

The Practicality of Popular Scientific Book of Fungi in Tabanio Beach Forest as Enrichment for Botani Tumbuhan Rendah Course

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Abstract

Learning resources can be developed by utilizing the surrounding environment or based on local potential. Individual intelligence will grow and develop through a process of interaction with their environment, so it is necessary to use the environment in contextual learning. One of the sources of learning based on local potential that can be developed is popular scientific books. The development of learning resources in the form of popular scientific books in this study aims to overcome the problem of limited learning resources in low plant botanical subjects, especially on the topic of fungi with macroscopic materials and examples of fungi from the environment. This development research aims to test the practicality of a popular scientific book entitled "Forest Fungi Tabanio Beach". This development method uses Tessmer's formative evaluation. The practicality of popular scientific books was carried out by 3 students as small group test subjects to obtain expected practicality data and 17 students as field test subjects to obtain actual practicality data using student response questionnaires. In addition, data on the implementation of popular scientific books which were assessed by 3 observers were also obtained. The results showed that the developed popular scientific books were practical to be used as enrichment for Low Plant Botany courses.

Abstrak

Sumber belajar dapat dikembangkan dengan memanfaatkan lingkungan sekitar atau berbasis potensi lokal. Intelegensi individu akan tumbuh dan berkembang melalui proses interaksi dengan lingkungannya, sehingga perlu adanya pemanfaatan lingkungan dalam pembelajaran kontekstual. Sumber belajar berbasis potensi lokal yang dapat dikembangkan salah satunya yaitu buku ilmiah populer. Pengembangan sumber belajar berbentuk buku ilmiah populer dalam penelitian ini dilakukan untuk mengatasi masalah keterbatasan sumber belajar pada mata kuliah botani tumbuhan rendah khususnya pada topik jamur dengan materi dan contoh-contoh jamur makroskopis dari lingkungan. Penelitian pengembangan ini bertujuan untuk menguji kepraktisan buku ilmiah populer yang berjudul "Jamur Hutan Pantai Tabanio". Metode pengembangan ini menggunakan evaluasi formatif dari Tessmer. Kepraktisan buku ilmiah populer dilakukan oleh 3 orang mahasiswa sebagai subjek uji *small group* untuk memperoleh data kepraktisan harapan dan 17 orang mahasiswa sebagai subjek uji *field test* untuk memperoleh data kepraktisan aktual dengan menggunakan angket respon mahasiswa. Selain itu juga diperoleh data keterlaksanaan buku ilmiah populer yang dinilai oleh 3 observer. Hasil penelitian menunjukkan buku ilmiah populer yang dikembangkan praktis digunakan sebagai pengayaan mata kuliah Botani Tumbuhan Rendah.

A. Introduction

The development of innovative and interesting learning resources is very important. The number of learning resources developed will make it easier to implement learning. The development of learning resources has a major contribution to the success of the learning process carried out (Prastowo, 2015). A good learning process will require the development of good learning resources as well. In other words, a learning process without the development of appropriate learning resources cannot be carried out optimally (Jailani and Hamid, 2006).

Learning resources can be developed by utilizing the surrounding environment or locally based. According to Irwandi and Fajeriadi (2020), learning resources that are developed based on local potential can affect student interest and learning outcomes.

One of the learning resources based local potential that can be developed is popular scientific books. Popular scientific book is scientific books written in a way that is easy to understand by the general public at large, such as teachers, lecturers, students, scientific practitioners, and enthusiasts of the field of science (LIPI Press, 2016; UNSOED, 2016). A popular scientific book is a written work that is based on the principles of the scientific method, but is described using simple sentences and is displayed in an attractive manner, making it easier for readers to understand scientific works that are often considered difficult to understand.

Research on the development of popular scientific books has been carried out by several researchers, including by Fajeriadi *et al.* (2019) and Astuti (2021) regarding development of popular scientific books of local wisdom to improve critical thinking skills, it is stated to be very valid based on the results of 3 validators. In addition, research on the development of popular scientific books was also carried out by Ridhana (2021) about the effectiveness of popular scientific books pteridophyta in the Loksado area to improve critical thinking skills. It was stated that the increase in student learning outcomes was high after using popular scientific books. Development research was also carried out by Fajrin (2021) regarding the practicality of popular scientific books on ethnobotany.

Tabanio Beach Forest is a forest area adjacent to Tabanio Beach which was developed as a Tabanio Beach tourist attraction. Tabanio Coastal Forest has great potential as a learning resource, because in the area there are abundant natural resources in the form of animals and plants of various types, ranging from low-level plants to higher-level plants. One of the potentials that can be used as a learning resource is the diversity of

macroscopic fungi. The diversity of macroscopic fungi in the Tabanio Coastal Forest area has the potential to be used as environmental-based learning.

Low plant botany is a compulsory subject for students of the Biology Education Study Program, FKIP University of Lambung Mangkurat Banjarmasin. Fungi are one of the topics in the lower plant botany course. At the time of the practicum on the topic of fungi there was still no use of fungi in the surrounding environment. The lack of supporting books or literature used to identify fungi during practicum causes some students to find it difficult to identify the types of fungi they get. In addition, the available books are only in the form of general descriptions, still not discussing the characteristics of fungi in detail. Therefore, the development of practical learning resources in the form of popular scientific books needs to be developed so that these problems can be resolved.

The development of learning resources in the form of popular scientific books in this study aims to overcome the problem of limited learning resources in low plant botany courses, especially on the topic of fungi with material and examples of macroscopic fungi from the environment.

Developing a local-based learning resource packaged in a popular scientific book needs to be done to support the learning process. Therefore, this study aims to produce a popular scientific book about fungi in the Tabanio Coastal Forest area which is practically used as an enrichment material for Low Plant Botany courses.

B. Materials and Method

This research is an exploration on the improvement of teaching materials through formative evaluation from Tessmer. This development research begins by carrying out preliminary research to design the initial product to be developed, namely a popular scientific book entitled "Tabanio Beach Forest Fungi".

The practicality data on the expectations of popular scientific books is get from the small group results, while the actual practicality is obtained from the field test where the following data are obtained:

1. Student responses to the utilization of popular scientific books The instrument used is a practical test sheet of expectations and actual in the form of a questionnaire at the end of the lesson using a student response questionnaire.
2. Implementation of the use of popular scientific books, the instrument used is the implementation questionnaire sheet.

The technique of analyzing student response data and the implementation of the use of popular scientific books are as follows.

1. Student response

At the end of the lesson, students fill out student response questionnaires. The percentage results obtained show how positive the student's responses when using popular scientific books is. The responses in the questionnaire were analyzed descriptively. Statements or scoring for the results of the questionnaire are used with a Likert scale which can be seen in Table 1. The percentage of student responses is calculated using the formula:

$$\text{Student response percentage} = \frac{A}{B} \times 100\%$$

Table 1 Percentage of responses

Percentage	Statement/ Practicality level
80,01 < x ≤ 100%	Very agree
60,01 < x ≤ 80,00%	Agree
40,01 < x ≤ 60,00%	Don't agree
20,01 < x ≤ 40,00%	Disagree

2. The implementation of learning activities using popular scientific books which were analyzed descriptively by averaging the scores for each aspect with the following formula:

$$\frac{\text{Total score obtained}}{\text{Max score}} \times 100\%$$

The percentage that has been obtained is then converted according to the category of implementation of the use of popular scientific books

Table 2 Categories of implementation of the use of popular scientific books

Percentage	Statement/ Practicality level
80,01 ≤ 100%	Very good
60,01 ≤ 80,00%	Good
40,01 ≤ 60,00%	Not good
20,01 ≤ 40,00%	Not very good

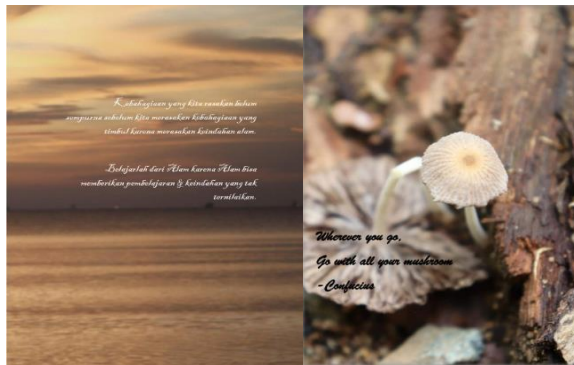
C. Result and Discussions

Practicality results are obtained from the results of student responses of small group test and field test data obtained from the expected and actual practicality which presented in table 3 below.

Student responses were obtained from the small group test step and the large group test to obtain expected and actual practicality data, both of which the results were very agreeable. These results indicate that students respond positively when using a popular scientific book entitled "Tabanio Beach Forest Fungi" on the topic of fungi. The positive response by undergraduate students of Biology Education at Lambung Mangkurat University showed that the use of the popular scientific book "Tabanio Beach Fungi" helped them in their studies. This is evidenced by the increase in student learning outcomes before using books and after using popular scientific books.

Table 3 Student Response

No	Statement	Practicality	
		Hope	Actual
1	The utilization of popular scientific book makes me have a high willingness to follow the lesson	4,66	4,82
2	The utilization of popular scientific book makes me have a high willingness to make good to utilize study time	5,00	4,82
3	The utilization of popular scientific book makes it simpler for me to comprehend the exercise	4,66	4,82
4	The popular scientific book is very interesting and not exhausting	4,66	4,82
5	The popular scientific book allows me to get rid of my misconceptions	4,33	4,88
6	If popular scientific books is held like this, I can remember the concepts from the lesson material longer	5,00	4,88
7	The utilization of popular scientific book can help solve the problem in everyday life regular day to identified with learning subjects	4,33	4,65
8	The utilization of popular scientific book has broadened my horizons	4,66	4,65
9	If the learning of Low Plant Botany is held with an inquiry model, it can improve learning achievement	4,33	4,88
10	If the Low Plant Botany learning is carried out like this, it can increase the morale of group work	5,00	4,53
11	Learning Low Plant Botany using popular scientific books makes my skills in interpreting problems better	4,66	4,65
12	Learning Low Plant Botany by using popular scientific books made my assuming skills better	5,00	4,88
13	Learning Low Plant Botany by using popular scientific books makes my skills in formulating problem solutions (deduction) better	4,66	4,59
14	Learning Low Plant Botany using popular scientific books makes my argument skills better	5,00	4,59
15	Learning Low Plant Botany by using popular scientific books makes my inference skills better	5,00	4,82
Earning Score		70,50	71,29
Percentage (%)		94,33	95,06
Average (%)		94,69	
Criteria		Very agree	



Memahami akan pentingnya peran Jamur bagi kelangsungan ekosistem hutan maupun sumber pangan sudah sepatutnya kita jaga dan lestarikan Hutan tempat jamur itu tumbuh.

Serta

Penting untuk memahami dan membedakan antara jamur edible dan non edible agar ketika kita menemui jamur di Hutan jangan langsung mengonsumsinya

Figure 1
Examples of analogies, quotes and short poems in popular science books

The popular scientific books developed are also equipped with interesting pictures that match the material and are equipped with analogies, quotes and short poems (presented in Figure 1) so that they can grow their interest in learning new

material in this book. This is in line with Dalman (2014) which explains that a popular scientific book should have a popular language, not be bound by standard scientific writing and an attractive display of images so that it can attract readers' interest to read the contents of the material in the popular scientific book. The results of these student responses provide an illustration that popular scientific books that have been developed are practically used.

The positive response of students to this popular scientific book can also be created because in its development it has paid attention to various aspects, one of which is by adjusting the presentation of the material so that it is easily understood by readers. This is in accordance with Barnawi and Arifin (2015) which explains that the presentation, appearance, and depth of material in a book including popular scientific books must be in accordance with the level of education and follow the development of science and technology. The results of students' positive responses to learning by using a popular scientific book entitled "Tabanio Beach Forest Fungi" are expected to improve students' critical thinking skills.

In addition to student response data, data on the implementation of the use of popular scientific books were also obtained which were assessed by 3 observers which can be seen in Table 4 below.

Table 4 Data on the implementation of popular scientific books

No	Statement	Student		
		1	2	3
1	Students read the front (table of contents, instructions and explanation of contents)	0	1	1
2	Students read the introductory information	1	1	1
3	Students read descriptions of general information	1	1	1
4	Students look at pictures and descriptions in popular scientific books	1	1	0
5	Students look at the writing on the colored boxes	1	1	1
6	Students read facts about the kingdom of fungi	1	1	1
7	Students reading the glossary	1	0	1
8	Students use popular scientific books when making observations	1	1	1
9	Students use popular scientific books when analyzing data	1	1	1
Sub quantity		8	8	8
Percentage (%)		88,88	88,88	88,88
Average		88,88		
Criteria		Very good		

Another reason that causes the high results of this implementation is also due to learning that has been planned systematically, coherently, and in accordance with curriculum developments that require students to be more active in the learning process. Furthermore, in its implementation, the learning process with a popular scientific book entitled "Tabanio Beach Forest Fungi" was carried out according to the plan. This can be seen from the results of the implementation of the use of popular scientific books which received very good criteria from the three observers. The above statement is in

line with Nuryani (2005) which states that the implementation of learning must be in accordance with and in line with the plan at the time of its implementation in learning, because otherwise it will affect the learning outcomes.

The results of the implementation of popular scientific books have a very good category so that they are suitable for use in the learning process with a popular scientific book entitled "Tabanio Beach Fungi", it is expected to improve learning outcomes and students' critical thinking skills. In addition, popular scientific books that have been developed

are expected to be used as a reference in choosing good teaching materials so that they can be used in practical learning to achieve a predetermined learning goal.

Based on the description above, the expected practicality in using popular scientific books developed is in accordance with the reality in the field. The practicality test of product development is very important before the item is utilized to measure its effectiveness. As stated by Tessmer (1998), that the focus on the practicality test of small group evaluation is found in information on the capacity of understudies to guarantee the accomplishment of improving product results before field test.

The advantages of popular scientific books that have been created make this teaching material exceptionally functional in light of the fact that the popular scientific books created contain material about macroscopic fungi found in the Tabanio Coastal Forest which can be used as environmental-based learning. Popular scientific books that have been developed contain descriptions of their characteristics and roles, along with the pictures shown in popular scientific books are pictures with original colors that match the original plants, making it easier to identify the fungi species being studied. The presentation of popular scientific books created is orchestrated so as to make it more clear and learn. As indicated by Lucardie (2014) intuitive and fun learning is viewed as an instrument that empowers understudies' focus and helps in the ingestion of learning materials.

D. Conclusion

Overall, the popular scientific book entitled "Tabanio Beach Forest Fungi" which was developed was stated to be practical to use as an enrichment material for Low Plant Botany courses based on student response data that obtained a percentage of 94.69% in the category of strongly agree and based on the implementation of the use of popular scientific books that received the result is 88.88% with very good category.

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