Perception of Prospective Physics Teachers on Learning Assisted by Ethnovlog Integrated with Local Culture

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Abstract. This research aims to identify and analyze the perceptions of prospective physics teachers regarding the use of ethnologs in physics learning that is integrated with local culture. The research method used was descriptive qualitative, with research subjects consisting of prospective physics teachers in the Medan State University. From the research results, facts were obtained regarding the perception of prospective Physics teacher students regarding knowledge about ethnoscience and ethnologs, namely, 62% knew about ethnoscience and ethnologs, 35% did not know about ethnoscience and ethnologs, while the rest knew some. Apart from that, from the research conducted, 94% of respondents felt the need to obtain information and training related to ethnoscience and ethnologs in learning. This research makes an important contribution to the development of innovative and contextual learning models, as well as providing insight for educators and curriculum developers to better integrate local cultural elements in the learning process.

Keywords: prospective physics teachers, ethnovlog, local culture, physics learning.

ICIESC 2024, September 17, Medan, Indonesia

DOI 10.4108/eai.17-9-2024.2353065

1 Introduction

In this digital era, the world of education is faced with various challenges, one of which is how to increase students' interest and motivation to learn. One solution that can be used is to utilize information and communication technology (ICT) in the learning process [1]. One form of innovative ICT utilization is by using ethnologist-based learning media [2]. Ethnovlog is a video blog that contains content about local wisdom. Local wisdom is knowledge, values, and traditions that are inherited from generation to generation by a society [3][4]. Etnovlog can be an interesting and effective learning medium because they can connect learning materials with the real life of students. This is in line with the current conditions in the province of North Sumatra where each city district has a variety of culture and local content and tends to be much different from one region to another [5] including in terms of language, customs, art, geography and also the social life of the community.

In addition, ethnology-based learning media is an innovation that combines video blogs with local wisdom [6][7]. This media has the potential to improve student learning outcomes by increasing interest and motivation in learning, helping understanding the material, and developing various skills. The study discusses the expectations of students' perception of learning using ethnologist-based learning media, with an emphasis on cognitive, affective, and psychomotor aspects. One strategy that can be used is to utilize the right learning media[8].

Ethnologist-based learning media is a type of learning media that has the potential to improve student learning outcomes [9][10]. Cognitive learning outcomes are related to students' ability to understand and remember information. By using ethnologist-based learning media, it is hoped that students can understand the learning material better because the material is presented in an interesting and easy-to-understand way. Furthermore, students are able to remember information more easily because the material is associated with local wisdom that is familiar to students [11]. And what is quite important is to improve critical and creative thinking skills because students are encouraged to analyze and evaluate the information [12][13]presented in etnovlog.

In the midst of the onslaught of modernization, Indonesia's local wisdom has found a new breath through ethnologist-based learning media. This media is like a bridge that connects the past with the future, delivering ancestral knowledge to the next generation in an innovative and interesting way[14]. Although it is classified as a new innovation, etnovlog have shown their potential to color the world of Indonesia's education. In various corners of the archipelago, etnovlog are present as a refreshing learning oasis, arousing students' interest and motivation in learning. However, the pace of development of etnovlog as a learning medium is not spared from obstacles. Teachers' lack of knowledge and understanding of etnovlog is one of the main stumbling blocks. Accompanied by limited access to the internet and technology in some regions, etnovlog still do not reach all corners of the country. The government and universities are also so intense with various programs that are implemented that collaborate between science activities with activities based on culture and local wisdom [15][16][17] including the Independent Campus Program with the archipelago module, in addition to exchange activities between students and students throughout the Republic of Indonesia which makes it a vehicle for student learning experiences directly to regions in the archipelago to more deeply into the plurality and various cultural diversity that exists in Indonesia[18][19][20][21][22]. In addition,

support in the development and utilization of etnovlog for students on campus is very crucial to maximize their potential. With the synergy of various parties, etnovlog can transform into a powerful educational tool, leading Indonesia's young generation to a glorious future.

Several examples of the application of etnovlog in Indonesia have shown promising results such as those in Sumatra about pandan processing that is integrated into science learning by measuring the flexibility and strength of pandan woven handicraft products with variations in treatment on the basic ingredients of pandan woven handicrafts [5]. In Yogyakarta, Javanese cultural etnovlog have become an effective learning medium, introducing ancestral traditions and customs to the next generation. In Bali, etnovlog of traditional games awaken students' love for local culture. In Papua, etnovlog of traditional medicinal plants open up insights into natural wealth and local wisdom. Etnovlog are not only a learning medium, but also a tool for cultural preservation[19]. Through etnovlog, the younger generation can get to know and understand the noble values of their ancestors, strengthen the nation's identity, and maintain cultural heritage so that it is sustainable.

The journey of etnovlog as a learning medium in Indonesia is still long and still needs to be developed to be able to develop ethnologist learning media that is integrated with local culture and needs to understand how the perception of prospective teacher students about the use of teaching media [23] so that later further treatment can be carried out so that the strategies implemented can be better [24][25][26]. Challenges and obstacles in the development of local culture-based teaching media still stretch with various challenges in the current educational conditions, etnovlog can be a lantern that illuminates Indonesia's educational path, ushering the younger generation towards a glorious future, based on local wisdom and ancestral knowledge.

2 Method

This study uses a qualitative descriptive research method with the aim of describing and analyzing the perception of prospective physics teachers towards ethnologist-assisted learning that is integrated with local culture. Qualitative descriptive research was chosen because this method allows the researcher to deeply understand the views, experiences, and perceptions of the research subjects[27]. The subject of this study is 34 prospective physics teachers who are studying in the Physics Education study program at Medan State University. Subjects were selected by purposive sampling with criteria, prospective teachers who have attended lectures using etnovlog and prospective teachers who have diverse local cultural backgrounds[29].
The object of this research is the perception of prospective physics teachers towards the use of etnovlog in physics learning that is integrated with local culture. The instrument used in the process of conducting research on prospective physics teachers[30][31] is an In-Depth Interview that is used to explore the perceptions, views, and experiences of prospective physics teachers towards learning with etnovlog. Questionnaire Contains closed and open questions designed to obtain quantitative and qualitative data regarding the perception of prospective physics teachers. In addition, observations were also carried out during the learning process to see firsthand the interaction of prospective teachers with etnovlog and their responses to the content presented. This stage involves a series of structured activities to obtain relevant and accurate information to answer research questions. The data collection process generally begins with careful preparation and continues to the stage of careful data processing.

2.1 Instrument Preparation

Before going into the field, researchers must first prepare measuring tools or instruments that will be used to collect data. These instruments can be questionnaires, interview guidelines, observation sheets, or other measuring tools [32][33] that correspond to the research variables. The process of making this instrument involves several important steps, such as formulating the question items, the question items must be arranged clearly, concisely, and easily understood by the respondents. To determine the measurement scale, the researcher needs to choose a measurement scale that is in accordance with the type of data to be obtained (nominal, ordinal, interval, or ratio). Determining the type of instrument, The choice of instrument will depend on the purpose of the research and the characteristics of the population. Determine the number of question items, The number of question items must be enough to measure the research variables comprehensively, but not too many so that respondents feel bored.

2.2 Instrument Testing

After the instrument is completed, the next step is to conduct a trial. The trial aims to identify the weaknesses and shortcomings of the instrument before it is widely used.

2.3 Implementation of Data Collection

Once the instrument is declared valid and reliable, researchers can start collecting data [33]. This stage involves direct interaction with respondents or other data sources. Some things that need to be considered in the implementation of data collection are, Researchers need to determine a representative sample of the population being studied. Data collection techniques can be in the form of interviews, questionnaires, observations, or document studies. Researchers need to create a comfortable and conducive atmosphere for respondents to provide honest and complete answers.

2.4 Data Processing

The data that has been collected is then processed to produce meaningful information. The data processing process includes several steps, namely: checking the completeness and consistency of the data[34], converting qualitative data into quantitative data if needed, compiling data in the form of tables or matrices, analyzing data using statistical methods that are in accordance with the research design. The data collection procedure in this study includes several stages As seen in the flow chart below:

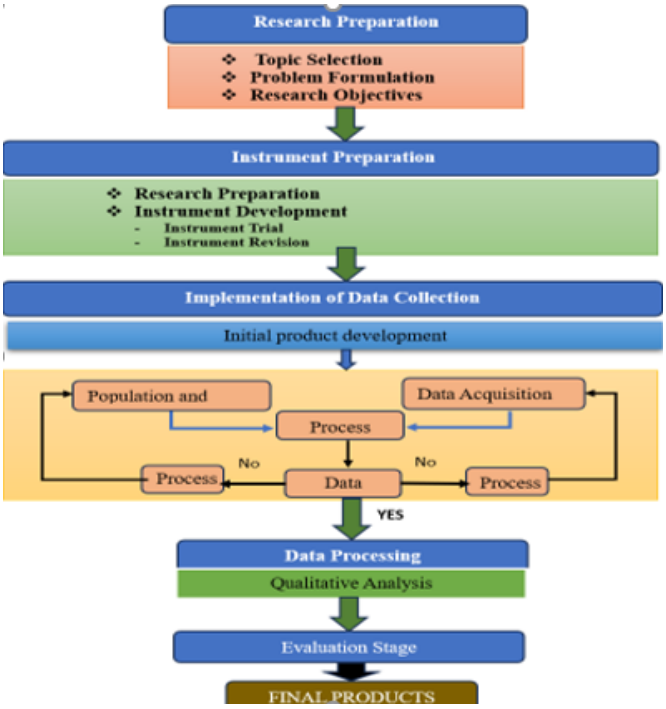

Fig 1. Research Procedure

3 Results and Discussion

This study involved 34 respondents who were prospective physics teachers at Medan State University. The data collected showed variations in respondents' understanding of ethnoscience and ethnologist concepts. The following are the results of the analysis of the data obtained:

Table 1. Respondents' Understanding of Ethnoscience and Ethnovlog

NO	Understanding Ethno Science	Data Percentage
1	Knowing About Ethnoscience and Etnovlog	62%
2	Knowing About Ethnoscience but Etnovlog Are Not	3%
3	Not Knowing About Ethnoscience but Etnovlog Knowing	0%
4	Not Knowing About Ethnoscience and Etnovlog	35%
	Sum	**100 %**

From the results of the research contained in the table above, to find out the understanding of prospective students of Physics teachers, as many as 62% or 21 out of 34 respondents stated that they knew both the concepts of ethnoscience and etnovlog. This shows that the majority of prospective physics teachers have a good understanding of how ethnoscience and etnovlog can be integrated in physics learning. And this implies that the high level of understanding of these two concepts shows a good readiness among prospective physics teachers to implement ethnology-based learning that is integrated with local culture. In addition, respondents who understand these two concepts are likely to be more receptive to and utilize etnovlog in physics learning, as well as be able to relate physics concepts to local cultural contexts. And for the respondents who occupy the 2nd most position in the question about ethnoscience and ethnologist knowledge, data was obtained as many as 35% or 12 out of 34 respondents stated that they did not know about ethnoscience and etnovlog. This shows that there are still one-third of prospective physics teachers who are not familiar with these two concepts.

Therefore, greater efforts are needed in introducing and teaching the concepts of ethnoscience and etnovlog to prospective physics teachers. In addition, training programs and workshops need to be improved to ensure that all prospective physics teachers have a good understanding of how to integrate ethnoscience and etnovlog in learning.

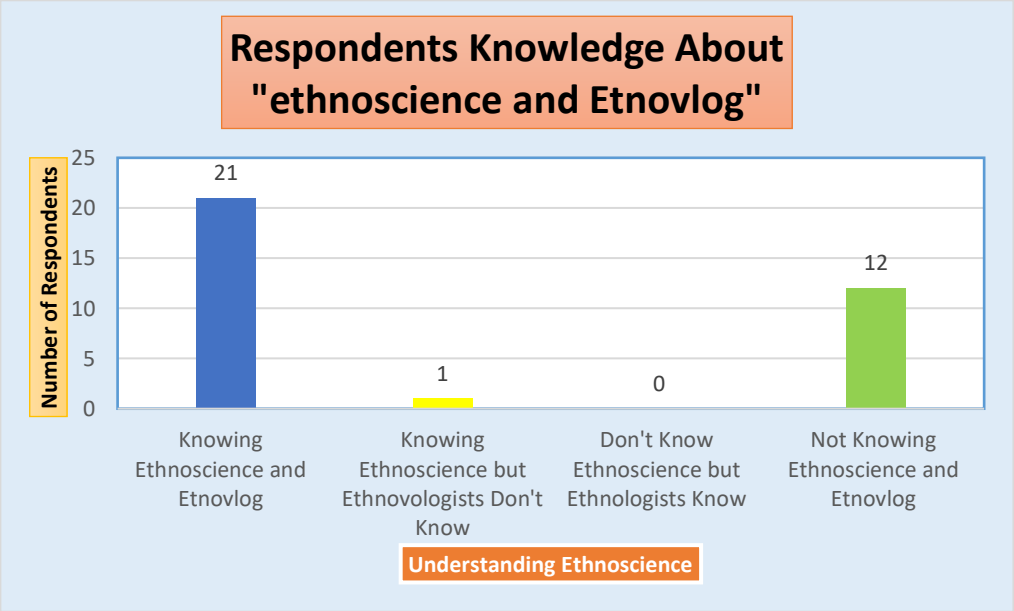

Fig 2. Respondents Understanding Graph About Ethnoscience and Ethnovlog

Furthermore, it ranks 3rd with the number of respondents who only know ethnoscience but have just heard about ethnologist media, data is obtained as much as 3% or 1 out of 34, respondents stated that they know about ethnoscience but do not know about etnovlog. This shows that there are still a small number of prospective physics teachers who understand the concept of ethnoscience but are not familiar with the learning media of etnovlog. Therefore, additional socialization and training is needed regarding the use of etnovlog as a learning medium so that all prospective physics teachers can make optimal use of it. Prospective teachers who know

ethnoscience but are not familiar with etnovlog need special guidance to understand how to integrate the concept of ethnoscience with video blogging technology. None of the respondents stated that they did not know about ethnoscience but knew about etnovlog. This suggests that the understanding of ethnoscience [35][36] tends to precede the understanding of etnovlog among aspiring physics teachers. Knowledge of ethnoscience seems to be an important foundation before understanding etnovlog. Therefore, learning about ethnoscience needs to be emphasized first before introducing etnovlog. This also shows that the concept of etnovlog has not been widely introduced without first understanding ethnoscience.

The results of this study indicate that although the majority of prospective physics teachers understand the concepts of ethnoscience and etnovlog, there is still a group of respondents who are not familiar with these two concepts. This varying level of understanding indicates the need for a different approach to socialization and training.

[1] Groups that know both concepts can be directly involved in the development and implementation of etnovlog in physics learning.
[2] Groups that know ethnoscience but do not know etnovlog Require special training on the use of etnovlog.
[3] Groups that do not know both concepts need a basic approach to ethnoscience before introducing etnovlog.

3.1. Analysis of Research Results Based on Understanding and Use of Ethnoscience

In question 2 of the questionnaire data given to prospective physics teacher respondents, findings were obtained based on the data obtained, there was variation in the understanding and use of ethnoscience among prospective physics teachers. Here is an analysis of the data that has been collected:

Table 2. Table Relationship of Knowledge About Ethnoscience And Its Use

NO	Understanding Ethno Science	Data	Percentage
1	Knowing About Ethnoscience and Having Used It	17	50%
2	Knowing About Ethnoscience but Not Using	5	15%
3	Didn't Know About Ethnoscience but Never Used	5	15%
4	Not Knowing About Ethnoscience and Not Using	7	21%
	Sum	**34**	**100%**

3.2. Knowing About Ethnoscience and Having Used It

In this study, as many as 17 out of 34 respondents stated that they knew about ethnoscience and had used it in learning, usually the use of learning was carried out when students carried out internships or teaching practices in the field. This shows that half of the prospective physics teachers are familiar with and have practical experience with ethnoscience concepts [37]. Respondents in this category are likely to have a deeper understanding of the benefits and

applications of ethnosciences in physics learning. They can also be agents of change who help disseminate the use of ethnoscience to their unfamiliar peers.

3.3 Knowing About Ethnoscience but Not Using

From the data above, it can be seen that as many as 15% of respondents know about ethnoscience but have never used it. This shows that there is theoretical knowledge that has not been applied in practice. Because they do not understand and know about ethnoscience and ethnologist media, many participants are not able to carry out learning that is integrated with ethnoscience and use ethnologist learning media. These Respondent participants may require further support, such as practical training or case studies, to apply ethnoscience knowledge in learning. Barriers to the use of ethnoscience may be related to a lack of resources or a lack of understanding of how to integrate them effectively.

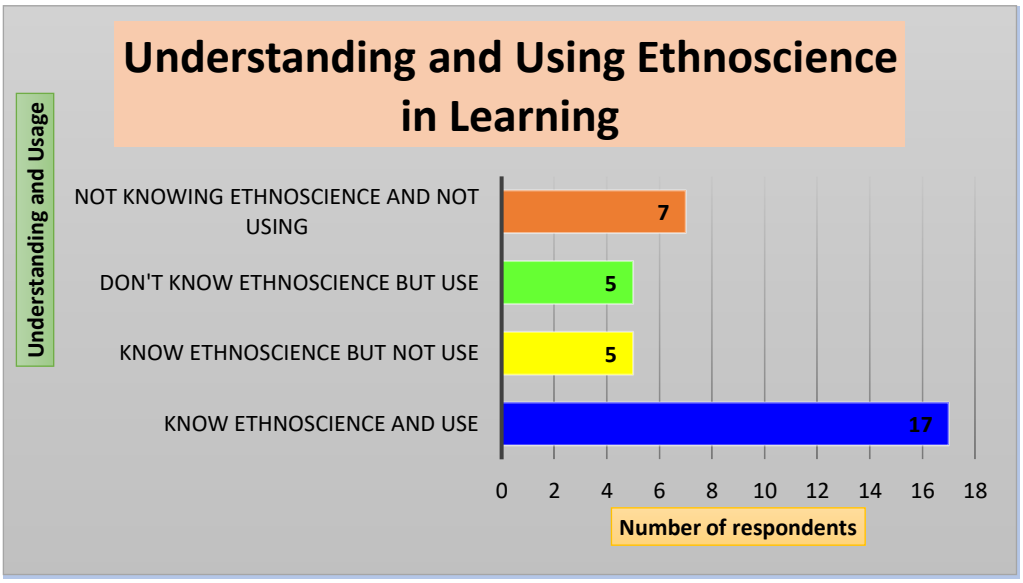

Fig 3. Graph Relationship of knowledge about ethnoscience and its use

An unusual fact finding is that there are respondents who do not know about ethnoscience, but they unconsciously carry out the learning process with integrated ethnoscience. This data was obtained as many as 15% of respondents did not know about ethnoscience but had used it. This happens when carrying out unconscious learning approaches using contextual content based on culture and community life. Such as calculating the density of objects on the coast between freshwater and salt water and so on [38]. This shows that there is a use of ethnoscience that occurs without a deep conceptual understanding but indirectly they use it in learning.

These respondents may engage in ethnoscience learning indirectly or through instruction from others without fully understanding the concepts. There is a need to improve theoretical understanding so that the use of ethnoscience is more meaningful and directed.

3.4 Not Knowing About Ethnoscience and Not Using

As many as 7 out of 34 respondents did not know about ethnoscience and had never used it. This shows that there is still a group of prospective physics teachers who have not been exposed to the concept of ethnoscience. Therefore, it is necessary to know from the existing analysis that these respondents need a basic introduction to the concept of ethnoscience and initial training on how to integrate it in physics learning. Socialization and education efforts need to be increased to reach this group so that they can understand and apply ethnoscience in learning [39].

The results of this study show that the understanding and use of ethnoscience among prospective physics teachers still vary. Some of the important points that can be discussed are as follows:

- **Understanding and Use**: The majority of respondents know and use ethnoscience, but there are also those who only have theoretical knowledge without practice, or vice versa.
- **Barriers to Implementation**: For those who know but don't use, barriers may be a lack of resources or clear examples of practice.
- **The Need for Improved Education**: For those who do not know the concept but have used it, there needs to be an effort to improve theoretical understanding so that the use is more directed.

3.5 Analysis of the Application of Ethnoscience Related to Various Aspects in the Surrounding Community

The application of ethnoscience, which combines modern science with traditional and local knowledge from a particular society, has far-reaching implications in various aspects of people's lives, including agriculture and food products, medicine and health, as well as socio-cultural aspects [40]. The application of ethnoscience in agriculture and food products includes the use of local and traditional knowledge to improve agricultural yields and the quality of food products. Traditional practices such as the selection of plant varieties that are resistant to specific environmental conditions, sustainable soil management methods, and natural pest control are often the main focus.

In the field of medicine and health, ethnoscience can combine knowledge of traditional medicine with scientific discoveries for the development of new medicines or more holistic health care[41]. Socio-cultural aspects in the application of ethnoscience include preserving local culture, strengthening community identity, and empowering people in decision-making related to natural resources and the environment.

Table 3. The application of ethnoscience is related to various aspects of the field

NO	Understanding Ethno Science	Data	Percentage

1	Agriculture and Food Products	5	15%
2	Medicine and Health	6	18%
3	Socio-Cultural	12	35%
4	Don't Know	5	15%
5	Others	6	18%
	Sum	**34**	**100%**

Based on the data collected, there are variations in the application of ethnoscience related to various aspects of the field in the surrounding community. As many as 15% of respondents stated that the application of ethnoscience in their society is related to agriculture and food products. This shows that ethnoscience is used in traditional agricultural practices as well as the processing of food products. Ethnoscience in agriculture reflects the use of local wisdom in managing agricultural land and food production, which can contribute to local food sustainability and security.

Agricultural education programs that integrate ethnoscience knowledge can help maintain and improve traditional agricultural practices that are effective and environmentally friendly. Furthermore, a total of 18 respondents stated that the application of ethnoscience in their society is related to medicine and health. This shows that the concept of ethnoscience is widely used in the practice of traditional medicine and public health [42]. The use of ethnoscience in health demonstrates the confidence and effectiveness of traditional approaches in medicine. The potential for the development of ethnoscience-based health education programs that can combine modern science with local wisdom.

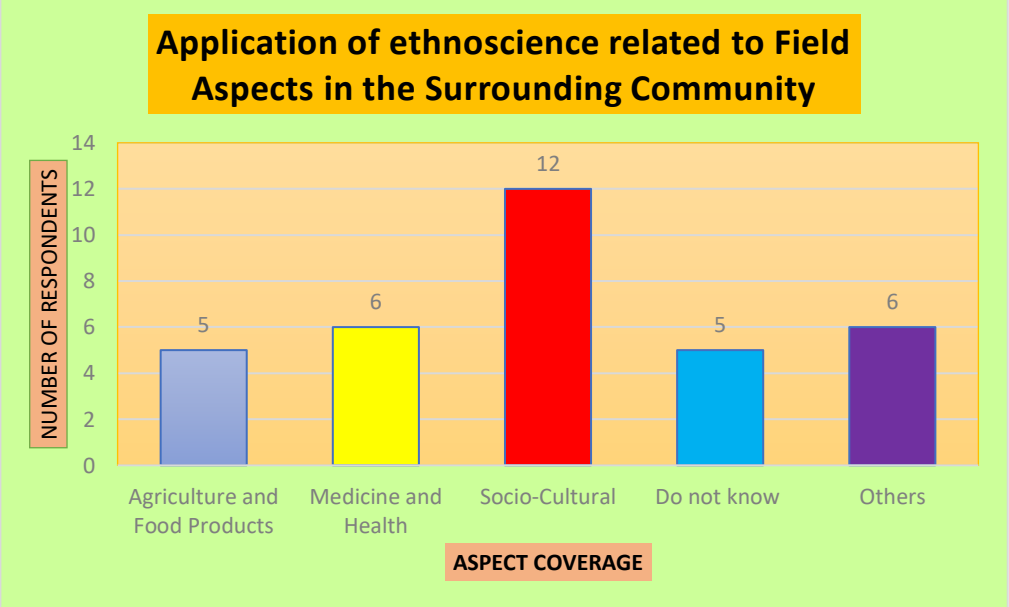

Fig 4. The application of ethnoscience is related to various aspects of the field

From the data presented, 12 out of 34 respondents stated that the application of ethnoscience is related to social and cultural aspects. This shows that ethnoscience has an important role in the social and cultural practices of society. Ethnoscience as an integral part of local culture and traditions can be a medium to strengthen the cultural identity of the community. Educational programs that integrate the socio-cultural aspects of ethnoscience[44][45] can help increase appreciation of local cultural heritage.

However, there are still some respondents who answered that they do not know, this is a respondent who does not know about ethnosciece and etnovlog from the beginning, namely as many as 5 out of 34 respondents stated that they do not know about the application of ethnoscience in the community around them. This shows that there are still some people who have not been exposed or have not understood the concept of ethnoscience. The need to increase socialization and education about ethnoscience to the public. There needs to be an effort to document and disseminate ethnoscience knowledge in the community.

And the respondents who answered these others were in the fields of education, training, service and those that smelled supernatural. A total of 6 out of 34 respondents stated that the application of ethnoscience in their society is related to other aspects that are not included in the categories that have been mentioned. This suggests that there are applications of ethnoscience in other fields that may be specific or unique. Further research is needed to identify and document the applications of ethnoscience in a variety of other fields that are not widely known. The diverse application of ethnoscience shows great potential to be developed and integrated in various aspects of people's lives.

The results of this study show that the application of ethnoscience in the surrounding community covers various aspects of the field, with a significant focus on socio-cultural and health aspects. Some of the key points that can be discussed are:

- **Socio-Cultural Aspects**: The majority of respondents identified the application of ethnoscience in socio-cultural aspects, pointing to the important role of ethnoscience in maintaining and developing traditions[46] and local cultural values.
- **Health**: The use of ethnoscience in medicine and health emphasizes the importance of traditional knowledge in public health practices.
- **Agriculture and Food Products**: The use of ethnoscience in this field reflects the sustainability of traditional agricultural practices that have stood the test of time.
- **Variation in Application**: The presence of respondents who stated that they did not know or identify the application of ethnoscience in other fields indicates that there is a variation in the understanding and application of ethnoscience in society.

4 Conclusion

This study aims to analyze the perception of prospective physics teachers towards ethnologist-assisted learning that is integrated with local culture[48]. Based on the results of the study, most of the respondents already know about ethnoscience and etnovlog. Only a small percentage know about ethnoscience but do not know about etnovlog. This suggests that although knowledge of ethnosciences and etnovlog already exists among aspiring physics teachers, there is still a need to improve a broader and deeper understanding [49].
Overall, this study shows that prospective physics teachers have a positive perception of ethnologist-assisted learning that is integrated with local culture, but there are still shortcomings in terms of practical knowledge and experience[50]. There is a significant need to increase participation in formal education and provide more training and socialization to ensure that aspiring physics teachers can understand and apply ethnoscience and ethnologist concepts effectively in their teaching. This effort will help in creating a richer, relevant, and integrated learning process with local culture, which can ultimately improve the quality of science education in Indonesia.

Acknowledgments. We would like to thank the Research and Service institution of the State University of Medan for providing facilities and helping the implementation of this research, as well as the Faculty of Mathematics and Natural Sciences, Universitas Negeri Medan who supports its lecturers to carry out research and conduct publications.

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