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Development of an Encyclopedia of Traditional Foods Preserved by the Malay Tribe of Kayong Utara Regency as a Biology Learning Resource

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Abstract: The local potential of traditional preserved foods of the Malay community of Kayong Utara district can be developed into meaningful learning media. This study aims to analyse the validity and student response to the encyclopedia learning media developed. The research used the Research & Development method with the ADDIE development model. The research stages include Analysis, Design, Development, Implement and Evaluation. The results showed the validity of the developed media in the aspects of language, material, and media with consecutive scores of 88.66% (very feasible), 95.33% (very feasible), and 99.33% (very feasible). Student responses were positive on the results of small-scale and large-scale trials with scores of 87.26% and 88.55% respectively. It is concluded that the encyclopedia of traditional food preserved by the Malay tribe of Kayong Utara Regency is feasible to use and gets a positive response to be used as a biology learning resource.

Keywords: Development; Encyclopedia; Learning media; Traditional food

Introduction

The method used in this research uses the Research & Development method with the ADDIE development model (Mahaputri et al., 2022). Latifah et al. (2023) found that one of the most well-known regions in West Kalimantan for ecological, cultural, and gastronomic tourism is North Kayong Traditional specialties rooted in the people's culture might be found in North Kayong Regency. Customary cuisine is a component of human culture that is shaped by local customs and lifestyles. Every location has distinctive traditional dishes that reflect the local way of life. Traditional food is defined as food that is consumed on a daily basis in the form of specialty snacks or staple foods North Kayong. Regency is home to an abundance of Malay preserved foods, such as dried bamboo shoots, pekasam bamboo shoots, dodol pumpkin, and lempok, according to research findings (Fahrazi et al., 2023).

These foods have the potential to be used as biological teaching resources: durian, tempoyak, tape, cengkarok, coconut masekat, salai fish, salted fish, pedak gembung, anchovies, amplang, dried shrimp, cencalok, belacan, pekasam pempahat, and pekasam mussels (Aini et al., 2024). All living organisms and their interactions are the subject of biology, which offers learning materials that are highly relevant to daily life (Howbert et al., 2019). Students can study biology in an engaging and accessible way by utilizing their local potential (Febriyanda et al., 2022). Biodiversity in particular has not been often linked to biology daily existence, hence it is exclusively focused on textbooks (Saylendra et al., 2023).

It is possible to boost students' interest in learning by combining biological content with local possibilities (Ariskasari & Pratiwi, 2019). Given how closely biological material resembles everyday life, it is important for students to fully understand biological material in order to use biological science as a tool in

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their daily lives (Dewi & Agung, 2021). For this reason, it's critical to connect what students learn in the classroom to real-world situations (Dirgantari et al., 2020).

According to the findings of interviews conducted with a biology teacher and class X students at SMA Negeri 2 Simpang Hilir, the instructor assists in the presentation of the information for biodiversity lessons by utilizing class 10 biology textbooks, LKS, and audiovisual media. The fact that biology textbooks are static is one of the primary issues educators have with the media they employ. Biology textbooks solely provide textual content, which might be tedious for pupils to read (Hastiningsih & Sari, 2023).

Thus, it is imperative to provide educational materials that serve as a remedy for the issues that crop up, such creating encyclopedias (Rustandi & Rismayanti, 2021). The encyclopedias that are most often used in education are still general, and there is still a dearth of encyclopedias that highlight local possibilities (Sabilla et al., 2023). The encyclopedia's development of local potential will give it a distinctive quality (Wahyudi & Palupi, 2023).

The creation of an encyclopedia based on the potential of locally produced preserved traditional cuisine to give a general overview of the variety of natural resources present in the North Kayong area is another element (Sabilla et al., 2023). A summary of the abundance of natural resources will provide the broader public—not just students—a better understanding (Agatha et al., 2020).

The encyclopedia has the benefit of having genuine photographs of these plants and animals to support its scientific categorization information about plant and animal resources (Prayitno, 2017). One educational tool that may be utilized to assist students comprehend course content and teachers explain the diversity and unique features of the community is an encyclopedia (Handayani, 2019). This study's encyclopedia is built on the possibility of locally produced preserved traditional foods. An encyclopedia offers details on many scientific topics together with images, photos, and other media that might aid with comprehension (Saputri et al., 2024). This study's encyclopedia is built on the possibilities in the local preserved traditional food (Arini & Sudatha, 2023).

An encyclopedia is a book that provides a quick and succinct overview of every scientific field; it is often organized alphabetically or by category (Sulistiyawati & Hedianti, 2015). According to findings from other studies, media is any tangible instrument that may convey ideas and encourage children to study (Supiandi et al., 2023). Therefore, it is anticipated that the creation of this encyclopedia will provide data regarding the veracity of the encyclopedia's media as well as data regarding the favorable reactions of students to such media (Nabila et al., 2021). Potential Traditional Foods Preserved by the Malay Tribe of NorthKayong Regency is the title of this development. Researchers want to boost students' enthusiasm and interest in studying as a whole by developing this learning material (Nurdiansyah et al., 2021).

Method

Research and development (R&D) are the research approach utilized in this study (Watthanakuljaroen, 2023). A product that is fit for use is the result of this kind of study (Ramly et al., 2022). Robert Maribe Branch's ADDIE model is referred to in this study. As stated by Sugiyono (2021), the research pertains to the application of the ADDIE development model (Analysis, Design, Development, Implementation, Evaluation) in conjunction with the Research and Development (R&D) method to create an encyclopedia detailing the potential of traditional food preserved by the Kayong Utara Regency Malay tribe as a biology learning resource (Husnadi et al., 2024).

Data Sources and Data Collection Tool Techniques

The North Kayong district's Malay tribal community served as the data source. Three methods were employed to obtain the data: indirect communication, expert validation, and direct communication with the instructors at SMAN 2 Simpang Hilir. Student answer questionnaires, validation sheets, and interview instructions were the instruments utilized to gather the data. The purpose of the interview guidelines is to ascertain the learning materials utilized, validation sheets, and questionnaires intended as data collecting instruments in order to ascertain the expert's evaluation of the North Kayong Regency's encyclopedia of traditional foods conserved by the Malay tribe.

Encyclopedia Design

This step, often referred to as the design stage, involves developing the goals of the biology learning materials on biodiversity for Class X SMA students based on the requirements for the media (Aditama et al., 2019).

Data Analysis Technique

The analysis in this study is as follows.

Analysis of the Validity of Encyclopedia Learning as equation 1.

$$P = \frac{\sum_{i=1}^{4} xi}{\sum_{j=1}^{4} xj} \times 100\% \quad (1)$$

Description:
P = Percentage of choices
$\sum_{i=1}^{4} xi$ = The number of scores of the answer to the assessment by the expert
$\sum_{j=1}^{4} xj$ = Number of highest answer scores

Table 1. Validation Assessment Categories

Percentage (%)	Qualitative value	Information
X > 8	Very eligible	Not revised
61 < x ≤ 80	Eligible	Not revised
41 < x ≤ 60	Fairly eligible	revised
21 < x ≤ 40	Less eligible	revised
X ≤ 20	Totally not worth it	revised

Source: Fithriyah & As'ari (2012)

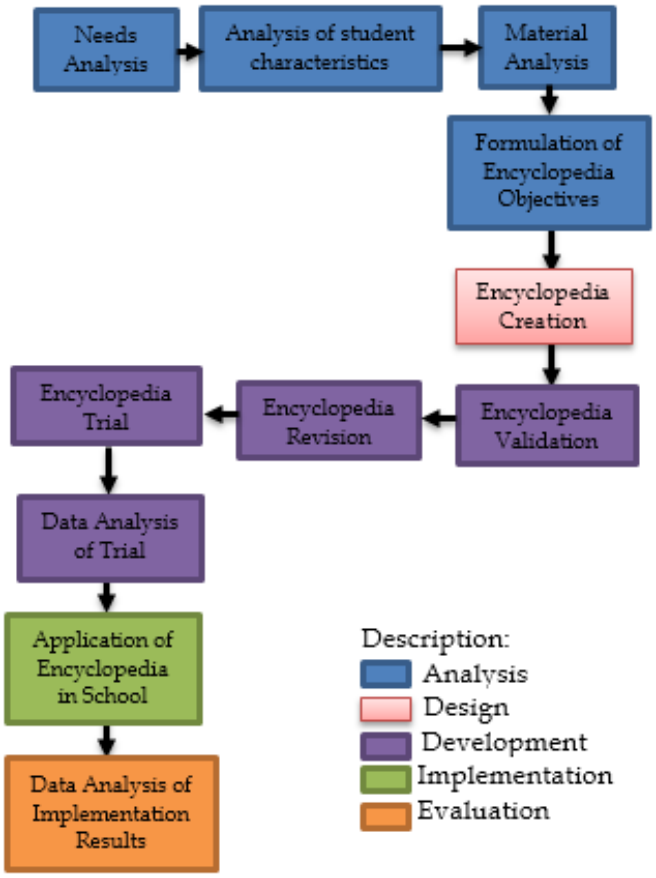


Figure 1. Steps of the ADDIE Development Model (Sugiyono, 2021)

The percentage of student response questionnaire was calculated using the equation 2.

$$\%NRS = \frac{\sum NRS}{\text{Maximal NRS}} \times 100\% \quad (2)$$

Description:
%NRS = Percentage of student response scores
∑ NRS = Total student response score (NRS SS+ NRS S+ NRS TS+ NRS STS)
Maximal NRS = ∑ R × Best choice score
= ∑ R × 4

Table 2. Categories of Questionnaire Answer Assessment

Percentage (%)	Qualitative value	Information
0 ≤ NRS < 20	Very weak	Revised
20 ≤ NRS < 40	Weak	Revised
40 ≤ NRS < 60	Enough	Revised
60 ≤ NRS < 80	Strong	Not revised
80 ≤ NRS ≤ 100	Very strong	Not revised

Source: Bintiningtiyas (2016)

The research procedure for developing encyclopedia media is the ADDIE development model. The ADDIE model can be used for various forms of product development such as models, learning strategies, media, and teaching materials. According to Sugiyono (2021) the ADDIE development procedure includes Analysis, Design, Development, Implementation, and Evaluation. In general, the research procedure can be seen in Figure 1.

Result and Discussion

Result

Analysis Stage

The initial step in the creation of research is analysis (Sugihartini & Yudiana, 2018). Analyzing the requirements for developing educational media in order to meet teaching and learning objectives is what is being done at this point. Analyzing student needs is one aspect of the analyses that are done in order to provide learning resources that are appropriate for the requirements of the students and enhance the quality of learning. Features of the students Because all learning processes must be tailored to the unique qualities of the pupils, the researcher examines the students' attributes at this step (Artekin, 2024).

The analysis of the material includes diversity, particularly in the sub material of using biodiversity, the formulation of learning objectives, and the problems encountered during the teaching and learning process (Jacobus et al., 2023). These issues are typically related to the learning strategies and material, necessitating the use of additional learning resources to help students comprehend the material better (Widiastuti et al., 2020).

Design Stage

Planning (design) is the process used to create a product that will meet the requirements of this encyclopedia's preparation (Setiawan, 2016). This portion of the section is an introduction, which includes the title, author's name, image illustration, cover page, preface, usage instructions, table of contents, and introduction found on the front cover of the encyclopedia (Sharma et al., 2020).

The content, or core portion, includes food photos, descriptions, and features, as well as images of the many plant and animal varieties of processed components and how traditional food is processed and kept by the Malay tribe of North Kayong Regency and is equipped with a classification of plant or animal processed ingredients. This encyclopedia's last section includes the book's back cover, glossary, compiler profile, and bibliography (Noviar, 2016).

Development Stage

Learning media creation and modification activities are part of the development stage. The purpose of this step is to collect validation data findings from three groups of validators: material experts, linguists, and media experts. After that, comments and recommendations are incorporated into the encyclopedias that are created. Provide a validation questionnaire sheet as the final evaluation result after incorporating feedback from three validators in order to get accurate data (Sevtia et al., 2022).

Based on the results of the validation questionnaire in Table 4, the average value of the validation results is 93.77% with the category 'very feasible'. The results of the three validators are presented in Table 5, 6, and 7.

Table 3. Encyclopedia of Traditional Preserved Foods of the Malay Tribe of North Kayong Regency

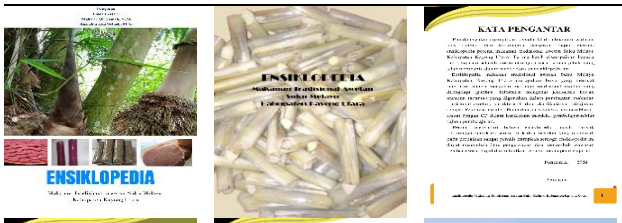
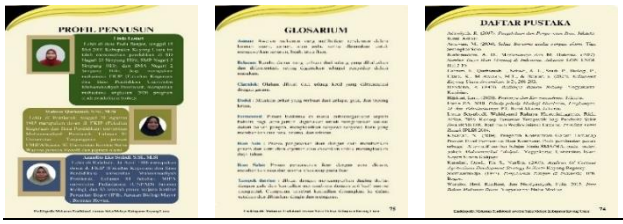
Initial design	Description
	The following are included in the introduction: Title, Author's name, Picture illustration, Cover page, Preface, Usage instructions for the encyclopedia, and Table of contents Overview
	The following constitute the substance or core section: Processing preserved food in a traditional manner, processing preserved food and, using plants and animals in the preservation process, and video demonstrating the traditional method of preserving food
	The book's back cover and author bio are included in the concluding part along with: Glossary, Bibliography, and a profile of the author

Table 4. Media Validation Results

Aspects	Validator Assessment (%)			Average (%)	Description
	1	2	3		
Language	80	80	100	86.66	Very Decent
Media	100	100	98	99.33	Very Decent
Material	98	90	98	95.33	Very Decent
Total	278	270	296	281.32	
Average (%)		272.33		93.77	

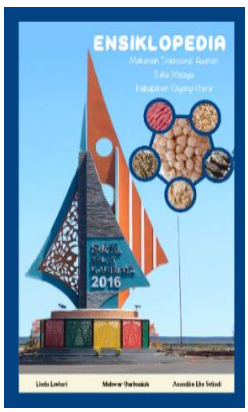
Table 5. Results of Small Scale Test Students' Response to Media

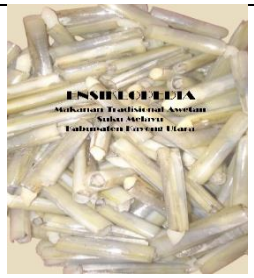
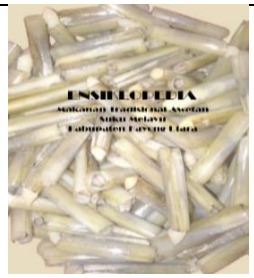
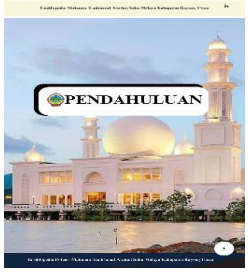
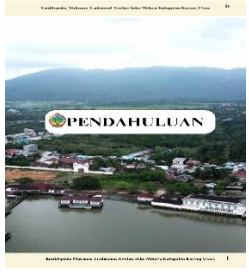
Aspects	Indicators	Small scale		(%)	Average
		+	-		
Content eligibility	Response to encyclopedia media	90.62	82.81	86.71	
	Response to encyclopedia material	89.06	85.93	87.49	
Attractiveness	Response to the language used in the encyclopedia	90.62	79.68	85.15	87.33
	Response to the display in the encyclopedia media	95.31	87.5	91.40	
	Response to encyclopedia media cover	85.93	85.93	85.93	
Total		451.54	421.85	436.68	
Average		90.30	84.37	87.33	

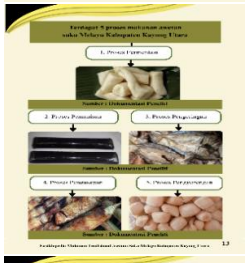
Table 6. Results of Large Scale Test Students' Response to Media

Aspects	Indicators	Large scale		(%)	Average
		+	-		
Content eligibility	Response to encyclopedia media	94.68	81.38	88.03	
	Response to encyclopedia material	90.42	82.97	86.69	
Attractiveness	Response to the language used in the encyclopedia	86.16	88.82	87.49	88.55
	Responses to the display in the encyclopedia media	90.95	89.36	90.15	
	Response to encyclopedia media cover	93.08	87.76	90.42	
Total		455.29	430.29	442.78	
Average		91.05	86.05	88.55	

Table 7. Final Design of the Validated Products

Draft	Before repair	After repair	Description
Front cover			The cover has undergone revisions in response to expert advice and input, changing the representation of the North Kayong monument

Draft	Before repair	After repair	Description
Cover page			The background image's color has changed in response to expert feedback
Preface			Expert advice is included, such as the learning indicators that are added following the introduction page
Instructions for using the encyclopedia			The backdrop color has changed in accordance with the expert's recommendations
Table of contents			Expert advice was sought on modifications to the encyclopedia's bolded subtitle text
Contents			Expert advice was received on the addition of subtitles and picture modifications in the background image area

Draft	Before repair	After repair	Description
Contents			Experts recommended making the text smaller and adding a black backdrop color
Contents			Based on the expert's comments, the background picture was altered and the subtitles were eliminated
Contents			Based on feedback and recommendations from experts, the writing style has changed, photos have been added, and certain images have been somewhat expanded
Contents		 	Based on feedback and recommendations from experts, the writing style has changed, photos have been added, and certain images have been somewhat expanded
Bibliography			The bibliography is now written more slowly, and expert opinions have led to adjustments to the backdrop color

Draft	Before repair	After repair	Description
Glossary			A new addition to the phrase
Profile of Author			The author's bio backdrop has a little color change
Back cover			The rear cover's lettering backdrop has a subtle color shift

Implementation Stage

The application of encyclopedia material intended to be utilized as a resource for biology education is known as the implementation stage (Jais et al., 2022). In class X, researchers used small- and large-scale experiments to evaluate encyclopedia media in order to disseminate student answer surveys. 63 students from two classes X participated in the study, and the outcomes of the small- and large-scale trials were 87.33% and 88.55%, respectively. The average findings of both the small- and large-scale trials, which were determined to have a highly good response from the media, were collected by the researcher from the trial's results (Sarip et al., 2022).

Evaluation Stage

The final phase of development research is evaluation. At this point, managing the evaluation findings and making inferences are done (Chidinma et al., 2024). Based on the findings of the test of students' questionnaire answers to encyclopedia media, as well as the collection of questionnaires from material specialists, linguists, and media experts. Thus, it can be said that the encyclopedia of traditional foods kept by the Malay tribe in North Kayong Regency, which is part of the learning medium, is approved for usage (Muruganantham, 2015).

Discussion

The end result of this research is an encyclopedia designed to be a teaching tool. The first step involves conducting a multi-stage analysis, first identifying the needs of the students in order to enhance the quality of their learning through the use of learning resources (Muhith et al., 2022). This is done by interviewing biology subject teachers, specifically Mrs. Helen Puspitaningrum S.Pd., and class X students of SMAN 2 Simpang Hilir. Analysis of student characteristics: During this phase, class X SMAN 2 pupils were given a questionnaire by researchers to help them examine the characteristics of the students. Simpang Hilir. Information from material analysis was used in the SMAN 2 curriculum. Since Simpang Hilir is an independent curriculum, the material chosen to help guide the creation of learning materials based on the goals to be met on the material of biodiversity exploitation is adjusted to the syllabus of the independent curriculum. The results of material analysis on the syllabus for the independent curriculum are taken into consideration when creating the learning objectives for the purpose of creating an encyclopedia that serves as student enrichment material. Additionally, the learning outcomes that students must meet for the biodiversity material with CP in the independent curriculum are taken into consideration. Learning

goals/Educational Goals 10.2 Recognize the degree of biological diversity in the immediate surroundings.

The goal of the second step, design, is to create educational media. Currently, after utilizing the Canva program to compile the draft for the encyclopedia, the design takes the shape of a traditional food encyclopedia that has been kept by the Malay tribe in the North Kayong area. The encyclopedia's front cover, which includes the title, author's name, illustration picture, agency logo, rear cover, cover page, preface, usage directions, table of contents, and introduction, is one example of the media's design that includes an introductory part. The content, or core component, includes pictures of food, descriptions, and features, as well as pictures of processed plant or animal ingredients and traditional food that the Malay tribe of the North Kayong area has retained.

Development, the third step, involves creating and altering educational materials. At this step, three validators—media experts, linguists, and material specialists—provide feedback and ideas that are turned into modifications (Gerl et al., 2021). Following the completion of the feasibility evaluation, linguists, media experts, and material experts achieved successive percentages of 95.33, 86.66, and 99.33%. Included the very feasible category. Based on how the research was carried out, the three validators' mean validity ranged from 81 to 100% in the very feasible category.

The fourth step is implementation; during this phase, the media encyclopedia has been refined based on recommendations and feedback from language, media, and content specialists before being put to the test on students (Astiani et al., 2021). The encyclopedic media reactions will be tested on two different scales: small-scale trials and large-scale trials. Aspects of content viability and appeal to encyclopedic media are included in learner trials.

The feasibility study yielded consistent results of 87.33 and 88.55% in the small- and large-scale experiments, respectively, placing them in the very feasible category. In order for the media encyclopedia of the potential of traditional cuisine kept by the Malay tribe of North Kayong Regency to be considered practical, this step comprises of testing. Given that the proportion ranges from 81 to 100%, it can be said that the media is very feasible and that students are responding well to the created encyclopedia media.

The evaluation step, which comes in at number five, involves managing the assessment's findings and making conclusions. The learning media encyclopedia of traditional food preserved by the Malay tribe of Kayong Utara Regency is deemed suitable for use based on the findings of validation questionnaires acquired from media experts, linguists, and material experts as well as student response questionnaires to the traditional food encyclopedia media preserved by the Malay tribe of North Ksyong Regency.

Conclusion

Based on the research that has been conducted on Development of Encyclopedia of Potential Traditional Foods Preserved by the Malay Tribe of North Kayong Regency, it is concluded that this media is suitable for use as a learning resource that provides benefits to teachers and students as a means and reference material to support contextual learning using this encyclopedia. Based on the results of the study, the results of validation consisting of linguists of 86.66 (very feasible), media experts of 99.33% (very feasible), and material experts of 95.33% (very feasible) so that this media has a very feasible validity. The media also received positive student response results to the media with an average value of 88.55% large-scale student trials and 87.26% small-scale trials. The validity results are very feasible, and the response results are very positive so that the encyclopedia media is said to be suitable for use by educators and students in the learning process.

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Author Contribution
L.L.: methodology, data analysis, manuscript writing, review, reference search. M.Q.: Manuscript writing, review, reference search and editing, A.E.S.: Article writing, review, and editing.

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There are no conflicts of interest in this article.

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