the instructional multimedia product developed. At this stage all requirement that has been developed is in accordance with its function. The product is ready; it can be tested on students and then evaluated and revised to produce a final product that is ready to be disseminated.

e. Evaluation

Evaluation is processed to see whether the learning system that is being built is successful, in accordance with initial expectations or not. Multimedia products are evaluated based on the results of student responses, so it can be concluded whether the developed instructional multimedia is suitable for use in learning.

B. Population and Sample

The population in this study was 121 students and 10 teachers at SD GMIM Koya. Since the material in instructional media developed is intended for grade V and the test only to see the feasibility of the media, then

samples are 5/23 students in grade V and 1/10 teachers.

C. Research Instrument

This study aims to test the feasibility of Instructional Media. Therefore, Feasibility test instrument applied in this research (Media Expert, Material Expert and user testing).

D. Data Analysis Techniques

To analyze the data from feasibility testing, the average score used as reference to see the result of media expert, material expert and user testing.

RESULT AND DISCUSSION

The product produced in this study is a multimedia learning material for computer introductions for elementary school students. This study focuses more on the development of learning media using Adobe Animate in accordance with the limitations of the problems that have been designed. The multimedia development method used in this research is using the ADDIE model. The stages in the development model adapted from the ADDIE model consist of several steps, including: (1) analysis, namely the field survey stage for analyzing the needs of the system to be developed; (2) design, namely planning and preparing the structural framework for animate instructional multimedia programs; (3) development, the stages carried out are making multimedia, alpha test, and beta test; (4) implementation, namely the stages of using instructional multimedia, there are two tests, namely limited trials and field trials; (5) evaluation, namely the stages carried out to determine the shortcomings and effectiveness

of the products developed in large-scale use or field tests, besides that in this evaluation stage students will provide assessments on certain aspects related to the response after using instructional multimedia products both in learning or independently. Each of the stages of research and development will be described as follows.

a) Analysis Stage

In this stage, the researcher conducts several analyzes to provide an overview of the instructional multimedia that will be developed. The analysis process obtained is a reference in the development of this instructional multimedia. The analysis carried out includes needs analysis which is described as follows: a. Needs Assessment. In this research, needs assessment is done by digging and collecting information related to development needs. The results of this assessment were obtained through observation and interviews. The results of observations and interviews conducted with a teacher, information is obtained that the obstacles that often arise in the use of learning media are the availability and utilization. Lack of media availability causes teachers to use improvised media.

b) Planning Stage

1. Collection of Resources

Based on the pre-survey result, then first determine, and collect the resources needed in this product development research. There are 3 types of sources needed to develop this multimedia, including: Media Sources, relating to some of the software used which are Coral

Draw X7 and Photoshop Cs6 for editing the images used, Internet Download Manager for downloading the required videos, Microsoft Word for storing text material. For the sources of computer introduction materials taking from several school textbooks and other sources such as the internet. Supplementary Sources are sources that help develop this multimedia, including actual and factual articles.

2. Flowcharts

The flowchart was made after knowing the design of the Adobe Animate instructional media content. Flowcharts in the development of adobe Animate -based instructional media are used to describe the flow from one frame to another and explain each step of making adobe Animate-based Productive Multimedia learning media. Flowchart images can be seen in the attachment.

3. Create storyboards

The storyboard is made after knowing the design of the content in each part of the Adobe Animate -based instructional media. Storyboard in the development of adobe Animate -based instructional media is used to describe each frame, by listing multimedia objects and links to other frames. Storyboard images can be seen in the attachment.

c) Development Stage

After the design process is complete, the next thing to do is the development stage. At this stage, researchers develop products based on previously obtained data. In addition, there are several processes that must be carried out so that the product development stage can be carried out. The steps taken are as follows:

1. Material Collection

In the development stage of Animate -based instructional media, the first step is to collect materials that meet the required needs. The materials collected include learning materials, supporting pictures, audio, and video. These materials are obtained both from books and from the internet. For learning materials, researchers mostly collect material from teaching material books that are in accordance with the curriculum as well as the applicable KI and KD. In addition, the researchers also added some examples and questions that the researchers developed from the internet. Then for supporting images, researchers got it by downloading it from the internet and making it through Photoshop software. The images were developed by researchers back into animated images as needed. Then finally, the researcher looked for audio from the internet to be the background sound. Researchers select and sort out sounds that can make application users feel comfortable while using them.

2. Develop the Multimedia Instructional

This research has successfully developed an instructional multimedia for teaching introduction of computer for senior elementary school students. What follows is a brief explanation of the layout in the multimedia developed. at the time the multimedia is run, an initial layout will emerge from the multimedia like what is shown in Figure 2. With the layout of the multimedia as shown in Figure 1, product is user friendly and its welcome menu for user before go to the main menu. Then, figure 3. shows the features of interactive instructional multimedia developed which

contain of optional menu to experience in this media.



Figure 2. Initial Display of Multimedia Instructional



Figure 3. Feature of Multimedia Instructional

In multimedia, students can see the features, contain of a set of lesson plan, the materials, quiz, and developers' profile and help button. The multimedia presents the content which designed in such a way to accomplish the learning process. The display of the content shows in Figure 4 and 5 where it explains about the learning content based of lesson plan.



Figure 4. Display of Learning Materials

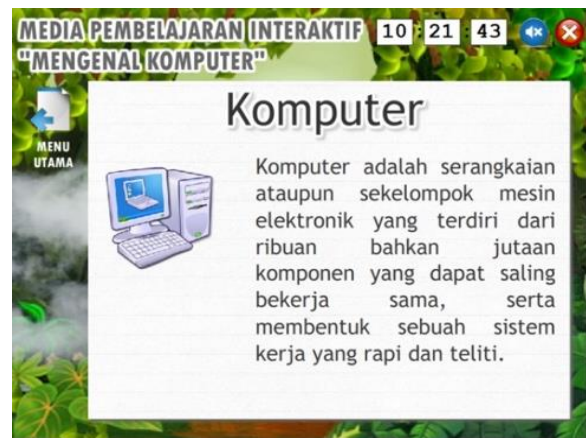


Figure 5. Display of Learning Materials

When select the material button, some choices are displayed, the presentation of the materials are almost the same. However, Figure 6 provides help menu to guide students to understand about how to operate to multimedia instructional developed. After finish the learning process, students will be given a comprehension test, the display of each of the pages can be seen in Figures 7.



Figure 6. Display of Help

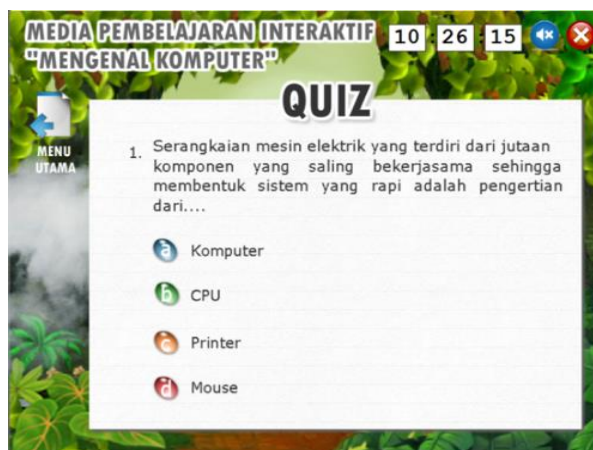


Figure 7. Display of Quiz

1) Trial

The trial stage is the stage where the product is implemented in learning activities. The goal is to find out the shortcomings and feasibility of the product when used in learning activities. The research activity was carried out on July 22, 2023 in a computer laboratory which was attended by 6 respondents, consisting of 5 students and 1 teacher at SD GMIM Koya. In the first trial, students were given pre-test questions that had been previously validated. Next, learning activities with students begin to use the product on their respective computers. Students then first open the multimedia file on their device. After that, the researcher guides the students to use the product. In this phase the researcher asked students to try all the content contained in the multimedia. Not only students, but teachers were also asked by researchers to participate in trying the products made. This is so that the data obtained will be maximized. During the trial process, the researcher monitors the trial run on the product. In addition to helping students if they have difficulty or confusion, the researcher also records events such as if an error occurs or there is a bug. This is done so that later researchers can correct errors that occur even though basically the product that the researcher developed is feasible to use because it has been validated by material experts and media expert validation. After the lesson time was over, the researcher asked the students to give spontaneous input regarding the Adobe Animate -based instructional media that they used during the learning activities. Some students apparently have not finished trying all the existing content. The following week, on July 29, 2023, the researcher

d) Implementation Stage

After getting the feasibility test from experts, the next stage carried out by the researcher is the product implementation stage. At this stage, the researcher begins to test the product. There are two further stages that researchers must do, namely testing and beta testing. The following is an explanation of the previously mentioned stages.

continued the research in class. After opening the class, the researcher asked the students to re-open the Adobe Animate instructional media and study the material to continue the previous one. During the learning process using the given product, students seemed enthusiastic about the features in the application. The researcher at this time also noted events that should be used as data, such as increased student enthusiasm and the absence of bugs or errors that occurred while students were using the product. In addition, the researcher also asked several students about the multimedia they used. After that, in the last 60 minutes, the researcher gave post-test questions to find out whether there was an increase in students' abilities or not after using adobe animate-based learning media. The results and discussion of this posttest will be explained in the discussion of the data description.

2) Beta Testing

After testing the product, the next stage is Beta testing. This **stage** is the last stage in the process of testing the developed instructional media. This test is used in the development of product improvements where research data is taken from the responses of grade V students of SD GMIM Koya using a questionnaire that has been provided by the researcher. Furthermore, the data obtained from students is used to determine the level of product feasibility from the learning aspect, the display aspect, the audio media aspect, and the navigation aspect. In its measurement, every aspect of the questionnaire contains several indicators and assessment criteria used to assess product quality. The assessment criteria

are used in the questionnaire to assess the level of product feasibility.

e) Stage of Evaluation

Evaluation is the last stage of ADDIE's multimedia development. This evaluation was carried out by researchers by accessing data obtained from the results of research. The data are material and media feasibility data which obtained from expert lecturers and product feasibility analysis from the results of student questionnaires. In addition to analyzing the results of material validation, media validation, and student questionnaires and to determine the improvement of students' abilities to the learning process and student learning outcomes before and after using the product. An explanation of the evaluation results data is explained in the data description and data analysis section.

Table 1. Feasibility Test Result

Type of test	Result
Media Expert	92,88
Material Expert	93,76
User Testing	91,67

CONCLUSION

Refers to result of data analysis and discussion, the conclusion are, the product of the instructional multimedia to implement introduction of computer in this study is simple, clear, and contains, among other things, 1) basic competencies and learning indicators to be achieved in the teaching by using the multimedia developed; 2) material items to be learned; 3) description of activities for each page; 4) components contained in each page. The instructional multimedia developed

has been validated. The result of validation shows that the criteria is valid. Furthermore, it can be accepted as the instructional media for computer introduction topics. The novelty of this research lies in the developed media, which has never existed before. Furthermore, the instructional media was successfully developed and valid to apply in learning process especially for elementary students in grade V.

REFERENCES

- Branch, R. M. (2009). *Instructional design: The ADDIE approach* (Vol. 722). New York: Springer.
<https://doi.org/10.1007/978-0-387-09506-6>
- Hakiki, M., Surjono, H.D., Wagiran., Fadli, R., Budiman, R.D.A., Ramadhani, W., Habibie, Z.R., Suhardiman, S., Hidayah, Y. (2023). Enhancing Practicality of Web-Based Mobile Learning in Operating System Course: A Developmental Study. *International Journal of Interactive Mobile Technologies (iJIM)*, 17(19), pp. 1–16.
<https://doi.org/10.3991/ijim.v17i19.42389>
- Hakiki, M., Fadli, R., Samala, A. D., Fricticarani, A., Dayurni, P., Rahmadani, K., Astiti, A. D., & Sabir, A. (2023). Exploring the impact of using Chat-GPT on student learning outcomes in technology learning: The comprehensive experiment. *Advances in Mobile Learning Educational Research*, 3(2), 859-872.
<https://doi.org/10.25082/AMLER.2023.02.013>
- Miftah, M. (2018). Pengembangan dan pemanfaatan multimedia dalam pembelajaran interaktif. *Jurnal Litbang: Media Informasi Penelitian, Pengembangan Dan IPTEK*, 14(02), 147–156.
<https://doi.org/10.33658/jl.v14i2.117>
- Pebrianto, P., Herpratiwi, H., & Fitriawan, H. (2021). Pengembangan Multimedia Pembelajaran Hari Raya Agama Buddha di Sekolah Minggu Buddhis Bodhisattva. *Edukatif: Jurnal Ilmu Pendidikan*, 03(04), 1261–1270.
<https://doi.org/10.31004/edukatif.v3i4.556>
- Rahman, A., & Nyoman, J. I. (2020). Pengembangan Multimedia Pembelajaran Interaktif untuk Meningkatkan Hasil Belajar IPS. *Jurnal Edutech Undiksha*, 08(01), 32–45.
<https://doi.org/10.23887/jeu.v8i1.27049>
- Septian, A., Inayah, S., & Pelani, J. I. (2021). Pengembangan Multimedia Pembelajaran Berbasis Macromedia Flash Pada Materi Bangun Datar. *RANGE: Jurnal Pendidikan Matematika*, 02(02), 97–107.
<https://doi.org/10.32938/jpm.v2i2.697>
- Suryandaru, N. A. (2020). Penerapan Multimedia Dalam Pembelajaran Yang Efektif. *Jurnal Pendidikan Dan Pengajaran Guru Sekolah Dasar (JPPGuseda)*, 03(02), 88–91.
<https://doi.org/10.55215/jppguseda>
- Utomo, L. A., Muslimin, M., & Darsikin, D. (2016). Pengembangan Bahan Ajar Berbasis Multimedia Pembelajaran Interaktif Model Borg and Gall Materi Listrik Dinamis Kelas X SMA Negeri 1 Marawola. *JPFT (Jurnal Pendidikan Fisika Tadulako Online)*, 04(02), 10–15.
<https://doi.org/10.56327/jurnaltam>
- Waziana, W., & Anggraeni, L. (2017). Penerapan Aplikasi Pembelajaran Bahasa Inggris Dasar Berbasis Multimedia. *Jurnal TAM (Technology Acceptance Model)*, 07, 22–27.
<https://jurnal.ftikomibn.ac.id/index.php/JurnalTam/article/view/68>
- Wibawanto, W., & Ds, S. S. M. (2017). *Desain dan pemrograman multimedia interaktif*.

books.google.com.

https://books.google.com/books?hl=en&lr=&id=9pULDgAAQBAJ&oi=fnd&pg=PA1&dq=multimedia+pembelajaran&ots=5G0hhLwLXP&sig=GuRQxu3T35MN_Ope_g4pSkgzUCog.