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The Practicality of Popular Ethnobotany Scientific Books on Mangrove Plants Genus Avicennia, Tabanio Village

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Abstract

Learning using popular scientific books based on the local potential of an area is one solution that can be used to overcome problems that often arise such as a lack of student reading interest due to boring teaching materials and learning media in Ethnobotany courses, especially in some ethnobotany studies that require students to interact directly with the community. This development research aims to describe the practicality of a popular scientific book prototype entitled "Etnobotani Tumbuhan Mangrove Genus Avicennia Desa Tabanio". The research method used is the development model by Plomp and Nieveen which is limited to the formative evaluation phase based on the Tessmer model. The results showed that the results of the feasibility test for popular scientific books got an average score of 88.9% with very good criteria and the results of student responses to popular scientific books got an average of 91.56% with criterion very agree This shows that the popular scientific book entitled "Ethnobotany of Mangrove Plants Genus Avicennia Desa Tabanio" is very practical to be used as an enrichment material in ethnobotany learning.

Abstrak

Pembelajaran dengan menggunakan buku ilmiah populer berdasarkan potensi lokal yang dimiliki sebuah daerah merupakan salah satu solusi yang dapat digunakan untuk mengatasi masalah yang sering muncul seperti kurangnya minat membaca mahasiswa karena bahan ajar dan media pembelajaran yang membosankan pada mata kuliah Etnobotani khususnya pada beberapa kajian etnobotani yang mengharuskan mahasiswa untuk berinteraksi langsung dengan masyarakat. Penelitian pengembangan ini bertujuan untuk mendeskripsikan kepraktisan prototipe buku ilmiah populer yang berjudul “Etnobotani Tumbuhan Mangrove Genus Avicennia Desa Tabanio” Metode penelitian yang digunakan ialah model pengembangan oleh Plomp dan Nieveen yang dibatasi sampai pada fase evaluasi formatif berdasarkan model Tessmer. Hasil penelitian menunjukan hasil uji keterlaksanaan buku ilmiah populer mendapatkan nilai rata-rata 88.9% dengan kriteria sangat baik dan hasil respond mahasiswa terhadap buku ilmiah populer mendapatkan rata-rata 91,56% dengan kriteris sangat setuju. Hal tersebut menunjukan bahwa buku ilmiah populer dengan judul “Etnobotani Tumbuhan Mangrove Genus Avicennia Desa Tabanio” sangat praktis digunakan sebagai bahan pengayaan dalam pembelajaran etnobotani.

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A. Introduction

South Kalimantan is an area that has various kinds of potential for biodiversity as well as several habitats for living things in the area, including mangrove forests, swamp forests, protected forests, and coastal forest vegetation. The mangrove forest is a coastal forest ecosystem consisting of groups of trees that can live in a high salt environment. One of the characteristics of mangrove plants has roots sticking out of the surface. According to Taksu and Wesnawa (2019), a general description of mangrove forests grows that life among brackish water swamps located in the coastline and around river estuaries that have very important benefits for the life of the surrounding natural ecosystem. Also, mangroves have several benefits for the community, such as the use of mangroves as medicinal plants for the community (Wibowo *et al*., 2009). Efforts to develop popular scientific books based on local potential are important so that this research can provide information to the wider community about the local potential possessed by the people of Tabanio Village in South Kalimantan.

Tabanio mangrove forest is an area that provides productive natural resources both as a source of food and education as well as a habitat for many flora and fauna, this area will also be used as a tourist attraction. Based on preliminary research, South Kalimantan has several mangrove plants from the genus Avicennia such as *Avicennia alba*, *Avicennia marina*, and *Avicennia officinalis* L. which can be published in teaching materials in the form of popular scientific books.

Popular scientific books are a good source of learning media for students because they have the advantage of making it easy for students to apply. Adequate sources of learning media can produce students who are competent in their fields (Abdullah, 2012). The objective of development is to identify the use, processing, and preservation of plants by local communities.

According to Prastowo (2015), a good book is a book that is written in good and easy-to-understand language, is presented in an attractive manner equipped with pictures and clear information, the contents of the book also describe something following the idea of writing. The benefits of making popular scientific books for students include making learning activities more interesting, getting the opportunity to study independently, and having the convenience of learning every competency that must be mastered (Putri *et al*., 2020).

Ethnobotany development is an effort to take advantage of the local potential of an area, especially in mangroves in the South Kalimantan area and Ethnobotany studies refer to the study of interactions between humans and plants. Ethnobotany based on local potential will be published in a popular scientific book so that students' critical thinking skills can be formed and the local potential of an area can be followed by the wider community. According to Dharmono (2019), the development of ethnobotany includes several studies, namely botanical studies, pharmacology, ethnoecology, ethno social and anthropology, ethnolinguistics, and ethnoeconomics.

Ethnobotany is one of the courses for students of the Biology Education Study Program at the Teacher Training and Education Faculty, Lambung Mangkurat University, Banjarmasin. Ethnobotany learning is studying aspects of the direct relationship between humans and plants in their traditional activities and uses in society (Dharmono, 2007). The use of popular scientific books based on local potential is very helpful for students in learning because in popular scientific books there are several advantages, one of which is the presence of colorful plant pictures accompanied by local names of these plants so that they can attract students' reading interest and make it easier to understand learning materials (Latifah *et al*., 2018). There is a need for the development of teaching materials to support the population concept material which contains material with examples from the surrounding or local environment. This is what underlies researchers to develop teaching materials based on local content in the form of popular scientific books.

Several studies on the development of teaching materials based on local potential have been studied by Irwandi *et al*. (2019) in his research on the practicality of popular scientific books about sea turtles in coastal areas which stated that the results of the study found that the popular scientific books developed were stated to be practical for use in learning based on observations of the implementation of the lesson plan (RPP) by obtaining an average score. score 3,4 in the good category. Whereas the student response got a score of 88.5% which indicates that students gave a positive response to popular scientific books (BIP). The above research is in line with research conducted by Putri *et al*. (2020) who developed a popular scientific book to improve student science process skills which showed expert validation results with an average score of 90.2% in the Very Valid category and individual test results (one to one) of students with an average score of 90.5 % Very Good category. The results of this study indicate that popular scientific books can improve science processing skills in students. Based on these studies, it seems that there are still quite wide

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opportunities in developing teaching materials, one of which is popular scientific books.

B. Materials and Method

This type of research is development research. The development research focused on Formative Evaluation by Tessmer (1994) includes Preliminary research, prototyping phase, and semi-summative evaluation. A preliminary study was conducted to analyze essential materials that can be used in ethnobotany learning. The results of the preliminary research form the basis for the preparation of a popular scientific book entitled "Ethnobotany of Mangrove Plants Genus Avicennia, Tabanio Village". This book has gone through the expert validation stage before. The practicality of popular scientific books is obtained from a series of small group tests (one to one), the implementation of popular scientific books using popular scientific book implementation instruments, and the opinions of three students using student response questionnaires. Data were analyzed descriptively categorization

C. Results and Discussions

1. Student Readability

The practicality of the contents of the popular ethnobotany scientific book of mangrove genus Avicennia, Tabanio Village was obtained based on the readability test results of students (three students) as in Table 1.

Table 1 Student Readability Test Results

No	Indicator	M1	M2	M3	average
1	Text is easy to understand.	4	4	3	3.67
2	Have a clear image	4	4	3	3.67
3	There is a description in the image	3	4	4	3.67
4	Interesting image.	4	4	4	4.00
5	The images presented are following the material	3	3	4	3.33
6	Explain a concept using illustrations of problems related to everyday life.	4	4	4	4.00
7	Using examples of everyday life.	4	4	4	4.00
8	Encourage discussion with other friends.	4	3	4	3.67
9	Relating to biological material.	4		4	2.67
10	The material is coherent.	4	3	4	3.67
11	No sentence creates a double meaning.	4	4	3	3.67
12	Understand the symbol or symbols used in the BIP	4	4	3	3.67
13	Understand the terms used in this popular science book.	4	3	4	3.67
	Total	**50**	**44**	**48**	
	Persentase (%)	**96.1**	**84.6**	**92.3**	
	Averange (%)		**91,03**		
	Criteria		**Very good**		

The final results of the student readability test are categorized based on Table 2.

Table 2 Readability Test Percentage

Persentase	Criteria
80,1%-100%	Very good
60,1%-80%	good
40,1%-60%	Moderate
20,1%-40%	Not good
0,0%-20%	Not very good

(Modified from Arikunto in Fatmawati, 2014)

The legibility test result of the popular scientific book "Ethnobotany of Mangrove Plants Genus Avicennia, Tabanio Village" in Table 2 states that the average is 91.03% in the very good category. The results of the practicality of the student content indicate that the popular scientific books developed are suitable for further testing to improve students' critical thinking skills in studying ethnobotany learning. The results of the student readability test phase (one to one) of the popular scientific book ethnobotany of the genus Avicennia mangrove plant aims to assess the appearance and presentation aspects of the popular scientific book "Ethnobotany of Mangrove Plants Genus Avicennia, Tabanio Village". At this stage, suggestions were obtained by 3 students who had taken the Ethnobotany course for improvement as in Table 3.

The readability test aims to conduct an assessment by students who are users of popular scientific books on the ethnobotany of the mangrove genus Avicennia, Tabanio Village. The assessor is viewed from the readability component, the interactive component, the ease of use component. This is in line with Akbar (2013) which states that individual testing or audience validation (students/readers) can be used in the assessment of a book, including the popular ethnobotany scientific book mangrove genus Avicennia, Tabanio village.

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2. Implementation of Popular Scientific Books

The implementation of popular scientific books are obtained from a small test step carried out on 3 ULM biology education undergraduate students who have taken the Ethnobotany course, student response data can be seen in Table 3.

Based on the results of the implementation test table in Table 1, it shows that the popular scientific book ethnobotany of the mangrove genus Avicennia, Tabanio Village above, obtained 88.9% results with very good criteria. This shows that the popular scientific book ethnobotany of the mangrove genus Avicennia, Tabanio Village, is in a very good category to be used as enrichment material for Ethnobotany courses to improve students' critical thinking skills.

Table 3 Implementation of Popular Scientific Books

No	Indicator	Student Code		
		M1	M2	M3
1	Students read the front (table of contents, instructions, and explanation of contents).	1	1	1
2	Students read preliminary information.	1	1	1
3	Students read descriptions of general information.	1	1	1
4	Students look at pictures and descriptions in popular science books.	1	0	1
5	Students look at the writing on the colored box.	1	1	1
6	Students read facts about the genus Avicennia	1	1	1
7	Students read the glossary	0	1	1
8	Students use popular scientific books when making observations.	1	0	1
9	Students use popular scientific books when analyzing data	1	1	1
	Sub Total	**8**	**7**	**9**
	Persentase (%)	**88.9**	**77.8**	**100.0**
	Average (%)		**88.9**	
	Criteria		**Very Good**	

3. Student Response to BIP

The practicality of the popular ethnobotany scientific book of mangrove genus Avicennia, Tabanio Village was obtained based on the results of student responses for expected and actual practicality as shown in table 4.

Based on the results of the student's response to the use of BIP, the score on M1 was 92.00%, the value on M2 was 89.33% and the value on M3 was 93.33% with an average number of 91.56% so that the students obtained the criteria strongly agree.

The results of the test of readability, feasibility, and student response to the developed scientific books are said to be practical for students to use because they have several advantages such as being easy to understand, presenting clear plant pictures that make it easier for students to understand the material being studied. It is very important to test the practicality of the development product before the product is used to measure its effectiveness. As described by Yunizarrakha *et al*. (2018) in their research stated that the focus on testing the practicality of small group evaluations was seen in the data on the ability of students to ensure the successful improvement of product results before the field test.

The purpose of using popular scientific books developed is to improve critical thinking skills with indicators adapted from Ningsih *et al*. (2020) with indicators namely interpretation, analysis, evaluation, inference, explanation and self-regulation can make it easier for students to understand Ethnobotany course material. Based on student opinion regarding the use of popular scientific books in studying Ethnobotany, it is stated that students find it easier to learn and understand the material presented with teaching materials in the form of popular scientific books. Students think that studying plants by using popular scientific books containing descriptions and pictures can make it easier for students to determine the characteristics of plants.

This is also expressed by several studies including Fitriansyah *et al*. (2018) and Ningsih *et al*. (2020) explained that scientific work must be easy to use to motivate students not to be lazy, not to be bored, and to be more enthusiastic.

Students think that learning using popular scientific books is very useful and fosters interest in participating in ethnobotany learning activities which have been known as boring subjects. This is in line with Dharmono, (2019) found the cause of boring ethnobotany learning because the material is standardized and does not develop. The pictures contained in popular scientific books make learning in ethnobotany courses not boring and even more interesting. Popular scientific books can foster positive attitudes for ethnobotany courses so that students strongly agree to use popular scientific books as teaching materials for ethnobotany learning.

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The advantages possessed by the popular scientific book developed to make this teaching material very practical because the advantages of the popular scientific book being developed contain material on the Avicennia genus plants found around students, especially those who live in the mangrove forests of Tabanio Village which are complete about the characteristics and the benefit of being accompanied by pictures that are featured in popular scientific books is the original color image that matches the original plant, making it easier to identify the species of the genus Avicennia studied. Also, the presentation of popular scientific books developed is arranged in such a way that it is easy to understand and learn. According to Irwandi *et al*. (2019) interactive and fun learning is considered a mechanism that encourages student concentration and helps in the absorption of learning material.

Based on the description of student responses to the practicality of popular scientific books being developed, the practical elements of popular scientific books have been fulfilled. Based on practicality data, there are still students who say No in the field test. This is thought to be caused by the different characteristics of students who are the subjects of this study so that their opinions differ too. As stated by Nugraheni *et al*. (2019), his research suggests that each individual or student has different characteristics so it cannot be denied that student answers allow for different.

The relevant research is researched by Yunizarrakha *et al*. (2018) who developed a popular scientific book with the results of student response to BIP developed with an average value of 89.33% which indicates the criteria for students agree so strongly that popular scientific books developed can improve students' critical thinking skills.

Table 4 Student Response to BIP

No	Indicator	Student Code		
		M1	M2	M3
1	The use of this popular scientific book gave me a high desire to take part in lessons	4	4	5
2	The use of this popular scientific book gave me a strong desire to make good use of my study time	4	4	5
3	The use of this popular scientific book made it easier for me to understand the lesson	5	4	5
4	This popular scientific book is very interesting and not boring	5	4	5
5	This popular scientific book allows me to eliminate misconceptions in myself	4	5	4
6	If the use of popular scientific books is carried out like this, I can remember the concepts from the subject matter longer	4	4	5
7	The use of this popular scientific book can help solve problems in everyday life related to learning topics	5	5	4
8	The use of this popular scientific book broadened my horizons	5	4	5
9	If Ethnobotany learning is carried out with an inquiry model it can improve learning achievement	4	4	5
10	If Ethnobotany learning is carried out like this it can increase group morale	5	5	4
11	Ethnobotany learning can improve my reasoning in studying the subject matter	5	5	4
12	This Ethnobotany study can help me think more critically	4	5	5
13	This Ethnobotany study can enhance my creativity	5	5	5
14	Ethnobotany learning can make me feel more valued in expressing my opinion	5	4	5
15	Pembelajaran Etnobotani yang dilaksanakan ini membuat saya memiliki keberanian untuk mengeluarkan pendapat	5	5	4
Acquisition Score		**69**	**67**	**70**
Persentase (%)		**92.00**	**89.33**	**93.33**
Average (%)			**91.56**	
Criteria			**Strongly agree**	

D. Conclusion

The popular scientific book developed is stated to be practically used in Ethnobotany learning based on the results of the student readability test with an average score of 91.03% with the very good category. The implementation of BIP by obtaining an average score of 88.9% in the very good category. Whereas in the student response, the score was 91.56% which indicates that students gave a positive response to popular scientific books (BIP) so that popular scientific books were practically used by students. The development of this popular scientific book can improve critical thinking skills as shown by the results of research showing moderate N-Gain so that this popular scientific book can be used as enrichment material for ethnobotany courses. The limitation of this research is the lack of material contained in this book so that only certain material is studied. So there is a need for further research to develop BIP with a broad range of materials.

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