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Electronic module based on local wisdom of mangrove ecotourism using professional 3d pageflip for elementary schools

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Abstrak

Kurikulum 2013 yang menuntut untuk dapat mengintegrasikan kearifan atau potensi yang ada di daerah, sehingga diperlukan sebuah bahan ajar yang mendukung yaitu bahan ajar berbasis kearifan lokal. Salah satu kearifan lokal yang dapat diintegrasikan ke dalam proses pembelajaran adalah Ekowisata Mangrove Pangkal Babu. Penelitian ini bertujuan untuk menghasilkan bahan ajar berupa modul elektronik berbasis Ekowisata Mangrove Pangkal Babu yang valid. Jenis penelitian ini adalah penelitian dan pengembangan (Research and Development), dengan menggunakan model pengembangan ADDIE akan tetapi hanya sampai tahapan pengembangan (Development). Hasil penelitian ini menunjukkan bahwa tingkat kelayakan modul elektronik aspek bahasa didapatkan dari validator bahasa dengan rata-rata 4,28 termasuk dalam kategori sangat layak, tingkat kelayakan media dengan rata-rata 4,58 termasuk dalam kategori sangat layak, tingkat kelayakan materi dengan rata-rata 4,59 termasuk dalam kategori sangat layak. Sedangkan hasil dari validasi praktisi dengan rata-rata 4,49 termasuk dalam kategori sangat layak. Serta keterbacaan modul elektronik bagi siswa dengan rata-rata 3,92 termasuk kategori baik, dan keterpakaian modul elektronik dengan rata 3,81 termasuk kategori baiki. Hasil penelitian ini dapat disimpulkan bahwa pengembangan modul elektronik berbasis ekowisata mangrove pangkal babu menggunakan aplikasi 3D PageFlip Professional layak untuk digunakan dalam proses pembelajaran di kelas IV Sekolah Dasar. .
Kata Kunci: Modul elektronik, 3d pageflip professional, Ekowisata mangrove, Sekolah dasar.

Abstract

The 2013 curriculum demands to be able to integrate the existing wisdom or potential in the region, so we need a supporting teaching material, namely teaching materials based on local wisdom. One of the local wisdoms that can be integrated into the learning process is Pangkal Babu Mangrove Ecotourism. This study aims to produce valid teaching materials in the form of an electronic module based on Pangkal Babu Mangrove Ecotourism. This type of research is research and development (Research and Development), using the ADDIE development model but only up to the development stage. The results of this study indicate that the feasibility level of the electronic module in the language aspect is obtained from the language validator with an average of 4.28 which is in the very feasible category, the media feasibility level with an average of 4.58 is in the very feasible category, the material feasibility level is an average of 4.59 is in the very feasible category. Meanwhile, the results of the practitioner's validation with an average of 4.49 were in the very feasible category. As well as the readability of the electronic module for students with an average of 3.92 in the good category, and the usability of the electronic module with an average of 3.81 in the good category. The results of this study can be concluded that the development of an electronic module based on mangrove ecotourism pangkal babu using the 3D PageFlip Professional application is feasible for use in the learning process in grade IV of elementary school.
Keywords: *Electronic module, professional 3d pageflip, mangrove ecotourism, elementary school.*

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INTRODUCTION

Local wisdom is a potential or advantage that exists in a certain area in the form of culture, traditional customs, and natural resources that can be utilized by humans. Local wisdom is a product of the culture of the past which is worthy of being constantly held on to life (Alqomayi, 2018). Local wisdom is part of the culture of a society that can not be separated from the language of society it self (Darmadi,2018). Local wisdom is a process of realization in increasing the valuable local potential so that it becomes a product, a service, or other valuable works, which has a unique and comparative advantage (Subali *et al.,* 2015). Local wisdom is considered not merely a mere symbol or characteristic of locality but it has usefullness for the local community (Ilhami *et al.,* 2019). Local wisdom is associated with erudition, awareness, and cultural practices about humans, nature, and also insight of relations amongst the inhabitants of ecological community (Marfai, 2012). Local wisdom has an important role to direct people to behave well. The local wisdom which can be used to increase the welfare includes hard work, discipline, education, health, mutual aid or cooperation, gender management, culture creativity and preservation, and environment care (Sibarani, 2018)

One form of local wisdom that exists in Indonesia, precisely in the province of Jambi, West Tanjung Jabung Regency, namely the wisdom of mangrove ecotourism at Pangkal Babu. This local wisdom is a mangrove ecosystem that has educational value for students, especially at the elementary school level. Pangkal Babu mangrove ecotourism has various types of flora and fauna in it and has functions and benefits for the lives of the surrounding community. The Head of the West Tanjung Jabung Regency Tourism Sector hopes that this local wisdom can be used as teaching materials for students, especially for the elementary school level.

Education is a process of changing an individual for the better. Education is a process of exploring knowledge, skills, and habits in life (Asrial *et al.*, 2019). Education is not only a means to reintroduce a culture or local wisdom to the next generation, but more than that, education plays a role in changing and developing a more decent life for individuals. Education functions to develop capabilities and shape the character and civilization of a dignified nation in order to educate the life of the nation (Sukasni & Efendy, 2017; Budiarti, Harlis, & Natalia, 2020). Education is also a long-term investment that we must prepare in order for us to have a better life in the future (Nafiati, 2017). One level of education, namely elementary school has a very important role to prepare students as development assets of a country. Education is a very important activity, with the education of humans can change behavior and knowledge for the better (Astalini *et al.,* 2018).

Education in Indonesia currently uses the 2013 curriculum system which demands the integration of culture in the learning process. In line with the National Education System Law Number 20 of 2003 Article 36 Paragraph 3 Point D states that the curriculum is prepared according to the level and type of education within the framework of the Unitary State of the Republic of Indonesia by taking into account the diversity of regional potentials and their environment. The education law regulates the system and governance of education in Indonesia, which means that education must be able to encourage the preservation of cultural diversity in each region, by integrating it into the learning process. The integration aims to make students aware of the local wisdom in their area so that values can be preserved within that local wisdom (Asrial *et al.*, 2020). Integrating culture in learning is expected that students are able to understand concepts and can actualize them in real life.

Although local wisdom has local value, it has educational value (Yustesia, 2017). Learning based on culture and local wisdom that is in the residence of students aims to create learning that is close to students (Asrial *et al.,* 2019). Local wisdom-based learning is very essential that the students acquire intelligence in thinking, behaving, and responsible behavior in preserving integrity, stability (Ningrum

et al., 2017). Through this opinion, the integration of local wisdom in each area is a very important reason in learning.

One important factor in learning is the existence of teaching materials used by educators. Teaching materials are content or learning materials that have been compiled by educators in a complete and systematic manner (Afifah, 2020). Teaching materials function for educators, namely to save teaching time, change the role of educators to become a facilitator, the learning process becomes more effective (Agustina, 2018). Teaching materials are designed to make students more enthusiastic about learning. One of the teaching materials that has the potential to be developed for transfer material in learning as an attraction for students' interest and motivation is a module (Acesta *et al.*, 2020). With the demands of the current curriculum, the learning process should be able to integrate local local wisdom. One way to integrate is to include local wisdom as teaching material that is applied to students.

However, based on the results of the preliminary study that was carried out by carrying out observations and interviews with class IV teachers at SD N 36/V Pembengis on 5-February-2022. The results of the preliminary study found that teaching materials based on local wisdom were not yet available, this was reinforced by the explanation of the class IV teacher who revealed that the teaching materials used in the learning process were still very minimal. At present the teaching materials used are still conventional books originating from the central government, namely teacher books and student books, which have not fully integrated local wisdom in their respective regional environments. In addition, the class teacher also really hopes for teaching materials that are truly integrated with local wisdom that exists in the school area.

Therefore, a solution can be provided by making teaching materials in the form of modules that take advantage of current information and communication technology developments to realize the demands of the applicable curriculum. As well as making the learning process effective, efficient and meaningful for students. Learning to use modules can effectively change students' perceptions towards scientific concepts, and their learning outcomes can be optimally improved (Kuswono & Khaeroni, 2017).

In today's development where technology has a very important role in the world of education everywhere. Future education will be more determined by information networks that allow interaction and collaboration (Budiman, 2017). There are four pillars of a knowledge society: 1) Education; 2) ICT (Information communication and technology); 3) Innovation; 4) Science & technology (Tapper *et al.*, 2011). ICT is a form of advanced science technology must be optimized function, especially in the implementation of learning (Parsania *et al.*, 2015). ICT must be used optimally in the learning process. The use of information and communication technology in learning is carried out to increase effectiveness in implementing the learning process (Sanjaya, 2014). This will be a reference for every educator to apply information and communication technology in the learning process in elementary schools.

Utilizing information and communication technology in learning activities will be very useful. Integration of ICT in the education system has the ability of enriching the quality and effectiveness of learning and teaching processes (Şahin, 2014). Technology adds value to education and supports more effective pedagogy by providing knowledge to students and improving communication that supports learning (Bakar & Mohamed, 2008). The development of modules using ICT that will be presented in learning is expected to be able to improve student learning outcomes and assist students in solving problems. The module is accompanied by a specific learning objective, so that students know the objectives to be achieved after participating in learning (Ruffi, 2015). Thus, there is a lot of use of

information and communication technology in the existing learning process, one of which is developing print modules into electronic modules.

Making teaching materials in the form of electronic modules can be a solution for educators. The e-module is an innovation of teaching materials in the form of non-print with a shape resembling a printed book but was able to overcome the limitations of the printed book because it produces products in the form of soft files so efficient and economical distribution (Raihan *et al.*, 2018). The advantages of electronic modules are that they can help students become more responsive, active and increase interaction between teachers and students (Putra *et al.*, 2017). Therefore the development of electronic modules can be carried out for all teaching staff to maximize learning outcomes. The learning process that uses electronic modules makes students have additional sources of information, creating interactive and student-centered learning that is expected in the 2013 curriculum (Gahliyah, 2015). This electronic module can be made using an application which is one of the results of the development of information and communication technology, namely the professional 3D pageflip application.

This electronic module is made using software with adequate facilities, namely software in the form of Professional 3D PageFlip. This software has the advantage that the resulting teaching materials can include images, videos, animations, and simulations (Yanti *et al.*, 2017). The advantages of professional 3D pageflip media are that they are capable of being like real books, can contain moving animations, and as interactive learning media (Fitriyani, 2017). The existence of this electronic module will make it easier for educators to obtain teaching materials and deliver learning materials that are in accordance with existing local wisdom so that learning objectives are achieved effectively.

Based on the background that has been described, the formulation of the problem in this study is to develop an electronic module based on the local wisdom of the mangrove ecowasata of Pangkal Babu using a valid professional 3D pageflip application to be implemented by Grade IV elementary school students. The objective of this research is to create teaching materials in the form of electronic modules based on local wisdom that are valid for grade IV elementary school.

RESEARCH METHODOLOGY

This type of research is R&D (Research and Development) with research procedures using the ADDIE model (Analysis, Design and Development, Implementation and Evaluation). Because ADDIE is appropriate for developing educational products and other learning resources (Branch, 2009). However, research only reaches the development stage, this is because it only aims to make a valid product. The development of the ADDIE model can be carried out until the development stage if the research objective is limited to developing and producing a valid learning media to implement (Nurjannati, *et al.*, 2017).

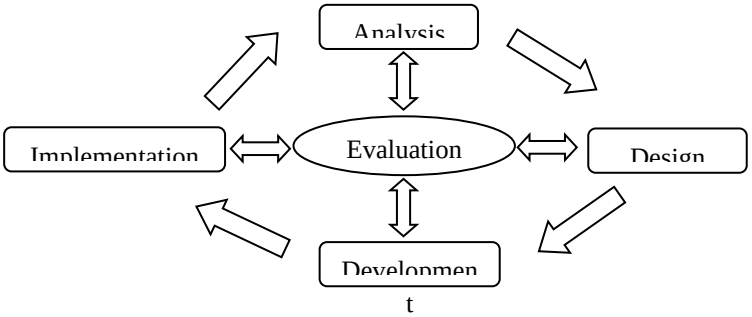

Figure 1. *Electronic Module Development Flowchart*

The analysis stage is the first stage that is carried out before developing a product. This stage analyzes the needs and objectives of the learning that will be studied by students up to the characteristics of class IV students. Furthermore, the design stage, consisting of the preparation of local wisdom-based electronic modules starting from the preparation of subject matter, stories, exercises, crafts to instruments. The next stage was the development of an electronic module based on mangrove ecotourism at Pangkal Babu using 3D Pageflip Professional, and conducting product validation tests and trials on fourth grade elementary school students.

In this research, there is product validity which is carried out through consultation with experts in accordance with their fields. The validity test in this study involved media experts, linguists and material experts as well as practitioner experts. Using a 5 (five) Likert scale questionnaire, with a positive statement the value is very feasible 5, worthy value 4, sufficient value 3, not feasible 2, very inappropriate 1. With the research assessment criteria as table 1 below.

Table 1. *Validation criteria*

Interval Skor	Category
4,22 – 5,00	Very Worth It
3,41 – 4,21	Worthy
2,61 – 3,40	Pretty Decent
1,80 – 2,60	Less Eligible
0 – 1,79	Very Unworthy

This research was carried out at SD Negeri 36/V Pembengis, even semester of the 2021/2022 academic year, with the subject of research in small groups of class IVB students, totaling 6 students. The instrument used in this study used a questionnaire. There are 2 questionnaires used, namely the usability questionnaire and the electronic module legibility questionnaire. The questionnaire uses a Likert scale of 5 (five), with the research categories as shown in table 2 below, namely very good, good, good enough, not good, and very bad.

Table 2. E-*module Readability and Usability categories*

Score Intervals	Category
4,22 – 5,00	Very Good
3,41 – 4,21	Well
2,61 – 3,40	Pretty Good
1,80 – 2,60	Not Good
0 – 1,79	Very Not Good

Data collection in this study was carried out by conducting expert validation which aims to see if the e-module is suitable for use by class IV students or not. The data analysis technique uses descriptive qualitative which is used to describe the product validation results of each validator and the results of small group tests of e-modules on usability and readability are translated in the form of mean, median, mode, percentage for each variable

RESULTS AND DISCUSSION

This research is a development research that produces teaching materials in the form of electronic modules based on local wisdom of mangrove ecotourism at Pangkal Babu developed using the 3D Pageflip Professional application. This research uses the ADDIE development model which starts from the analysis stage to the development stage only. At the analysis stage, an analysis of the needs and objectives of learning is carried out according to the applicable curriculum to be taught to students, as well as the characteristics of students. Based on the results in the field, especially in class IV, it was

found that there was a lack of teaching materials that integrated local wisdom, which resulted in teachers experiencing difficulties in associating local wisdom into learning materials. In addition, the character of Grade IV students who are able to use ICT, and are more eager to learn when learning is carried out by utilizing ICT developments. Therefore, teaching materials are needed that have integrated local wisdom in them, with the aim that students are able to know local wisdom and be able to preserve it.

The design stage consists of drafting the electronic module and the contents of the electronic module including material, stories, practice questions, crafts and preparation of instruments. The material in the electronic module is related to the local wisdom of the Pangkal Babu mangrove ecotourism. At the development stage, the designs that have been compiled are developed into a product in the form of an electronic module based on mangrove ecotourism at Pangkal Babu, which was developed using the 3D Pageflip Professional application. Furthermore, researchers validated by experts who are competent in their fields, the results can be seen in table 3

Table 3. *Expert validation results*

No	Aspect	Eligibility Level	Catergory
1	Media	4,58	very feasible
2	Material	4,59	
3	Language	4,28	
4	Practitioner experts	4,49	

Based on table 4. The validation results from each expert show that the media aspect is 4.58 which means it is included in the very feasible category, the material aspect is 4.59 which is very feasible, the language aspect is 4.28 which is very feasible, and the practical value of 4.49 with a very decent category. Based on the results of the evaluation that has been carried out on media, material, language and practitioner experts, it can be concluded that the electronic module based on local wisdom mangrove ecotourism at Pangkal Babu deserves to be developed and tested. The components in the electronic module include the cover, preface, table of contents, instructions for using the module, core competencies, basic competencies, indicators, learning objectives, concept maps, materials, assessments, glossary, bibliography.

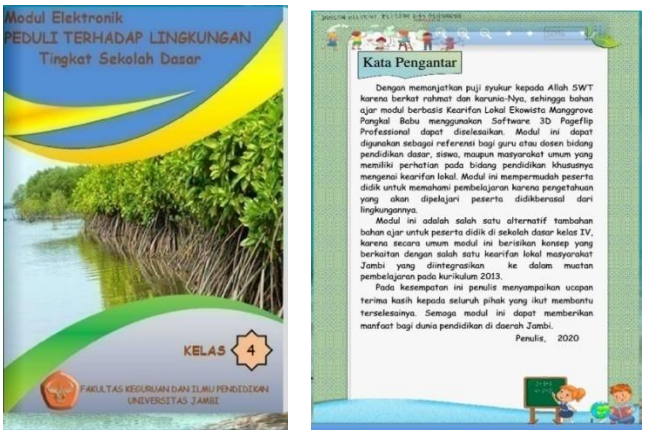

Figure 2. *Module Cover and Preface*

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The cover contains the title of the module, class, author and preface containing the author's thanks to all parties who have helped complete the electronic module that has been designed

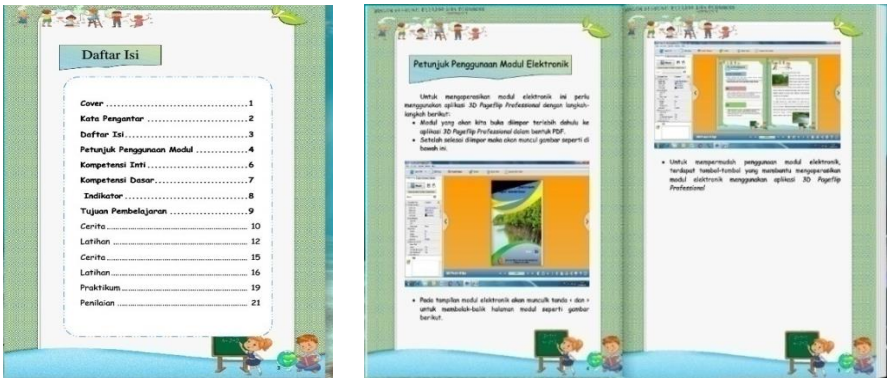

Figure 3. *Table of Contents and Instructions for Using the Module*

The table of contents contains the entire contents of the electronic module and listed pages. The user manual contains a description of how to use the electronic module, supported by pictures for each step

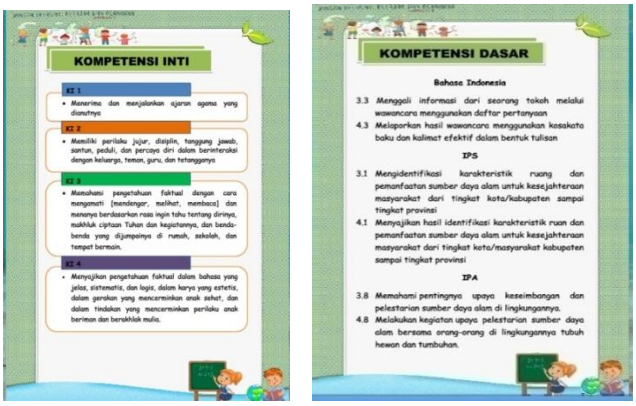

Figure 4. *Core Competencies and Basic Competencies*.

Core competencies consist of spiritual competence, social competence, knowledge competence and skills competence. Basic competence contains competencies that must be mastered by students in each subject matter

Figure 5. *Indicators and Learning Objectives*

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Indicators and Learning Objectives are the development of basic competencies that contain goals that will be mastered or achieved by students in learning.

Figure 6. *Concept Map and Learning Materials*

Concept maps contain material that students will learn. The material contained in the electronic module is developed in text form, supported by pictures and videos to support learning so that students can more easily understand the teaching material provided

Figure 7. *Competency Test and Craft*

The purpose of giving competency tests to students is to emphasize conceptual understanding of learning material, which is able to strengthen aspects of the knowledge and attitudes of students. Crafts contain assignments to make a product related to the teaching material that has been taught, aiming to develop students' self-skills

Figure 8. *Assessment and Glossary*

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The assessment contains assessment guidelines that the teacher can use to assess students' activities in making the specified work. Glossary is an alphabetical list of terms in a particular field of knowledge equipped with definitions for the terms in the developed module

Figure 9. *Reference*

The reference list contains books or reading materials used by researchers in compiling electronic modules.

Furthermore, the e-module that has been validated by experts is then tested on a small group of grade IV elementary schools totaling 6 people. This activity aims to see readability and usability from the perspective of students. This electronic module was tested on class IVB students at SD Negeri 36/V Pembengis as teaching material in a learning activity that lasted 2 x 45 minutes. After the pilot activities were carried out, students were asked to fill out readability and usability questionnaires for electronic modules based on local wisdom mangrove ecotourism in Pangkal Babu using the 3D Pageflip Professional application.

The results of the module readability data obtained from students using an electronic module readability questionnaire using 15 statements, can be seen in the following table.

Table 4. The results of the e-module readability assessment

readability E-Module						Category
Student	Score	Mean	Median	Modus	(%)	
AP	54	3,85	4	4	72	Good
DR	56	4,07	4	4	76	Good
LL	55	3,92	4	3	73,33	Good
NL	53	3,78	4	3	70,66	Good
MT	58	4,14	4	4	77,33	Good
BA	53	3,78	4	4	70,66	Good

Based on table 4. Regarding the statistical description of readability by students on the use of e-modules based on local wisdom mangrove ecotourism at Pangkal Babu using 3D Pageflip Professional, the average of each student is 3.85; 4.04 ; 3.92; 3.78; 4.14; 3.78 which is in a good category for the

readability aspect of the e-module. Based on the results obtained, the e-module based on local wisdom mangrove ecotourism at Pangkal Babu using the 3D Pageflip Professional application has good readability for students with an overall average of 3.92 included in the good category.

These results indicate that all respondents easily understand the reading contained in the local wisdom-based e-module mangrove ecotourism at Pangkal Babu using the 3D Pageflip Professional application in learning. Teaching materials developed must pay attention to the procedures for writing the language used or the readability level that is easy to understand (Habibi, 2019). Writing teaching materials pays attention to aspects of language such as vocabulary, sentence structure related to readability by students (Lubna, 2017). E-modules, which are teaching materials, must be readable by students so that students can understand the material they are studying well. The development of teaching materials must consider the use of language if the language used is not understood by students, then the teaching materials will not have any meaning (Sitohang, 2014).Hasil data keterpakaian e-modul yang didapatkan dari siswa dengan menggunakan angket keterpakaian modul elektronik dengan menggunakan 11 butir pernyataan, dapat dilihat pada tebel berikut.

Table 5. Results of the Use of E-Modules by Students

Use E-Moduls						Category
Student	Skor	Mean	Median	Mode	(%)	
AP	41	3,72	4	4	74,54	Good
DR	42	3,81	4	4	76,36	Good
LL	40	3,63	4	3	72,72	Good
NL	41	3,72	3	3	74,54	Good
MT	43	3,90	4	4	78,18	Good
BA	45	4,09	4	4	81,81	Good

Based on Table 5 statistical description of the use of e-module based on local wisdom mangrove ecotourism at Pangkal Babu using the Pageflip Professional 3D application for students, it shows that the average of each student is 3.72; 3.81; 3.63; 3.72; 3.90; 4.09. To see the e-modu usage category; can be seen in the table based on the category column. The data obtained from 6 respondents showed that the use of the e-module was included in the good category and showed a positive response with an overall average of 3.81 in the good category.

The results of these data show that the local wisdom-based e-module mangrove ecotourism at Pangkal Babu using the 3D Pageflip Professional application is easy for students to use in the learning process. Good teaching materials have the goal of making it easier for students to carry out learning activities (Zahroh, 2017). Teaching materials are said to be practical if the results of the practicality assessment have reached the good/practical category in accordance with predetermined criteria (Kurnia *et al.*, 2019). Learning by using an e-module based on local wisdom in the mangrove ecotourism of Pangkal Babu using the 3D Pageflip Professional application is easy to implement.

Based on the results of the data that has been described, it can be interpreted that the validity of the e-module based on local wisdom in the mangrove ecotourism of Pangkal Babu using the 3D Pageflip Professional application in the aspects of media, material, language and practicality from experts is included in the good category. Meanwhile the readability and usability of the e-module for students is included in the good category, so that the e-module based on local wisdom mangrove ecotourism at Pangkal Babu using the 3D Pageflip Professional application is feasible to be

implemented or used in the learning process of grade IV Elementary Schools. Electronic modules can display text, images, animations, and videos through computers and the existence of e-modules can improve students' understanding of concepts and learning outcomes (Suyatna et al, 2018; Imansari & Sunaryantiningsih, 2016).

CONCLUSION

This research produced an electronic teaching material integrated with regional local wisdom for fourth grade elementary school learning. The electronic module based on local wisdom mangrove ecotourism at Pangkal Babu using the 3D Pageflip Professional application has been tested by experts in their field and the results are very feasible to be used as teaching materials for students. By using an electronic module based on local wisdom, the mangrove ecotourism of Pangkal Babu using the 3D Pageflip Professional application can reintroduce local wisdom in the area, especially Jambi province.

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