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Student Perceptions of Electronic Student Activity Sheets (E-LKM) on Ethnoscience-Integrated Pteridophyta Subject Mater

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Abstract: Higher education is currently growing with the use of technology as one of the important aspects in the learning process. Botany courses, especially on Pteridophyta material, are an integral part of the biology education curriculum in many universities. The use of Electronic Student Activity Sheets integrated with the Ethnoscience approach can be a significant innovation in improving the quality of low-level botany learning. This study aims to explore students' perceptions of the use of E-LKM. The methodology used was descriptive quantitative. The instrument used is a questionnaire. The respondents in this study were students of the Biology Education program with a total of 42 people. The sampling technique is convenience sampling. Based on the results of the questionnaire, several main findings were obtained: (1) The interest indicator obtained an average of 4.32 or 86.38% in the very high category. (2) The material indicator has an average of 4.26 with 85.24% in the very high category. (3) The language indicator obtained an average of 4.26 with 85.24% in the very high category. This E-LKM succeeded in improving the quality and motivation of students' learning. Students' positive perceptions of its use provide evidence that innovation in learning technology can improve the quality of learning.

Keywords: Perception, e-LKM, Ethnoscience

1. INTRODUCTION

Higher education is a platform to form a smart and competent young generation in various fields of science. One of the important elements in the development of science is the utilization of information and communication technology (ICT) to improve the quality of learning. With the times, education in higher education must adapt to these changes, one of which is through the use of electronic-based learning media as a tool in the learning process.

Innovation and creativity in information technology-based learning must be initiated by educators so that the learning process remains relevant to the times. The use of learning tools integrated with information technology is not only interesting but also able to motivate students (Irwandani and Juariyah, 2016; Kasim and Wahyuni, 2018; Sari, 2019).

in electronic form or E-LKM can be a new alternative that can be used by lecturers to make the learning process more effective and efficient both online and offline. E-LKM is an electronic sheet that contains material, summaries, and tasks that refer to certain competencies (Prastowo, 2013). Electronic learning media helps students communicate easily and can be accessed anytime and anywhere with the internet (Yasdi, 2012).

Pteridophyta material is an integral part of the Low Level Botany course in the Biology Education curriculum in higher education. Pteridophyta is a group of vascular plants that often receive less attention in botany learning. One aspect that needs to be considered in learning botany is the application of the Ethnoscience approach, which integrates traditional and scientific knowledge to understand various aspects of plants, including Pteridophyta.

Ethnoscience is the transformation between indigenous science and scientific science (Rahayu, 2015). The ethnoscience approach combines indigenous knowledge with scientific knowledge (Novitasari, 2017). Learning with an ethnoscience approach is recognized as a fundamental part of education because it does not separate cultural science and local wisdom of the community.

Researchers have validated the design of the E-LKM of the Botany of Low Plants Course, especially on Pteridophyta material integrated with Ethnoscience. This E-LKM will be used by 3rd semester students in the Biology Education Study Program, Faculty of Education and Vocational, Lancang Kuning University. Before it is used, it is important to know students' perceptions of the E-LKM that has been made. The role of ethnoscience integrated E-LKM in the context of botany learning has not been widely discussed, especially in the Low Level Botany course. Therefore, it is necessary to understand student perceptions of the ethnoscience-integrated electronic student activity sheet (EKM) on Pteridophyta material to measure the effectiveness of this EKM in improving student understanding of Pteridophyta material and the ethnoscience approach. The results of this study are expected to contribute to the development of E-LKM on other materials so that science learning in the classroom is not only informative but also practical and useful in real life.

2. METHODS

The research method This research is a quantitative descriptive study that aims to determine student perceptions of the Electronic Student Activity Sheet (LKM) on ethnoscience integrated Pteridophyta material. Descriptive research is used to explain facts, symptoms, and events systematically. Data were collected through questionnaires distributed to students. After the data is obtained, the results are presented descriptively and connected with relevant theories.

The research sample was 42 students who took low-level botany courses in the Biology Education Study Program, Faculty of Teacher Training and Education, Lancang Kuning University in the odd semester of 2023/2024. This research was conducted from February 2023 to May 2024 at the Faculty of Teacher Training and Education, Lancang Kuning University. This study uses a questionnaire with a Likert scale used to measure student perceptions of E-LKM. Data was collected through Google Form link, then analyzed using descriptive data analysis techniques. The data was calculated with a percentage process and then interpreted through the following assessment ;

Interval	Category
84% ≤ Score ≤ 100%	Very Good
68% ≤ Score ≤ 83%	Good
52% ≤ Score ≤ 67%	Simply Good
36% ≤ Score ≤ 51%	Fairly Good
20% ≤ Score ≤ 35%	Not Good

3. FINDINGS AND DISCUSSION

In this chapter, we will discuss the results of research on student perceptions of the use of Electronic Student Activity Sheets (E-LKM) that integrate ethnoscience on Pteridophyta material. This research was preceded by development research in designing the E-LKM used. Below is presented the E-LKM Design Picture which has previously been tested for validity and practicality.

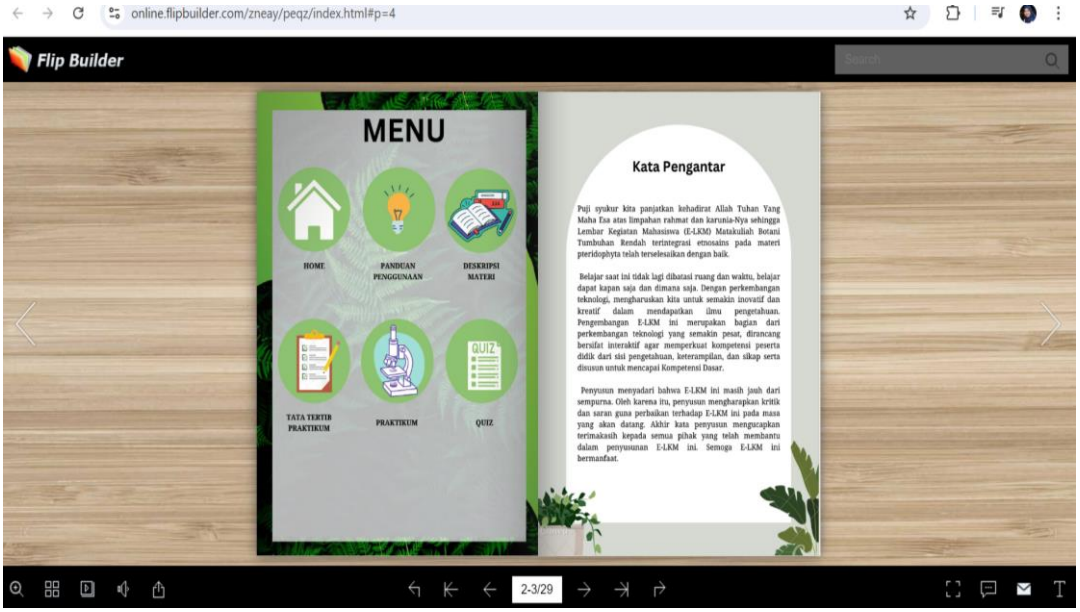

Figure 1. Ethnoscience-Integrated Pteridophyta E-Learning Design
(https://online.flipbuilder.com/zneay/peqz/index.html#p=4)

This study involved 42 respondents who were students enrolled in a lower botany course, which included Pteridophyta. Data were collected through a questionnaire designed to evaluate the extent to which students respond to and utilize the E-LKM in their learning. The results of students' perceptions were seen from 11 questionnaire statements developed from 3 indicators, namely interest, material and language used.

Table 2. Results of Student Perception Questionnaires Based on Interested Indicators

No	Frekuensi (F) dan persentase (%)										N	Skor	%
	SS		S		CS		TS		STS				
	F	%	F	%	F	%	F	%	F	%			
1	17	(40,5)	24	(57,1)	1	(2,4)	-	-	-	-		4,33	86,67
2	19	(45,2)	22	(52,4)	1	(2,4)	-	-	-	-		4,38	87,62
3	20	(47,6)	21	(50)	1	(2,4)	-	-	-	-	**42**	4,40	88,10
4	17	(40,5)	22	(52,4)	3	(7,11)	-	-	-	-		4,19	83,81
5	21	(50)	18	(42,9)	3	(7,11)	-	-	-	-		4,29	85,71
Rerata Skor												**4,32**	**86,38**

Based on the questionnaire results presented in student perceptions of the Electronic Student Activity Sheet (E-LKM) that integrates Pteridophyta material with ethnoscience show very positive results on the attraction indicator. In the first attraction indicator, the display of E-LKM on Pteridophyta material obtained a score of 4.33 or 86.67%, indicating that the design and presentation of E-LKM attracted students' attention. This is in line with research by Santoso & Yuliana (2022) which revealed that attractive designs in digital learning materials can significantly increase student engagement. Interactive learning media can reduce boredom and improve the learning experience, as reported by Hidayat & Rosyid (2021).

The statement that E-LKM supports students to master low plant botany lessons, especially Pteridophyta material, obtained a score of 4.19 or 83.81%. This indicates that the E-LKM is effective in supporting the achievement of learning objectives, in line with research by Nurhadi & Setiawan (2023) which emphasizes the role of learning media in improving understanding of learning materials. Finally, the statement regarding the connection of the material with ethnoscience which makes the material easier to understand obtained a score of 4.29 or 85.71%, this confirms that the integration of cultural context in learning materials can strengthen understanding, as expressed by Lestari & Supriadi (2022).

Overall, the average score on the attractiveness indicator of the E-LKM covering ethnoscience-integrated Pteridophyta material reached 4.32 or 86.38%, which is in the very high category. This finding shows that students have a very positive perception of the E-LKM and assess that the integration of ethnoscience in low plant botany material is very useful in increasing their interest and understanding. This is consistent with recent findings that underline the importance of contextual elements and interesting design in learning materials (Kusumawati & Nugroho, 2022).

Table 2. Results of Student Perception Questionnaires Based on Subject Matter Indicators

No	Frekuensi (F) dan persentase (%)										N	Skor	%
	SS		S		CS		TS		STS				
	F	%	F	%	F	%	F	%	F	%			
1	18	(42,9)	23	(58,8)	1	(2,4)	-	-	-	-		4,38	87,14
2	16	(38,1)	23	(58,8)	3	(7,11)	-	-	-	-	**42**	4,17	83,33
3	17	(40,5)	23	(58,8)	2	(4,8)	-	-	-	-		4,26	85,24
Rerata Skor												**4,26**	**85,24**

Student perceptions of the second indicator, namely material, show very positive results. In the first statement, regarding the relationship of the Pteridophyta E-LKM material with daily life, an average score of 4.38 or 87.14% was obtained. This shows that students feel that the material presented is relevant to the context of their daily lives. This result is in line with research by Pratama & Widodo (2022) which shows that materials that link learning with real contexts tend to be more easily accepted and understood by students. For the second statement, which measures the extent to which the material presented in the E-LKM is easily understood by students, an average score of 4.17 or 83.33% was obtained. This indicates that students feel that the material is presented in a way that is quite clear and easy to understand. This finding is consistent with the results of research by Santosa & Fadli (2021), which emphasizes the importance of delivering material in a clear and

structured manner to facilitate student understanding. The third statement, which states that the E-LKM supports students in understanding ethnoscience-laden Pteridophyta material, obtained an average score of 4.26 or 85.24%. This shows that students feel that the E-LKM is effective in helping them understand the Pteridophyta material through ethnoscience integration. This result supports the findings by Hidayati & Arifin (2023) who mentioned that the integration of ethnoscience in learning materials can increase the understanding and relevance of the material for students.

Overall, the average score for the indicator of student perception of the material presented in the ethnoscience-loaded Pteridophyta E-LKM is 4.26 or 85.24%, which is in the very high category. This indicates that students have a very positive perception of the E-LKM material, assessing that the material is not only relevant and easy to understand, but also effective in supporting their understanding. This finding is in line with recent research which shows that the use of learning materials that are relevant and integrated with cultural contexts can strengthen students' understanding (Lestari & Supriadi, 2022).

Table 3. Results of Student Perception Questionnaires Based on Language Indicators

No	Frekuensi (F) dan persentase (%)										N	Skor	%
	SS		S		CS		TS		STS				
	F	%	F	%	F	%	F	%	F	%			
1	17	(40,5)	21	(50)	4	(9,5)	-	-	-	-		4,12	82,38
2	17	(40,5)	24	(57,1)	1	(2,4)	-	-	-	-	**42**	4,33	86,67
3	21	(50)	19	(45,2)	1	(2,4)	-	-	-	-		4,33	86,67
Rerata Skor												**4,26**	**85,24**

There are three main statements measured related to the language indicator. First, students assessed that the sentences and paragraphs in the E-LKM were clearly structured and easy to understand, with an average score of 4.12 or 82.38%. This result shows that students feel that the E-LKM has succeeded in presenting the material with a clear and communicative language structure, which is important for effective understanding (Pratama, 2021; Sari, 2022). The second statement rated the language applied in the E-LKM as simple and easy to understand, with a score of 4.33 or 86.57%. This indicates that students appreciate the use of language that is not complicated and appropriate to their level of understanding, which is in line with the finding that simple language can improve learning effectiveness (Wahyuni, 2023). The third statement assesses that the font chosen in presenting the material is simple and easy to read, with a score of 4.33 or 86.57%. This score indicates that the selection of typography also contributes to the ease of reading and accessibility of the material, which is in accordance with research showing that good visual design can support the learning process (Putri, 2020).

Overall, the average score of student perceptions based on language indicators is 4.26 or 85.24%, with a very good category. This shows that students have a very positive perception of the language aspects in the E-LKM, which includes clarity, simplicity, and readability of the material. This excellent category indicates that the E-LKM has been well designed in terms of language, supporting the achievement of effective learning objectives (Mulyadi, 2022; Ramadhan, 2023).

The results of the student perception questionnaire on the use of Electronic Student Activity Sheets (E-LKM) integrating ethnoscience on Pteridophyta material with 3 questionnaire indicators, it can be seen that the average score related to the focus on the interest indicator obtained 4.32 with 86.38% in the very high category. The average score of the overall questionnaire statement for the material indicator is 4.26 or 85.24% in the very high category. The average score of student perceptions based on language indicators is 4.26 or 85.24% in the very good category. Can be seen in Figure 2 below

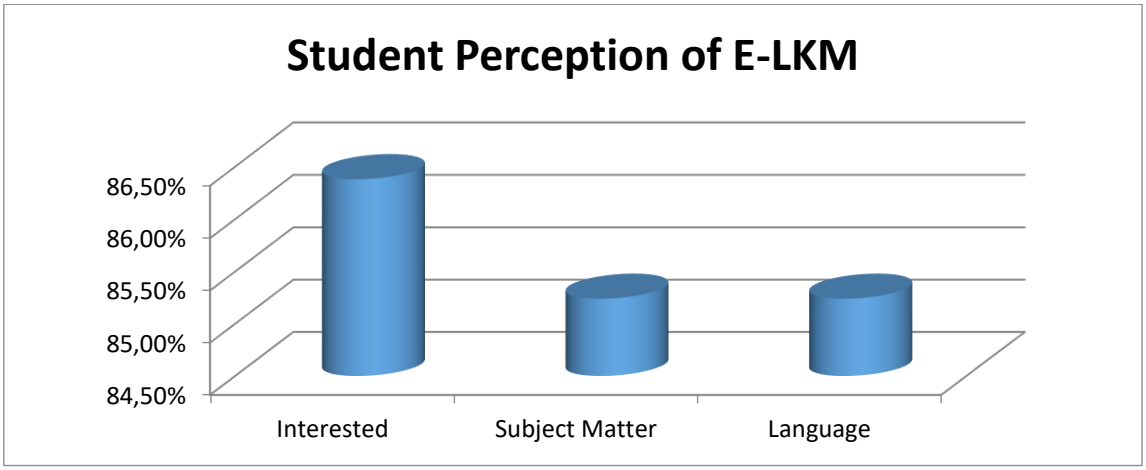

Figure 3. Student Perceptions Based on Indicators

The integration of learning materials with ethnoscience is crucial as it links scientific knowledge with local cultural contexts, increasing relevance and student engagement (McKinley, 2007). This approach enriches the curriculum by valuing traditional knowledge, strengthening students' critical thinking skills through the comparison of different scientific and local perspectives (Dove, 2006). This not only increases student motivation but also ensures learning materials reflect cultural diversity. Research shows that the incorporation of ethnoscience in education helps students understand science in a more contextualized way while giving credit to local knowledge that is often overlooked (Sillitoe, 2006).

4. CONCLUSION

Based on the results of the student perception questionnaire on the use of Electronic Student Activity Sheets (E-LKM) that integrate ethnoscience on Pteridophyta material, the following conclusions can be drawn: 1). The average score for the attraction indicator is 4.32 with 86.38% of respondents in the very high category. This shows that this very high level of interest reflects that the E-LKM succeeded in attracting students' interest in understanding the material in a more contextual and relevant way. 2) The overall mean score for the material indicator is 4.26 with 85.24% in the very high category. This indicates that students considered the Pteridophyta material integrated with ethnoscience to be relevant and useful, thus facilitating their understanding of the topic. 3). The mean score for the language indicator was also 4.26 with 85.24% of respondents in the very good category. This indicates that students feel that the language used in the E-LKM is clear and appropriate so that it supports the effectiveness of the material presented and enhances the learning experience of students.

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