



Feasibility of e-encyclopedia plantae results of postnatal plant inventory of the malay tribe

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ABSTRACT

Learning media can help clarify the meaning of the message to be conveyed so that learning objectives can be achieved. Learning media can be presented in non-print or electronic form and can be developed from the results of research such as an inventory of medicinal plants. This research aims to determine the feasibility of e-encyclopedia media as a result of postnatal medicinal plant inventory of the Malay tribe of Bentunai Village. This research uses the R&D (Research & Development) research method, but it is only carried out until the design revision stage. The media feasibility test was carried out by validation by five validators and analyzed using Aiken V validity and ICC (Intraclass Correlation Coefficient) reliability. The aspects assessed are content, writing, convenience and appearance. The results of the e-encyclopedia validator analysis showed that the Aiken validity value in the content aspect in the very high category, the writing aspect in the very high category, the convenience aspect in the very high category and the appearance aspect was in the very high category. The average validity of these four aspects is in the very high category. The results of the ICC reliability analysis show a reliability and agreement between validators is at a good criteria index. So, it can be concluded that the e-encyclopedia developed as a result of the inventory of postnatal medicinal plants from the Malay tribe of Bentunai Village is suitable for use as a learning medium.

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INTRODUCTION

The learning process is the core of the educational process. Learning is a series of actions between educators and students that occur in a reciprocal relationship and take place in an educational situation to achieve learning objectives (Zaifullah et al., 2021; Junaedi, 2019). Quality learning depends on the effectiveness of the learning that occurs in it (Entwistle & Peterson, 2004). In quality learning, in order to achieve learning objectives, quality teachers and learning media are needed (Meliyana et al., 2022; Ratnawati et al., 2021)

Learning media is a tool in the learning process that functions to clarify the meaning of the message conveyed so that learning objectives can be achieved (Wulandari et al., 2023; Kustandi & Darmawan, 2020). Learning media is divided into two large groups, namely print and non-print media. Printed learning media is media made with a printing machine that contains writing, images, colors and symbols that contain learning material (Anwar et al., 2022; Marchionini, 1988). Non-print learning media is media that does not go through a printing process, so it is presented in digital or electronic form (Susilawati et al., 2021). Electronic media can make the learning process more interesting, can be used anywhere and anytime and can improve the quality of learning (Puspitasari, 2019; Sidiqui & Masud, 2012).

Research on the development of electronic media has been carried out to date. Based on research conducted by Panjaitan et al. (2016) concerning the development of bilingual e-comics as a learning medium. Research conducted by Puspitasari (2019) shows that the use of learning media in the form of electronic modules is effective in increasing student learning motivation, improving learning outcomes and students' critical thinking abilities. Apart from that, Mery et al. (2022) stated that e-comics are suitable for use as learning media to support learning. The development of learning media in the form of electronic magazines carried out by Husniyah (2022) was able to improve students' problem-solving abilities.

Encyclopedias are media that are identical to pictures, seem lighter, more interesting and more concise (Renita et al., 2020) so they make students more interested in reading them (Soleha et al., 2022). Encyclopedias are usually large and thick, making them difficult to carry everywhere (Sumadi et al., 2017), therefore electronic encyclopedias are needed. An electronic encyclopedia is a book that contains a list of knowledge terms arranged alphabetically and provided with brief information presented in electronic form (Rahmah, 2018).

Based on research conducted by Kundariati et al. (2020) the use of electronic encyclopedias (e-encyclopedias) can provide interesting learning experiences for students, where students can learn inside or outside the classroom. Research conducted by Wulandari et al. (2023) stated that the use of an encyclopedia on kingdom Plantae material can attract students' interest and motivation in learning and create a fun learning atmosphere. Encyclopedias can be developed from research results that contain local potential in an area. Research on developing an encyclopedia from the results of an inventory of ferns (Renita et al., 2020), developing an encyclopedia resulting from an inventory of road protection plants in the spermatophyta division (Adhia et al., 2022), developing an encyclopedia resulting from an inventory of medicinal plants on Lombok Island (Hana et al. al., 2020), development of an encyclopedia based on the results of an inventory of medicinal plants in Babane Village, Bengkayang Regency (Kristi et al., 2023) and development of an e-encyclopedia based on the diversity of taro in Bogor Regency (Azizah et al., 2021).

In this research, the e-encyclopedia was compiled based on the results of an inventory of postnatal medicinal plants from the Malay tribe in Bentunai Village, Selakau District, Sambas Regency. The people of Bentunai Village, with a majority of Malay ethnicity, still use traditional medicine for post-natal healing. The diversity of postnatal medicinal plants has been developed into media in the form of an e-encyclopedia containing photos of plant collections accompanied by classification, morphology, benefits and methods of processing plants into postnatal medicines. It is hoped that this media can be used to support the learning of Kingdom Plantae sub-material for class X.

The kingdom Plantae is part of the material on the diversity of living things in class, viruses and their role, biological technological innovation, ecosystem components and interactions between components and environmental changes (Krisdianti et al., 2023). This research aims to determine the feasibility and reliability value of the e-encyclopedia of medicinal plants after giving birth to the Malay tribe of Bentunai Village as a learning medium for kingdom Plantae for class X SMA.

METHODS

Research Design

This research develops e-encyclopedia media using the development method (Research and Development). The R&D method is a method used to validate and develop products (Sugiyono, 2019).

Participants in Research

To determine the types of postnatal medicinal plants used by the Malay people of Bentunai Village, interviews were conducted with 3 traditional healers. To determine the suitability of the media being developed, validation was carried out by 2 lecturers and 3 high school biology teachers.

Instrument

The instruments used in this research were teacher interview sheets and e-encyclopedia media validation sheets. The instruments for developing e-encyclopedia media are listed in Table 1 and Table 2.

The interview sheet is used to determine the problems and challenges that are often faced in the learning process, as well as the urgency in using e-encyclopedia as a learning media. The validation sheet is used to determine information about whether the e-encyclopedia being developed is suitable or not for use as a learning media.

Table 1.

Instrument components of the class X high school biology teacher interview sheet

No	Indicators	Question Items
1	The curriculum used in schools	1
2	The learning process in school	2
3	Student activity during teaching and learning activities	3
4	Difficulties or obstacles encountered in teaching	4
5	How to overcome existing problems or difficulties	5
6	Instructional media used	6 & 7
7	Teachers' opinions regarding the use of e-encyclopedias in learning kingdom plantae material	8

Table 2.

Components of the e-encyclopedia media validation sheet instrument

Aspects	Indicators	Question Items
Content	Clarity of usage instructions	1
	Order of presentation of material	2
	Clarity of language used and suitability to target users	3
Ease	Ease of media use	4
Writing/Text	Suitability of font/letter selection	5
Appearance	The images shown support the clarity of the material content	6
	Use of composition and combination of each font color, background	7
	Placement of text and image layout	8

Procedure

In this research, only five stages were carried out, namely potential and problems, data collection, product design, design validation and design revision. At the potential and problem stage, an interview was conducted with the class X biology teacher to obtain information related to the use of media in the learning process which is used as a reference in the media development that will be carried out. At the data collection stage, an inventory of postnatal medicinal plants used by the Malay community of Bentunai Village was carried out as material for the media to be developed. The third stage is product design in the form of an electronic encyclopedia (e-encyclopedia). In the fourth stage, media validation was carried out with 5 validators (3 class X biology teachers and 2 lecturers). In the fifth stage, namely design revision according to suggestions from the validator.

Data Analysis Techniques

The data analysis used is quantitative analysis. Data analysis of validation results refers to Aiken. Analysis of expert test data is calculated using the following formula:

$$V = \frac{\sum s}{n(c-1)}$$

(Aiken, 1985)

Description:

- V = index of respondent agreement regarding item validity
- S = the score set by the respondent minus the lowest score (s= r-1)
- r = score of the respondent's selected category
- n = number of respondents
- c = number of selected categories filled in by respondents

After calculating the validity value of the Aiken indicator, the ICC reliability value is then calculated using validation data obtained referring to Zaki (2017). The ICC reliability formula is:

$$\rho = \frac{MSrs - MSe}{MSr + (k-1)MSe}$$

Description:

- MSrs = mean square between raters
- Mse = error score variance
- K = number of assessors

It is declared reliable if the results of the ICC reliability analysis calculation are in the index range $0.4 \leq ICC < 0.75$ which means good criteria and $ICC \geq 0.75$ which means very good criteria (Zaki, 2017).

RESULTS AND DISCUSSION

The e-encyclopedia was compiled based on the results of an inventory of postnatal medicinal plants of the Malay tribe in Bentunai Village, Selakau District, Sambas Regency, West Kalimantan. This e-encyclopedia contains a brief description of kingdom plantae, pictures of post-natal medicinal plants, local names, common names, plant classification, benefits of post-natal medicine and how they are processed by the Malay people of Bentunai Village. The learning media that has been created is then validated by experts to determine the appropriateness of the media.

Analysis of the validation results was carried out by referring to the content validity of Aiken V. The results of the content analysis of the e-encyclopedia media are presented in Table 3.

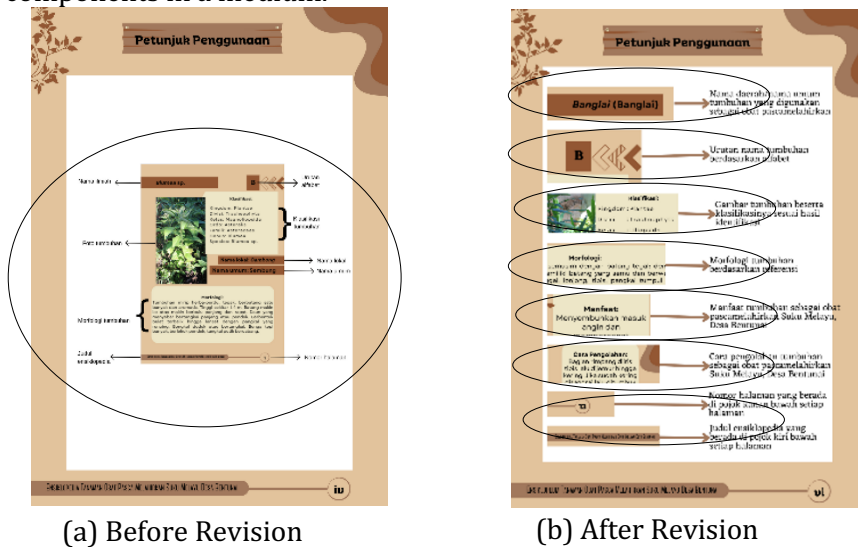
Table 3.

Results of E-encyclopedia Media Content Validity Analysis on Kingdom Plantae Based on the results of the post-natal medicinal plant inventory of the Malay tribe in Bentunai Village, Selakau District, Sambas Regency, West Kalimantan, Indonesia

Aspect	Indicators	Validity of Aiken Values	Description
Content	Clarity of usage instructions	0.85	Valid
	Order of presentation of material	0.90	Valid
	Clarity of language used and suitability to target users	0.95	Valid
Average content aspect validity value		0.90	Valid
Ease	Ease of media use	1.00	Valid
Average validity value of the convenience content aspect		1.00	Valid
Writing	Appropriate selection of fonts/letters	1.00	Valid
Average validity value of writing aspects		1.00	Valid
Appearance	The images shown support the clarity of the material content	1.00	Valid
	Use the composition and color combination of each font and background	0.95	Valid
	Placement of text and image layout	0.85	Valid
Average validity value of display aspects		0.93	Valid

Aspects of Content

The content feasibility component consists of three indicators. The first indicator, namely clarity of instructions for use, obtained a V value of 0.85 in the valid category. Based on the validator's assessment, there is a suggestion, namely instructions for using the e-encyclopedia, which previously were only provided with arrows, but after being corrected, it is displayed per component, namely plant names, sequence of plant names, classification, plant images, morphology and page numbers (Figure 1). According to Nurmasari et al. (2021) instructions for use function to make it easier for readers to understand the components in a medium.



(a) Before Revision

(b) After Revision

Figure 1. Presentation of Instructions for Using E-encyclopedia Media (in Bahasa).

The second indicator, namely the order in which the material is presented, obtained a V value of 0.90 with a valid category. Based on the validator's assessment, the presentation of material in the e-encyclopedia is arranged alphabetically (Figure 2). This is in line with Nurmasari et al. (2021) that one of the characteristics of an encyclopedia is that it is presented in alphabetical order. Writing is presented alphabetically to make searching easier and short on time (Alfajria & Sudjudi, 2015).

The third indicator, namely clarity of the language used and suitability to the target user, obtained a V value of 0.95 in the valid category. Based on the validator's assessment, the language used in the e-encyclopedia is easy to understand for the target users, namely class X high school students and is not complicated (Figure 3). According to Mery et al. (2022) vocabulary that is easy to understand is expected to streamline the learning process. Iskandar et al. (2016) said that in preparing learning media it is necessary to pay attention to the language so that it does not deviate from the specified language rules.



Figure 2. Presentation of Material Presentation Alphabetically (in Bahasa).



Figure 3. Presentation of Language in E-encyclopedia (in Bahasa).

Ease Aspect

The convenience aspect consists of one indicator, namely ease of use of the media, a V value of 1.00 is obtained in the valid category. The assessment from the validator is that this media is easy to use because it is presented in electronic form so it can be used anywhere and anytime. This is in line with Puspitasari (2019) that electronic media is easy to use wherever and whenever and attracts more attention for students. Kundariati et al. (2020) that the use of an electronic encyclopedia (e-encyclopedia) can provide an interesting learning experience for students, where students can learn inside or outside the classroom.

Writing Aspect

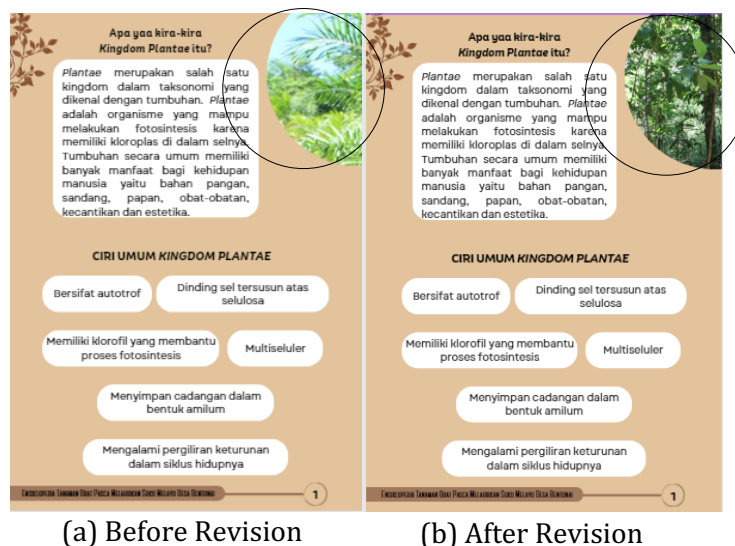
The writing aspect consists of one indicator, namely the suitability of font/writing selection, which obtained a V value of 1.00 with a valid category. The types of fonts used in e-encyclopedia media vary (Figure 4). There are six types of letters used, namely garet for subtitles and content, arimo for content in bubble text, eczar for writing on the cover, canter for e-encyclopedia titles on each page, binate for titles and canva sans for image names and image sources. Based on the validator's assessment, the type of font used is easy to read. In developing media, the choice of letters must be considered so that it is easy to read (Fadli et al., 2017). This is in line with Nuraini & Waluyo (2021) that the use of letters can affect readers' readability.



Figure 4. Presentation of Font Types Used in E-encyclopedia (1. Garet, 2. Arimo, 3. Eczar, 4. Canter, 5. Binate, 6. Canva Sans) (in Bahasa).

Display Aspect

The display aspect consists of 3 indicators. The first indicator, namely the image displayed, supports the clarity of this material, with a V value of 1.00 in the valid category. The validator assesses that the image displayed looks clear. However, there is one image presented that does not match the material (Figure 5). Iskandar et al. (2016) stated that selecting appropriate images aims to increase students' understanding.



(a) Before Revision

(b) After Revision

Figure 5. Presentation of Images on E-encyclopedia (in Bahasa)

The second indicator, namely the use of composition and color combinations for each font and background, obtained a V value of 0.95 in the valid category. In this e-encyclopedia, the font is black with a white background and the background color for the e-encyclopedia media is light brown. Based on the validator's assessment, the composition and combination of font and background colors contrast (Figure 6). Mary et al. (2022) stated that color selection can influence learning media because contrasting colors can attract students' attention and interest.

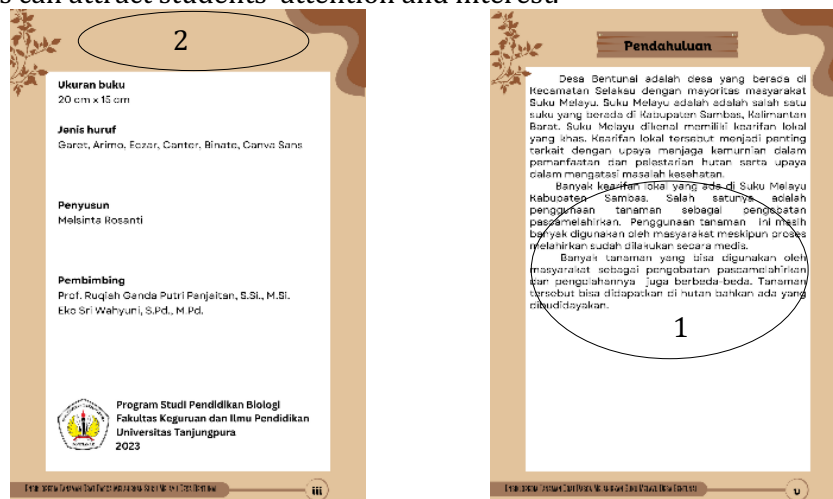
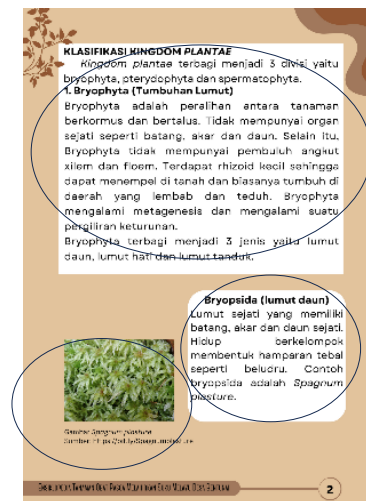


Figure 6. Presentation of the Composition and Color Combination of Font and Background for each Page on the E-encyclopedia (1. Black font on a white background, 2. E-encyclopedia media background color is light brown) (in Bahasa).

The third indicator, namely the placement of text and image layout, obtained a V value of 0.85 in the valid category. Based on the validator's assessment, there was a suggestion that the layout of each text and image was too monotonous, so readers were less interested in reading it (Figure 7). The placement of the layout will influence the attractiveness of students' learning interest (Fadli et al., 2017). According to Suryani et al. (2022) varying layout placement produces an attractive and non-monotonous appearance.



(a) Before Revision



(b) After Revision

Figure 7. Presentation of Text and Image Layout (in Bahasa)

The e-encyclopedia media was validated by five validators to determine its suitability. Analysis of validation results was carried out referring to the ICC which refers to the reliability of Zaki (2017). The reliability of the e-encyclopedia results is presented in Table 4.

Table 4.

Results of ICC Reliability Analysis of E-encyclopedia Media on Kingdom Plantae Class X Submaterial Based on the results of the post-natal medicinal plant inventory of the Malay tribe, Bentunai Village, Selakau District, Sambas Regency, West Kalimantan, Indonesia

	Intraclass Correlation ^a	Confidence Interval 95%		F Test with True Value 0			
		Lower Limit	Upper Limit	Value	df1	df2	Signature
Single action	.147 ^b	-.071	.588	1.859	7	28	.115
Average Size	.462 ^c	-.497	.877	1.859	7	28	.115

Description:

df1 = numerator

df2 = denominator

Based on the results of the validation assessment of the postnatal medicinal plant e-encyclopedia design for the Malay tribe of Bentunai Village, a reliability analysis was carried out using the ICC formula Zaki, (2017). The results of reliability analysis using ICC on e-encyclopedia media obtained an average value of validator agreement of 0.46, so it can be stated that e-encyclopedia media has reliability in the good category (Zaki, 2017). Based on the reliability value, it shows that the e-encyclopedia developed is suitable for use as a learning media. However, the use of this e-encyclopedia cannot be separated from the teacher's direction and guidance. Teachers play a role in integrating media in the learning process, so that learning can be meaningful and learning objectives can be achieved.

CONCLUSION

The assessment of the e-encyclopedia as a result of the inventory of medicinal plants after giving birth to the Malay tribe of Bentunai Village consists of four aspects of assessment, namely aspects of content, writing, ease and appearance of the e-encyclopedia. The results of the e-encyclopedia validator analysis showed that the Aiken validity value in the content aspect was 0.90 in the very high category, the writing aspect was 1.00 in the very high category, the ease aspect was 1.00 in the very high category, and the appearance aspect was 0.93 in the very high category. The average validity of these four aspects is 0.93 in the very high category. The results of the ICC reliability analysis show a reliability value of 0.46 with a good criteria index. The assessment results show that the e-encyclopedia developed from the inventory of postnatal medicinal plants of the Malay tribe in Bentunai Village is valid and therefore suitable for use as a learning medium.

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