

Innovation of Flipbook Teaching Materials in Supporting Student Learning Independence

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Abstract. Currently, it is still rare to find teaching materials that are innovative and use technology, so they have an impact on decreasing student motivation and independence in learning. The purpose of this study was to describe the stages of developing teaching materials, determine the validity and practicality of the teaching materials produced and determine the level of independence of students after using these teaching materials. This type of research is research and development by adapting the 4D development model. The steps are Define, Design, Develop, and Disseminate. The subjects in this study were 16 fifth grade students and teachers at SD Negeri 173 Gaya Baru, Tellu Limpoe District, Bone Regency. The instruments used in this study were interview guidelines, validation sheets, student and teacher response questionnaires and learning independence questionnaires. The results showed that the resulting product was in the form of Flipbook teaching materials with the help of the Publuu application which was developed containing material in the form of reading materials, pictures, videos and evaluation through 3 stages of define, design and development. The data from the material expert validation results is 96.9% in the valid category and the media expert validation results are 76.6% which are in the valid category. In addition, the practicality test shows that the average student response is 89% and the teacher's response is 90.26% which is in a very high practicality category, so that it influences student learning independence. This flipbook-shaped teaching material makes a contribution to elementary schools for use in the learning process, because it is practical and flexible.

Keywords: Flipbook, Learning, Primary School, Teaching Material, Technology

1. Introduction

Education is currently inseparable from technology, especially since the era has led to the era of society 5.0 which shows rapid technological progress. Technology is known to have an important role in the development of education and various sectors until the 21st century (Wijaya et al, 2020). The introduction of the internet, wireless internet networks and mobile devices into social life has accelerated technological advances. Information technology enables communication between people around and ensures that information is transmitted without any barriers or boundaries (Uçak, 2019). In the world of education, technology can be used in the learning process as a medium or teaching material that can replace conventional teaching materials and media. Technology has become a part of modern human life and is increasing at the time of online or offline learning. Technology is increasingly being used to promote online student engagement in learning environments. Engagement refers to the commitment or efforts of students involved in various categories such as behavioral, emotional and cognitive engagement (Wang, 2019). The use of technology in the learning process is expected to increase students' digital literacy. Digital literacy is the ability to produce information with the help of digital technology (Yildiz, 2020). Digital literacy requires the ability to access, produce and use technology that develops in the learning process (Isrok'atun et al, 2022). The rapid development of information technology is currently very influential on learning in the classroom so that teachers are expected to make various innovations in the learning process (Bungawati & Rahmadani, 2023). Therefore, utilizing technology in character-based learning is a must to prepare students to become individuals with integrity, responsibility and positive contributions to society. Apart from that, digital literacy also needs to be emphasized

to help students use technology productively and ethically to support their character development.

1.1. Problem Statement

The existence of blended learning between online and offline causes teachers and students to need teaching materials that are interactive and can be used independently. Teaching materials are very important for teachers and students. For teachers, teaching materials play an important role in saving teaching time, transforming the teacher's role into a facilitator and creating more effective and interactive learning. For students, teaching materials can help them learn the material and help their ability to study independently. In addition, the presence of teaching materials that are developed according to needs will direct learning activities in accordance with the achievement of the planned competencies (Firman, et al, 2021). Teaching materials are very useful to facilitate teachers in the learning process (Asrial et al, 2022). However, in the reality that is happening in the field today, it is still rare to find teaching materials that are innovative and use technology. Most of them only use textbooks or only explain on the blackboard, thus triggering student boredom. This problem was found at SD Negeri 173 Gaya Baru, Tellu Limpoe District, Bone Regency.

The lack of use of technology-based teaching materials has an impact on reducing student learning motivation and student independence in learning, so that student learning outcomes tend to decrease. Therefore, there are many ways that can be done to motivate students in the learning process in order to obtain learning outcomes that meet the minimum completeness criteria and trigger an attitude of independence. One way to motivate students is to use the e-learning learning model. Digital books are part of e-learning (Alperi, 2019). Various tools in the world of education such as pens, books, blackboards and chalk have been widely used so far. However, the use of materials or electronic devices or technology must also be seen as an agenda that should be implemented immediately (Julia et al, 2020).

1.2. Related Research

Various research results show that teaching materials can improve the character of nationalism and learning independence (Salafudin et al, 2018). First, research by Falah and Indana (2021) that research describe validity flipbook type e-book in terms of the feasibility content, language, and display. The validation results of the flipbook type e-book by three validators obtained an average score of 3.84 with a very valid category. Thus, the flipbook-type e-book is declared valid and practical. The similarities in this study are that they both use flipbook-based teaching materials. The difference is that this previous research is objects or learning materials developed.

Second, the results of research from Kriswanti, Widiarini and Niam (2022) which aims to develop flipbook worksheets based on strengthening the practical character of independence. The results of the research show that the product meets valid criteria and can be used. In addition, the practicality of the media by students obtained an overall percentage of 96.8% with very good criteria, independence by students obtained an overall percentage of 97.8% with very good criteria. The similarities in this study are that they both developed flipbook-based teaching materials for grade V SD. The difference is that this previous research developed teaching materials by studying fractional material, while this study examined material on Theme 1 Sub-theme 1 Organs of Animal Movement (Kriswanti et al, 2022). This teaching material makes it easier for users, including teachers and students, because it can be accessed using smartphones, including Android. Android-based interactive learning media can be used interactively and has visual effects (Saputri et al, 2020). Therefore, this teaching material allows the flexibility of the learning process and can be done without space and time limitations (Odewumi et al, 2019).

Third, the results of research from Utama (2020) which aim to produce e-book teaching materials based on the Android Flip PDF application. The results of the study show that the results of this development show that the quality of teaching materials seen from the feasibility aspect is in the very feasible category. In addition, students show a positive independent learning attitude. The similarities in this study are that they both develop flipbook-based

teaching materials and examine their relationship with student independence. However, the difference is that previous research developed teaching materials by studying social arithmetic material with junior high school students as subjects, while this study examined material on Theme 1 Sub-theme 1 Organs of Animal Movement with elementary school students as subjects (Utama, 2020).

Furthermore, there are also research results from Aftiani, Khairinal and Suratno (2020) regarding the development of professional flip pdf-based e-book learning media to increase learning independence and student learning interest. Based on the test results of the large group assessment of the student learning independence questionnaire on the developed e-book with an average percentage of 80% with the "good" criterion. This research uses the same type of development research but uses a different model. This previous study used the Borg and Gall model with junior high school students as subjects, while this study used the ADDIE model with elementary school students as subjects (Aftianiet al, 2020). The novelty of this study is that with the development of teaching materials in the form of flipbooks in elementary schools, the product results can be declared valid and practical, so as to increase student learning independence. Flipbook teaching materials are equipped with multimedia-based material containing images and videos as well as evaluations that can make it easier for students to learn independently anytime and anywhere.

1.3. Research Objectives

The focus of this research is to develop Flipbook teaching materials with the help of the Publuu application. Teaching materials are arranged systematically using language that students can easily understand according to their level of knowledge and age so that students can study independently with minimal guidance from the teacher (Zaputra et al, 2021). The main goal of a teacher in developing teaching materials is to make learning more effective, efficient and in accordance with predetermined competencies (Yulaika et al, 2020). This teaching material is an electronic teaching material in the form of a flipbook to attract more students' attention. Using 3D Page Flip Professional is able to provide a more attractive display of teaching materials, because FlipBook is a software for converting files in PDF format into a 3D animated book which can include music, videos, pictures, buttons and animations to complement teaching materials (Susilawati et al, 2020). The purpose of this study is to describe the stages of developing teaching materials, determine the validity and practicality of the teaching materials produced and determine the level of independence of students after using these teaching materials. Student learning independence is needed so that they have the responsibility to regulate and discipline themselves, because this is a characteristic of the maturity of educated people (Yunitasari et al, 2019).

2. Theoretical Framework

2.1. Teaching Materials

Teaching materials are something used by teachers to facilitate the learning process, which can be in the form of reading books, workbooks or displays (Kosasih, 2021). Teaching materials are based on the syllabus and the actual needs for teachers' instructional materials; they are fundamental to education. Without teaching materials, it is challenging to form a comprehensive educational system (Zhou et al, 2024). The teaching materials are in the form of books and the like or audio, video and computer programs that contain subject matter. Teaching materials are very unique and specific. Unique means that the teaching material can only be used for certain audiences in a particular learning process, while specific means that the contents of the teaching material are designed in such a way as to only achieve certain goals from certain audiences (Nuryasana & Desiningrum, 2020). It can be concluded that teaching materials are a collection of subject matter designed in such a way by the teacher in various forms to make it easier for students to learn learning material in the classroom. Concrete materials like pictures or objects are believed to be helpful with learning, but not in all circumstances (Zhang & Fyfe, 2024).

There is no denying education simultaneously contributes to development on micro, meso, and macroeconomic fronts (Ahmme & Uddin, 2022). Therefore, the learning process requires adequate facilities, including technology-based teaching materials. In developing teaching materials, it is necessary to pay attention to the development model in order to ensure the quality of teaching materials in supporting the effectiveness of learning, because the development of teaching materials is basically a linear process with the learning process. The availability of teaching materials is still minimal. Teaching materials should be arranged based on the needs of learning objectives (Cahyadi, 2019). The establishment of positive interactions between teachers and students in the learning process is a key element in the relationship between media and learning activities. Success in achieving learning goals is determined by this interaction. It is certain that this interaction has a meaning in the form of a message as part of the communication between the teacher and students. The message in question is the subject matter contained in the teaching material (Sagita, 2018).

2.2 Publuu Application Assited Flipbook

Advances in technology have led to various applications that can be used in education. One of them is the emergence of flipbooks, namely the development of electronic book forms that can be accessed using devices. Flipbook Maker software is an application that supports learning and includes animations such as motion, video and audio (Wibowo, 2018). Flipbook is a sheet of paper resembling an album or calendar which has several advantages, namely, it can present learning material in the form of words, sentences and pictures, it can be equipped with colors, so it attracts students' attention more, makes it easy and inexpensive, easy to carry to school. everywhere and can increase student learning activities. In addition, it can help improve students' mastery of abstract things or events that cannot be presented in class. Flipbooks can be used as a learning media to accompany the learning process, help students learn more practically, include the demands of learning media that can make it easier for teachers to convey material and can help students improve their understanding of concepts (Ayuardini, 2023). However, the drawback of flipbooks is that they can only be used individually or in small groups (Masithoh, 2022). *Flipbook Maker Software* is an application that is capable of providing a back and forth effect on the display of modules so as to produce products that can be distributed in Shock Wave Flash (SWF) format and also in Hyper Text Markup Language (HTML) format (Susilawati, 2021).

The teaching materials developed are designed using Canva which are published in flipbook form via the Publuu.com page. The design is made into a PDF file and uploaded to the Publuu application so that it is in the form of a Flipbook. This is intended so that the e-module looks realistic like a book that can be flipped through (Agustina et al, 2022). Publuu is one of the best online flipbook software list. This is because flipbook makers provide visual quality and interactivity. Compared to the others, Publuu is easier to use. Moreover, users can add page turning animation effects to create more realistic flipbooks. The presence of technology-based teaching materials makes it easier for teachers to teach, including teaching using a mixed system. Blended learning was viewed more favourably by teachers. It can be therefore suggested, that whilst the initial challenge of pedagogical disruption and the requirement to significantly shift practices was apparent, due to training and trialling online teaching methods, large numbers of teachers saw the potential of technology to facilitate new ways of teaching and learning (O'Connor et al, 2023).

2.2. Student Learning Independent

Independent attitude is the ability to carry out activities or things independently without the help of others. Forming an independent attitude is one of the goals in national education, namely article 20 of the 2003 Law concerning the National Education System, in that article it is stated that the goal of national education is for students to believe in and fear God Almighty, have noble character, be healthy, knowledgeable, capable. and creative. independent, democratic and responsible citizens (Santoso, 2021). Learning independence provides flexibility for educational units to provide an appropriate curriculum and liberates students to develop their competencies in accordance with environmental conditions and existing infrastructure (Santoso et al, 2023).

Lack of independence in students can be a trigger for low student learning outcomes. Students who have low learning independence scores do not yet have initiative in learning and still depend on learning resources or materials from the teacher (Rahmawati et al, 2023). Students who have independent learning lead to a learning process where each student can take the initiative with or without asking for help from others in setting learning activities, for example stating learning objectives, finding sources or learning materials on their own, clarifying learning needs and directing the learning process (Sugiant et al, 2020). Learning independence can give freedom to students to look for references regarding learning material from various sources of information without encouragement and assistance from others, including when using the developed flipbook teaching materials. Student learning independence can give satisfaction to students to keep track of new information, develop further student learning exercises, can help students by developing new information and be careful in figuring out how to do it (Supriyantoko & Sastrawijaya, 2022).

3. Method

3.1. Research Design

This type of research is research and development or known as R n D by adapting the 4D development model to produce teaching materials in flipbook form. The 4D research stages developed by Thiagarajan start from define, design, development and dissemination (Budiasuti, 2023). However, in this study, researchers only reached the third stage, namely development, because the research objectives had been achieved at the development stage.

3.2. Participant

This research involved 16 fifth grade students and class teachers who were at SD Negeri 173 Gaya Baru, Tellu Limpoe District, Bone Regency. The student who was the respondent was eleven years old. There were nine men and seven women. Class teachers are basic education graduates who work as state civil servants. This study focuses on Theme 1, namely the locomotor organs of animals and humans, more specifically on sub-theme 1, namely the locomotor organs of learning animals 1 with Indonesian and Natural Science content.

3.3. Data Collection

The instruments used in this study were interview guidelines, validation sheets, student and teacher response questionnaires and learning independence questionnaires. The practicality of the resulting media can be seen from four aspects, namely the ease of use of teaching materials, time efficiency, suitability with the material and student attractiveness (Marlini, 2019). There are four benchmarks used to measure student learning independence, namely self-confidence, activeness in learning, learning discipline and responsibility (Santoso et al., 2023). Researchers produce research data in the form of qualitative data and quantitative data. Qualitative data comes from the results of interviews with teachers, while quantitative data comes from the results of validation by material experts and media experts as well as the results of student and teacher response questionnaires, as well as learning independence questionnaires.

3.4. Data Analysis

The results of the interviews and suggestions provided by the validator were analyzed qualitatively, while the validation results based on the assessment of material experts and media experts were analyzed quantitatively. In order to determine whether there is an increase in student learning independence, it can be determined by using the standard gain value as shown in formula 1 below:

$$\text{gain (g)} = \frac{\bar{X}_{\text{after}} - \bar{X}_{\text{before}}}{\bar{X}_{\text{maximal}} - \bar{X}_{\text{before}}}$$

The categorization of standard gain values can be seen in table 1 below:

Tabel 1. Standard Gain Value Category

g Value	Category
$g \geq 0,7$	High
$0,7 > g \geq 0,3$	Medium
$g < 0,3$	Low

Source: (Aprilia, Sutrio, & Sahidu, 2020)

3.5. Validity and Practicality

As for the validity category as shown in table 2, as well as the results of the student response questionnaire about the practicality of the products produced can be seen in table 3.

Tabel 2. Product Validity Category

Intervals	Category
$\geq 0,61 - 1,00$	Valid
$< 0,61$	Invalid

Source: (Azwar, 2015)

Tabel 3. Product Practicality Category

Intervals	Category
0,81 – 1,00	Very high
0,61 – 0,80	High
0,41 – 0,60	Medium
0,21 – 0,40	Low
0,01 – 0,20	Very low
0,00	Impractical

Source: Zaputra et al, 2021

4. Findings

The resulting product is in the form of Flipbook teaching materials with the help of the Publuu application. The developed module contains material in the form of reading materials, pictures, videos, and evaluations. This module was developed by researchers as teaching materials that can assist students in learning independently. This module can be accessed anytime and anywhere, so it is considered capable of improving student performance in learning. The process of developing this Flipbook teaching material goes through 3 stages of define, design and development.

4.1. Define

First, define by finding the problem and finding the right solution to overcome the problem obtained. The activities carried out are the analysis of students and the analysis of teaching materials used. The discovery of the problem is based on the results of interviews with teachers and closed questionnaires given to students. The problem found was that learning took place conventionally, namely still explaining material using the blackboard, meanwhile 75% of students said that they liked learning material when it was accompanied by pictures and 25% liked it when there was a video. Students hope to be given teaching materials that can be accessed from their smart devices to make it easier for them to understand the subject matter. Apart from that, based on the results of the interview, the class teacher, namely Ika, S.Pd. revealed that,

“The learning method that is often implemented is lectures, so that sometimes learning in the classroom is not very conducive, the teaching materials provided are in the form of printed worksheets accompanied by images that are less attractive because the size proportions and colors are not clear”.

The class teacher also said that student learning outcomes were still in the poor category. Inadequate internet facilities in schools are also an obstacle in the learning process. Teachers hope that researchers can develop teaching materials that can support students' independent learning to minimize noise in the classroom and improve student learning outcomes. Class teachers also hope for improvements in internet access so that technology-based teaching materials can immediately be implemented according to students' needs in order to improve their digital literacy abilities. the teacher added that they had never used the Publuu application before, so it was suitable to be developed at the school.

4.1. Design

Second, the design is done by selecting material according to the basic competencies, designing the modules to be made, compiling the format of the parts that must appear in the developed module, selecting applications that can assist in making flipbook-shaped modules, namely compiling material with the Canva application and then converted into flipbook form with the help of the portrait-oriented Publuu application. The subjects contained in the teaching materials developed are Science and Indonesian. The basic competence of science content is 3.1. explain locomotion and its function in animals and humans as well as how to maintain the health of human locomotion and 4.1. make simple models of human and animal locomotion. The basic competency of Indonesian content is 3.1. determine the main ideas in spoken and written texts and 4.1. presenting the results of identification of main ideas in written and oral texts orally, in writing and visually.

The initial design that emerged was to design the cover as the initial display of the teaching material being developed. On the cover there is the identity of the material that is loaded and the content of the subject. There is a picture of a man, according to the original purpose of developing this teaching material to support student learning independence. This cover was developed on the Canva app. The color selection for each part is also chosen to be appropriate, attractive and not too flashy, so that it appears to be maintaining aesthetics. The cover design can be seen in Figure 1. (a). Next in Figure 1. (b) there is a preface design and a table of contents design.



Figure 1. (a) Cover View (b) Preface and Table of Contents

The next designed part is good material layout, image layout and video placement. Each part is arranged proportionally to make it look attractive and choose the color of the text that matches the background. Material design can be seen in Figure 2 below:



Figure 2. Summary

4.1. Development

Third, development is carried out by developing products that have been designed in the previous stage. After the product has been completed, a validation test is carried out by 2 experts. The first validator as a material expert is a teacher at an elementary school. The second validator as a media expert is a technology and information lecturer. After being validated by the validator, it is then tested on a limited basis. The validation results provided by experts can be seen in table 4 and table 5.

Tabel 4. Material Expert Validation Results

Aspect	Percentage (%)	Category
Content aspect	95,8	Valid
Presentation aspect	95	Valid
Linguistic aspect	99,6	Valid
Average	96,9	Valid

Tabel 5. Media Expert Validation Results

Aspect	Percentage (%)	Category
Graphical aspect	85	Valid
Media engineering aspects	83,3	Valid
Aspects of visual communication	62,5	Valid
Average	76,9	Valid

In addition to the quantitative data obtained from the validation results, there is also qualitative data in the form of comments or suggestions given. Comments and suggestions are presented in Table 6 below:

Tabel 6. Comments and Suggestions by Validators

Validators	Comments and Suggestions
Validator 1 (Material expert)	Add a list of references sourced from the internet such as image sources, video sources that are loaded in the media
Validator 2 (Media expert)	<ol style="list-style-type: none"> 1. Add images to increase student enthusiasm in learning. 2. The cover is good, it would be nice if you added an image that could attract attention. 3. The inserted video cannot be run yet, so it's best to insert a video that can be accessed immediately.

After the product was revised according to the comments and suggestions given by the two validators, then the teaching materials were tested on a limited basis to fifth grade students. Trials were carried out to determine the feasibility of the teaching materials that had been developed. Furthermore, the researcher directed students to fill out a practicality questionnaire that had been prepared by the researcher. The results of the student response questionnaire can be seen in Table 7 below:

Tabel 7. Student Response Questionnaire Results

Aspect	Percentage (%)	Category
Ease of use of teaching materials	87,3	Very high
Time efficiency	88	Very high
Compatibility with the material	90	Very high
Attractiveness	90,7	Very high
Average	89	Very high

In addition, the researcher has also prepared a practicality questionnaire on the teaching materials that have been developed by the researcher to be filled in by the teacher. The results of the teacher's response questionnaire can be seen in Table 8 below:

Tabel 8. Teacher Response Questionnaire Results

Aspek	Persentase (%)	Kategori
Attractiveness	82,8	Sangat Tinggi
Process and ease of use	88	Sangat Tinggi
Time	100	Sangat Tinggi
Average	90,26	Sangat Tinggi

Flipbook teaching materials assisted by Publuu can increase student learning independence. This can be seen based on the initial data on the acquisition of learning independence scores before using flipbook teaching materials and the final data on learning independence gain scores after using flipbook teaching materials. Data on the results of the standard gain value of student learning independence based on the results of the questionnaire analysis can be seen in Table 9 below:

Tabel 9. The results of the Gain Value of Student Learning Independence Standards

g Values	Category	The number of students	Percentage (%)
$g \geq 0,7$	High	10	62,50
$0,7 > g \geq 0,3$	Medium	3	18,75
$g < 0,3$	Low	3	18,75

5. Discussion

Based on the results of interviews with teachers and the results of questionnaires filled out by students, the teaching materials used by teachers are thematic books supported by printed worksheets which when used still need help from the teacher. Students like teaching materials with pictures and teaching materials that contain videos so that supporting teaching materials other than textbooks are needed. This is related to teacher competence in teaching, including competence in using technology. Teachers must have good competence to improve the quality of education. A teacher must have the competence to complete the learning function (Putra et al, 2024). Teachers hope to apply technology-based teaching materials to support

the learning process. The solution offered by researchers is to develop online-based teaching materials in the form of flipbooks according to students' needs. The advantages of teaching materials based on flipbooks can be opened via smart devices anytime and anywhere students are, either independently or in groups (Mardiana & Harti, 2022).

The final result of the design stage is the product specification of teaching materials namely (1) teaching materials are designed in the Canva application with the consideration that this application is easy to access, complete features according to the needs of students and is free of charge, (2) the front cover contains images, user identity and identity materials, (3) teaching materials equipped with learning objectives and concept maps to make it easier for students to learn them, (4) materials equipped with explanations, images displayed according to student needs, material videos that can be accessed directly because they are connected to the YouTube link and (5) evaluation that can be completed by students independently.

After the teaching material product is designed in the form of a flipbook, then it enters the validation stage by two experts, namely a material expert and a media expert. Based on the results of quantitative data analysis, an average percentage of validation results by material experts is 96.9, which means that the product is valid. Furthermore, the validation results by media experts obtained an average percentage of 76.9 which means valid. Even though the product is in a valid category, the product being developed still needs to go through the revision stage before being tested on a limited basis. The comments and suggestions given by the validator have been considered and revised according to the directions for the perfection of product development.

Furthermore, the final results of the teaching materials that have been developed are tested on a limited basis to students to measure the practicality of the teaching materials. The results of the student response questionnaire taking into account the four aspects of practicality obtained an average percentage of 89 which indicates that practicality is very high. The aspect that gets the highest percentage is the aspect of attractiveness. This shows that students are interested in learning technology-based teaching materials according to the age range of students who are interested in the visuals. In addition to students, there is also a teacher's response questionnaire by considering three aspects of practicality with an average percentage of 90.26 which indicates that practicality is very high. The aspect with the highest acquisition is the time needed by students to study the module more flexibly. By studying flipbooks it will give students longer time to study the material (Gokbulak & Senler, 2021). Flipbook-based teaching materials can be used to support students learning independently at home.

The development of these teaching materials can significantly increase student learning independence. Audio-visual-based multimedia technology can provide great opportunities to change the way students learn (Rahmadani, 2022). The cause of increasing student learning independence is influenced by the completeness of the features contained in these teaching materials, students are directed to work on evaluations by reading material or watching videos that are connected directly to the YouTube application so that it is more enjoyable. Student learning independence can increase if given appropriate learning media (Nuritha & Tsurayya, 2021). The weakness of this research is that the material developed is still limited, namely only a few animals whose movement organs have been identified, so it is recommended that future researchers complete aerial animals and animals that can fly. Apart from that, the lesson videos are taken from YouTube so it is recommended for future researchers to develop their own lesson videos that are relevant to open material. Future researchers can examine the extent to which flipbook teaching materials can influence students' cognitive learning outcomes.

This research has produced teaching materials in the form of flipbooks assisted by the Publuu application on animal movement organs in science and Indonesian language content. The resulting product was declared valid by media experts and material experts. Student and teacher responses show that the teaching materials are practical for use in learning. Flipbook teaching materials can be used anytime and anywhere so that they can increase students' independent learning.

6. Conclusion

Students and teachers hope to be able to obtain teaching materials that can be accessed from their smart devices to make it easier for them to understand the subject matter. Therefore, teaching materials in the form of flipbooks were developed with the help of the Publuu application which showed that these teaching materials were valid based on the validation process from media experts and material experts. Furthermore, based on the results of practicality trials by looking at the responses from students and teachers it is evident that this teaching material is in the very practical category. In addition, the teaching materials produced can also increase student learning independence as seen from the Gain value of 62.50% which is in the high category. This flipbook-shaped teaching material makes a contribution to elementary schools for use in the learning process, because it is practical and flexible.

Limitation

The limitation in this study is that it only takes 3 steps from the 4D model, namely define, design and development. This is due to the limited ability of the researcher's budget and time so that the dissemination or dissemination stage was not carried out.

Recommendation

We recommend teaching materials in the form of flipbooks to teachers in elementary schools to use in the learning process, because they are easier to make, more practical and more flexible to use.

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Conflict of Interest

The authors declared no conflict of interest.

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