

DEVELOPMENT OF DIGITAL-BASED TEACHING MATERIALS USING FLIPBOOK APPLICATION

Grace Pakonglean*¹, I Ketut Liggih², Muh. Putra Pratama³

Department of Educational Technology, Faculty of Teacher Training and Education, Indonesia Toraja Christian University

*Email: gracepakonglean024@gmail.com

Abstract

MA Negeri 7 Tana Toraja is a senior high school in Bonggakaradeng District, Tana Toraja Regency. In the current learning process, printed teaching materials are used without integrating technology that could expand students' perspectives, leading to a monotonous and less engaging learning experience, particularly in Class XI.2 during Informatics lessons, specifically in the material on the Social Impact of Informatics. Therefore, there is a need to develop digital-based teaching materials using the Flipbook application for Class XI.2. This study aims to (1) describe the need for developing digital-based teaching materials using the Flipbook application in Informatics subjects in Class XI.2 for MA Negeri 7 Tana Toraja, and (2) assess the validity and practicality of these digital-based teaching materials in the same setting. The validation results by media experts indicated a percentage of 84.44%, categorizing the material as "Very Appropriate," while material experts rated it 83.63%, also in the "Very Appropriate" category. The practicality trial yielded a 90% teacher response rate, categorized as "Very Practical," and an 84.55% student response rate, also categorized as "Very Practical."

Keywords: Developments, teaching materials, flipbook

Abstract

SMA Negeri 7 Tana Toraja adalah sekolah menengah atas yang terletak di Kecamatan Bonggakaradeng, Kabupaten Tana Toraja. Proses pembelajaran siswa masih menggunakan bahan ajar cetak tanpa memanfaatkan teknologi yang dapat meningkatkan wawasan siswa, sehingga pembelajaran masih sangat monoton dan kurang menarik. Hal ini terjadi di kelas XI.2 pada mata pelajaran Informatika, khususnya pada materi Dampak Sosial Informatika. Oleh karena itu, diperlukan pengembangan bahan ajar berbasis digital menggunakan aplikasi flipbook di kelas XI.2. Penelitian ini bertujuan untuk (1) mendeskripsikan kebutuhan pengembangan bahan ajar berbasis digital menggunakan aplikasi flipbook di kelas XI.2 mata pelajaran Informatika di SMA Negeri 7 Tana Toraja, (2) mengetahui desain pengembangan bahan ajar berbasis digital menggunakan aplikasi flipbook di kelas XI.2 mata pelajaran Informatika di SMA Negeri 7 Tana Toraja, (3) mengetahui tingkat validitas dan kepraktisan pengembangan bahan ajar berbasis digital menggunakan aplikasi flipbook di kelas XI.2 mata pelajaran Informatika di SMA Negeri 7 Tana Toraja. Hasil validasi oleh ahli media terhadap bahan ajar berbasis digital memperoleh persentase sebesar 84,44% dalam kategori "Sangat Layak" dan hasil validasi oleh ahli materi memperoleh persentase sebesar 83,63% dalam kategori "Sangat Layak." Hasil uji kepraktisan menunjukkan persentase respons guru sebesar 90% dalam kategori "Sangat Praktis." Hasil respons siswa diperoleh persentase sebesar 84,55% dalam kategori "Sangat Praktis."

Keywords: Pengembangan, bahan ajar, flipbook

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INTRODUCTION

Education has become a fundamental necessity for improving and developing human resources, as well as facilitating the interaction processes that encourage learning. Through education, it is expected that students will be able to develop their potential and, in turn, become more qualified human resources. One effective way to promote quality learning is through the use of media.

Learning media, specifically printed teaching materials, essentially consist of the content of a subject or field of study provided to students in accordance with the curriculum. A teaching material should at least include learning instructions, competencies to be achieved, supporting information, exercises, work instructions, and evaluations that assist students in the learning process.

However, these traditional teaching materials can often cause a decline in student interest, as they are perceived as monotonous and unengaging. Teachers are increasingly required to master technological advancements and provide learning tools that can actively engage students. This situation presents an opportunity to maximize the use of alternative, technology-based media to enhance the



quality of education. One such tool is digital-based teaching materials, which can be accessed both online and offline. These digital resources serve as an alternative form of learning media, offering engaging and enjoyable lessons. Additionally, digital-based teaching materials are easy to distribute and share, making them a practical solution for modern education.

Content standards are developed by formulating the scope of material that aligns with graduate competencies. The scope of the material encompasses the topics covered in the learning content, which are formulated based on mandatory requirements by laws and regulations, scientific concepts, and educational pathways, as well as the level and type of education. The content standard references the 2013 emergency and independent curriculum (Basuki, 2022), as stipulated in Permendikbudristek No. 7 of 2022. Content standards apply to early childhood, primary, and secondary education.

Students' learning process is not limited to the school environment but also extends to their daily lives. Classroom learning activities hold significant value for students, as they involve various components of subject matter with distinct purposes and functions. Therefore, it is essential to carefully plan the learning process to ensure it is effective, efficient, and enjoyable. Teachers, as critical components in the learning process, play a crucial role in determining the success of the learning experience. The primary functions of teachers include designing, managing, implementing, and evaluating learning (Kisno & Sianipar, 2019).

Digital-based teaching materials have advantages such as less cost, without printing, and easier storage, adding that digital-based teaching materials have advantages, namely easier prices, not limited by space and time, practical when under, and used and the impact is very environmentally friendly because they do not use paper materials or are not printed.

According to (Wajdi & Fadhilah, 2022) argues that, the teaching materials developed are said to be good if they meet three conditions, namely; aspects of validation, aspects of practicality and effectiveness. Textbooks as valid teaching materials are teaching materials that are worth using. Textbook validation is seen based on valid validity if its development is based on strong theoretical rationality. Meanwhile, construct validation means that the textbook study has a consistent relationship between various components in the learning model applied. A textbook that is developed is said to be practical if it is easy to use in the classroom in the implementation of learning. Textbooks that in their implementation in the field will greatly depend on the ease of practice in the field.

Digital-based teaching materials are teaching materials that are systematically arranged, studied in a man-aware manner, and actively by students according to the speed and ability of students without teacher guidance. The digital version is designed to be applied with electronic devices such as laptops, computers, and mobile phones. This teaching material is complete, interesting, interactive, and not boring. During the learning process, students can improve their critical thinking and develop their skills.

Through observations and interviews conducted at SMA Negeri 7 Tana Toraja, the researcher identified a problem: the school continues to rely on printed teaching materials in the learning process, which are often monotonous and lead to a decline in students' interest in learning. This issue arises from the lack of creativity and engaging content in the teaching materials currently in use. Based on these findings, the researcher is motivated to develop digital-based teaching materials that can assist students by providing easier access to resources, such as videos related to the material, which could enhance their understanding of modern technological advancements.

Given the context described, the development of appropriate and effective teaching materials is expected to support the smooth progression of the learning process, particularly in Class XI.2 during Informatics lessons at SMA Negeri 7 Tana Toraja. The introduction of digital-based teaching materials aims to foster students' character development and enhance their ability to think critically, solve problems, and reason logically.

METHOD

This research is a development study that adopts the ADDIE model, utilizing only three stages in the research process: Analyze, Design, and Development. The subjects of this study are Informatics teachers and students from Class XI.2, consisting of 18 students at SMA Negeri 7 Tana Toraja.

Data collection in this study employs both quantitative and qualitative descriptive techniques. Quantitative data are collected using a validation questionnaire to assess the feasibility of the teaching materials, which is administered to validators, material experts, and media experts. Additionally, a



questionnaire is used to gather feedback on the practicality of the teaching materials from both the Informatics teachers and the students in Class XI.2. Qualitative data are obtained through open-ended interviews with Informatics teachers and students in Class XI.2 to analyze their learning needs.

RESULTS AND DISCUSSION

Results and Discussion

The development of digital-based teaching materials in this study follows the stages of the ADDIE model, which consists of five phases: 1) Analyze, 2) Design, 3) Development, 4) Implementation, and 5) Evaluation. However, for this research, the researcher only utilizes three of these stages: 1) Analyze, 2) Design, and 3) Development. These three stages form the process through which the researcher will create and produce digital-based teaching materials using the Flipbook application at SMA Negeri 7 Tana Toraja. The stages are as follows:

a) Analyze

The initial stage aims to identify the preliminary needs in the development of digital-based teaching materials. The researcher conducted several analyses, including a problem analysis, where the researcher gathered information related to the issues occurring in the learning process in Class XI.2. The goal was to ensure that the developed teaching materials would meet the specific needs of students in this class at SMA Negeri 7 Tana Toraja. The findings revealed that students were less motivated to learn and struggled to understand the material, as the delivery of content lacked engagement. This issue was exacerbated by the fact that learning relied solely on printed books, resulting in a learning process that was largely teacher-directed with minimal interaction from students.

b) Design

Based on the results of the analysis, at this stage, the researcher designed the results of the analysis carried out previously in a structured manner. This stage includes planning and designing elements that are arranged manually with the help of a computer and a Microsoft Word application and a Flipbook application. This stage starts from 1) the development of teaching materials, 2) the preparation and design of content and materials, 3) and the creation of storyboards. With good and structured planning at the design stage, it is hoped that the teaching materials developed can meet interesting learning objectives and increase students' insight and support students' interest in learning in the learning process.

c) Development (Development)

At this stage of development, it aims to develop digital-based teaching materials using a flipbook application. The following are the results of the development of digital-based teaching materials:

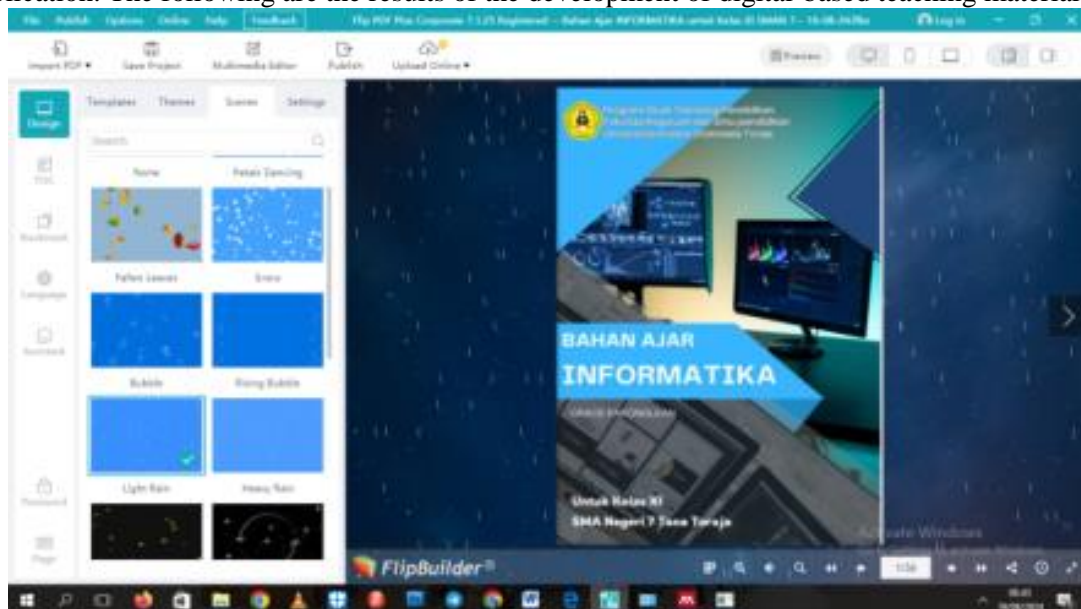


Figure 1 Display of digital-based teaching material development using a flipbook application

Before the developed teaching materials are tested in the classroom, a feasibility testing process is conducted by validators, media experts, and material experts to ensure that the materials are suitable for use in the learning process at the school. The following table presents the assessment results obtained from the validators, media experts, and material experts:

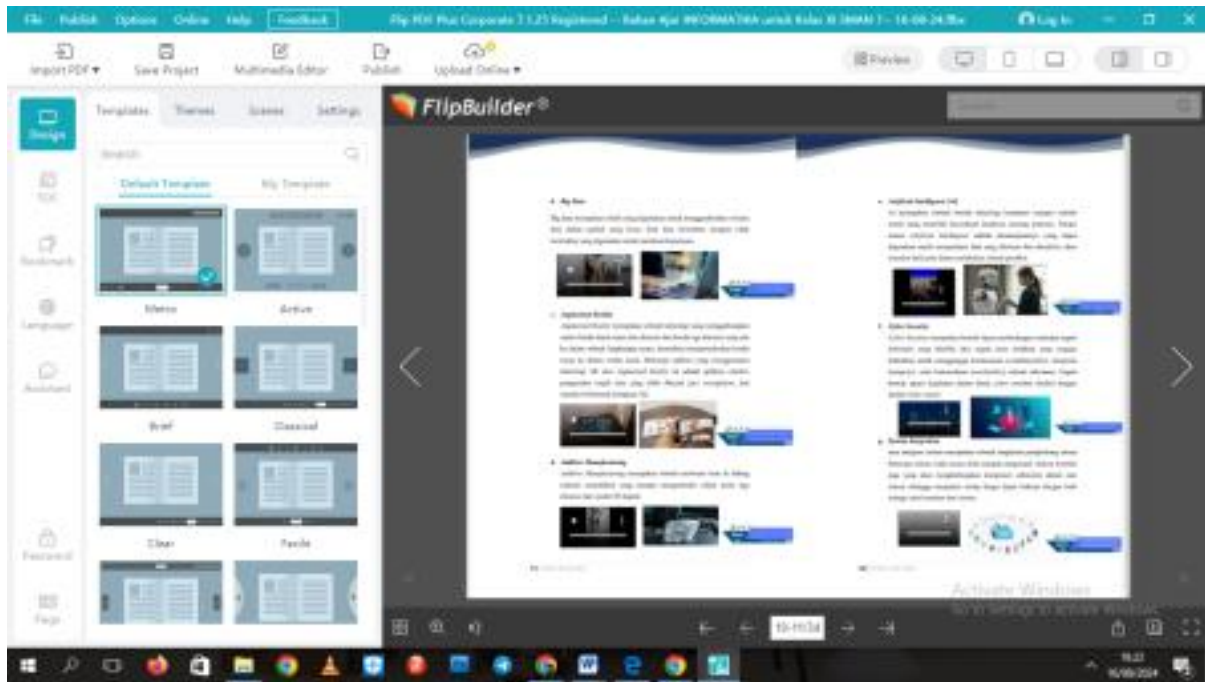


Figure 1 Display of digital-based teaching material development using a flipbook application

Table 1 Results of Validation of Eligibility of Material Experts

Assessment Aspects	Question Number	Validator Score	Total Score
Compatibility with students	1	4	76
	2	4	
	3	4	
Design appearance	4	4	
	5	4	
	6	4	
	7	4	
	8	4	
	9	4	
	10	5	
	11	5	
Writing or text	12	5	
	13	4	
	14	4	
	15	4	
	16	4	
Efficiency	17	4	
Video	18	4	
Presented Category			84,44%
			Highly Worthy



Based on the assessment results from media experts, who gave a rating of 84.88% in the "Highly Worthy" category, and the assessment results from material experts, who rated the materials at 83.63% in the "Highly Worthy" category, it can be concluded that the digital-based teaching materials are suitable for use in the learning process for Class XI.2 at SMA Negeri 7 Tana Toraja. After the teaching materials were tested, students and Informatics teachers were given a questionnaire to assess the practicality of the digital-based teaching materials using the Flipbook application. The following table presents the results of the assessments from both teacher and student responses:

Table 2 Results of Practical Responses of Class XI.2 Students

No.	Student's Name	Shoes
1.	Learner 1	45
2.	Learner 2	45
3.	Learner 3	49
4.	Learner 4	36
5.	Learner 5	43
6.	Learners 6	43
7.	Learners 7	46
8.	Students 8	34
9.	Learners 9	42
10.	Learners 10	35
11.	Students 11	43
12.	Students 12	43
13.	Students 13	45
14.	Students 14	43
15.	Learners 15	42
16.	Students 16	41
17.	Students 17	43
18.	Students 18	43
Total score		761
Percentage		84,55%
Category		Very Practical

Table 3 Results of Teachers' Practical Responses

Name	Score
Informatics Teacher	45
Percentage	90%
Category	Very Practical

From the data analysis results above, it can be concluded that the students' practical response was 84.55%, while the teachers' practical response was 90%, both falling into the "Very Practical" category. Based on the results from the teacher and student questionnaires, it can be concluded that the digital-based teaching materials developed are highly practical for use by both teachers and students in the learning process at school.

DISCUSSION

This research activity was conducted from July 18, 2024, to August 15, 2024. Using digital-based teaching materials, the learning process took place at SMA Negeri 7 Tana Toraja and was piloted in Class XI.2, with 15 students. Based on the learning activities conducted, the digital-based teaching materials effectively met the learning objectives.

The first objective was to present digital-based teaching materials that enabled students to interact with the content provided. This was evidenced by students' ability to understand the material presented through the digital-based teaching materials. The second objective was to ease the educators' task of



providing understanding to students, as the teaching materials proved effective in helping students develop a better understanding of the content.

The resulting teaching materials met the necessary criteria after developing the digital-based teaching materials using the Flipbook application. The development of these materials utilized the ADDIE (Analysis et al., and Evaluation) model, with the primary focus of this research being on the stages of Analysis, Design, and Development. This research aimed to assess the feasibility of the developed teaching materials.

During the development stage, digital-based teaching material products were created, with their design aligned to the learning objectives of the Informatics social impact material. The feasibility of these digital-based teaching materials was assessed through validation by media experts and material experts. The validation process focused on evaluating the overall appearance and presentation of the teaching materials. Data obtained from these assessments were used to revise and improve the digital-based teaching material products.

The validation results from media experts indicated a score of 84.44%, categorized as "Very Worthy," while the validation from material experts resulted in a score of 83.63%, also categorized as "Very Worthy." Based on these validation results, the digital-based teaching materials are suitable for use in the Informatics learning process, both in terms of media and content.

The practicality trial results showed that the student responses yielded 84.55%, categorized as "Very Practical," while the teacher responses were rated at 90%, also categorized as "Very Practical." These results align with the findings of Setiyorini (2017), which similarly found that validation results from media experts and material experts, as well as student responses, were rated in the "Very Feasible" and "Very Practical" categories.

Based on the validation and trial results, with the achievement of appropriate and practical teaching materials, it is evident that these materials can be effectively implemented in the learning process, positively impacting both teachers and students. Students will likely find the learning process more engaging due to the attractive design and inclusion of images that aid in understanding the material. This success is further supported by Shakespeare & Anonymous (2016), who argue that effective teaching materials significantly enhance student learning outcomes. This research has many obstacles ranging from the development process to the completion of teaching materials, but these obstacles can be solved so that researchers can produce a teaching material in Informatics class XI.2 at SMA Negeri 7 Tana Toraja which has been tested for quality.

Researchers are limited in the development of teaching materials, namely researchers, that is, these researchers do not measure the level of effectiveness of teaching materials, researchers only know the validation of media experts and material experts and the practicality of the trials carried out in the classroom. The advantages developed are that they produce more interesting teaching materials because they add educational videos from appropriate materials, appropriate images, text, and audio. The disadvantage of this teaching material is that when accessing via *mobile* phone, a strong network is required.

CONCLUSION

Based on the results of the research and discussion, the following conclusions can be drawn:

1. The development of digital-based teaching materials for Informatics subjects, specifically for the Informatics Social Impact material in Class XI.2 at SMA Negeri 7 Tana Toraja, has proven to be a valuable tool in the learning process. The needs analysis revealed a lack of technology utilization in the learning process, leading to underutilization of available facilities and infrastructure. Therefore, the introduction of these teaching materials encourages students to become more engaged and make greater use of technology, thus making the learning process more enjoyable.
2. The design process for the development of digital-based learning media in Informatics for Class XI.2 at SMA Negeri 7 Tana Toraja included several steps: designing the teaching materials, preparing the content, creating storyboards, and assembling the components to be displayed in the teaching materials.
3. The validation results from media experts indicate that the digital-based teaching materials are categorized as "Very Feasible." Similarly, the validation results from material experts also



placed the digital-based teaching materials in the "Very Feasible" category. Additionally, the practicality test results show that both teacher and student responses to the digital-based teaching materials were categorized as "Very Practical."

ACKNOWLEDGMENTS

The suggestions obtained after this research are:

1. The next researcher who will develop digital-based teaching materials can add informatics materials that are not yet listed in this teaching material.
2. It is necessary to develop further teaching materials so that students can be more active in the learning process
3. For the development of teaching materials, more practice questions can be given with a variety of challenging questions from difficult, intermediate, and easy questions, so that students can practice more.

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