Flipbook-Based E-Book Learning Media: Strengthening Literacy in Education Early Childhood

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Abstract: This research is based on the importance of innovative and communicative learning media such as e-books in the use of technology in the future to improve students' literacy skills because instilling the habit of reading fondly from an early age is still minimal. The purpose of this study was to produce a proper and effective e-book for improving student learning outcomes at Medan Methodist 5 Kindergarten. The development procedure used in this study is the development model from Borg and Gall and the instructional design step from Dick and Carey which is divided into 4 stages including the needs analysis stage, the product design stage, the validation and evaluation stage, and the final product stage. To see the effectiveness of the E-book, it can be analyzed through the normality test, homogeneity test, and hypothesis testing. Product validation results show a score percentage of 92.94% for material expert validation, 91.76% for media expert validation, 95.55% for design expert validation, and 98.26% for student response results. The results of the normality and homogeneity tests show that the research data has been declared normal and homogeneous. The results of the hypothesis test show that the value of t count is 2.37 and the value of t table is 1.66, where t count > t table. The results of this study indicate that flipbook-based e-books are feasible and effective in improving literacy skills and student learning outcomes in Medan Methodist 5 Kindergarten.

Keywords: e-book; flipbook; learning media

1. INTRODUCTION

Literacy ability is the ability to understand and utilize scientific knowledge as a solution to problems in everyday life, as well as to acquire new knowledge related to scientific phenomena [1]. Literacy skills focus on developing students' knowledge in applying science concepts significantly, and thoroughly, and being able to make decisions to overcome problems related to students' daily lives [2].

The cause of the low ability of scientific literacy in students is that the science learning process does not provide opportunities for students to develop critical thinking skills Science learning is still characterized by memorizing material and limited use of learning media. Mastery of literacy skills has benefits in developing students' cognitive abilities so that they can process information effectively and efficiently. There is a need for innovations in the learning process in children [3]. Early childhood is in the age range 0-6 years. This age range is a very good period for stimulating children. This time is often referred to as the window of opportunity. This period is referred to as a critical period where if the child does not get the right stimulus, such as the learning process or practice, the child can experience difficulties in his developmental stages at a later age [4].

Learning media is a means to assist in teaching and learning activities and influences learning situations, learning conditions, and the learning environment developed by the teacher [5]. One of the components that need to be considered in learning design is the selection or development of learning media that is suitable and by the material to be conveyed and attracts students' interest in the learning process. Learning media is very important to be applied in the learning process in the classroom because it can trigger the enthusiasm of students in understanding the subject matter provided by the teacher and the learning process will become more varied and not make students bored.

According to the Regulation of the Minister of Education and Culture (Permendikbud) of the Republic of Indonesia Number 137 of 2014 concerning National Standards for Early Childhood Education there are six aspects of development in early childhood that need to be achieved, one of which is the language aspect, the literacy sub-aspect (Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 137 of 2014 concerning National Standards for Early Childhood Education, 2014). Therefore, it is necessary to provide a stimulus that is responsive to early childhood literacy development and to develop reading, writing, and arithmetic skills according to their stage and development [6]. Some experts recommend that a curriculum that can integrate technology and authentic experiences can support early childhood participation, motivation, and knowledge of the material to be taught.

The use of this infographic e-book is declared valid to be applied in science learning [7]. But until now no one has published the test of flipbook-based e-books as a strategy to strengthen literacy skills in early childhood education.

In this regard, it is necessary to investigate the feasibility and effectiveness of flipbook-based e-books in the literacy skills of early childhood education. This research is important because, through the use of smartphones or computers, teachers can create learning media that are creative and the needs and characteristics of users (students). The e-book will be developed in line with the support from the teacher's acceptance attitude. The teachers also agreed on the use of e-books as a solution in increasing students' literacy levels. Next, an experiment will be carried out to test the feasibility and effectiveness of developing flipbook-based e-books as a

strategy to strengthen literacy skills in early childhood education.

1.1 Early Childhood Education Literacy

Literacy is a complex process that builds on previous knowledge, culture, and experiences to develop new knowledge and deeper understanding. The term literacy is defined as the ability to understand linguistic signs or literacy skills. In its original sense, literacy was conceptualized in terms of the primary domain, namely the primary reading and writing domain. From its original scope, literacy is a condition of literacy, literac,y and numeracy. Literacy terminology in the field of language is also developing [8].

Based on the descriptions and opinions of the experts above, it can be concluded that literacy is not only reading and writing, but also includes other fields, such as economics, mathematics, science, society, environment, finance, and even ethics. However, the most important thing for literacy is that one must be illiterate or, more simply, know how to read and write.

Children who learn to read from an early age tend to do better than at school (Dhieni, Nurbiana, et al. 2007). This is reinforced that one of the aspects that must be developed in childhood is the ability to read and write (Moleong, 2005). So the development of reading and writing skills for early childhood can be carried out as long as it is within the limits of preschool rules and by the characteristics of the child, especially learning through play to teach reading skills to preschoolers, the teacher needs to know the stages of children's reading development.

The development of reading skills in children aged 4-5 years goes through 5 stages, namely as follows: (a) Fantasy Stage (Magical Stage), (b) Self-Concept Stage, (c) Image Reading Stage (Bridging) Reading Stage), (d) Reading Introduction Stage (Take-off Reader Stage), and (e) Fluent Reading Stage (Independent Reader Satge) [9].

According to Clay and Ferguson [12], literacy consists of several components including (1) Early literacy. In the Indonesian context, early literacy is a basic effort to acquire abilities at a later stage. Early literacy is listening, hearing, and communicating through images and environmental interactions; (2) Basic literacy. Basic literacy is the ability to speak, listen, write, and do, arithmetic related to the ability to describe and communicate based on personal conclusions; (3) Library literacy. Library literacy is the ability to understand fiction and non-fiction as well as the ability to understand writing or research work; (4) Media literacy. Media literacy is the ability to understand and know the form and use of the media in the form of print, electronic, and other media; (5) Technology literacy. Technological literacy is the ability to understand various software and hardware technologies and understand the purpose of their use, and (6) Visual literacy Visual literacy is the ability to understand the information in the form of visuals and can be communicated in the form of reading.1.2 Hakikat Elektronic Book (E-book).

E-books, also known as digital books, are publications consisting of text, images, and sound and are published in digital form that can be read on computers and other electronic devices. Digital books are usually electronic versions of printed books, but it is not uncommon for a book to only be published in digital form without a printed version.

Cumaoglu, Sacici, & Torun [13] say that an e-book is Any kind of electronic text regardless of size or composition (digital objects), but excluding journal publications, available electronically (or optically) for any device (handheld or desk) included in a screen/monitor.

E-books have two interesting features from an educational point of view. First, e-book text is hypermedia. Readers may use the included hyperlinks to jump to related topics, and the text may contain graphic, audio, and video elements. Second, the content of e-books can be easily changed to suit the needs of readers by uploading new books and removing unwanted text. Teachers can compile a collection of information on their computers and ask students to download it if needed [14].

Electronic books function as learning media that can increase learning productivity and as a tool to help educators in making learning time more effective and efficient. Based on what was conveyed by Fatah [15] some of the functions of e-books as learning media are that they can increase learning productivity. The learning process is inseparable from learning resources in the form of reading books such as e-books. E-books also have unlimited references, so you don't get stuck on one learning resource. E-books help educators streamline and streamline learning time. Educators have to carry a lot of reading books in a heavy physical form. E-books in the form of digital data are very easy to carry in many files, so educators don't run out of learning materials for students.

E-books can reduce the burden on educators in presenting information, information provided through e-books is more concrete and allows individual learning because it does not depend on the information provided by educators, students can learn according to their needs, abilities, talents, and interests, learning more directed, can provide direct knowledge of the results of reading, allows the provision of broader information to students. Based on hammercomputer.com, the function of e-books is like other books, whose main function is as a learning medium (to seek knowledge from e-books or share knowledge into e-books). You can get a lot of knowledge from e-books that have been made by many people.

1.3 The Nature of Flipbooks

Electronic modules in the form of flipbooks are learning aids designed to achieve certain competencies which contain material, methods, and learning limitations as well as ways to measure learning outcomes that are structured and presented by utilizing information and communication technology in the form of the internet and electronic devices. 16].

Flipbook is a book published in digital format containing writing, and pictures, which can be read through a computer or other digital device. Digital books have many benefits. As a teacher, digital books are media that can be applied to learning which can certainly attract students' interest in learning.

Exposure to Suryani, Nunuk, Setiawan, and Putria [17] that the e-book developed in this study is based on a flipbook maker, which is a software that can change the appearance of books or other teaching materials into a digital book in the form of turning pages. This program is designed to convert packaging files from PDF, PowerPoint, Word, and Excel formats to be like a booktoo produce a more attractive appearance and can be published digitally. Various features such as zoom to enlarge view, word search, bookmarks, and thumbnails are available in this application [18].

This Flipbook teaching material was innovated using the Flip PDF Professional Pro software. Flip PDF Professional is

software that has editing functions and various interesting features and can create book pages that can be flipped [19]. Through Flip PDF Professional, books can be created that are more interesting because this software is equipped with various features such as hyperlinks, images, videos, and YouTube, and has various design templates, backgrounds, control buttons,

and navigation bars. Online.flipingbok.com software is software that can be used to support learning activities because in this software you can add videos, pictures, moving animations, and audio which can become interactive media that can attract students' interest so that they can make the teaching and learning process become not monotonous [20].

Figure 1. Display of Flipbook e-books

Figure 2. Learning with the Flipbook e-book

1.4 Development of Flipbook-Based E-books in Improving Literacy in Early Childhood Education

E-book development is an attempt to improve the learning process, learning outcomes, and quality of education. In meeting the demands in this technological era, the development of teaching media must continue to be carried out to meet educational needs that continue to develop in line with the rapid pace of technology. The existence of relevant learning materials will be a necessity for every level of education to facilitate the delivery of information to students/students so that it is easy to understand and understand and that learning does not get boring quickly.

Flipbook in this case will function as a tool to clarify the message conveyed by the teacher. In addition, flipbooks also function for individual learning so that students will think broadly and be able to solve a problem in the learning process, as emphasized that the flipbook used has a position as an aid in the process of teaching and learning activities, namely as a teaching aid for teachers/lecturers (teaching aids).

Increasing literacy in early childhood education is a conscious and planned effort to prepare students to have good literacy skills, and flipbooks are one of the teaching materials to make it easier for students to learn independently, but most teaching materials are only in the form of printed modules so they cannot stimulate students. teach through video shows and animations. With the development of advancements in the field of technology, researchers have developed flipbook-based e-books to improve literacy in early childhood education.

The research problem is formulated as follows: (1) Is the developed flipbook-based e-book learning media suitable for use as a strategy to strengthen literacy skills in early childhood education; and (2) Is the developed flipbook-based e-book learning media used effectively to improve literacy skills in early childhood education?

2. METHOD
This type of research is a type of development research, commonly called development (Research & Development). Development research is research that aims to produce a product through the development process [21]. According to Sugiyono [22] research and development is research that

produces products and also other activities, namely testing the effectiveness of the products to be produced. To be able to produce a certain product, namely research that needs analysis in nature and to test the effectiveness of the product so that it can function to a large audience, research must be carried out to test the effectiveness of the product that has been produced. According to Borg and Gall [23], development research is a process used to develop and validate products.

To produce an e-book development product based on the flipbook application for Methodist 5 Medan Kindergarten students, the development steps from Borg and Gall and the instructional design from Dick and Carey were used.
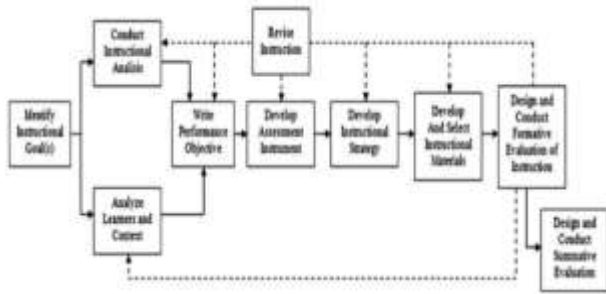

Figure 3. Dick and Carey's Instructional Design Model

This research was conducted at Medan Methodist 5 Kindergarten, Jln. Lake Semayang, Sei Agul Kec. West Medan, Medan City, North Sumatra Province. In Kindergarten Class B for the 2022/2023 Academic Year. The subjects of this study were 32 students of Medan Methodist 5 Kindergarten as the experimental class and 32 students of Medan Sriwijaya Kindergarten as the control class. The selection of the sample in this study used a purposive sampling technique, namely the determination of the research sample based on the consideration of the researcher who considered the desired research elements already exist in the members of the sample taken and suggestions from the subject teacher.

The development procedure used in this study adapts the Dick and Carey instructional development steps and the Borg and Gall product development steps with the following development steps:
1. Needs Analysis Stage: (1) Assess the objectives of the product to be developed, namely in the form of an e-book based on a flipbook application; and (2) Conduct curriculum analysis in determining products that are in bye demand of the curriculum.
2. Product Design Stage: (1) Making drawings or charts to be used as a guide in assessing and making products; and (2) Determine the concept of an e-book based on the flipbook application, the concept of delivering and organizing material, evaluation, pictures, and e-book storyboards.
3. Validation and Evaluation Stage: (1) Validate material experts, media experts, and design experts. After being validated by an expert/expert in their field; and (2) If the validators no longer provide input for improving the e-book, then this is a sign that the e-book is suitable for use; (3) Conducting product trials to Medan Methodist 5 Kindergarten students which include individual trials, small group trials, and field trials; and (4) The results of assessments and contributions from several experts, practitioners, and potential users become the basis for revising the product.
4. Final Product Stage. Producing the final product in the form of an e-book flipbook which has been revised based on

criticism and suggestions from the validation and evaluation stages. The final product is ready to be produced and used as learning media

Data collection was carried out using a questionnaire distributing questionnaires to the respondents, namely material experts, media experts, design experts, and student responses. The respondents assessed the quality of the e-book with the provisions of the research criteria in Table 1 below:

Table 1. Questionnaire Sheet Table

Criteria	Score
Very good	5
Good	4
Enough	3
Not good	2
Very bad	1

(Source: Arikunto [24])

Table 2. Expert Validation Questionnaire Assessment Qualification Criteria, and Student Response Instruments to flipbook-based e-books media

Percentage of Achievement Level	Eligibility	Description
80% $\leq X < 100\%$	Very Valid	No Need Revision
60% $\leq X < 79\%$	Valid	No Need Revision
40% $\leq X < 59\%$	Valid Partial	Partial Revision
20% $\leq X < 39\%$	Less Valid	Revision
0% $\leq X < 19\%$	Very Invalid	Revision

(Source: Arikunto [25])

Based on the quantitative data from the results of the validator by material experts, media experts, and student response questionnaires, the next step is to analyze the data and calculate the percentage level of achievement based on the formula:

$$P = \frac{\sum x}{\sum xi} \times 100 \%$$

Information:
x : The answer score from the validator
x_i : Score the highest answer
P : Presentation of eligibility level

The feasibility and effectiveness criteria achieved for use in media development are described in the following table.

Table 3. Media Eligibility Criteria

No	Score in Percentage (%)	Eligibility Category
1	$80 \leq P < 100$	Very Eligible
2	$60 \leq P < 80$	Eligible
3	$40 \leq P < 60$	Adequate
4	$21 \leq P < 40$	Inadequate
5	$0 \leq P < 21$	Very Inadequate

Flipbook-based e-book learning media improves literacy skills that are developed to get a positive response from students if the percentage obtained from the student response questionnaire reaches a score of $\geq 60\%$, then the learning media is categorized as feasible and effective.

Product Effectiveness Test Data Analysis Techniques. The effectiveness test aims to obtain information about whether or not the product development being tested is effective in the learning process.

Based on the formulation of the first problem, namely whether the developed flipbook-based e-book learning media is feasible to use. Flipbook-based e-book learning media can be said to be feasible to use based on the results obtained from expert validation regarding suggestions and improvements related to the developed flipbook-based e-book learning media. The next step was to do an individual trial of 3 students, and a small group test of 9 students to find out the response to the flipbook-based e-book learning media that was made.

Based on the formulation of the next problem, namely whether the developed flipbook-based e-book learning media is effective for increasing literacy. Learning is said to be effective if there are significant differences in learning outcomes between classes that are given treatment in classes that are not given treatment. The hypothesis uses the mean difference test or t-test. The t-test is the average difference to find out whether there is a significant difference at the 0.05 significance level with Microsoft Excel 19
.

The hypothesis formulated is:

Ho: $\mu1 = \mu2$ (there is no mean difference between the treated and untreated classes).

Ha : $\mu1 \neq \mu2$ (there is an average difference between the treated and untreated classes).

Decision-making Ho is accepted if the significance is greater than 0.05. The following is the calculation using the 2nd difference test for the population average according to Sudjana [26]:

$$t = \frac{\bar{X}1 - \bar{X}2}{s\sqrt{\frac{1}{n1} - \frac{1}{n2}}}$$

Where:

$\bar{X}1$ = total average score of the experimental class sample

$\bar{X}2$ = total average score of the control class sample

s = standard deviation

3. RESULTS AND DISCUSSION
3.1 RESULTS

The results of the assessment by media experts, material experts, individual trials, small group trials, and limited field trials for all aspects of the assessment are determined by the average score. The results of the assessment were then analyzed and determined whether or not it was appropriate to develop e-book learning media based on literacy skills flipbooks. The average percentage of the results of the assessment of media experts, material experts, individual trials, small group trials, and field trials is as follows:

Table 4. The average percentage of the results of the assessment of flipbook-based learning media for literacy skills

No	Categorization	Percentage of average score %	Criteria
1.	Material Expert Validation	92,94	very feasible
2.	Media Expert Validation	91,76	very feasible
	Learning Design Validation	95,55	very feasible
3.	Individual Trial	94,00	very feasible
4.	Small Group Trial	95,66	very feasible
5.	Field Testing	98,26	very feasible
The average		94,70	very feasible

Flipbook-based e-book learning media shows that: Material Expert Validation is 92.94% very feasible category; Media Expert Validation of 91.76% very feasible category, Learning Design Validation of 95.55% very feasible category; Individual Trial of 94.00% very feasible category, Small Group Trial of 95.66% very feasible category; Field trials of 98.26% very feasible category, an average of 94.70% very feasible category. which means the use of flipbook-based e-book learning media meets the needs of students

Based on the learning outcomes of students who were taught using the e-book at Medan Methodist 5 Kindergarten, the lowest score was 55 and the highest score was 100. The mean score was 81.25, mode 80, median 79.5, and standard deviation 13.50. To see student scores, class intervals are used, namely scores between absolute frequencies (the number of students who have learning achievement scores) and relative frequencies (the number percent of learning achievement scores). A complete description of learning outcomes using e-books is shown in Table 5.

Table 5. Frequency Distribution of Experiment Class Student Learning Outcomes

Class	Class Intervals	F. Absolute	F. Relative %
1	55 – 62	4	12,5
2	63 – 70	6	18,75
3	71 – 78	1	3,12
4	79 – 86	8	25
5	87 – 94	5	15,62
6	95 – 100	8	25
	Total	32	100

Based on the learning outcomes of students who were taught using printed books in TK Sriwijaya Medan, the lowest score was 20 and the highest score was 100. The mean score was 69.53, mode 88, median 70.5, and standard deviation 24.37. A complete description of learning outcomes using printed books is shown in Table 6:

Table 6. Frequency Distribution of Control Class Student Learning Outcomes

Class	Class Intervals	F. Absolute	F. Relative %
1	20 – 33	3	9,38
2	34 - 47	3	9,38
3	48 - 61	5	15,62
4	62 – 74	3	9,38
5	75 – 87	8	25
6	88 - 100	10	31,25
	Total	32	100

The analysis requirements test performed is the normality and homogeneity tests. Testing was carried out using the Liliefors test. A summary of the normality of the two samples can be seen in Table 7 below:

Table 7. Summary of Data Normality Test with Liliefors

No	Data	Class	L_{count}	L_{table}	Conclusion
1	Pretest	Experiment	0,09	0,16	Normal
2	Pretest	Control	0,06	0,16	Normal
3	Posttest	Experiment	0,08	0,16	Normal
4	Posttest	Control	0,11	0,16	Normal

Based on Table 7, it can be seen that the results of the pretest data normality test in the experimental class obtained $L_{count} < L_{table}$ (0.097 < 0.16) and in the control class also obtained $L_{count} < L_{table}$ (0.060 < 0.16). The same thing also happened to the posttest data normality test results for the experimental class with $L_{count} < L_{table}$ (0.082 < 0.16) and in the control class obtained $L_{count} < L_{table}$ (0.105 < 0.16). Thus, it can be concluded that the pretest and posttest data in the experimental and control classes are normally distributed at the significance level $\alpha = 0,05$

Homogeneity test analysis using the F test is to prove the largest variance and the smallest variance with the formula:

$$F = \frac{Varian\ terbesar}{Varian\ terkecil} = \frac{S_1^2}{S_2^2}$$

A summary of the homogeneity of the two samples is seen in Table 8 below:

Table 8. Summary of Data Homogeneity Test with Fisher's Test

No.	Data	Class	F_{count}	F_{table}	Conclusion
1	Pretest	Experiment	0,41	1,83	Homogeneous
2	Pretest	Control			
3	Posttest	Experiment	0,31	1,83	Homogeneous
4	Posttest	Control			

Based on Table 8, it can be seen that the results of the calculation of the pretest data homogeneity test in the experimental class and control class at a significant level α = 0.05 obtained $F_{count} < F_{table}$ (0.41 < 1.83), it can be concluded that the pretest data in the two classes have the same or homogeneous variance. Then in the posttest data homogeneity test in the experimental class and control class at a significant level α = 0.05 obtained $F_{count} < F_{table}$ (0.31 < 1.83), it can be concluded that the posttest data in the two classes have the same or homogeneous variance.

The following is the formulation of this statistical hypothesis, namely:
Ho : $\mu A1 \leq \mu A2$
Ha : $\mu A1 > \mu A2$

Information:
$\mu A1$: the average learning outcomes of students taught using flipbook-based e-book learning media increase literacy
$\mu A2$: the average student learning outcomes taught without using flipbook-based e-book learning media increase literacy

The t-test is used as a hypothesis-testing tool because the research data is normally distributed and homogeneous. The hypothesis in the research is:
Ho: Flipbook-based e-book learning media is not effective in increasing literacy.
Ha: Flipbook-based e-book learning media improves literacy

Hypothesis testing in this study was carried out using the t-test formula. The t-test was conducted to find out whether there is a significant difference between learning outcomes in classes taught using e-books (experimental class) and learning outcomes taught using printed books (control class) with the provision that if $t_{count} > t_{table}$ then H0 is rejected and Ha accepted.

The calculation results obtained $t_{count} = 2.37$ and $t_{table} = 1.66$ so that $t_{count} > t_{table}$ at a significant level α = 0.05. Based on these results, that H0 is rejected and Ha is accepted or in other words, there is a significant difference between student learning outcomes in the experimental and control classes at a significance level of 5%. Thus, the learning outcomes of students who are taught using e-books have differences from the learning outcomes of students who are taught with printed books and are declared tested for feasibility.

To test the effectiveness of the e-book being developed, the following calculations are performed:

$$X = \frac{total\ score\ obtained}{total\ ideal\ score\ of\ all\ items}\ x\ 100\%$$
$$= \frac{27}{32}\ x\ 100\%$$
$$= 84,37\%$$

The value of the effectiveness of the Print Module can be seen as follows:

$$X = \frac{total\ score\ obtained}{total\ ideal\ score\ of\ all\ items}\ x\ 100\%$$
$$= \frac{19}{32}\ x\ 100\%$$
$$= 59,37\%$$

Based on the calculation of the effectiveness test on both, the result is that the learning outcomes of students who are taught by e-books are higher than the learning outcomes of students with printed books (84.37% > 59.37%). Thus it can be concluded that e-books are more effectively used in early childhood learning at Medan Methodist 5 Kindergarten compared to using printed books at Sriwijaya Kindergarten Medan.

3.2 DISCUSSION

The product developing flipbook-based e-book learning media for early childhood learning is a product that is developed by taking into account aspects of learning and also learning principles, both design, media, and also the material or content in it. This development research is directed to produce a product in the form of flipbook-based e-book learning media for early childhood learning in Medan Methodist 5 Kindergarten to improve literacy skills and student learning outcomes as well as the competence of teachers and students in the use of information technology in today's technological era.

Research by Amrulloh [27] explains that to produce theoretically feasible media, the media must be reviewed by media experts, subject matter experts, and teachers. The

theoretical feasibility of the media is reviewed from (1) the feasibility of the material which includes the suitability of the media content with the concepts and learning objectives; and (2) media feasibility which includes media format, media quality, and suitability of the concept. (3) design feasibility which includes program design, design quality, and design concept. Based on the feasibility of these three aspects, learning media are produced that are theoretically feasible and suitable for use in the learning process.

Arsyad [28] explains that if the media is designed as an integral part of the learning process, then the assessment of the learning design also includes an assessment of the media used. The criteria provided by Walker & Hess in Arsyad's book [29] regarding reviewing learning media based on quality, namely: (1) quality of content and objectives, which include accuracy, importance, completeness, balance, interest, and suitability for student situations; (2) instructional quality, which includes providing learning opportunities, assistance for the learning, quality of motivation, instructional flexibility, quality of tests and assessments, impact on students and teachers; and (3) technical quality, which includes readability, ease of use, display quality, management, and documentation.

Based on the results of the validation that has been carried out, the e-book product is declared feasible to be continued in field trials. The developed e-book meets standards based on the standard design for the development of learning materials and learning media. For the assessment of learning material experts, a score of 92.94% was obtained which was categorized as very appropriate, for an assessment from learning media experts a score was obtained of 91.76% which was categorized as very feasible, and an assessment from learning design experts obtained a score of 95.55% which was categorized very worth it.

After the experts stated that this e-book product was very feasible to be tested in the field, field trials were carried out according to the procedure, namely individual trials, small group trials, and field trials. The score of student responses in individual trials was 94% (Very Eligible), small group trials were 95.66% (Very Eligible), and field trials were 98.26% (Very Eligible). Based on the results of the questionnaire, which were validated by material experts, media experts, and design experts and then continued with product trials, it can be concluded that e-books in early childhood learning are stated to be very suitable for use as learning media for Methodist 5 Kindergarten students in Medan.
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Testing the effectiveness of the product on the developed e-book has been carried out by comparing the average value of student learning outcomes taught using e-books with those using printed books. From the results of research data processing, there were differences in learning outcomes between students who were taught using e-books and those who used printed books (84.37% > 59.37%).

This is in line with Gonca Cumaoglu, Esra Sacici, and Kerem Torun [30] who stated that reading habits, accessing resources and material preferences change rapidly in the digital world. Changes in reading habits on a large scale have led to differentiation in resource accessibility, archiving, and the use of related technologies. So the use of e-books can be said to be effective in learning at school.

The same thing was said by Nisa [31] who stated that e-books that had been validated by product technology experts showed very valid results for use by students. This means that there is a significant difference in the average learning outcomes between the experimental class and the control class when using this e-book in early childhood education. Furthermore, Indraswari, Putri [32] also stated that the e-book developed as a result was deemed feasible to be used as an alternative learning resource in learning early childhood education.

Then Birgili, Seggie & Oğuz [33] stated that in principle the flipbook learning model asks students to study material at home before taking lessons in class. In the classroom, learning is truly more student-centered, students are allowed to be actively involved in the learning process in class. Therefore, the use of flipbook-based e-books developed in this study is effective for improving students' speaking skills in improving early childhood literacy skills. The effectiveness of flipbook learning is not only implemented for one, two, or more subjects, but for the whole school, it is very useful for today's new educational paradigm.

From Arsyad's explanation [34] about the benefits of media, it can be concluded that e-books can be called true learning media if these learning media can improve student learning outcomes. The use of e-book media allows students to more easily understand learning and master learning material, therefore this e-book media can improve student learning outcomes. From the explanation above, it can be concluded that e-book media is effective for improving student learning outcomes of Medan Methodist 5 Kindergarten. In addition, the teacher's ability to act as a motivator also greatly influences student learning outcomes because students must be motivated to be fully responsible for their learning assignments.

4. CONCLUSION
Based on the formulation of the problem, objectives, results, and discussion of the research on the development of e-book learning media previously described, the following conclusions can be drawn:
1. The e-book product developed for Medan Methodist 5 Kindergarten students meets the requirements and is suitable for use as a learning medium.
2. The effectiveness of the developed flipbook-based e-book is considered more effective than printed books. The results of testing the hypothesis prove that there is a significant difference between the learning outcomes of students who are taught using e-books and the learning outcomes of students who are taught using printed books.

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