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Development of the Plant Encyclopedia Used in Traditional Foods of Sekadau Regency

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ABSTRACT

Utilization of plants as food ingredients represents local wisdom and cultural richness that needs to be preserved. Preservation of this knowledge can be achieved through educational media. This research aims to produce valid learning media and measure positive responses from students. It follows the Research and Development (R&D) approach using the ADDIE development model consisting of 5 stages: Analysis, Design, Development, Implementation, and Evaluation. Instruments used include observation sheets, interview sheets, questionnaires, and validation sheets. Validation results from subject matter experts achieved 87.58% (very valid), media experts 96.66% (very valid), and language experts 89.99% (very valid). Students responded very positively in small-scale trials with 89.1% and large-scale trials with 93.7%. The research results indicate that the plant encyclopedia used in the traditional cuisine of Sekadau District is suitable for learning and receives positive feedback from students.

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Introduction

West Kalimantan boasts natural and cultural riches, including a diverse array of plant species that fulfill various life needs. Sekadau Regency is one of the regencies in West Kalimantan known for its diverse local cuisine. Food is an integral part of human culture, grounded in cultural systems that imbue the lives of people in specific regions. Every region in Indonesia has its own food as a marker of community identity. Apart from being part of cultural wealth, local cuisine can also serve as an innovative learning medium to present real knowledge that is a potential in its own region, enabling students to understand the material and foster a sense of environmental care, thereby contributing to conservation efforts.

Based on interviews with biology teachers at SMA Negeri 5 Sekadau, it is known that in teaching biodiversity, teachers utilize pictures, PowerPoint presentations, videos, and textbooks. However, there is currently an underutilization of the potential of plant resources as teaching media. Observations of the textbooks used revealed several shortcomings, such as the content not being

based on the potential plant resources available in the region. Instead, it predominantly focuses on resources from other regions or animals. This curriculum gap is significant because the material is closely tied to the potential benefits of plant resources within students' environments. Interviews with students indicated that many are unfamiliar with local cuisine, which is perceived as less appealing to younger generations compared to modern or international foods. This perception can potentially impact the preservation of local cuisine as part of Indonesia's cultural heritage.

Therefore, conservative and innovative efforts are needed to introduce the potential of plant resources in order to cultivate a liking for local cuisine among the younger generation and support educational activities to preserve it. To foster an appreciation for local cuisine among the youth, education and introduction related to these dishes are necessary. Preserving local cuisine is not only crucial for national cultural heritage but also can serve as a biological learning tool, especially for students. Utilizing the potential of local cuisine as a learning medium can enhance educational activities while simultaneously promoting its preservation. If studied and incorporated into biology education, more people, especially students, will become knowledgeable about local cuisine (Setiawan, 2016). Encyclopedias are one such effective medium due to their distinctive nature of providing information accompanied by relevant images or illustrations on the discussed topics. This approach aids in making the learning process more meaningful by enhancing understanding through visual representations and clear language (Rosnawati, 2021).

An encyclopedia is a book containing information arranged alphabetically (Prastowo, 2019). It serves as a contextual learning media with visual designs that stimulate critical and creative thinking, actively engaging in effective learning processes and responsibility towards educational effectiveness (Ketut, 2022). Encyclopedias can assist students in understanding learning materials by providing detailed and contextual scientific knowledge, as well as exploring biodiversity. This developed encyclopedia includes scientific classification information related to plant resources and is supported by original photographs of these plants. Encyclopedias are valuable information resources in various fields of knowledge. Examples include the "Encyclopedia of Plant Wraps in Malay Communities in Meliau Sub-district" used at SMAN 1 Meliau (Narulita, 2023), and the "Encyclopedia of Weaving Plants of Dayak Simpang" (Saputri, 2024), both used as learning media. Additionally, "Encyclopedia Based on Local Vegetables in North Kayong Regency" has been shown to enhance student learning outcomes and is considered suitable for educational use (Aini, 2024). Moreover, "Biodiversity Encyclopedia in Jepara Regency" serves as a supplementary teaching aid to improve learning outcomes and environmental conservation attitudes (Habiba et al., 2022). Similarly, "Encyclopedia Based on the Local Potential of Wakatobi in the Phylum Mollusca" can be utilized as a learning resource (Veni, 2022). The objective of this research is to develop a valid learning medium and measure positive responses from students.

Method

This research is a development study or Research and Development (R&D). The research and development process involves several stages to produce a product (Suryani & Setiawan, 2018). The product developed in this study is an encyclopedia of plants used in traditional foods of Sekadau Regency. The development of this encyclopedia follows the ADDIE development model. The ADDIE development model consists of 5 stages: Analysis, Design, Development, Implementation, and Evaluation (see Figure 1).

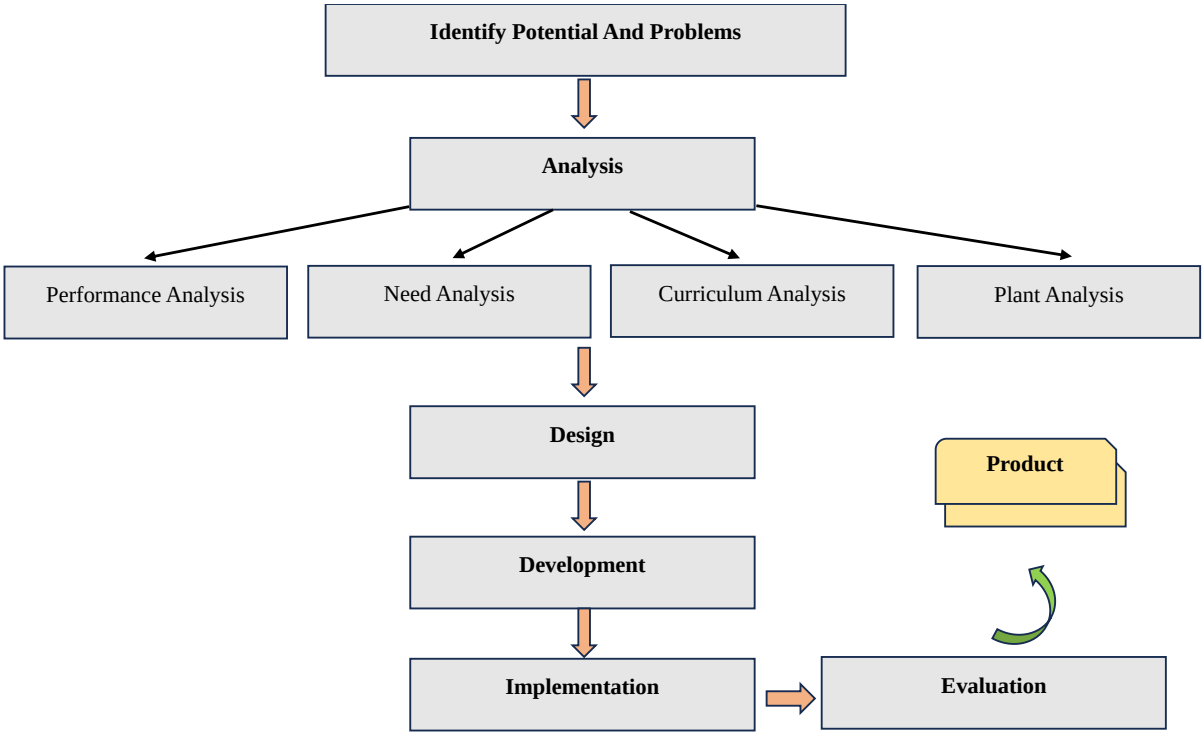

Figure 1 Procedure for ADDIE Development by Dick and Carry 1996

This research was conducted at SMA Negeri 5 Sekadau. The subjects of the study were students from class X MIA and X IIS. The small-scale test involved 7 students, while the large-scale test involved 21 students. The object of this research is an encyclopedia of plants used in traditional foods of Sekadau Regency. Data collection was carried out through interviews, observations, and questionnaires. The data obtained in this study included scores from the product validation questionnaires by expert validators in material, language, and media to assess the validity of the developed product. In addition, data from the student response questionnaires were analyzed to assess the practicality of the developed encyclopedia. The questionnaire included questions analyzed using a Likert scale with scores of 4, 3, 2, and 1. The categories are shown in Table 1 and Table 2.

Table 1. Validation Assessment Categories

No	Value Scale	Explanation
1	0-25	Very Invalid
2	26-50	Not Valid
3	51-75	Valid
4	76-100	Very Valid

Table 2. Student Response Categories

No	Value Scale	Explanation
1	0-25	Very Not Positive
2	26-50	Not Positive
3	51-75	Positive
4	76-100	Very Positive

Results and Discussion

The results of this research are an encyclopedia of plants used in the traditional foods of Sekadau Regency. This research utilizes the ADDIE development model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. The ADDIE model was developed by Dick and Carey to design instructional systems (Mulyatiningsih, 2016). The analysis phase includes performance analysis, needs analysis, curriculum analysis, and plant analysis. Performance analysis, conducted through interviews with the biology teacher of class X at SMA Negeri 5 Sekadau, revealed that the use of media such as pictures, PowerPoint, videos, and textbooks is insufficient to fully explore students' knowledge. Needs analysis was conducted by distributing questionnaires via Google Forms. Curriculum analysis revealed that the school

uses the "Merdeka" curriculum. The researcher developed an encyclopedia on the topic of biodiversity for class X in the first semester, with indicators presenting the results of observations on the benefits of biodiversity. Plant analysis involved interviews with 18 informants, including local community members, traditional leaders, traders, and housewives. The identification results found 11 types of plants used by the community in Sekadau Regency, as shown in Table 3.

Table 3. Analysis Results of Plants Used in Traditional Foods

No	Local Name	Latin Name	Part Used	Processsed Food
1	Bambu	*Gigantochloa robusta*	Shoots	Tubuk masam, tubuk Jemui, tubuk rebus
2	Cempedak	*Artocarpus integer*	Flesh of fruit	Jempout
3	Durian	*Durio zibethinus*	Flesh of fruit	Gula durian, lempok durian
4	Karet	*Hevea brasiliensis*	Seed, Leaf	Jerok
5	Padi	*Oryza sativa*	Seed	Ompink
6	Petai	*Parkia speciosa*	Skin, Seed	Jerok
7	Pisang pinang	*Musa paradisiaca*	Flesh of fruit	Jempout
8	Saong	*Etlingera elatior*	Flower	Tumis Saong
9	Sawi	*Brassica juncea*	Stern, Leaf	Jerok
10	Sawit	*Elacis guineensis*	Shoots	Umbut
11	Tengkawang	*Shorea stenopterra*	Seed	Jerok
12	Ubi	*Manihot esculenta*	Leaf	Jerok

Based on the findings from the conducted interviews, the researcher performed observations and documentation of the morphological characteristics of the plants. The results of the morphological identification and their uses will be included in the encyclopedia product developed as a biology learning medium.

The design phase aims to create an encyclopedia of plants used in traditional foods of Sekadau Regency through the composition of materials and the design of the encyclopedia product. The encyclopedia product design uses Canva. Canva offers various advantages, enabling the creation of attractive designs, facilitating practical learning media design, and saving time (Wulandari & Mudinillah, 2022; Zebua, 2023). The content of this encyclopedia comes from the identification of plants obtained through interviews with the people of Sekadau Regency. The developed encyclopedia contains material on biodiversity and consists of three main sections: introduction, content, and conclusion (Renita Ayu, et al., 2020). The components of the encyclopedia are shown in Table 4.

Table 4. Plant Encyclopedia Components

No	Section	Components
1	Beginning	Cover, Foreword, Table of Contents, Introduction, and Instructions for use
2	Content	Morfhological characteristics of plants, description of plants, use of plants as typical food, a QR code with a video demostrating the manufacturing process typical food using various types of plants
3	End	References, Glossary, Author Frofile

The development phase aims to produce a learning medium in the form of an encyclopedia of plants used in traditional foods of Sekadau Regency, deemed suitable for use based on feedback from experts (validators), development testing, and product refinement. Validation aims to obtain assessments and suggestions that serve as references to refine the

encyclopedia book, resulting in a better product (Wibowo et al., 2019). A learning medium is considered valid if it meets the validation assessment criteria. The encyclopedia media validation was conducted by 9 validators, consisting of 3 material experts (2 lecturers, 1 teacher), 3 media experts (2 lecturers, 1 teacher), and 3 language experts (1 lecturer, 2 teachers). Revisions were made based on input from media experts, material experts, and language experts. Revisions at this stage are design revisions before product testing. The revised result is the initial validated product. The encyclopedia is made according to ISO standards with dimensions of 21x29.7 cm. Based on the evaluations provided by the experts, the visual presentation of the encyclopedia can be seen in Figures 2 and 3.

Figure 2 Encyclopedia Cover and User Guide

Figure 3. Content Section of the Encyclopedia

Based on Figures 2 and 3, Figure 2 shows the cover, which includes the title along with several images of traditional foods, and the instructions for using the encyclopedia, which contain guidelines related to the description of the encyclopedia sections. Figure 3 shows the content, which includes explanations about the utilization of plants processed into traditional foods and descriptions of traditional food processing.

The learning medium produced can be considered suitable if it meets the validity aspects. The results of the expert team's validation are shown in Table 5.

Table 5. Expert Validation Assessment Results

No	Validator	Percentage %	Explanation
1	Material Material	87,58%	Very Valid
2	Media Expert	96,66%	Very Valid
3	Linguist	89,99%	Very Valid

Table 5 shows the validation results of the encyclopedia by the expert team, which achieved very valid results. The material expert validation showed 87.58% (Very Valid), media expert validation showed 96.66% (Very Valid), and language expert validation showed 89.99% (Valid). Thus, this proves that the plant encyclopedia used in traditional foods of Sekadau Regency is categorized as very suitable based on the assessments of material experts, media experts, and language experts.

The implementation phase aims to assess students' responses to the developed learning medium, which is an encyclopedia of plants used in traditional foods of Sekadau Regency. Student responses were obtained through two stages: small-scale testing and large-scale testing (Prayitno, 2017). Both small-scale and large-scale testing were conducted after validation by material experts, media experts, and language experts. Large-scale testing was performed to evaluate the encyclopedia media with a larger number of students. The aspects evaluated in both small-scale and large-scale tests include material suitability, language, usability, and appearance. The overall assessment consisted of 16 statements, with 8 positive statements and 8 negative statements. The results of the small-scale test showed 89.1% (positive), and the results of the large-scale test showed 93.7% (very positive), as seen in Table 6.

Table 6. Student Response Assessment Categories

No	Experiment	Percentage	Explanation
1	Small Scale	89,1%	Positive
2	Large Scale	93,7%	Very Positive

Based on Table 6, the use of the plant encyclopedia can significantly influence students' learning interest and their success in understanding the taught lessons. The presence of learning media plays a crucial role in the quality of students' learning because it allows students to actively engage in the learning process, not just passively receiving information from teachers (Lafifa et al., 2022). This is evident from the small-scale test results, which averaged 89.1% (Very Positive), and the large-scale test results, which averaged 93.7% (Very Positive), indicating that students are highly interested in learning using the plant encyclopedia. Encyclopedias featuring images or photos provide a realistic portrayal of objects, creating a more vibrant and accurate learning environment compared to text alone, thereby stimulating students' thinking abilities (Hernawati et al., 2018). The use of locally-based learning media can help students learn independently and enhance their knowledge about the potential and culture of their region, fostering awareness of environmental conservation (Ningrum et al., 2022; Ulya et al., 2022).

The validated encyclopedia, assessed positively by validators and receiving favorable responses from students, was subsequently implemented in schools after incorporating improvements based on feedback from material experts, media experts, and language experts. Based on the results of the validity and practicality stages, the encyclopedia received a "very valid" rating from expert validators and was

deemed "highly practical" by student users of the encyclopedia product.

In the evaluation phase, the researcher employed formative and summative evaluations. Formative evaluation was conducted to gather data throughout all stages of the ADDIE model. During the formative evaluation stage, the learning media was improved or revised based on feedback received during the validation process. Revisions were made based on suggestions from material, language, and media validators. Subsequently, summative evaluation was based on analyzing student response questionnaires to assess the impact of using the plant encyclopedia, which is used in traditional foods of Sekadau Regency, in the learning process.

nature (Chandra et al., 2020). Additionally, using encyclopedia media enriches learning materials, making learning more memorable, aiding in achieving objectives, assisting weaker students, and promoting independent learning (Tarmizi, Rashid & Saleh, 2019). It can enhance motivation and enthusiasm for learning (Agustina et al., 2019; Anshori, 2021). Therefore, it can be concluded that the developed media is suitable for use as an additional learning tool for biodiversity in the 10th-grade class at SMA Negeri 5 Sekadau.

Conclusion

Based on the research findings, the development of the plant encyclopedia used in traditional foods of Sekadau Regency has achieved a high level of suitability and can be effectively used in education. The validation results of the encyclopedia meet the established assessment criteria, with material aspects at 87.58%, media aspects at 96.66%, and language aspects at 89.99%. Student responses have shown very positive results, with 89.1% in the small-scale test and 93.7% in the large-scale test. Therefore, the plant encyclopedia used in traditional foods of Sekadau Regency can indeed be utilized as a valuable learning medium.

Suggestions that researchers can propose regarding development research are that the plant encyclopedia media used in traditional foods in biodiversity material for 10th-grade high school students that has

Therefore, the encyclopedia learning media on biodiversity can be used in the learning process to enhance positive student responses. The increase in positive responses from students after using the encyclopedia media is due to its ease of understanding, attractive presentation, and colorful print media. The encyclopedia media motivates students in the learning process. Integrating different methods with diverse media can further motivate students in the teaching and learning process (Laila Puspita, 2019; Magdalena et al., 2021). Based on previous research, the encyclopedia was chosen as a learning development product due to its lightweight, attractive, concise, and easy-to-understand

been developed can be tested for its effectiveness and validity in improving students' learning outcomes, learning interest, and learning motivation by other researchers.

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