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**Submission date:** 06-Jul-2023 12:35PM (UTC+0700)

**Submission ID:** 2127131395

**File name:** icality\_of\_popular\_scientific\_books\_on\_Myrtaceae\_Ethnobotany.pdf (624.68K)

**Word count:** 4875

**Character count:** 27079



## The practicality of popular scientific books on Myrtaceae Ethnobotany found in Forest Areas with Special Purposes (KHDTK) ULM

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### Article Information

#### Keyword:

Popular scientific book;  
Practicality; Ethnobotany;  
Myrtaceae

#### Kata Kunci:

Buku ilmiah populer;  
Kepraktisan; Etnobotani;  
Myrtaceae

#### History:

Received : 05/12/2021  
Accepted : 21/01/2022

### Abstract

This development research has the aim of describing the practicality of the popular scientific book on ethnobotany Myrtaceae Forest Areas with Special Purposes (KHDTK) ULM which is an education and training forest under the institution of Lambung Mangkurat University. This popular scientific book (BIP) was developed through Tessmer's Formative Evaluation, while the stages carried out were conducting a self-evaluation, followed by expert validation, student readability test (one-to-one evaluation), Small Group Test, and Field Test. The results of the practicality test of the contents of the one-to-one evaluation get an average value of 95.51% with very good criteria. Based on the results of the implementation test, the expectation was to get a percentage of 88.89% and the actual 92.22% was expected with very good criteria. the students' s response was expected to get a percentage of 96.80% and the actual 97.40% with very practical criteria. Based on the results of the research developed, it can be stated that the Popular Scientific Books (BIP) developed can be used in improving students' critical thinking skills because the scientific books developed have very practical criteria.

#### Abstrak

Penelitian pengembangan ini memiliki tujuan mendeskripsikan kepraktisan buku ilmiah populer etnobotani Myrtaceae Kawasan Hutan Dengan Tujuan Khusus (KHDTK) ULM yang merupakan hutan pendidikan dan pelatihan yang ada di bawah lembaga Universitas Lambung Mangkurat. Buku ilmiah populer (BIP) ini dikembangkan melalui Evaluasi Formatif Tessmer, adapun tahapan yang dilakukan yaitu melakukan evaluasi diri, dilanjutkan dengan validasi ahli, Uji keterbacaan mahasiswa (*one-to-one evaluation*), Uji Small Group, dan uji Field Test. Hasil penelitian uji kepraktisan isi pada uji *one-to-one evaluation* mendapatkan nilai rata-rata 95,51% dengan kriteria sangat baik. Berdasarkan hasil uji keterlaksanaan harapan mendapatkan presentase 88,89% dan aktual 92,22% harapan dengan kriteria sangat baik. Respon mahasiswa harapan mendapatkan presentase 96,80% dan aktual 97,40% dengan kriteria sangat praktis. Berdasarkan hasil penelitian yang dikembangkan maka dapat dinyatakan bahwa Buku Ilmiah Populer (BIP) yang dikembangkan dapat digunakan dalam meningkatkan keterampilan berpikir kritis mahasiswa karena buku ilmiah yang dikembangkan mendapatkan kriteria sangat praktis.

## A. Introduction

Learning resources are a place or container for the surrounding environment that contains information that becomes a vehicle for students to carry out the learning process (Hasyim, 2019). Learning resources are something that can contain messages to be presented through the use of tools or by themselves, it can also be something that is used to convey messages stored in the learning materials that will be given (Samsinar, 2020). Furthermore, according to Suhirman, (2018) learning resources are sources of knowledge that have various dimensions, namely learning resources are reviewed in a narrow sense to a broad sense. Thus, learning resources are everything that is designed to be used in learning activities and to facilitate the learning process. The 2013 curriculum requires learning based on the local potential of an area in order to improve students' critical thinking skills. The development of local potential-based teaching materials that adapts the 2013 curriculum emphasizes application-based learning in everyday life with a learning context that puts students first to real objects related to learning materials (Situmorang, 2018). Therefore, it is necessary to develop learning resources that can be used to improve and bring up knowledge, attitudes and skills that can encourage success in the learning process, one of which is the development of popular scientific books (Latifah et al., 2020) The development of local potential-based teaching materials that adapts the 2013 curriculum emphasizes application-based learning in everyday life with a learning context that puts students first to real objects related to learning materials (Situmorang, 2018). Therefore, it is necessary to develop learning resources that can be used to improve and bring up knowledge, attitudes and skills that can encourage success in the learning process, one of which is the development of popular scientific books (Latifah et al., 2020) The development of local potential-based teaching materials that adapts the 2013 curriculum emphasizes application-based learning in everyday life with a learning context that puts students first to real objects related to learning materials (Situmorang, 2018). Therefore, it is necessary to develop learning resources that can be used to improve and bring up knowledge, attitudes and skills that can encourage success in the learning process, one of which is the development of popular scientific books (Latifah et al., 2020)

Popular Scientific Books (BIP) are scientific media essays with characteristics including the presentation of actual, accurate, systematic facts in writing, as well as clear and precise explanations in

a discourse (Hermawan, 2019). BIP is one of the innovative writings in its production based on the way of writing scientific papers, and presented in sentences that are easy for readers to understand (Fitriansyah et al., 2018). BIP is a type of book that contains science and is very useful and presents actual facts and is written in interesting language (Setiawan, 2017).

The development of BIP must lead to the application of understanding and things experienced by researchers, especially in knowledge of the environment around us and seek to develop students' critical thinking understanding. As stated by Latifah et al. (2018) in their research which shows that there is a significant increase in students' critical thinking skills using popular scientific books. Handayani et al. (2020) also stated in his research that popular scientific books can improve the critical thinking of students at SMAN 2 Muara, Barito Kuala Regency.

An area that has a special purpose is a forest area that can be used as research and development of learning, education and training in forestry and cultural religion (Nugroho, 2017). Forest Areas with Special Purposes under ULM (KHDTK ULM) is a forum for implementing the Tridharma of Higher Education at the Faculty of Lambung Mangkurat University. This is certainly an opportunity in the development of popular scientific books that contain local potential, especially the ethnobotany of the plants found in KHDTK ULM. Apart from providing additional information, this also helps in maintaining and introducing local potential in the KHDTK ULM. Forest Areas with Special Purposes under ULM is an area that provides some productive biodiversity both as a source of learning and food and is a habitat for many flora and fauna, this area is also located within the Grand Forest Park (TAHURA) of Mandiangin village which is an object tour. The forest Areas with Special Purposes owned by Lambung Mangkurat University which is located in Mandiangin has various kinds of biodiversity. One of the flora families in the KHDTK ULM is Myrtaceae.

Myrtaceae is a tropical plant that also has many benefits. Some Myrtaceae plants have benefits as spices, and several Myrtaceae woody tree species have economic value (Lutfiasari et al., 2018). There are several types of Myrtaceae in KHDTK ULM, including bird guava, sakti guava, jambang, karatukal guava, water guava, habang shoots, bay leaves, satrup guava, pelawan, and eucalyptus. However, there are 6 types of Myrtaceae that are used by the local community, namely water guava, habang shoots, bay leaves,

satrup guava, pelawan, and eucalyptus. In addition, there has been no research on the ethnobotany of the Myrtaceae plant. This is certainly an opportunity to develop a BIP which includes studies in particular on the ethnobotany of Myrtaceae plants growing in KHDTK ULM. Some of these Myrtaceae plant species can be used as student learning materials with the aim of enriching insight, as enrichment and knowledge. Some plants which are a local potential of the area can be included in a teaching material or learning resource, namely popular scientific books to support student learning.

The use of plants by the surrounding community is called ethnobotany. Ethnobotany is a course in the Undergraduate Biology Education Study Program, FKIP Lambung Mangkurat University. Martin (1998) suggests that ethnobotany is an interaction that occurs between humans and surrounding plants. Dharmono (2018) suggests that ethnobotany is a branch of science that studies the relationship between living things and the surrounding environment. The use of popular scientific books based on local potential is very useful for students in learning because in popular science books there are several advantages, one of which is the presence of pictures of plants that have different colors and are accompanied by local names on each plant, so that it can attract students' reading interest and make it easier to understand the learning material (Latifah et al, 2018). Based on information from teaching lecturers and observations of teaching materials, it can be seen that examples of ethnobotany studies on local plants are still limited, even though the use of local potential-based teaching materials really helps students to more easily understand learning materials, especially in plant ethnobotany courses. So with the existence of popular scientific books on ethnobotany as a learning resource that contains material containing examples from the surrounding or local environment, it can be used as a reference for teaching materials for students to be more familiar with and help in maintaining and local potentials in KHDTK ULM.

## B. Material and Method

This research is a development research that leads to Tessmer's (1998) development design research. This development research begins with preliminary research that makes the initial product design in its development, namely a popular scientific book entitled Myrtaceae Ethnobotany (Case Study in Forest Areas with Special Purpose ULM).

The practicality data of the contents of popular scientific books is obtained from the results of the One to One test, while the practicality data of expectations is obtained from the small group test, and the actual practicality is obtained from the small group test. This test involved undergraduate students in Biology Education, Lambung Mangkurat University, Banjarmasin which was obtained from the following data:

1. The content practicality test was obtained from a readability test involving 3 students. This test is carried out to find out the weaknesses and shortcomings of popular scientific books that were developed so that they can be improved before entering the next practicality test stage. The instrument used is a content practicality questionnaire. The results of the practicality test of the contents are calculated using the formula:

$$P = \frac{A}{B} \times 100$$

Description:

P = Percentage

A = Total score obtained for each aspect

B = Total score

Table 1 Test Percentage Legibility

Percentage	Criteria
80.01 < x 100	Very good
60.01 < x 80	Good
40.01 < x 60	Currently
20.01 < x 40	Not good
0 < x 20	Not very good

(Modification from Fatmawai, 2014)

2. The implementation is obtained from the observer's assessment of students using popular scientific books. This test is carried out during the learning process. The results of student implementation were obtained from the assessment of 3 observers in the small group test and the assessment of 10 observers in the field test. The instrument used is an observer assessment sheet on the expected and actual implementation test. The results of the use implementation test popular science books Myrtaceae Ethnobotany by students the percentage is calculated by the formula:

$$\text{Student grade} = \frac{\text{Total score obtained}}{\text{Maximum quantity}} \times 100\%$$

**Table 2 Categories of the BIP Implementation**

Percentage	Criteria
80.00 – 100	Very good
60.00 – < 80.00	Good
40.00 – < 60.00	Currently
20.00 – < 40.00	Not good
0 – < 20.00	Not very good

(Modification from Fatmawati, 2014)

- Student responses were obtained from the results of small groups of 5 students, while the actual practicality was obtained from field tests involving 20 students. This test is carried out at the end of the lesson to obtain how much positive response is given by students to the use of popular scientific books in learning. The instrument used is a practical test sheet of expectations and actual in the form of student response questionnaires. The results of student responses to the use of popular science books the percentage is calculated by the formula:

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

Description:

A = Proportion of students who choose

B = Total ideal score

**Table 3 Percentage of Student Responses**

Percentage	Criteria
85.1%-100%	Very Practical
70.1%-85%	Practical
60.1%-70%	Practical enough
50.1%-60%	Less Practical
<50%	Not practical

(Modification from Sugiono, 2015)

## C. Results and Discussion

### Practicality of BIP Content

The practicality of the popular scientific book contents about Myrtaceae Ethnobotany was obtained from the results of the readability test shown in table 4.

**Table 4 Student Readability Test Results**

No.	Statement	Student Score	Average
1.	Easy to understand text	12	4
2.	Image is clear or not blurry	9	3
3.	There is a description on the picture	12	4
4.	The images presented are interesting	12	4
5.	The images presented are in accordance with the material	12	4
6.	Explain a concept using illustrations of problems related to everyday life.	12	4
7.	Using everyday life examples	12	4
8.	Encourage discussion with other friends.	10	3.33
9.	Related to biological material	12	4
10.	The material is coherent	12	4
11.	There are no sentences that have a double meaning	11	3.66
12.	The symbols or symbols in this popular science book are easy to understand	11	3.66
13.	The terms in this popular science book are easy to understand	12	4
<b>Total</b>		<b>149</b>	
<b>Percentage (%)</b>		<b>286,53</b>	
<b>Overall average (%)</b>		<b>95,51</b>	
<b>Criteria</b>		<b>Very good</b>	

(Source: Data Processing Results)

The results of the readability test of the popular scientific book Ethnobotany Myrtaceae in Table 4 get an average result of 95.51% getting the criteria Very Good, meaning Popular scientific books developed are easy to understand. This is in line with what was conveyed by Rosyidah et al. (2013) that teaching materials that get very good criteria mean that the teaching materials developed by researchers make it easy for students to understand the material in the teaching materials properly because they use language that is in accordance with the level of development of

students and has a coherent concept that makes students easy. to understand the material. These results show that the developed BIP can be used in the next test. The results of the practicality test stages of the content through the student readability test (one to one) of this popular scientific book aim to test several displays and presentation indicators in the developed BIP.

The individual test (student readability) has the aim of testing the readability level of students. This is in line with the opinion Arifin. et al (2019) who stated that the readability test aims to test the

level of readability by students, so that the results do not cause multiple statements to have multiple meanings. This is in line with what was conveyed by Taqwa. et al (2020) individual test conducted with students in the hope that students can use the BIP correctly and accurately. individual tests (student readability) conducted on students have the aim of getting responses, criticisms, and suggestions regarding the readability of BIP so that it can make it easier for students (Lestari, 2018).

The results of the practicality of the content that have very good criteria because the popular scientific book Ethnobotany Myrtaceae which was developed uses easy language and is presented in an attractive way so that it fosters student reading interest. This is in line with Dewi & Arini (2018)

that the aspects of readability relate to easy language, writing methods, attractive presentation according to the interests of readers, the beauty of the writing style used, and the ease of understanding the systematics of the material presented.

## 2. Implementation of the BIP Use

Practicality data is also obtained from data on the implementation of the use of popular scientific books, the results of data on the implementation of the use of popular scientific books are obtained from the assessment of 3 observers on the feasibility of expectations and 10 observers on the actual implementation which can be seen from Table 5.

**Table 5 Implementation of the Use of BIP**

No	Statement	Execution	
		Hope	current
1	Students see the BIP prefix (table of contents, instructions and explanation of contents).	66.67	80.00
2	Students read the introductory information.	100.00	100.00
3	Students read descriptions of general information.	66.67	80.00
4	Students look at pictures and descriptions in popular scientific books Myrtaceae Ethnobotany.	100.00	100.00
5	Students look at the writing on the colored boxes.	100.00	100.00
6	Students read facts about the concept of ethnobotany.	100.00	100.00
7	Students reading the glossary.	66.67	70.00
8	Students use popular scientific books Myrtaceae Ethnobotany when making observations.	100.00	100.00
9	Students use popular scientific books Myrtaceae Ethnobotany when doing data analysis.	100.00	100.00
<b>Percentage (%)</b>		<b>88.89</b>	<b>92.22</b>
<b>Criteria</b>		<b>Very good</b>	

(Source: Data Processing Results)

Based on the results of Table 5 the implementation test in the table above shows that popular scientific book Myrtaceae Ethnobotany on the results of the implementation of expectations were 88.89% and the actual implementation was 92.22%. Based on these results, it is obtained very good criteria means that the syntax or every step of the learning process using popular scientific books goes well. This is in line with what was conveyed by Annafi, (2016) that the learning implementation test which gets a very good category means that it shows that the learning syntax is carried out very well.

This popular scientific book on Myrtaceae Ethnobotany is included in the very good category because learning is carried out systematically, in sequence, and in accordance with the curriculum that requires students to be active in the teaching and learning process. This statement is supported

by Rahmati. et al (2021) which states that the results of the implementation of popular scientific books are influenced by a systematic, sequential, and appropriate learning process in accordance with the applicable curriculum. Pambudi. et al (2019) stated that the teaching and learning process plans that are systematically arranged will get maximum results.

## 3. Student Response to BIP

The results of the practicality of expectations were obtained from the responses of 5 students in the small group test and the results of the actual practicality were obtained from the responses of 20 students in the field test. The use of popular scientific book Ethnobotany Myrtaceae received a very good response from ULM Biology Education undergraduate students who have taken ethnobotany courses, as shown in Table 6.

**Table 6 Student Responses to BIP**

No	Statement	Practicality	
		Hope	Current
1	This popular scientific book on Myrtaceae Ethnobotany gave me a sense of learning.	96.00	95.00
2	I can study individually with this popular scientific book Myrtaceae Ethnobotany.	96.00	97.00
3	The material in BIP can be understood easily	100.00	98.00
4	The popular scientific book Myrtaceae Ethnobotany is very interesting and not boring when used.	96.00	98.00
5	If the use of the popular scientific book Myrtaceae Ethnobotany is carried out like this, I can remember the concepts from the lesson material easily and for a longer time.	96.00	96.00
6	The use of this Myrtaceae Ethnobotany BIP can help in solving a problem related to life.	96.00	97.00
7	The use of this popular scientific book on Myrtaceae Ethnobotany has broadened my horizons.	92.00	97.00
8	The BIP contains clear images so that it is easy for me to understand the contents of the book.	100.00	98.00
9	I can study independently using BIP	96.00	98.00
10	Learning by using this popular scientific book Ethnobotany Myrtaceae can help me develop critical thinking skills.	100.00	100.00
<b>Percentage (%)</b>		<b>96.80</b>	<b>97.40</b>
<b>Criteria</b>		<b>Very Practical</b>	

(Source: Data Processing Results)

Based on the results of student responses, the expectation of getting a percentage of 96.80% and the actual getting a percentage of 97.40% with very practical criteria. The means criteria teaching materials that developed very easy to use by students in the learning process. This is in line with what Setyawan et al. (2019) the learning media developed with the very practical category means that it is very easy to use by students in the learning process.

The results of the student response test on the popular popular scientific book Ethnobotany Myrtaceae which get a very practical category because this teaching material has the advantage that it is equipped with interesting pictures and illustrations that are adapted to the material to attract student learning interest. This statement is supported by Irwandi et al. (2019) that the material in popular scientific books equipped with interesting pictures can give students interest to read them. So, based on the results of student responses to popular scientific books developed, it can be said to be practical.

The results of the excellent student responses are inseparable from the process of making popular scientific books by paying attention to various aspects, one of which is the use of simple common language, and presenting appropriate material so that it is easy to read and understand. This is in line with what was conveyed by Rahamiati et al. (2021) presenting appropriate material content can make it easier for readers to

understand popular scientific books. BIP can be a new innovation to attract students to read and understand lessons, because the BIP form has an attractive appearance and complex material so it is not boring (Irwandi et al., 2019).

Based on the results of the practicality of the content, implementation, and student responses, it shows that the popular scientific book Myrtaceae Ethnobotany is practical to use as teaching materials. The popular scientific book that was developed contains material on 6 ethnobotanical studies including botanical studies, Linguistic studies, Ecology, Pharmacology, Anthropology, and Economics equipped with interesting pictures according to what was developed. According to Latifah et al. (2020) that popular scientific books whose material is presented with pictures, associated with knowledge and adapted to student experience will be very easy to understand. In addition, the popular popular scientific book Ethnobotany Myrtaceae uses light language so that it is easy to understand and learn. This is in line with what was conveyed by Sintia et al. (2021) that popular scientific books have a simple vocabulary that will be easy to understand. Popular scientific books that are made and arranged in such a way can make it easier for readers to understand clearly (Nurlita et al., 2021). The results of a positive response from students to learning ethnobotany using the popular popular scientific book Ethnobotany Myrtaceae are expected to improve students' critical thinking skills.

## D. Conclusion

The development of the Popular Scientific Book of Ethnobotany Myrtaceae can be stated as practical for students to use as a learning resource based on the results of the practicality of the content which gets an average value of 95.51 with very good criteria, implementation data expects to get a percentage of 88.89% and the percentage of actual implementation is 92.22 % with very good criteria, and the student response data is expected to get a percentage of 96.80% and the actual implementation gets a percentage of 97.40% with very practical criteria.

## E. Acknowledgement

Thanks to the author's parents who have provided material and moral motivation, the supervising lecturer from the Master of Biology Education who has guided the author during the research. Don't forget to also thank the administrative staff of the Master of Biology Education and the research team who have helped carry out this research.

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