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DEVELOPMENT OF AN INVENTORY ENCYCLOPEDIA OF FERN TYPES BASED ON LOCAL POTENTIAL EXPLORATION IN BIANG ROSAN VILLAGE TOWARDS LEARNING INTEREST IN THE MATERIAL OF PTERIDOPHYTA AT SMAN 3 SANGGAU

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ABSTRACT

This research aims to determine the validity, practicality and effectiveness of an encyclopedia inventory of fern types based on local potential in Biang Rosan Hamlet on interest in learning about Pteridophyta material at SMA Negeri 3 Sanggau. The research method used is research and development (Research and Development) which uses the ADDIE research plan with steps, namely; (1) analysis (analyze), (2) planning (design), (3) development (development), (4) implementation (implementation), (5) evaluation (evaluation). The subjects of this research were 6 development subject validators and 30 trial subjects. The instruments used in this research were validation sheets, questionnaires and tests. The research results are; (1) the validity of the encyclopedia inventory of fern types in Biang Rosan Hamlet by media expert validators and material experts obtained a result of 84% with very valid criteria, (2) the practicality of the encyclopedia inventory of fern types in Biang Rosan Hamlet obtained a result of 91% with the criteria very practical, (3) the effectiveness of the fern encyclopedia in Biang Rosan Hamlet was obtained by learning results with an N-gain value of 0.72 with high criteria. Meanwhile, with the results of interest in learning using the interest in learning questionnaire, the results were obtained at 90% with very practical criteria. Based on the research results, the media encyclopedia inventory of types of ferns in Biang Rosan Hamlet is very practical and effective to use.

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Introduction

Sanggau Kapuas is one of the regencies in West Kalimantan Province, has a sub-district, namely Kapuas Sub-district. One of the villages in Kapuas Sub-district is Rambin Village, Biang Rosan Hamlet, one of the potentials in Biang Rosan is the fern flora. The type of fern that is widely found in Biang Rosan Hamlet is the resam fern (Dicranopteris linear).

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Ferns are a group of plants that have quite a large number of species (Ayu, 2020). That some of the world's fern species (4,500 species) are found in the Asian region. Around 1,250-1,500 types of ferns are recorded as growing in Indonesia with 515 of them spread across Java (Atsushi, et al. 2018). Ferns (Pteridophyta) are classified as cormus plants whose bodies are real, namely the differences can be seen which are divided into three parts, namely leaves (folium), stems (caulis) and roots (radix) (Mentari, 2019).

Based on the results of observations at SMA Negeri 3 Sanggau on the Pteridophyta material, it was found that students had difficulty understanding the material because the classification of ferns was sometimes complicated and confusing, this was due to the large number of similar species but had small differences in morphology (Atsushi, et al. 2018). In addition, the main learning resources from teachers are still lacking. The main learning resources used by teachers are textbooks

Based on the student needs questionnaire distributed to grade X students at SMA Negeri 3, the preferred media are textbooks, modules, student worksheets and encyclopedias with a percentage of textbooks 30%, modules 19%, worksheets 10% and encyclopedias 41%. So the learning media needed and deemed suitable and can be developed to increase students' interest in learning Pteridophyta material is the Encyclopedia.

Through the media in the form of the Fern Inventory Encyclopedia provided, it can make it easier for students to identify the specimens being observed. The Fern Inventory Encyclopedia media that will be developed is the result of exploration in Biang Rosan Hamlet. The encyclopedia contains information related to concrete and illustrative facts, so the encyclopedia is very suitable for use as teaching materials in biology.

The purpose of the exploration learning model is to explore, build, train, and familiarize students' personal, social, rational thinking, metacognition, and cognitive abilities in the biology learning process. The exploration model allows researchers to detect the presence of diverse species in an ecosystem. By exploring various parts of the forest, researchers can find species that may not be detected through other research methods that are more passive or limited to certain areas. Through exploration, researchers can directly observe the natural habitat and living conditions of the species. This is very important to understand the ecological factors that influence the distribution and survival of species in the forest and exploration allows for the collection of more comprehensive data on species, including morphological characteristics, behavior, and ecological interactions with other species. For the exploration area, 2 hectares are needed to explore the area where the species to be studied live using the transect method. The transect method is one of the sampling techniques often used in ecological and conservation biology research, including for plant studies. This method is effective for assessing the distribution and diversity of species in relatively large or long areas. (Safitri, et al, 2021).

The low quality of learning is partly caused by the use of learning resources that are not optimal (Mulyasa, 2020). According to (Ramansyah, 2020) the environment as a learning resource facilitates the learning process, has an attraction, and motivates students to be more active, interactive, and critical in solving problem formulations. Students must be introduced to the potential of their surroundings so that they are accustomed to using adaptive thinking

and behavior systems (Nugroho, 2024. Efforts to utilize the environment in learning are by making it a learning resource.

Based on the background description above, the researcher will conduct a research on "Development of an Encyclopedia of Fern Type Inventory Based on Exploration of Local Potential in Biang Rosan Hamlet on Learning Interest in Pteridophyta Material at SMA Negeri 3 Sanggau" as a learning media that can help students in the learning process.

Method

The research conducted is ADDIE model development research. The ADDIE development model consists of 5 steps, namely Analysis, Design, Development, Implementation, Evaluation (Tegeh et al., 2014). The subjects of this research development are a validator expert team consisting of 6 validators, namely; 2 material experts and 1 media expert from the Biology Education study program, and teachers from SMAN 3 Sanggau, namely 2 media experts and 1 material expert. While the subjects of the test questions in this study used a small class group, namely class XE consisting of 30 students at SMAN 3 Sanggau. The techniques used in this study are direct and indirect communication techniques, measurement techniques and documentation techniques. The instruments used in this study were expert validation sheets, student response questionnaires, and tests where the test consisted of pretest and posttest questions.

The main problem in this study is the validity and effectiveness of the Development of the Fern Type Inventory Encyclopedia Based on Local Potential Exploration in Biang Rosan Hamlet on Learning Interest in Pteridophyta Material at SMAN 3 Sanggau. The validity of the Fern Type Inventory Encyclopedia Based on Local Potential Exploration is obtained from the validator's assessment in the form of qualitative and quantitative data. The qualitative data can be in the form of validation sheets and reviews from experts or validators. The formula for calculating the percentage of validity of the Encyclopedia in this study is as follows:

$$\text{Percentage Index \% } = \text{X } 100\% \frac{Total\ skor\ yang\ diperoleh}{Skor\ tertinggi\ (angka)}$$

As for seeing the practicality criteria of the Encyclopedia of Fern Type Inventory Based on Exploration of Local Potential in Biang Rosan Hamlet Regarding Learning Interest in Pteridophyta Material at SMAN 3 Sanggau, it can be seen in table 1.1.

Table 1. Product Validity Assessment Guidelines

Percentage %	Validity Criteria	Information
81 ≤ score ≤ 100%	Very Valid	No Revision
61 ≤ score ≤ 80%	Valid	No Revision
41 ≤ score ≤ 60%	Quite Valid	Partial Revision
21 ≤ score ≤ 40%	Less Valid	Revision
4 ≤ score ≤ 20%	Invalid	Revision

(Belianus et al., 2021)

The Encyclopedia of Fern Type Inventory Based on Exploration of Local Potential in Biang Rosan Hamlet is said to be valid if the percentage of the index number 61 ≤ score ≤ 80%, namely from the results of the material validation sheet and media validation sheet reaching the valid criteria with the statement not revised. The effectiveness of the Encyclopedia of Fern Type Inventory Based on Exploration of Local Potential in Biang Rosan Hamlet which was developed was obtained by using test result data in the form of pretest and posttest which were done by students. The formula for calculating the percentage of module effectiveness in this study is as follows:

$$N\text{-}gain(\text{g}) = \frac{Spost - Spre}{Smaks - Spre}$$

Information:
N-gain(g) = Normalized
Spontaneously = Score*Post Test*(In average)
Smaks = Maximum score
Spread = Score*Pre Test*(On average)

So, to see the effectiveness criteria of the Encyclopedia of Fern Type Inventory Based on Local Potential Exploration in Biang Rosan Hamlet, it can be seen in table 2.

Table 2. N-gain(g) Classification

The magnitude of N-gain(g)	Classification
g > 0.7	Tall
0.3 ≤ g ≤ 0.7	Currently
g < 0.3	Low

(Donna et al., 2021)

The Encyclopedia of Fern Type Inventory Based on Exploration of Local Potential in Biang Rosan Hamlet is said to be effective if the N-gain(g) is at 0.3 ≤ g ≤ 0.7, namely the results of the pretest and posttest reach a moderate classification.

Results

Encyclopedia Development Results

Development of Fern Type Inventory Encyclopedia Based on Exploration of Local Potential in Biang Rosan Hamlet on Learning Interest in Pteridophyta Material at SMAN 3 Sanggau. This Fern Type Inventory Encyclopedia consists of a title, education office logo, campus logo and school logo, class, independent curriculum, cover image consisting of fern photos, author identity, encyclopedia identity, table of contents, list of fern inventory results, instructions for use, CP, ATP and TP. The contents of the Encyclopedia consist of fern material, fern inventory results from Biang Rosan Hamlet consisting of habitat descriptions, benefits, brief descriptions of identified ferns, classifications, image captions and local names of ferns. The cover consists of a table of contents, glossary, index, author biodata and a

description of Biang Rosan Hamlet.

Validity of the Encyclopedia

The validity of the Encyclopedia in this study uses the results of the material expert validation sheet and the results of the expert validation sheet. The following are the results of the material expert validation analysis.

Table 3. Average Assessment of Material Experts

No	Validators	Validator Name	Percentage %	Criteria
1.	Validator I	Tesa Manisa, M.Pd	71.66%	Valid
2.	Validator II	Prof. Dr. Novi Nurmayanti, M.Pd	77.08%	Valid
3.	Validator III	Prof. Dr. Yayah Rohayati, S.Pd	66.6%	Valid
		Average	71.80%	Valid

From the results of the validation of the material obtained, the average value from the material expert was 71.80% with valid criteria. So that the Encyclopedia of Fern Type Inventory Based on Local Potential Exploration in Biang Rosan Hamlet is valid for use as a learning medium. The results of the media expert validation analysis are as follows.

Table 4. Average Media Expert Assessment

No	Validators	NameValidators	Percentage%	Criteria
1.	ValidatorsI	Nawawi, S.PD S., M.Pd	90.76%	Very Valid
2.	ValidatorsII	Nida Rahmania, S.Pd	98.46%	Very Valid
3.	ValidatorsIII	Peronika Sitanggang, S.Pd	97.69%	Very Valid
		Average	95.64%	Very Valid

From the results of the media validation obtained, it was found that average value from media experts of 95.64% with very valid criteria. So that the Encyclopedia of Fern Type Inventory Based on Local Potential Exploration in Biang Rosan Hamlet is categorized as very valid so that it can be used as a learning media that is ready to be tested on students.

So the level of validity of the assessment results of the expert validator team, namely material experts and media experts, on the Encyclopedia of Inventory of Fern Types Based on Exploration of Local Potential in Biang Rosan Hamlet

Table 5. Recapitulation of Results from Material Experts and Media Experts

No	Validators	Percentage%	Criteria
1.	Subject Matter Expert	71.80%	Valid
2.	Media Expert	95.64%	VeryValid
	Average	83.82%	VeryValid

Based on the table above, then the recapitulation of the assessments of material experts and media experts of 83.82% with very valid criteria so that the Encyclopedia of Fern Type

Inventory Based on Local Potential Exploration in Biang Rosan Hamlet can be used in schools where the research was carried out.

The results obtained are in line with (Rani, 2023) Development of an Encyclopedia of Fish Species Inventory in Sungai Kakap Village as a Learning Medium for Vertebrate Material at SMAN 1 Sungai Kakap with a result of 84.35% with very valid criteria. The Encyclopedia of Fern Species Inventory Based on Local Potential Exploration that was developed has several advantages from researchers, including pictures of ferns which are native ferns from Biang Rosan Hamlet and the results of researcher identification and design that make the Encyclopedia of Fern Species Inventory more interesting so that students do not feel bored in learning and this can help students in increasing their interest in learning with learning media in the form of the Encyclopedia that was developed. This is also reinforced by previous research conducted by (Ayu, 2020) and this is reinforced by research on the Development of Fern Encyclopedia as a Learning Source for Biodiversity with a validity result of 83% with very valid criteria and research (Nurul Fatimah, 2019) Development of Ornamental Plant Encyclopedia at Pasty (Yogyakarta Animal and Ornamental Plant Market) on the Main Material of Biodiversity for Grade X SMA/MA Students with a validity result of 83.98% with very valid criteria.

The effectiveness of the Encyclopedia in this study uses the posttest results. The following are the results of the analysis of the effectiveness of the module reviewed from the results of the student posttest, which can be seen in table 6

Table 6. N-gain results

Information	Pretest	Posttest	Average (mean)	Value	Average N-gain	Criteria
Number of Students	30	40	Pretest	Posttest		
The highest score	40	100	26.9	80.6	0.72	Tall

Based on the results obtained from the students' pretest and posttest questions in table 1.7 above, an N-gain of 0.72 was obtained with high information, so it can be said to be effective. This is supported by research (Rani, 2023) Development of an Encyclopedia of Fish Species Inventory in Sungai Kakap Village as a Learning Medium for Vertebrate Material at SMAN 1 Sungai Kakap with an average student result of 78 with a percentage of 78.78% with very effective criteria.

Meanwhile, according to (Nurul Fatimah 2019) Development of Ornamental Plant Encyclopedia in Pasty (Yogyakarta Animal and Ornamental Plant Market) on the Main Material of Biodiversity for Grade X SMA/MA Students with an effectiveness result of 80.00% with very effective criteria. This is also reinforced by previous research conducted by (Nasruddin et al., 2022) Encyclopedia media is effective for use in the learning process, because it can improve student learning outcomes. Research (Pratiwi 2014) states that encyclopedia media is effective for use in the learning process and improves student learning outcomes.

Research (Laili 2018), states that encyclopedia media improves students' communication skills. Thus, based on data analysis on students' N-Gain values and previous

relevant research, the encyclopedia of fern inventory in Biang Rosan Hamlet as a learning medium is suitable for use as a learning medium because it is practical and effective and can help students in learning Pteridophyta material with learning media from the surrounding nature.

According to ((2015)Encyclopedias have advantages compared to other media, namely: encyclopedias present basic and complete information about a problem in the field of science, encyclopedias provide visualizations that can attract students' interest in the learning process, encyclopedias provide images that can help explain the descriptions or explanations given.

Conclusion

Based on the results obtained from the research conducted on the Development of an Encyclopedia of Fern Inventory Based on Exploration of Local Potential in Biang Rosan Hamlet on Learning Interest in Pteridophyta Material at SMAN 3 Sanggau, it is stated that it is very valid and effective so that it can be used in learning. So it can be concluded that:

1. The validity of the Encyclopedia of Fern Type Inventory Based on Local Potential Exploration in Biang Rosan Hamlet on Learning Interest in Pteridophyta Material at SMAN 3 Sanggau obtained a result of 83.82% with very valid criteria.
2. The Effectiveness of the Encyclopedia of Fern Type Inventory Based on Local Potential Exploration in Biang Rosan Hamlet on Learning Interest in Pteridophyta Material at SMAN 3 Sanggau obtained an N-Gain result of 0.72 with a high increase so that it can be stated as very effective.

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