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The Validity of Learning Media in the Form of Booklet Types of Pteridophyta (Fern) in the Riverbanks of Wisata Alam Sungai Kembang for Senior High School Grade X

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Abstract

Pteridophyta is a sub-concept on Plant (Plantae) material in the Biology subject for Grade X Senior High School. In this competency, students are expected to apply classification principles to classify plants into divisions based on observations of plant morphology and metagenesis and linking their role in the continuity of life on earth. However, most students still find it difficult to understand the concept. This Pteridophyta is due to the lack of local potential-based references that are directly related to student life, one of which is learning media. Learning media is one of the means to help teachers and students learn concepts in Biology more broadly. This encourages researchers to develop learning media in the form of a booklet on the Plantae material sub-concept of ferns (Pteridophyta). This study aims to describe the validity of the booklet developed on the types of ferns (Pteridophyta) on the riverbanks of the Wisata Alam Sungai Kembang. This research uses RandD method with 4D development model to develop learning media in the form of booklets. The results of the validity test of the developed booklet showed very valid results.

Abstrak

Pteridophyta merupakan subkonsep pada materi Tumbuhan (Plantae) di mata pelajaran Biologi SMA Kelas X. Pada kompetensi tersebut siswa diharapkan dapat menerapkan prinsip klasifikasi untuk menggolongkan tumbuhan ke dalam divisio berdasarkan pengamatan morfologi dan metagenesis tumbuhan serta mengaitkan peranannya dalam kelangsungan kehidupan di bumi. Namun kebanyakan siswa masih sulit untuk memahami konsep Pteridophyta tersebut karena masih kurangnya referensi berbasis potensi lokal yang berkaitan langsung dengan kehidupan siswa, salah satunya yaitu media pembelajaran. Media pembelajaran merupakan salah satu sarana untuk membantu guru maupun siswa dalam mempelajari konsep pada Biologi secara lebih luas. Hal tersebut mendorong peneliti untuk mengembangkan media pembelajaran berupa *booklet* subkonsep tumbuhan paku (Pteridophyta). Penelitian ini bertujuan untuk mendeskripsikan validitas *booklet* yang dikembangkan tentang jenis tumbuhan paku (Pteridophyta) di bantaran sungai Wisata Alam Sungai Kembang. Penelitian ini menggunakan metode RandD dengan model pengembangan 4D untuk mengembangkan media pembelajaran berupa *booklet*. Hasil uji validitas terhadap *booklet* yang dikembangkan menunjukkan hasil sangat valid.

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A. Introduction

Broadly speaking, there are five areas that are the main habitats of ferns (Pteridophyta), namely: open areas, protected areas, climbing spikes, epiphytes, and ferns living on rocks and riverbanks (Hasanuddin and Mulyadi, 2015). One of the outskirts (banks) of the river overgrown with ferns (Pteridophyta) is the riverbank of Wisata Alam Sungai Kembang.

Wisata Alam Sungai Kembang is one of the tourist objects which are administratively located in the area of West Awang Bangkal, Karang Intan Sub-District, Banjar District on South Kalimantan. Located at an altitude of approximately 250 m, makes the area a good habitat for various types of plants, including ferns (Pteridophyta), because ferns (Pteridophyta) like humid places, especially highlands.

The types of ferns (Pteridophyta) in an area can be used as a learning resource for Grade X high school students on the Pteridophyta sub-concept. Pteridophyta is one of the sub-concepts in the Plant material which is included in the subject of Biological Diversity in Grade X SMA. In this competency, students are expected to be able to apply the principle of classification to classify plants into divisions based on observations of plant morphology and metagenesis and to relate their role in the survival life on earth.

One of the reasons why students find it difficult to understand the concept of Pteridophyta is the lack of local potential-based references that are directly related to students' lives. The reason for not implementing local potential-based learning is due to limited information and time difficulties in learning that are relevant to potential, while the characteristics of the 2013 curriculum emphasize that learning is applied in life in the hope of training students' skills in socializing and learning to identify local potential problems in their area independently.

Learning media is one of the things that teachers can use in helping the learning process in the classroom. Media in Biology learning is one of the means so that teachers and students can understand the concept of Biology broadly. The many types of existing learning media require teachers to pay more attention to compatibility, accuracy, convenience, and attractiveness in choosing media. This is to increase interest in learning so as to help students understand in the learning process. Media can be in the form of print media or electronic media, one of the learning media in print is booklets.

Booklet is a small and thin book containing information that is equipped with pictures (Rahmatih, et al. 2018). Pralisaputri, et al (2016)

suggest that booklets are informative, their attractive designs can arouse curiosity, so that students' understanding of a concept is more meaningful. Booklets are compact with an attractive design and easy to carry anywhere.

Patmawati, et al. (2018) in his research on the development of invertebrate animal biology booklets as learning media for high school students showed that the development of learning booklet media was feasible, practical, and effective to be applied to the biology learning of invertebrate animal materials. Fauziyah (2017) in her research on the development of booklet-based learning media in MA biology subjects also reported that booklets were effectively used in the learning process, this could be seen from the activeness of students during discussions through question and answer activities between groups, and also indicated by the value of the level of implementation of the media booklets by students and teachers who fall into the very good category. In addition, another study on the use of booklets for high school students was also carried out by Fitriasih (2019) in her research on the Development of Pteridophyta Diversity Booklets in the Suban Air Panas area, booklets can be used as one of the teaching materials for the Biology learning process for high school students.

Based on this research and development were carried out on learning media in the form of booklets of Pteridophyta Riverbanks Wisata Alam Sungai Kembang for SMA Grade X with the aim of describing the validity of the booklets developed about types of ferns (Pteridophyta) on the banks of Wisata Alam Sungai Kembang.

B. Materials and Method

The development of the Pteridophyta (fern) booklet learning media used the research and development (RandD) method using the 4D model (Thiagarajan, 1974), but only carried out 3 stages, namely: define, design, and development.

The place where the research was conducted is the Wisata Alam Sungai Kembang area, West Awang Bangkal, Karang Intan Sub-District, Banjar District on South Kalimantan. The time of the study was carried out from January to May 2020.

The research procedure carried out includes the following stages: 1) defining, (a) early-late analysis; (b) student analysis; (c) task analysis; (d) concept analysis; and (e) formulation of learning objectives, 2) design, (a) selecting appropriate learning media; (b) designing the initial design of the booklet, 3) development, namely expert validation by two lecturers of Biology Education,



Faculty of Teacher Training and Education, Lambung Mangkurat University.

The calculation of the expert validation results on the booklet is compared with the criteria based on Akbar (2015) which has been modified, namely: 80-100% (very valid), 60-<80% (valid), 40-<60% (quite valid), 20-<40 % (less valid), and 0-<20% (invalid).

C. Result and Discussions

The validation data for learning media products was obtained from the validation instruments given to the validators of Biology Education Study Program, Faculty of Teacher Training and Education, University of Lambung Mangkurat. The results of data processing validation of learning media in the form of booklets can be seen in Table 1.

Table 1 Result of Booklet Validation Test for Type of Fern (Pteridophyta) In the Riverbank of Wisata Alam Sungai Kembang

No.	Validated Indicators/Aspects	Value (%)	
		V1	V2
1.	Relevance	80%	100%
2.	Accuracy	80%	80%
3.	Completeness of Servings	80%	100%
4.	Systematic of Serving	80%	80%
5.	The suitability of the presentation with the demands of student-centered learning	73,33%	80%
6.	Conformity of Language with good and correct Indonesian Language rules	80%	80%
7.	Readability and communicativeness	80%	100%
8.	Comformoty of Media	80%	100%
9.	Media capabilities as a learning stimulus	75%	80%
10.	Ease of media in learning practices	65%	100%
11.	Media design	80%	80%
12.	Media quality	80%	80%
Average		83,16%	

Information:
 V1= Validator 1, V2= Validator 2.

Based on the data in the table above, the results of the validity of the Pteridophyta booklet from the test by 2 validators are included in the very valid criteria with a percentage of 83.16%, which means it is suitable to be used as a supporting learning media for students.

The booklet learning media created is an educational booklet containing Biology material for Grade X high school about ferns (Pteridophyta) whose contents are adjusted to the learning objectives based on Basic Competencies in the 2013 Curriculum Syllabus. The booklet is made with Microsoft Power Point (PPT) because it is easier to place pictures and writing as well as easier for the design process. The paper used is A5 (15x20 cm or half A4). The contents of the booklet contain an introduction (title page, preface, table of contents, identity, KI, KD, and IPK, instructions for use), the content section includes material about ferns (Pteridophyta) in accordance with the main material in the Pteridophyta sub-concept, closing section (glossary and bibliography). In the content section, besides containing material about Pteridophyta, it also contains descriptions of the types of ferns (Pteridophyta) found on the banks of the Wisata Alam Sungai Kembang river. The following is a cover image of the developed booklet:



Figure 1 Front Cover of Booklet Type of Pteridophyta



Figure 1 Front Cover of Booklet Type of Pteridophyta



In the development of learning media, it is mandatory to include a validity assessment or product validation test to be developed. So that the content or construct of the media is made accurate and suitable for use by the target in the learning process. Learning media is said to be valid if the results of the assessment are in accordance with predetermined criteria. As explained by Suharsimi (2010) that a learning media is said to be valid if the results match the criteria, in the sense of having parallels between test results and predetermined criteria.

Validation was carried out by 2 lecturers of Biology Education, Faculty of Teacher Training and Education, Lambung Mangkurat University, who were also supervising lecturers, as validator 1 and validator 2. Several aspects that became indicators of the booklet validation test were the relevance of the material, the accuracy of the material, the completeness of the presentation, the systematics of the presentation, the suitability of the presentation with the demands student-centered learning, language suitability with good and correct Indonesian language rules, legibility and communicativeness, media suitability, media ability as a learning stimulus, ease of media in learning practice, media design, and media quality. The validation test was only carried out once, but before doing the validation, several booklets were consulted with the validator who then got some suggestions for improvement. The results of the validation and suggestions from the validator serve as guidelines for revising/correcting product deficiencies.

In the aspect of relevance, the material in the booklet is considered relevant to the competencies that must be mastered by students and the description in the booklet has met the demands of the curriculum. This booklet is an educative booklet that contains high school biology material for Grade X about ferns (Pteridophyta) whose contents are adjusted to the learning objectives based on Basic Competency (KD) 3.7 in the 2013 Curriculum Syllabus. According to Tamara (2018), the preparation of teaching materials should be guided by core competencies (KI) and basic competencies (KD), because the teaching materials that are prepared are not guided by KI and KD, of course, they will not provide many benefits to students.

On the aspect of accuracy, the material in the booklet is considered to be presented in accordance with scientific truth and in accordance with the development of students because the material contained in the booklet is taken from books used by students in high school. The material is considered to be presented in accordance with everyday life because most of them have used

examples that can be found in students' lives and used real photos. According to Utami, et al. (2015) learning media can not be separated from the concept of learning carried out by students at school which must be in accordance with the real world which is the object or target of the science. Arsyad (2013) also explains that visual-based media plays a very important role in the learning process because it can facilitate understanding, and can provide a relationship between the content of the subject matter and the real world.

In the aspect of completeness of presentation, the presentation of the contents of the booklet is considered to be in accordance with the competencies that must be mastered by students, and is considered to have provided benefits in the importance of mastering competencies for students' lives. The booklet also provides a complete table of contents, bibliography, and glossary. According to Sitepu (2012) the main parts that are physically usually contained in books such as booklets are the cover and content of the book, the front which contains the title page, blank page, main title page, table of contents page and foreword. The content section consists of chapter titles and subtitles that contain the lesson material to be conveyed. The back consists of a bibliography, glossary and index, but the use of the glossary and index is only if the book contains many terms or phrases that have special meanings.

In the aspect of presentation systematic, the material in the booklet is considered to have contained a flow of thought from simple to complex and the presentation of the booklet design is in accordance with the description of the material contained. According to Rahmatih, et al. (2018) booklets have advantages over other media, which are easy to carry because they are small, the explanations are concise and systematic, and there are pictures that make it easier for students to understand a concept or fact.

In the aspect of the suitability of the presentation with the demands of student-centered learning, booklets are considered to be able to motivate students' curiosity and can encourage students to further observe the ferns in their environment. The material presented can also encourage students to build their own knowledge. According to Pralisaputri, et al (2016) booklet is one of the learning media that is informative, its attractive design can arouse curiosity, so that students' understanding of a concept can be more meaningful.

In the aspect of language suitability with good and correct Indonesian language rules, such as the accuracy of the use of spelling, terms, and sentence composition in the material, it is



considered appropriate and appropriate to the rules of the Indonesian language. The language used is adjusted to the correct Indonesian Spelling General Guidelines (PUEBI) and uses terms that are in accordance with the concept of discussion.

In the aspects of readability and communicativeness, such as the language used, the length of sentences in the material, and the sentence structure of the material, it is considered that it is in accordance with the students' understanding. According to Suwarni (2015) the language used in a teaching material must be simple, straightforward, and communicative.

In the aspect of media suitability, its relation to learning objectives, student characteristics, and learning resources are considered to be very appropriate. According to Fadhilah (2016) that the selection of learning media must be adjusted to the learning objectives, paying attention to facilities, student characteristics, student learning styles, and learning theory. In addition, according to Prihadi (2010) in choosing media teachers should pay attention to the suitability of the media with learning objectives, and it is necessary to take into account whether the media is in accordance with the maturity level and characteristics of students, in order to achieve the maximum expected results.

On the aspect of the ability of the media as a learning stimulus to attract students' attention, create a sense of pleasure for students to learn Pteridophyta (ferns), become a tool to understand and remember information a² develop student motivation, it is considered to be able to stimulate students in learning and be able to develop student motivation to learn. According to Susilawati, et al. (2015) with pictures on a learning media can generate motivation and interest in student learning, and help students interpret and remember learning materials. Hilmi (2017) also states that in the process students use colorful pictures or photos to attract students' attention in learning so that they can concentrate fully while studying.

In the aspect of media convenience in learning practices in terms of time, cost, and energy in the use of booklets, it is considered efficient and safe if used in learning practices. According to Athiyah (2018), the use of learning media is expected to make the learning process easier² for students and teachers, because learning media can overcome the limitations of space and time in learning.

In the aspect of media design, such as proportions and color composition that are in accordance with the appearance of the media, the appearance of the media design is consistency, the cover display, pictures and illustrations on attractive media and the type and size of the letters used on

the media are easy to read This is because the booklet design is made as attractive as possible by combining images, fonts, and supporting backgrounds. The booklet is designed not only to contain writing but also to include pictures of Pteridophyta obtained from direct research and from supporting literature. Booklets are also designed with a mix of colors, fonts/fonts, and customized backgrounds. The colors chosen are light colors to make them look brighter and more attractive, for the letters mostly use the typeface "Tw Cen MT" because this letter is not too stiff but also still clear to read, and for the background the dominant color is white so that it contrasts with various colors. colors and images. According to Meldasari, et al. (2018) readability, one of which is influenced by the contrast of the color of the letters with the background color used. The power of color, can have a psychological effect on everyone who sees it. Asyhari and Silvia (2016) in their research also mention that one of the things that must be considered in making learning media is the beauty factor including aesthetic shape, size, harmony, and accuracy in color combinations, so that it attracts students' attention and interest to use the learning media.

In the aspect of media quality, such as the quality and size of the paper as well as the results of printing and binding, it is good. The paper size used in the manufacture of the Pteridophyta type booklet is A5 (15x20 cm or half the size of A4). According to Andreansyah (2015) and Krismadana *et al.* (2021) there are many things that must be considered in making booklets, one of which is the size of the paper. The recommended paper size for making booklets is half the size of A4 paper or about 15 cm x 21 cm.

D. Conclusion¹

The booklet of the types of Pteridophyta (ferns) in the Riverbank of Wisata Alam Sungai Kembang obtained a validity of 83.16% with a very valid category, so it is suitable to be used as one of the learning media.

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