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# Multimedia in Digital Books for Simulation and Digital Communication for Vocational High School

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## 2 ABSTRACT

This study is basically an overview of multimedia-based digital books used by students of Vocational High School (Sekolah Menengah Kejuruan / SMK) Gowa for Simulation and Digital Communication subjects. This multimedia-based digital book was developed based on curriculum analysis, teacher's competence, students' needs, school conditions, and suitability of the material being taught. This qualitative descriptive study used observation and interview techniques with students and teachers of SMK Gowa Regency, Indonesia. The results showed that the teacher's and students' descriptions stated that this digital book was very suitable for simulation and digital communication material, easy to use because the menus were simple, easy to understand, and the tutorial video really helped students to learn independently. Another result of this study is to use multimedia digital books. It needs support from the competence of teachers and students in using technology, appropriate teaching materials, the internet, and gadgets that support learning with this multimedia digital book.

**Keywords:** digital book, vocational high school, multimedia, students, technology

## 1. INTRODUCTION

The education world is required to move quickly to keep pace with the information and communication technology that is developing so rapidly, and it's almost limitless. The generation faced by educators is increasingly creative, innovative, and competitive. This fact demands that educators become more creative in building their classrooms for the creation of increasingly interesting learning and learning process. Technology's use becoming more and more inevitable,

Mastering technology is one of the four competencies that must be possessed by educators, such as Pedagogical competence, social competence, professional competence, and personality competence. In accordance with the mandate of Law Number 14 of 2005 about teachers and lecturers, section 10, paragraph 1. Developing and utilizing technology for the learning process, based on students' characteristics, is part of pedagogical competence.

Development and use of educational media are increasingly diverse, practical and easy to use as well as supported by the students' character who strongly support the use of digital-based educational media, so it becomes a challenge for educators to develop various educational media that can be used in the learning process, without having to rely on books anymore -

printed or other conventional teaching materials. Books, which have always been one of the main educational media, have undergone a shift, no longer in print but are available in electronic books or digital books form. Could be Accessed anytime, without carrying various piles of printed books, but with gadget or smartphone. Gadgets that are getting cheaper and easier are no longer a difficult item to own, so that printed books are slowly moving from heavy student bags into gadgets that they only have to keep in their pocket.

Gardiner (2010) stated that digital books are book publications in a digital form consisting of several elements, such as text, images, or combined and easy to read on computers or other electronic devices (smartphones and tablets). The government, through the Ministry of Education and Culture, has developed this technology through the School Electronic Book (BSE). The goal is, of course, to make it easier for teachers and students to receive adequate learning resources easily, quickly and for free. Praise-worthy efforts, but there are still shortcomings, this book still contains static images, and doesn't have complete multimedia yet, such as audio, video and animation. The features that are actually owned by digital book maker applications and even become the main attraction of digital books.

This, can affect students' desire to use it, especially for independent study purposes, because in fact, they are

still similar to textbooks only in digital or electronic form. Self-study requires more than just a textbook, both in print and in digital form. Video tutorials, animations, a combination of audio and visuals are certainly much more helpful for students to understand their lessons even without being accompanied by a teacher, especially subjects that require skills.

Observation in location by researchers shows the educational unit, which is considered sufficiently in need of adapting printed books to digital books, is SMK. With a variety of learning that requires skills, examples and displays, this multimedia-based digital book will greatly ease the burden on students to do learning, especially independently. Saputra (2019), who developed digital books for cinematography subjects, showed that students considered digital books based on flipbooks to offer more convenience than ordinary textbooks, such as being easier to carry. There are video tutorials, colorful sheets, images that can be zoom and do not require internet access and fees.

The same research was also conducted by Febriati (2019), who developed digital books for educational communication courses. The results showed the enthusiasm of students in using flipbook-based digital books as teaching materials for educational communication courses. Students assessed that flipbook-based digital books provide more convenience than plain textbooks (print), such as portability, video tutorials, colorful pages (graphics), zoomable images, and free of charge. Research on digital books' use among high school students was also carried out by Muhammad (2019) with the title "Use of Android-based digital books to improve learning outcomes motivation and reading skills in Arabic lessons." The results of this study indicate that the digital book based on android is effective in increasing student motivation in Arabic lessons in grade 10th of High School. In general, the learning motivation of 10th-grade students increases after learning activities are carried out using Android-based digital book media.

Some of those studies showed that digital books are a suitable choice, especially if the intended learning requires practice, such as the Cinematography and Educational Communication courses from the research above, and also for students in general. The learning character of vocational students is based on preliminary observations that are appropriate for developing digital books. That reason is what made the researchers develop this research, to describe how multimedia-based digital books were developed and used at SMK in Gowa for simulation and digital communication.

## **2. LITERATURE REVIEW**

### **2.1. Digital Book**

Digital books or electronic books, according to Seamolec (2013), are a technology that utilizes

computers to display information in text form, images form, audio form, video form, or their combination (multimedia) in a dynamic form that can be read by a computer. And other electronic devices. Meanwhile, according to Prasetya (2015) stated that a digital book is a teaching material that contains information (science) that is organized and structured so that it can make it easier for readers and when it is being presented.

The development of digital books is currently increasing fast, at first. Digital books only contain text and images, then evolved so that they can be combined with other elements such as audio, video and animation. Currently, digital books also continue to experience renewal in terms of design and presentation that are more attractive by using a combination of animated visual graphics in one digital book package. According to Landoni, digital books or electronic books are media where information is organized and structured so that it can be presented to readers. According to Muttaqin (2019), digital books can contain the same information or content as printed books, but they have an electronic version (file); with digital books or electronic versions, features that can be developed will be more diverse, for example presenting content - more dynamic content so it will be more interactive.

In simple terms we can say that a digital book is a printed book that has been converted into a digital format through digitalization steps that make it visible on the desktop screen. The development of technology makes digital books not only transfer text from printed books into digital form, but then load them with multimedia such as videos, animations, and it can even be opened on a smartphone.

According to Smaldino, et al. (2008), from an educational point of view, digital books have two features, they are: (1) the textbook allows readers to use the included hyperlinks to jump to certain topics, and text possible to contain graphic, audio and video elements; and (2) readers' content is given customizable access to suit their needs by uploading new books and deleting unwanted text.

Based on Sumarno (2017) research showed the benefits of digital books as seen from their physical form, which is a small physical size so that they are stored in data storage such as flash drives and others. Digital books are also not obsolete like ordinary books; digital formats have survived through the ages with unchanging formats. Digital books are also interactive learning media in delivering information because they can be presented in illustrations form along with multimedia.

Sumarno (2017) describes the benefits of digital books, which are:

- a. Digital books have a tremendous impact on technological advances in education. For an educator, it is very helpful to have digital books with various

conveniences. Educators will find it easier to find sources of subject matter and to add references to learning sources. Educators do not need to move from one place to another, which wasting time and energy because digital books can be obtained online and offline. You only need to sit and browse with internet access. Digital books are very helpful for educators' success in teaching because they are efficient and effective.

- b. Lesson plans and learning designs developed can be implemented with digital book media referring to learning abilities, simulations, questions, or problem-based rational decision making.
- c. For students, digital books are also very helpful for the learning process outside the classroom or at home. Students who have internet data always access able to download digital books from the internet and then study offline.
- d. Using digital books or electronic books will automatically reduce paper usage. In this case, it brings benefits for nature conservation.
- e. Easy to carry, because the shape is the soft file so it is more practical and you only need to bring a gadget to access it.
- f. Only needs a small storage space, unlike storing books, which require a special place and space to store them.
- g. Cheap and practical, the costs incurred to get digital books only need an internet connection.
- h. Durable/long-lasting, unlike printed books, if it is too long, it will be damaged, and the color of the book will change.

## 2.2. Multimedia

Media is the root or basic word for multimedia, which means a combination of several media elements. According to Munir (2012), stated that multimedia is a combination of various media (text, images, video, and sound) combined by using certain software to facilitate interactive communication. Another opinion comes from Trismianto (2010), which stated that multimedia is the use of a number of different technologies (text, audio, graphics, animation, video, and interactive) that make it possible to combine media in new ways for communication purposes (education). The definition of multimedia is also put forward by Puspitasari (2013), which defines digital books as books that are designed by combining several digital media (audio, video, text, or graphics) for use in presentations or learning.

Some of those opinions show that multimedia is closely related to computers and is a combination of several media such as text, sound, images, video and animation made in one program that is run using gadgets

to deliver information or messages, including educational messages. Naseer and Harsemadi (2013) stated that multimedia, especially learning multimedia, consists of several types. They are: (1) interactive multimedia, (2) hyperactive multimedia, (3) linear / sequential multimedia, (4) learning presentation multimedia, (5) independent learning multimedia, (6) multimedia kits, (7) hypermedia, (9) interactive media, and (10) virtual reality. The digital book used in this study is a digital book with the Flip PDF Professional program because it has many features and a complete page editor for inserting various media. That this program provides many templates that can be used and developed with your own creations, such as adding multimedia elements, namely videos, links to youtube, images, hyperlinks, flash animation and other media.

This program uses a "drag and drops" technique to make it easier for users to create multimedia-based digital books. The digital book files can then be stored in various forms of files, including HTML 5, zip, mac app, FBR, mobile version. In addition, this program provides 11 languages. This fairly easy operation makes everyone expected to be able to produce books that are cool and interesting and easy to carry with only devices such as tablets, smartphones or desktops.

## 2.3. Simulation and Digital Communication

Vocational High Schools (SMK) in accordance with the essays in the Decree of the Directorate General of Primary and Secondary Education (Dirjen Dikdasmen) Number 130 / D / KEP / KR / 2017 concerning the Structure of the Vocational Secondary Education Curriculum, has Simulation and Digital Communication subjects. This subject focuses on abilities communicating ideas is a necessity for everyone. Siddig teaches how to explore ideas to solve problems related to products/services, find alternative solutions, and communicate in collaboration form so that Simdig becomes one of the life skills that are very important for students (Seameo Seamolec, 2016).

Digital books development as educational media is not something new in Indonesia, which is why some of these studies have become the basis for researchers to conduct this research, as a comparison of research conducted by Saputra and Anwar (2019) titled digital and introductory cinematography: A textbook that tells a story, this research provides an overview of the enthusiasm of students in the Introduction to Cinematography subject when this digital book is used for introductory cinematography courses. Students enjoy conveniences such as lightness because they can be carried anywhere, there are video tutorials, colorful sheets, and text and images that can be zoomed if you want to zoom in or zoom out on a certain part.

The results of this study indicate that it's time to use books in digital form because of their convenience and benefits for the effectiveness of the learning process which is not fixated in classrooms even in crowded places because it's easy to carry books in digital files form that can be opened simply through a device. Meanwhile, Febriati (2019) research shows that students' enthusiasm in using flipbook-based digital books as teaching materials for educational communication courses. Students assessed that flipbook-based digital books provide more convenience than plain textbooks (printed), such as portability, video tutorials, colorful pages (graphics), zoomable images, and free of charge. Both of them put their focus on digital books at the student or college level.

The use of digital books for high school students was carried out by Muhammad (2019) with the title "The use of digital books based on android to improve learning outcomes motivation and reading skills in Arabic lessons." The results of this study indicate that the digital book based on android is effective in increasing student motivation in Arabic lessons in grade 10th of High School. In general, the learning motivation of grade 10th students increases after learning activities are carried out using Android-based digital book media, which indicates that the use of digital books among students is not something new to do.

Those studies show differences with this study, ranging from the type of subject to the level of the educational unit. This is important because as a learning media, no matter how sophisticated it is, it still has to adapt to student characteristics, school conditions, educators' abilities and the needs of the field of study.

### 3. METHOD

This research is a qualitative descriptive study that will describe multimedia-based digital books on simulation and digital communication subjects and how these digital books are used in vocational students. Qualitative descriptive research, which is also called taxonomic research refers to the opinion of Creswell (1994), is a type of research to explore and clarify a phenomenon or social reality by describing a number of variables with regard to the problem and the unit under study. Processing and data analysis of this type of research uses descriptive statistical processing (descriptive statistics).

Descriptive data display will describe extensive data, detailed and in-depth data to place the reader in the context of "being there." Descriptive research emphasizes process, which means seeing how facts, reality, symptoms and events occur and experienced. (Raco, 2010) so that without treatment, it will only provide an overview of this multimedia digital book and how students of SMK 4 Gowa, South Sulawesi, Indonesia, use it in simulation and digital

communication. Data were collected through observation, literature study and interviews. The subjects in this study were one an expert in simulation and digital communication, one learning media expert, and Vocational School students from grade 10th in the 2019/2020 academic year.

## 4. RESULT AND DISCUSSION

The focus of this research is to provide an overview of how digital multimedia books for "Simulation and digital communication" and "Communication" subjects at SMK 4 Gowa. The description includes the suitability of the curriculum, the needs of the study, student characteristics and the school's situation and conditions (school infrastructure). Observing and interviews were conducted to receive an appropriate needs analysis for students at SMK 4 Gowa.

### 4.1. Curriculum and students' needs in simulation and digital communication subjects

Referring to the 2013 curriculum, which was updated in 2015 and 2017 or known as the national curriculum. Researchers analyzed the syllabus and lesson plans used by teachers in learning to get an overview of competencies and basic competencies that must be met from simulation and digital communication and communication subjects. Simulation and digital communication and communication are subjects that sharpen students' skills and creativity, so it is appropriate to use multimedia-based digital books, especially if we're expecting students' independence. The material in simulation and digital communication subjects requires students to master various programs to solve problems in society with technology's help.

### 4.2. Students' of Digital Simulation of SMKN 4 Gowa Characteristics

Students at the SMK grade 10th are in the age range of 16-18 years. This age, if referring to the theory of cognitive development, according to Piaget, is at the formal operational stage. According to Piaget, children's intellectual development is divided into four stages, such as sensory-motor (0-1.5 years), pre-operational (1.5-3 years), concrete operations (6-12 years) and formal operations (12 years and over). Especially for the formal operational stage: 12 years old and over (children can already use concrete operations to form more complex operations. Piaget's theory views high school / vocational school children as individuals who are at a stage of uncertainty in a series of development processes because they are in a transitional period, which is from childhood to adulthood. They do not want to be called children but do not want to be called adults or not ready to carry the predicate as adults. The main characteristics of their

development are hypothetical, abstract, deductive and inductive, also logical, and probability (Ibda. 2015).

Learning resources in digital books seem suitable for children at that age. Trying new and challenging things can be found by using learning resources that contain multimedia elements in them. Digital books will help students to learn not only by reading text and images but also can receive information through sound and video embedded in digital books.

Students' needs are an important part of understanding the characteristics of students as users of digital multimedia books for simulation and digital communication subjects at SMK 4 Gowa. There are three aspects. They are the conditions of the learning process to find out how the conditions of the learning process are. The material needs to find out subject matter that is difficult to understand by students and the need for learning media to find out the media needed by students in simulation and digital communication subjects. The picture obtained shows that the dominant teacher uses printed and written teaching materials so that students are not very interested, but they must be able to understand the material because the teacher always carries out evaluations.

Teachers have actually used digital books, but they are not specifically designed for this subject. Based on observations and interviews, students said it is a little easier to understand the material when the teacher uses digital books, even though these digital books are not specifically designed for them, also as in general. It really is for simulation and digital communication materials. This has led to students' interest in multimedia digital books for simulation and digital communication subjects that were developed because it refers to their characteristics, class facilities and infrastructure, as well as the conditions of students of SMK 4, Gowa itself.









The learning purposes of simulation and digital communication refer to the core competencies, basic competencies, and indicators in each subject matter, which is prepared using the ABCD principle. They are audience, behavior, condition and degree. The learning purposes that must be achieved by students in the simulation and digital communication subjects of the concept visualization material are: (1) while standing in front of the class, students can explain the meaning of video presentation, (2) after reading, the students are able to explain the function of a video presentation at least three, (3) through observations, students can identify all types of video presentations, (4) after reading, students are able to explain the characteristics of a video presentation at least three, (5) students are able to make storyboards by following the steps in digital books, and (6) students are able to make video presentations by following steps on digital books.

### 4.3. Overview of Digital Multimedia Books for Simulation and Digital Communication Subjects for students of SMK 4 Gowa

This digital book has a video that will be inserted in a multimedia-based digital book in a video tutorial form, which is an important element that distinguishes this digital book from other digital books because it is tailored to the characteristics and needs of the students of SMK 4 Gowa. The video contains steps in installing, opening, using and saving files created using the program according to the material being taught.

The combination of videos, which not only contains tutorials but includes music to make the display not only meet the students' visual but also audio abilities. Easy to use menus that are very familiar to technology users such as next and previous, thumbnails, auto flip, and zoom. The table of contents has been arranged so that it can function as a hyperlink with pages according to the inside of the simulated digital book content and multimedia-based digital communication. In addition, users can also use the word search menu to get to certain pages more quickly. All of these menus are menus that are very well understood by students and teachers who are accustomed to using technology. The Digital Multimedia Book for Simulation and digital communication subjects for students of SMK 4 Gowa is displayed in Table 1.

Table 1 The Scene of The Digital Multimedia Book

Scene	Pictures	Explanation
1		Cover when you open multimedia-based digital book
2		Table of contents page
3		The start page after the chapter contains the learning purposes and then the subject matter
4		Digital book's contents that contain pictures
5		Digital book's contents that contain videos
6		The page at the end of each chapter contains a summary and assignment
7		Upper menu inside a multimedia-based digital book
8		Lower menu inside a multimedia-based digital book that can be hidden and shown

#### **4.4. An Overview of Digital Multimedia Simulation Books and Digital Communication's Use for Grade 10th SMK**

The teacher of the digital simulation and communication subject in this study stated that the multimedia digital book for grade 10th of SMK 4 Gowa students fulfills aspects of the ease of material delivery, students become very active, and it looks attractive. Concept visualization material and digital books are very helpful and make it easier for teachers to explain and direct students to understand digital simulation subject matter.

Students as users also provide an overview of multimedia digital books for simulation and digital communication subjects by determining several aspects, such as the quality of appearance, clarity of the material, the suitability of images, and ease of use of menus. This research provides an overview of students being able to use multimedia-based digital books properly and make it easier for students to understand simulation and digital communication subject matter. The animation, videos and tools offered by this digital book really attract the attention of students because it makes it easier for them to understand various materials, following guides through video tutorials. The selection of letters, colors, sounds, animation and images is the main attraction expressed by students in this digital book.

This digital multimedia simulation and digital communication book are in file form so that it is very practical to use both via computers, tablets and smartphones with simple menus commonly used by teachers and students. According to Sumarno (2017), the benefits of digital books are seen from their physical form in which is digital data form, which is a small physical size so that they are stored in data storage such as flash drives and others. Digital books are also not obsolete, like ordinary books. Digital formats have survived through the ages with unchanging formats. Digital books are also interactive learning media in delivering information because they can be presented in illustrations form along with multimedia.

The process of introducing this multimedia digital book was initiated by the teacher in the computer laboratory as a simulation and digital communication class. The digital book is displayed through a projector, and then students open the digital book through the computer. After the introduction, students are able to use them independently, trying out various tools on the menu. In addition to digital books, this study also includes a manual given to the teacher as a guide to teaching students the use of digital books.

Digital books are developed using various considerations, including student characteristics, school conditions, and subject matter. The right media will make it easier for teachers and students to achieve learning

goals. There is no single media that is suitable for all learning conditions, but the media must also be adapted to various learning components, including using multimedia-based digital books that have been developed. But in this study, the use of digital multimedia books for simulation and digital communication subjects at SMK 4 Gowa needs to fulfill components such as the ability of teachers to use computers. The ability of students is used to using technology facilities, especially computers, in learning. The learning method, in utilizing multimedia digital books for simulation and digital communication subjects, will be student-centered. The teacher combines various learning methods, such as group discussions, problem-based learning, survey, inquiry, and simulation. Gadgets and the internet are the main conditions that must be met in order to use this digital book to its full potential.

### **5. CONCLUSION**

Multimedia-based digital books are a learning resource that really helps teachers and students in learning. Teachers can easily use digital books in both face-to-face and distance learning, while students can learn actively independently with complete material through a combination of text, images, videos, and animations that are made specifically according to student characteristics, especially for simulation and digital communication subject.

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