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Development of Flipbook Based Module as Learning Media on a Phonology Course

Pengembangan Modul Berbasis Flipbook Sebagai Media Pembelajaran pada Mata Kuliah Phonology

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Abstract

Learning media integrated to technology is needed to help students learn easier. This current research aims to develop a feasible learning media in the form of a flipbook-based module for the phonology course in the Department of English, Universitas Negeri Malang. Research and Development methodology with Borg Gall research and development model was employed. The data were collected from media expert validation, material expert validation, and field trial. The media expert validation shows 98.4 percent score with a very good category; material expert validation shows 97.8 percent score with very good category; and the field trial shows 90.9 percent score with very good category. The validation result shows that the flipbook-based module is feasible and can be categorized very well as learning media for phonology courses. The product provides the basic knowledge of phonology that is equipped with audios and video, and it can be accessed online through a smartphone and personal computers.

Keywords: flipbook; phonology; module

Abstrak

Media pembelajaran yang terintegrasi dengan teknologi membantu siswa belajar lebih mudah. Penelitian ini bertujuan untuk menghasilkan dan menganalisis media pembelajaran yang layak berupa modul berbasis flipbook untuk mata kuliah fonologi di Departemen Sastra Inggris, Universitas Negeri Malang. Penelitian ini menggunakan metodologi Research and Development dengan model penelitian pengembangan Borg Gall. Data diperoleh dari validasi ahli media, validasi ahli materi, dan uji coba lapangan. Validasi ahli media menunjukkan skor 98,4 persen dengan kategori sangat baik, validasi ahli materi menunjukkan skor 97,8 persen dengan kategori sangat baik, dan uji coba lapangan menunjukkan skor 90,9 persen dengan kategori sangat baik. Hasil validasi menunjukkan bahwa modul berbasis flipbook layak dan dapat dikategorikan sangat baik sebagai media pembelajaran mata kuliah fonologi. Produk ini memberikan pengetahuan dasar tentang fonologi, dilengkapi dengan audio dan video. Kemudian, produk juga dapat diakses secara online melalui smartphone dan komputer pribadi.

Kata kunci: flipbook; fonologi; modul

1. Introduction

Phonology is a study that is interested in the language system, the rules by which sounds occur in language and the sorts that play a role in communication (Lorenz, 2013). There are two subdisciplines of linguistics which discuss sound, namely phonetics and phonology. The relationship between phonetics and phonology is a complex one, but people might initially approach phonology as narrowed-down phonetics (McMahon, 2002). Basically, phonology deals with rules in a mental grammar related to language sound. It can be said that phonology is the study of language sound in general while phonology is a study about language in the English language (Lorenz, 2013; Odden, 2005). Phonology refers either to the representation

of the sounds and sound patterns in a speaker's mental grammar or the study of the sound patterns in a language or in human language (Fromkin, Rodman, & Hyams, 2003). Because phonology is related to sounds, the learning process is much better accompanied by practice.

Since the COVID-19 pandemic, the teaching of phonology courses has been shifted from face-to-face meetings into online learning. In the context of the Department of English, lecturers teaching the course have used several strategies to teach phonology such as using videos. The students learn individually from the video and then continue to do an additional assignment. Then, the assignment for a drawing of a speech organ is changed by using google drawing. Before the COVID-19 pandemic, the students were given a course book. The students would be guided to pronounce the sound correctly by the lecturer. Furthermore, students are also given a task to draw the diagram of the speech organs to remember and memorize it.

In the phonology course, interaction between students and the teacher is needed to know if the students' pronunciation is correct. It is because sound is an important part of language, especially in pronunciation. After all, the pronunciation that is not appropriate will result in a misunderstanding in communication. Short-term storage of verbal information based on phonological and phonemes have been widely considered to be the basic units of verbal short-term memory (Schweppe, Grice, & Rummer, 2011). Because of that learning phonology should be done intensively since phonology is a study about language sounds.

In addition to the interaction, it is important that the teaching of phonology incorporates multimedia learning. Mayer (2014) who popularized Cognitive Theory of Multimedia Learning (CTLM) stated that people learn more deeply from multimedia principles. Multimedia can be defined as the combination of texts and pictures. So it means people learn more effectively and efficiently from words and pictures than from words alone. The word can be spoken or written, and the picture can be in the form of graphical imagery including illustrations, photos, or video. In response to this, the development of phonology learning media continues to be pursued to optimize the learning process. Adnyani, Sari, Suputra, Pastika, and Suparwa (2018) have developed phonology learning media in the form of Blendspace based on Information and Communication Technology (ICT). The research shows that the result is adequate for helping students learn phonology. However, some deficiencies need to be addressed. One of them is that the result should be added to the students' video or audio in order for the students to learn to recognize the correct sound production. Thus, this current study aimed to fill the gap by developing a feasible module as learning media that involves an introduction to phonology, production of speech sound, syllables, stress, and weak form that incorporates digital media, flipbook. Flipbook as the digital media can make the appearance of the module more variable because flipbook will display text, images, videos and sounds (Mulyaningsih & Saraswati, 2017; Sugianto, Abdullah, Elvyanti, & Muladi, 2017). Besides, flipbook-based modules can be open anytime and anywhere through smartphone and personal computer.

2. Method

The research uses Research and Development (R&D) as the research methodology (Borg & Gall, 2003). R&D is the activities, processing, analysis, and presentation of data carried out systematically and objectively accompanied by activities to develop a product to solve a problem. In the context of education, R&D is conducted to develop an educational product like curriculum, syllabus, textbook, instructional media, modules, assignment instruments, and other educational products (Haryati, 2012; Latief, 2009). The development of learning media

in the language field, especially in the phonology course, is one solution to creating a feasible learning media. Therefore, this learning media development is packaged in the form of a flipbook-based module and equipped with audios on the phonology course. The module will cover basic phonology materials, which can be assessed anytime and anywhere.

Furthermore, the writer uses the Borg and Gall R&D model to conduct the research (Borg & Gall, 2003). The researcher chooses this research development model because Borg and Gall's model has feasibility validation by the expert and field trial in the step. So the developed product has high feasibility and according to the needs. Borg and Gall's development model has ten steps that must be done, namely 1) Research and collection of data, 2) planning, 3) preliminary product development, 4) preliminary trial, 5) preliminary revision, 6) main product trial, 7) operational revision, 8) operational trial, 9) final product revision, and 10) dissemination and implementation (Borg & Gall, 2003). However, the researchers simplified the steps into seven stages due to the time constrain. The seven stages used are shown in Figure 1:

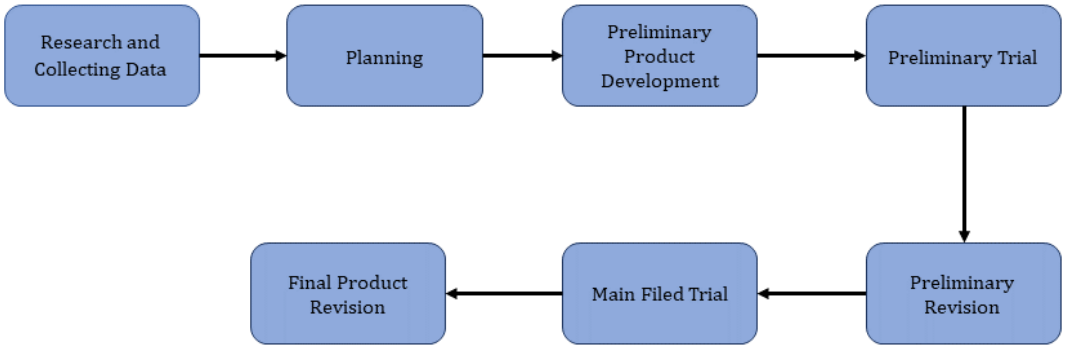

Figure 1. Research and development procedure

Research and collecting data included studying literature related to problems, preparing for formulating framework research, conducting preliminary research to collect information (observation and retrieval of relevant data), searching the problems encountered in learning, and summarizing the problems. Problem identification was carried out based on observations on the phonology course at the Department of English, Universitas Negeri Malang during the online learning and interviews with the students. Based on the observation, the first author could see that the relationship between students and teacher were less intensive due to the use of videos. The teachers could not supervise students' pronunciation of the sounds. Furthermore, the results of the interviews revealed that the students found it difficult to study because the materials and the audios were not in unity.

Based on the findings of the previous step, the researchers formulated the material for the phonology course. Researchers planned what materials need to be in phonology flipbook-based. Besides, the researchers used pictures and audio to support the book. Voice recordings of the pronunciation of the sounds were also prepared. All materials were then converted into PDF form. Then the PDF form was processed on Flip PBD Builder to add the sounds and videos.

The next step before the field trial was expert validation. The aspects validated were the content material and media aspect. The validation results were used to improve the flipbook-based module. After the validation stage, the initial product was designed and validated by the

lecturer of Universitas Negeri Malang and tested on the 20 students who took phonology courses to seek suggestions and feedback about the flipbook-based phonology module. According to Suparman (2001), students that are elected must be representatives to represent the research subject. If there is an evaluation of the use from the learning media, the learning media must be revised. The revision in the second stage is carried out if there are weaknesses or shortcomings in small-scale trials. This second revision aims to improve the product before it is tested on a large scale. However, this revision is also used as the final product revision. The final stage of the development step was a flipbook-based module for phonology based on suggestions, criticisms and assessments from the trial and revision stages.

To obtain the expected amount of data, the researcher used a data collection instrument, observation and questionnaire. Questionnaire distributed consisted of 3 types which were intended for material experts, media experts learning, and students (audience).

The following formula was used to analyze the data from the results of the validation questionnaire and trials to obtain an overview of the product in the form of a percentage number.

$$P = \frac{n}{N} \text{ x } 100\%$$

Description:
P = Percentage of test subject evaluation results
n = Total score of respondents' answers
N = Total score of ideal answers

There were two types of data analysis techniques used in the development of the flip-book-based phonology module: qualitative and quantitative data analysis techniques. Furthermore, to determine conclusions on the analysis of the results of the validation questionnaire and product trials that have been carried out, then the assessment criteria are set as in the table 1:

Table 1. Assessment percentage criteria

No	Interval	Category
1	81.25% < score ≤ 100%	Very Good
2	62.50 % < score ≤ 81.25%	Good
3	43.75% < score ≤ 62.50%	Not good
4	25.00% < score ≤ 43.75%	Poor

Source: Ali (1987, p. 184)

3. Result and Discussion

Result of initial development

Initial development product flipbook-based phonology module adapted from Course Learning Outcomes (CLO). The formulation of course learning outcomes that will be achieved by the phonology course are as follow: (1) describe the concept of phonetics and phonology, (2) explain related theoretical concepts in phonetics and phonology, (3) demonstrate accurate transcriptions of English linguistic data, (4) analyse phonological phenomena in English. Based on the course learning outcomes, to improve students' understanding and skills, so that the focus of the learning is on practicing speaking audio, transcription, and other topics related to phonology.

Formulation result of materials and organization of manuscripts/storyboards

The formulation of materials on the flipbook-based phonology module are divided into seven chapters. The flipbook-based phonology module has integrated with audios how to pronounce English sounds so that the product is expected to increase students' learning motivation and understanding. The organizing of the materials are shown in the Table 2:

Table 2. Materials and organization of storyboard

Chapter	Topic	Sub-Topic
Chapter I	Phonetic and Phonology	
	The Production of Speech Sounds	
Chapter II	Consonant	
Chapter III	Vowel	
	Diphthong	
Chapter IV	Syllable	Structure of English Syllable
	Strong and Weak Syllable	
Chapter V	Stress	
	Simple Word Stress	Two Syllable Word, Three Syllable Word
	Complex Word Stress	Affixes, compound word,
	Variable Stress	
	Word Class Pair	
Chapter VI	Weak Form	
Chapter VII	Intonation	

Media expert validation result

The data is obtained from media expert validation of a flipbook-based phonology module that is conducted by one of the lecturers of Universitas Negeri Malang. The Table 3 is the data from the media expert validation results against development flipbook-based modules as learning media products in the field of phonology.

Table 3. Media expert validation result

No.	Aspect	Score		Percentage (%)	Description
		n	N		
Attractiveness					
1	The use of the type of font in this learning media is easy to read	4	4	100	Very Good
2	The font size on this learning media is easy to read	4	4	100	Very Good
3	The images used has good and clear quality	3	4	75	Good
4	The audio used has good and clear sound quality	4	4	100	Very Good
5	The position of the audio on the learning media makes it easier to understand the material	4	4	100	Very Good
6	The position of the picture on the learning media makes it easier to understand the material	4	4	100	Very Good
7	The audio on learning media is easy to play	4	4	100	Very Good
8	The pictures on learning media are arranged systematically	4	4	100	Very Good
9	The audios on learning media are arranged systematically	4	4	100	Very Good
10	The images presented on the learning media are in accordance with the material presented	4	4	100	Very Good
11	The audios presented on the learning media are in accordance with the material presented	4	4	100	Very Good
Effectiveness Aspect					
12	This learning media is effective in helping phonology learning	4	4	100	Very Good
13	Learning media are presented according to student needs	4	4	100	Very Good
14	This learning media is safe to be used	4	4	100	Very Good
15	Instructions for using this learning media are easy to understand	4	4	100	Very Good
16	The learning media is easy to use and easy to access	4	4	100	Very Good
	TOTAL	63	64		

The result of the media expert validation can be calculated as follow:

$$P = \frac{n}{N} \text{ x } 100\%$$
$$P = \frac{63}{64} \text{ x } 100\%$$
$$P = 98.4\%$$

Based on the calculation of media expert validation above, the score that is obtained is 98.4% that shows the criterion of the product is very good. The score shows that the product outline and appearance is good. Then, the pictures, audio and the material are structured well so that the product is effective to help students learn phonology. Then, it can be concluded that the flipbook-based learning media for phonology course is feasible and can be used as a learning tool. Furthermore, there are aspects that need to be revised from the validator. The aspect that needs to be revised is the quality of the picture in Chapter 1 because there is a picture that has low quality so it cannot represent the speech organs well.

Material expert validation result

The data is obtained from material expert validation of a flipbook-based phonology module that is conducted by one of the lecturers of Universitas Negeri Malang that competencies in linguistics and phonology. The following is the data from the material expert validation results against development flipbook-based module as learning media products in the field of phonology presented in table 4:

Table 4. Material expert validation result

No.	Aspect	Score		Percentage (%)	Description
		n	N		
Student Need Suitability Aspect					
1	The material presented in the learning media is in accordance with the current student's ability level	4	4	100	Very Good
Learning Object Suitability					
2	The material presented is in accordance with the phonology learning objectives	4	4	100	Very Good
3	The scope of the material presented in the learning media is in accordance with the sub-themes	4	4	100	Very Good
Material Content Aspect					
4	The materials presented are clear and in accordance with the phonology material	4	4	100	Very Good
5	The materials presented full fill the need to achieve the learning objectives of Phonology	4	4	100	Very Good
6	The examples presented in the learning media are in accordance with the scope of the material	4	4	100	Very Good
7	The audios on learning media according to the material presented	4	4	100	Very Good
8	The pictures on learning media according to the material presented	4	4	100	Very Good
Presentation Aspect					
9	The arrangement of sentences used in the learning media is easy to understand	4	4	100	Very Good
10	The arrangement of the materials are systematic and makes it easier for students to learn phonology	4	4	100	Very Good
11	The position of the audios presented in accordance with the material	3	4	75	Good
12	The position of the images presented in accordance with the material	4	4	100	Very Good
	TOTAL	47	48		

The result of the media expert validation can be calculated as follow:

$$P = \frac{n}{N} \text{ x } 100\%$$

$$P = \frac{47}{48} \text{x } 100\%$$
$$P = 97.8\%$$

Based on the calculation of material expert validation above, the score that is obtained is 97.8%. Furthermore, based on the table of criterion that has been determined, the calculation shows the criterion is very good. So that the flipbook-based learning media for phonology courses, especially the materials, is suitable with the students' needs and the learning objective. Other than that, the material is written clearly and accompanied with pictures and audio. So, it can be said that the product is feasible and can be used as a learning tool. However, there are revisions that need to be done based on suggestions from the validator, those are: (1) in the chapter 1, the researcher is suggested to give number to the speech organ picture, (2) in the chapter 5 and 6, the researcher is suggested to add several new audio related to the topic, (3), in the chapter 2 and 3, the researcher is suggested to add video or YouTube link related to the exercises.

Field trial result

The data was obtained from a field trial of the 20 college students of English Language Education, Universitas Negeri Malang who took a Phonology course. Furthermore, the field trial was done in seven days through Whatsapp. The result of field trial toward the development of flipbook-based phonology module as the learning media that is showed in the Table 5:

Table 5. Field trial result

Number	Score		Percentage (%)	Description
	N	N		
Technical Aspect				
1	74	80	92,5%	Very Good
2	71	80	88,8%	Very Good
3	71	80	88,8%	Very Good
4	72	80	90%	Very Good
5	72	80	90%	Very Good
6	72	80	90%	Very Good
7	74	80	92,5%	Very Good
8	74	80	92,5%	Very Good
9	72	80	90%	Very Good
10	73	80	91,2%	Very Good
Benefit Aspect				
11	70	80	87,5%	Good
12	71	80	88,8%	Very Good
Total	866	960		

The field trial result can be counted with the following formula

$$P = (\sum n)/(\sum N) \times 100\%$$
$$P = 783/960 \times 100\%$$
$$P = 90.2\%$$

Based on the calculation of the field trials results that have been carried out, the results obtained are 90.2%. According to the table of assessment percentage criteria that has been

determined, the results are categorized as very good criteria, so that the flipbook-based phonology module as learning is feasible and can be used as a learning tool. Furthermore there are some critics and suggestion about the product, those are: (1) in Chapters 2 and 3, the researcher is suggested to add video shows how to pronounce consonant and vocal, (2) the topic of each chapter is better wrote in the first page of each chapter, (3) the researcher is suggested to make the online version of the module, (4) it is better to add summary for each chapter.

The final result of flipbook-based phonology module as learning media

The result of the development phonology module is in the form of a flipbook-based e-module that integrates with audios and videos. The product can be opened and operated from the link https://bit.ly/FlipbookBasedPhonologyModule. The flipbook can be opened through smartphone or personal computer. It has 57 pages that contain seven chapters. Besides, the flipbook provides the materials with a total 71 sounds, with the details as following: 24 consonant sounds, 11 vocal sounds, 9 diphthong sounds, 15 stress sounds, 7 world class pairs sounds, and 5 weak form sounds. Furthermore, the flipbook also provides two videos in chapter II about consonants and chapter III about vocal and diphthong. In addition, the flipbook also provides links to access IPA transcription that can help students do the exercises.

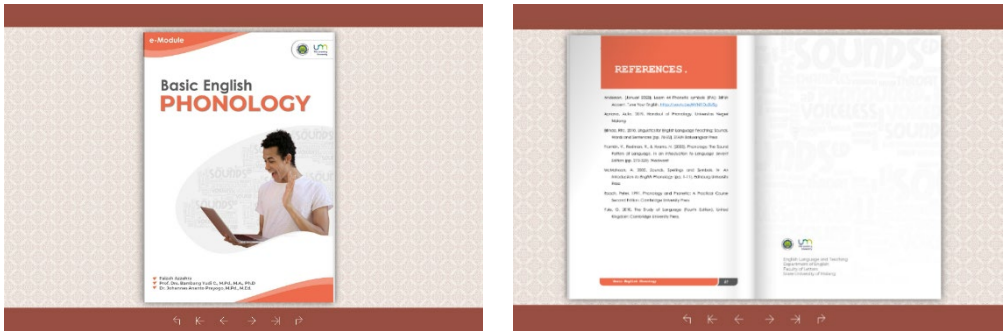

Figure 2. The front and back covers of the flipbook

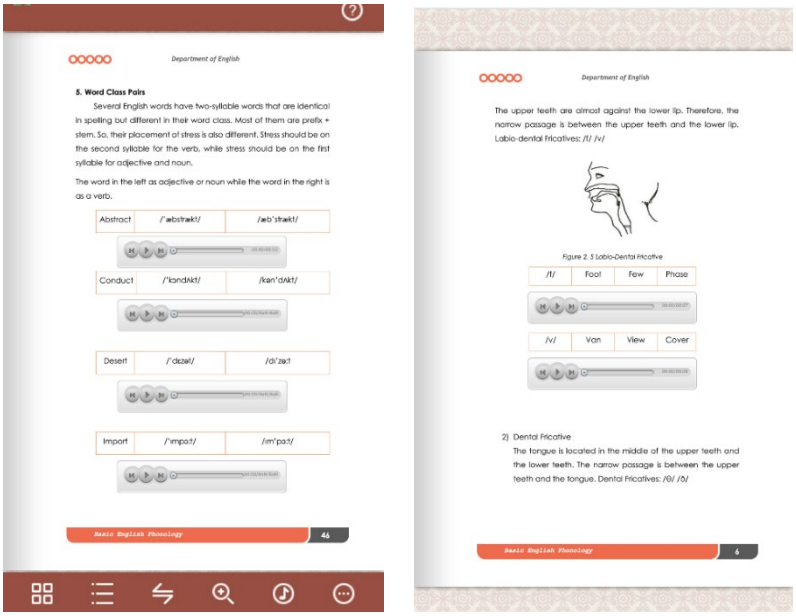

Figure 3. The Sounds Structure

The sounds are arranged directly after the words and the phonological transcription. So, students also can learn to be aware between the sounds and the phonological transcription. Besides, in the chapter II or consonant, each sound is also accompanied with pictures that show how speech organs produce the sound.

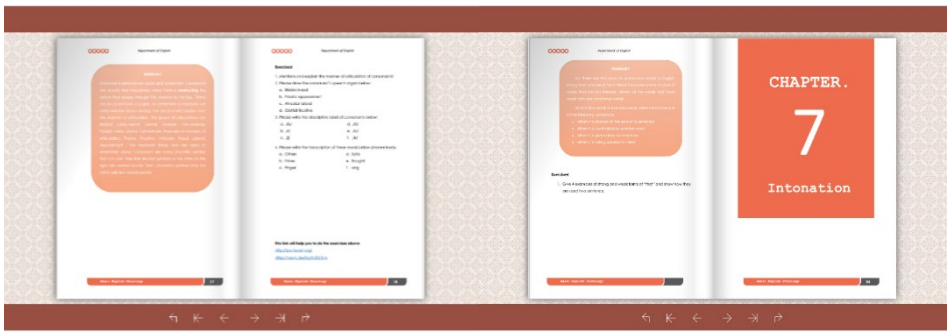

Figure 4. Summary and exercises for each chapter

The flipbook-based phonology module also provides material summaries and exercises for each chapter. The summaries are placed before the exercises. Expected from the summary, students can learn and review the material easily.

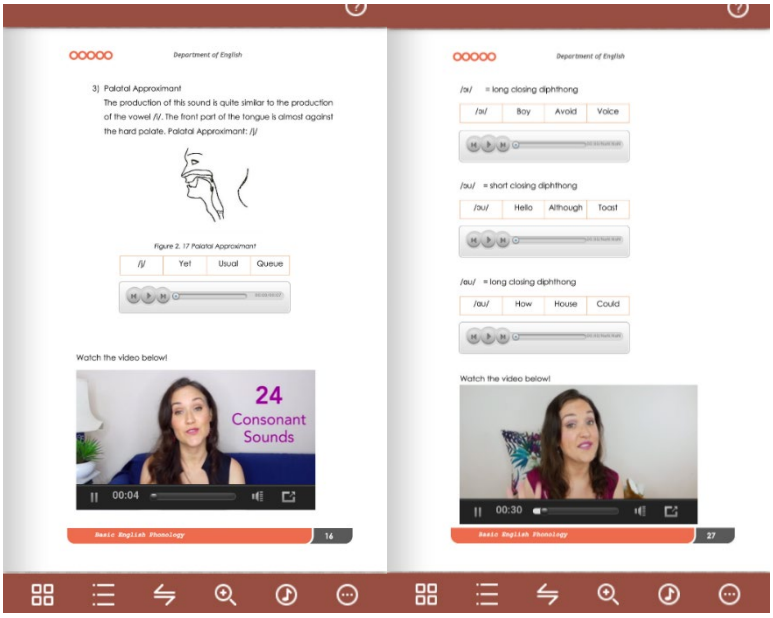

Figure 5. Videos for Chapter II and III

There are two videos that are placed in Chapter II and Chapter III. The videos aim to help students visualize how to pronounce the sounds in chapter II and Chapter III correctly and fluently because Chapter II and III discuss consonants, vowels, and diphthongs that can categorize the basic sounds in phonology.

Discussion

Basic English Phonology Module is developed for a phonology course at the Department of English, Universitas Negeri Malang. The module is supported with pictures, audios, and video. This product is developed based on the theory of the importance of learning media on the foreign language learning. Nasution in Nurrita (2018) stated that the benefit of using

learning media on foreign language learning, those are: (1) attracting students' attention so as to foster student motivation, (2) clarifying teaching materials, (3) varied learning methods, (4) students doing more learning activities. It can be proved from the field trial where the result has a very good category.

The module is in the form of a flipbook that can be opened online through smartphone and personal computer. Flipbook based module is chosen according to the Multimedia Cognitive Theory that was developed by Mayer (2014). Multimedia cognitive theory suggests that people learn easier and deeper through words, pictures, and audios or multimedia than from words only (Mayer & Moreno, 2003). Besides, the theory of multimedia learning centers on the idea that learners attempt to build meaningful connections between words and pictures that they can understand more than they could have with words or pictures alone. Flipbook based is chosen because flipbook can provide pictures, audios and videos in unity, so students can learn easier and understand the materials well.

Although the product can provide picture, audios, and videos as supporting material, there are two weaknesses that need to be improved for the future study: (1) the audio provided still uses two accents, some audio is British and some is American, (2) the offline version of the product only can be opened through personal computer. However, the product provides several advantages to the students because it can be opened easily through smartphone and personal computer with unlimited access space and time. The product also provides material and exercises that are suitable with students' needs and course learning outcomes. Moreover, the product supported by multimedia can increase students' motivation to learn phonology.

4. Conclusion

The purpose of this study is to develop a flipbook-based module for a phonology course for college students. The materials of the product and the media used have an important role in the significance of the product. The product is in the form of flipbook that can be assed online and offline. Based on the media expert validation, the score shows 98.4% thus it is feasible to be used as learning media. The score of the material validation is 97.8% which shows that the material of the product is very good. Furthermore, the field trial results show that the product has very good criterion with the score of 90.2%. The score also shows that the product is feasible and can help students to learn phonology courses. The product is easy to use and in accordance with students' needs. The current study contributes not only to the teaching of phonology in the Department of English Universitas Negeri Malang but also it has contributed to the field of multimedia material development by using flipbook based phonology. The privilege of this learning media is unlimited access space and time to access.

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