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The attraction of the Fabaceae family encyclopedia book: Educational development research

Daya tarik buku ensiklopedia famili Fabaceae: Penelitian pengembangan pendidikan

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Abstract

Critical thinking is one of the 4C skills students need to develop to compete in the 21st-century. Learning planning is focused not only on strategies and human resources, but also on learning resources. Learning resources integrated with the values of critical thinking skills need to be developed and tested. A learning resource that has the potential to be integrated with critical thinking values and generally has an attractive design is an encyclopedia. This study aims to analyze the content practicality or attractiveness of the Fabaceae family encyclopedia book. This study is an individual test in a series of educational development research (EDR) using the Tessmer formative evaluation research design. The data sources are three students enrolled in the Phanerogamae course. Data was collected using a readability questionnaire. Data analysis was carried out in a descriptive categorization manner. The results showed that the attractiveness of the Fabaceae family encyclopedia obtained a good category. This shows that the developed encyclopedia meets the standards and has an aesthetic value that can help students develop their critical thinking skills. The value is also supported by its user-friendly and visually appealing format. This encyclopedia still needs to be studied further in learning activities to analyze the value of its implementation.

Keyword: encyclopedia, Fabaceae family, critical thinking skills, attractiveness

Abstrak. Berpikir kritis adalah salah satu keterampilan 4C yang perlu dikembangkan peserta didik agar mampu bersaing di abad 21. Perencanaan pembelajaran tidak hanya terfokus pada strategi dan sumber daya manusianya, melainkan juga sumber belajar. Sumber belajar yang terintegrasi dengan nilai-nilai keterampilan berpikir kritis perlu dikembangkan dan diuji. Sumber belajar yang berpotensi dapat diintegrasikan dengan nilai-nilai berpikir kritis dan pada umumnya memiliki desain yang menarik adalah ensiklopedia. Tujuan dari penelitian ini adalah menganalisis kepraktisan konten atau daya tarik buku ensiklopedia famili Fabaceae. Penelitian ini adalah uji perorangan dalam rangkaian penelitian pengembangan pendidikan (EDR) menggunakan desain penelitian evaluasi formatif Tessmer. Sumber data adalah tiga peserta didik yang terdaftar dalam kursus Phanerogamae. Data dikumpulkan dengan menggunakan angket keterbacaan. Analisis data dilakukan secara deskriptif kategorisasi. Hasil penelitian menunjukkan daya tarik ensiklopedia famili Fabaceae memperoleh kategori baik. Ini menunjukkan bahwa ensiklopedia yang dikembangkan memenuhi standar dan mempunyai nilai estetika yang dapat membantu siswa mengembangkan kemampuan berpikir kritisnya. Nilai tersebut juga didukung dengan formatnya yang ramah pengguna dan menarik secara visual. Ensiklopedia ini masih perlu dikaji lebih lanjut dalam kegiatan pembelajaran untuk menganalisis nilai implementasinya. Kata kunci: ensiklopedia, famili fabaceae, keterampilan berpikir kritis, daya tarik.

INTRODUCTION

The foundation of a nation's development in the 21st-century is education. Drastic changes in social, economic, and technological dynamics demand a transformation in the education system (Banarsari et al., 2023). In this era of globalization, 21st-century education also sets new standards where students must be able to think critically and learn in increasingly complex and dynamic ways. By thinking critically, one is expected to be able to face problems, solve appropriate problems responsibly, creative thinking, communicate, and collaborate. According to Suharyani et al. (2020), critical thinking focuses on understanding something done with full awareness and leads to a goal. In addition, according to Zubaidah (2016) and Rahmadayanti et al. (2022), critical thinking also describes other skills, such as communication and information skills, as well as the ability to examine, analyze, interpret, and evaluate evidence.

Critical thinking skills require systematic learning resources that support learning. One of the learning resources is an encyclopedia. An encyclopedia is a collection of materials or publications containing bibliographies, definitions, summaries, and explanations of a particular science (Susanto & Ngazizah, 2022). An encyclopedia is one educational resource that can be made (Masrurah et al., 2023). Tessmer's formative assessment paradigm, which includes many stages such as self-evaluation, expert review, individual testing, small group testing, and field testing, can be used to implement encyclopedias as a learning development tool. In the research of Hidayati et al. (2024) chose the biology object of the Lauraceae family to complete some research that does not yet exist in the Banua Botanical Garden, which gets results with valid, practical, and very effective categories that show that it is feasible to use as an alternative learning resource to train students' critical thinking skills. Hadiati et al. (2022) developed an encyclopedia of ethnobotany of medicinal plants, which obtained very valid results, met the standards of easy to understand, and was very effective in learning.

Both studies represent research on local potential-based development and encyclopedia development. Based on this potential, this research aims to develop an encyclopedia based on the local potential of the Fabaceae family diversity. According to Nurviati et al. (2023), plants of the Fabaceae family have various types of plants, such as herbs, shrubs, and trees, which are legumes (fruits related to nuts and legumes). The sex is bisexual, taproot type, pinnate leaves, multi-colored, and stalked arm flowers.

In the area from Tabanio village to Pagatan Besar, there is Tabanio Beach Forest in Tanah Laut Regency. Administratively located in Tanah Laut Regency, Takisung District, South Kalimantan Province, Tabanio settlement is a coastal settlement. It is located ±53 Kilometers from Banjarbaru city (Dewi & Nursalam, 2022). Ten species of the Fabaceae family are found in the coastal forest of Tabanio Village, including *Acacia crassicarpa* A. Cunn. Benth., *Acacia farnesiana* Willd., *Caesalpinia pulcherrima* Swartz, *Clitoria ternatea*, *Mimosa pudica*, *Parkia speciose* Hassk., *Samanea saman* Jacq. Merr., *Senna alata* Roxb., *Senna occidentalis* Link, and *Tamarindus indica* are located in one of the areas.

Through the usability or appeal of the material, this research seeks to teach students critical thinking techniques and self-control. This research will likely advance previous research conducted throughout the creation of this encyclopedia. Teachers can use this encyclopedia to assess students' critical thinking skills concerning learning theory and conduct a practicality or attractiveness assessment. Thus, the question arises about the usefulness of the Fabaceae family encyclopedia book for developing critical thinking skills.

RESEARCH METHODS

The research was conducted in a coastal forest area in Tabanio Village, Tanah Laut Regency. This research methodology uses Tessmer's design to incorporate EDR (Educational Design study). The research was conducted in four stages: individual test, small group, expert review, and field test. This study only used individual testing at the one-to-one stage to collect data on the practicality of the content. Three Phanerogamae course participants were given the content practicality test. This study collected content practicality data using a content practicality test, which was then tested using Formula 1 by Arbainsyah (2016) adapted to Nur (2013).

$$\bar{X} = \frac{\sum X}{n} \dots\dots\dots \text{Formula 1}$$

Description:

\bar{x} = Average score of all aspects

$\bar{\Sigma X}$ = Total average score of content practicality aspects

n = Number of aspects of content practicality

Table 1 Category of practicality category

No.	Category	Description
1.	$1 \leq X < 2$	Not Good
2.	$2 \leq X < 3$	Good Enough
3.	$3 \leq X < 4$	Good
4.	4	Very Good

RESULTS AND DISCUSSION

The results of the encyclopedia content practicality test are contained in Table 2. Front cover and table of contents can be seen in Figure 1. The encyclopedia book is attractive and easy to use because the opinions of the three students are good.



Figure 1 Front cover (A) and table of contents (B) (in Indonesian)

Table 2 Category of practicality of encyclopedia content

No.	Statement	Score			Average	Category
		S1	S2	S3		
1.	Each section studied is easy to understand	4	4	4	4	Very Good
2.	Instructions for use and how to carry out tasks are clear	4	3	4	3,67	Good
3.	The entire content is complete based on a logical sequence	4	4	4	4	Very Good
4.	The words used are easy to understand	3	4	3	3,33	Good
5.	Images are of good quality and can be understood	4	4	4	4	Very Good
6.	There are no errors when knowing the grammar	3	4	3	3,33	Good
7.	The photo on the cover is straightforward and can be understood	4	4	4	4	Very Good

Description: S = student

Based on Table 2, the positive assessment of the three students shows that this encyclopedia book is easy to use and visually appealing. The practicality of the content aims to increase the value and attractiveness of an encyclopedia, which has the following advantages: (1) Each part is easy to understand; (2) The information is complete and follows a logical sequence; (3) The pictures are clear and have meaning; and (4) The cover photo is clear and has meaning. Zaini (2019) states that practicality has several types of data, namely content, expected, and actual practicality. However, this study only uses content practicality.

Based on the score for the statement that each part studied is easy to understand, the average is 4 with a very good category. This explains that the encyclopedia meets the criteria for its purpose, namely, to help students easily understand the contents of the encyclopedia. This aligns with Anjani et al. (2022) that the material provided is easily understood by third-grade students of primary education and by one of the objectives or functions of teaching materials, namely to assist students in learning.

The statement of instructions for use and how to carry out the task is clear, and the score is 3.67, with a good category. The existence of instructions for use makes it easier for readers to understand the book's contents and achieve the learning objectives. The function of the instructions is to guide the reader in learning the components of the encyclopedia. A brief explanation of the instructions for use is expected to make it easier to understand the material's content in the encyclopedia (Nurmasari et al., 2022).

In the following statement, the overall content is complete based on the logical sequence, getting a score of 4 with a very good category. Encyclopedias have characteristics arranged by word that can provide detailed and in-depth explanations or information. Encyclopedias are designed in a good and logical order to allow students to study teaching materials independently wherever they like. Thus, it can better prepare students for the lesson (Anna, 2024). According to Rosnawati & Sunaryati (2021), learning resources are used effectively if they can stimulate user curiosity because learning resources look systematic, structured, neat, clear, and exciting. The format of the Fabaceae family encyclopedia is visually appealing. There is a correlation between the development of the encyclopedia's beautiful form and its content's usefulness. Characteristics of an encyclopedia reading, depending on the subject covered, are that captivating pictures or illustrations complement the information.

The use of words that are easy to understand is one of the advantages of print media. This statement obtained an average score of 3.33 in the good category. Words are a variety of language that shows the ability to understand something (Rizky et al., 2022). Using words in the encyclopedia requires attention to detail and quality of information; the format must be consistent and logical. This aims to make it easy for readers to understand the contents of this encyclopedia. Encyclopedias can be supplemented with scientific information and supported by original drawings or photographs. A book with pictures can provide an accurate picture to show real things and provide more straightforward and precise meaning than words (Handayani et al., 2021).

The encyclopedia has an advantage in the statement of good quality images and can be understood with an average of 4 very good categories. The encyclopedia presented contains clear images that make it easy for students to understand what is meant. This can make students interested in reading the contents of the Fabaceae family encyclopedia book. This is also supported by Adawiyah et al. (2023), who found that encyclopedias are attractive because the images presented are high quality and the material is easy to understand. Encyclopedias that are attractive can make students interested in studying encyclopedias so that learning is more meaningful to them. Febriani (2021) argues that an encyclopedia is a science that presents information accompanied by aesthetically appealing illustrations and images on the topics discussed. The use of encyclopedias to make learning more accessible, more interesting, and less boring is the reason behind its attractive design and color printing.

The statement of errors when knowing grammar is not found scores 3.33 with a good category. The score obtained is still not optimal because typos and grammar errors are still inappropriate. Typos and grammatical errors that are not found are the researchers' weaknesses. The research of Maulina et al. (2021) received criticisms and suggestions included in this statement, namely the use of italics in foreign words is still not correct, there are still errors in writing punctuation marks, and the alignment of image captions needs to be tidied up. This is a weakness of the encyclopedia book.

Based on the photo statement on the cover, the meaning is straightforward and can be understood, obtaining an average score of 4 in the very good category. This is an advantage of the Fabaceae family

encyclopedia book. The encyclopedia's straightforward cover and attractive color combination can increase interest in reading the book's contents. This is in line with the research of Maulina et al. (2021) that an attractive cover design is essential because it can cause the beginning of attraction so that students are encouraged to read the encyclopedia. Because encyclopedias have designs that attract attention and are printed with various colors, using encyclopedias to help the learning process has several advantages, including clarity, interest, and reducing boredom. This shows that in terms of book quality, the application of the contents of the Fabaceae family encyclopedia is exciting. The attractiveness of the encyclopedia is the key to determining how practical the content is. The encyclopedia's practicality score received a very good assessment, stating that the book's structure makes the encyclopedia attractive (Fatmalia et al., 2024). The Fabaceae Family Encyclopedia book's practicality test aims to characterize the encyclopedia's usability, including how attractive the design structure is.

CONCLUSION

With an average total score of 3.76, the results of the content practicality test fall into the good category. This category shows how suitable this is as an educational tool to develop students' critical thinking skills concerning appearance. This encyclopedia still needs to be studied further to fulfill the stages of EDR. Analysis of the implementation of the encyclopedia in learning activities is required, mainly to test its effect on students' critical thinking skills.

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