Indonesian Journal of
Mathematics and Natural Sciences Education
p-ISSN: 2721-172X e-ISSN: 2721-1746
Vol. 4 No. 1 Year 2023; Pages 9-22
http://mass.uinkhas.ac.id DOI: 10.35719/mass.v4i1.126

# Needs Analysis in the Development of an Ethnoscience-Based Educative Magazine

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**Abstract**

This study aims to analyze the need for the development of an ethnoscience-based educative magazine on the topic of petis lorjuk Madura. The results of the scientific reconstruction can be packaged in natural science teaching materials in the form of educative magazines. This research is qualitative descriptive research, using interviews, observation, and documentation techniques. The stages of the research started with preparation, making research instruments, implementation, and completion. The results of this study are the community's indigenous knowledge about making petis lorjuk with STEAM reviews. The results of this study found reinforcement and misconceptions where there is a correlation between the ethnoscience study of petis lorjuk and natural science material. The results of the ethnoscience study that have been obtained can be used as science teaching materials contextually and can review further related misconceptions of knowledge so that learning is more meaningful and sensitive to the surrounding environment.

**Keywords: Educative, Ethnoscience, Magazine, Need**

## INTRODUCTION

Indonesia is a country with the second highest level of biodiversity in the world (Maddinsyah, Kustini, & Syakhrial, 2018). The existence of an abundance of biological natural resources is influenced by several factors, one of which is because the waters in Indonesia are rich in food sources for various types of plants and marine animals and also contain various types of mineral sources. Marine animals here also contribute to the high level of Indonesia's biodiversity, which is 25% (Maddinsyah, Kustini, & Syakhrial, 2018). It can be said that Indonesia has a high potential in marine diversity. One of the islands in Indonesia that has this potential is Madura.

Madura is an island located to the east of the Java Sea which geographically consists of a coastal area surrounded by ocean, especially on the north and south sides (Bolkiah, Ilham, & Indrayani, 2021). Even though it is administratively located within the province of East Java, it is located separately from the island of Java. Madura has a fairly abundant diversity of biomes and biota. One of the districts on Madura that has high diversity is Pamekasan. This district is one of the largest on Madura, which is 729.3 km$^2$. This regency is bordered by Sumenep in the east, Sampang in the west, the Madura Strait in the south, and the Java Sea in the north.

The diversity of biota Pamekasan is unique, one of which can be found at Talang Siring Beach. The mainstay fishery commodity in the area is bamboo clams (Bappeda Pamekasan 2013). Lorjuk is the term used to refer to bamboo clams in the Pamekasan district. Bivalve is a marine invertebrate animal whose shape has a shell that has segments similar to bamboo. These bamboo clams (*Solen* sp.) are small and long in shape that usually live on muddy coasts (Wahyurini, 2017). This bamboo shell has a fairly high protein content (Trisyani, 2018) so many people in the Pamekasan area produce it in daily foods. One of the foods that are quite well-known and popular with the public, in general, is "petis lorjuk".

Petis is a cooking spice that is shaped like a paste that resembles thick porridge which has a fairly tough and elastic texture. It usually colours in brown or black (Astawan in Fajrita, Junianto, and Sriati, 2016). Petis circulating in the market have a variety of qualities. This difference in quality is influenced by the composition of the paste itself. Starting from raw materials, supporting materials, and different processing methods. Petis one of which can be made with the basic ingredients which is bamboo clams or lorjuk. The main ingredients used are extracts or juice from bamboo clams. The process of making petis lorjuk is still carried out traditionally by the people in the area around Talang Siring Beach itself. This process is done from generation to generation by local people in the area. Because the manufacturing process is still based on the original knowledge of the community. So it is necessary to reconstruct community knowledge based on local wisdom into scientific knowledge, to perfect or strengthen the original knowledge of the community. All in all, it is necessary to do a more in-depth ethnoscience study.

Ethnoscience comes from the Greek words "Ethnos" which means nation and "Scientia" which means knowledge (Hum in Wahyu, 2017). It is interpreted that ethnoscience is a unique knowledge possessed by a nation. According to Hadi & Ahied (2017), ethnoscience is also interpreted as an effort to reconstruct indigenous knowledge into scientific knowledge. For this reason, it is important to study ethnoscience in this study. One of the ethnoscience studies is by using the STEAM review. According to Ashari & Mariana (2022), STEAM is an integration of five disciplines namely Science, Technology, Engineering, Art, and Mathematics. This review is quite appropriate to be used to find out community indigenous knowledge in ethnoscience studies.

The results of the ethnoscience study that have been obtained can ultimately be used as a contextual learning resource and can review whether there is a misconception of knowledge or not. It is expected that the integration of local wisdom values into science learning can make learning more meaningful and increase sensitivity to the surrounding environment. Knowledge is a broad aspect that develops based on the scope of ethnoscience, so it is necessary to have an effective reconstruction of knowledge. The reconstruction is in the form of exploring the development of


DOI: https://doi.org/10.35719/mass.v4i1.126

science through the interests and talents of objects in the form of society as a source of culture. Cultural developments that exist within the scope of society are very diverse so there is a need for contextual adjustments and approaches to learning systems (Satria et al., 2020).

The ability of students to understand learning is proven to be much more effective if it is associated with the culture they have. Teachers can also carry out ethnoscience-based learning to be able to attract interest and make it easier for students to understand the learning being studied (Senjawati, 2020). This learning aims can be realized by developing science teaching materials based on ethnoscience that attract students' interest in learning activities.

Needs analysis in the development of teaching materials can be carried out by conducting surveys and explorations in the community, one of which is related to ethnoscience (Puspita Hadi et al., 2020). Ethnoscience-based learning is also carried out to increase students' interest in and love for their culture. The ethnoscience-based learning process is also expected to be able to encourage students to participate in preserving the culture around them.

Based on this description, it is necessary to carry out this research with the title "Needs Analysis on the Development of Ethnoscience-Based Educative Magazine".

This study aims to analyze the need for the development of an ethnoscience-based educative magazine on the topic of petis lorjuk Madura. The results of the scientific reconstruction can be packaged in natural science teaching materials in the form of educative magazines.

## METHOD

The approach in this study is qualitative because it studied deeper regarding how the concept of community knowledge is related to making petis lorjuk at Talang Siring Pamekasan Beach with STEAM (Science, Technology, Engineering, Art & Mathematics) review.

The research was carried out in September 2022 with research subjects, namely the community around Talang Siring Pamekasan Beach. This qualitative research uses an ethnoscience design. According to Basttiste in Sudarmin & Asyhar (2012), ethnoscience is the study of knowledge systems obtained from culture or phenomena related to the society.

The stages of the research are starting with the preparation stage (pre-field research), followed by the preparation of research instruments. Next is the stage of conducting research (during research in the field), this stage is carried out when in the field or research location. Activities carried out include collecting data based on technical or research methods that have been determined and using the instruments that have been prepared at the planning stage. Furthermore, the stages were continued by data processing, data analysis, and data grouping. In the end, tested the validity of the data using triangulation. And the last stage is completion which

concludes the results of data analysis that has been tested for validity, then proceed with preparing a research report.

The research was conducted at Talang Siring Beach, Pamekasan, and Universitas Trunojoyo Madura. Techniques for collecting data are by observation, interviews, and documentation. After the data has been obtained, then the next step is the data analysis stage. The stages compress data by sorting and sorting data that meets the data categories in the study. Furthermore, the data is displayed and compressed in a schematic to conclude. The data validity test which is used to ensure the correctness of the data obtained is by using triangulation. The triangulation used is a triangulation of data sources, namely by using a variety of different data sources to cross-check data obtained from key informants or samples.

## RESULTS AND DISCUSSION

Results in this study indicated that the form of community indigenous knowledge about petis lorjuk which is focused on STEAM (Science, Technology, Engineering, Art, and Mathematics) review. The results of indigenous knowledge are then compared with scientific knowledge to find out whether there are misconceptions or not. More detailed research results will be discussed in the table below:

**Table 1. Results of Comparison of Indigenous Knowledge & Scientific Knowledge**

| Study Topic | Indigenous Knowledge | Scientific knowledge | Misconception or Reinforcement |
|---|---|---|---|
| **Science** | The material used to make lorjuk petis is lorjuk itself. More precisely, the juice is obtained from boiled lorjuk.) | Lorjuk or bamboo shells are shells that have a shape like a shell with joints, whereas the name suggests it looks like bamboo. Bamboo shells or clams have a high protein content so this lorjuk processing is processed in many processed forms. The general preparations are petis, rengginang, fried peanuts, and so on (Wahyurini, 2017). | **Strengthening** (The material used for making petis lorjuk is indeed the main ingredient, namely lorjuk itself or bamboo shells). |
| | Another ingredient used is water. The use of water here is to boil water. Which in the end also aims to get lorjuk juice | Boiling is a method of cooking food in a boiling liquid. Usually, food that is cooked using water can increase solubility (Panjaitan et al, 2018). The water in the paste functions as a dispersing medium and forms an emulsion in the paste. And the water used is clear, tasteless or smelly (Asmoro, 2019). | **Strengthening** (Water is used to increase solubility and as a dispersing medium in the paste which helps with the boiling process). |

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| | Another ingredient used is MSG which is used to flavor the petis lorjuk | MSG is a sodium salt of glutamic acid, which is used as a flavor enhancer or to add a better taste to dishes (Sulastri, 2017) | **Strengthening** (MSG contains glutamic acid which is used as a flavor enhancer). |
| | The other ingredient used is granulated sugar, which is used to get rid of the salty taste that comes from lorjuk. | Sugar is sucrose, which is a disaccharide formed from glucose and fructose bonds. Sugar is a simple carbohydrate that is generally produced from sugarcane. The function of sugar is to provide aroma, and sweetness and as a preservative, helping to form texture and color (Mulyakin, 2020). Sugar is also used as an inhibitor for bacterial growth, so it can last longer (Asmoro, 2019). | **misconceptions** (Sucrose is sucrose which is a disaccharide formed from glucose and fructose bonds which gives a sweet taste not to eliminate the salty taste. The sweet taste caused by granulated sugar can reduce the saltiness of lorjuk.) |
| | Another ingredient used is lime which is used to remove the fishy smell | Lime is effective enough to reduce fishiness. This is because it contains citric acid and ascorbic acid, which these two acids react with trimethylamine to form trimethyl ammonium which is then converted to bimetal ammonium. So that it has an impact on reducing the fishy smell (Trisyani et al, 2021) | **Strengthening** (Lime contains citric and ascorbic acid so it can eliminate or reduce the fishy smell). |
| **Technology** | The tool used is an aluminum pot, whhich is used for boiling lorjuk. Usually, the process of boiling it is over a stove. | In principle, there is no difference between making petis using any tool. The tools used in the process of making paste are furnaces, pans, filters, pans, basins, blenders, knives, buckets, and scales (Anwar, 2018). Boiling is a method of cooking food in a boiling liquid. Because it requires high temperatures, aluminum is suitable for boiling (Panjaitan et al, 2018) | **Strengthening** (The tool used for making lorjuk petis you can use any tool which can support the process of making petis lorjuk itself). |
| | Another tool used is a filter. This filter is used to separate the lorjuk from the juice that has been obtained. Usually, the manufacturing process uses this filter when the lorjuk has been boiled | In principle, there is no difference between making petis using any tool. The tools used in the process of making paste are furnaces, pans, filters, pans, basins, blenders, knives, buckets, and scales (Anwar, 2018). | **Strengthening** (The tool used for making lorjuk petis you can use any tool which can support the process of making petis lorjuk itself). |

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| | Another tool used is a stirrer. This stirrer is used to mix the lorjuk petis extract with water, MSG, and sugar. Furthermore, this tool is also used to stir the lorjuk petis mixture until it thickens. | In principle, there is no difference between making petis using any tool. The tools used in the process of making paste are furnaces, pans, filters, pans, basins, blenders, knives, buckets, molds, and scales (Anwar, 2018). The mixing process is carried out with the stirring stage (Viyanti et al, 2019). | **Strengthening** (The tool used for making lorjuk petis that you can use any tool which can support the process of making petis lorjuk itself). |
| | Another tool used is a mold container. This container is used to print finished lorjuk petis. The shape adjusts to the wishes of each manufacturer. | In principle, there is no difference between making petis using any tool. The tools used in the process of making paste are furnaces, pots, pans, basins, blenders, knives, buckets, molds and scales (Anwar, 2018). | **Strengthening** (The tool used for making lorjuk petis that you can use any tool which can support the process of making petis lorjuk itself). |
| **Engineering** | The first stage is to clean the lorjuk that has been taken, usually cleaned of sand and so on. | Cleaning the shells is usually done to remove bacteria or dirt attached to the shells. This is done by washing or using objects such as knives and so on (Lestari, 2022). | **Strengthening** (The cleaning process is done to remove bacteria or dirt by washing process). |
| | | Lime is effective enough to reduce fishiness. This is because it contains citric acid and ascorbic acid. These two acids react with trimethylamine to form trimethyl ammonium which is then converted to bimetal ammonium. So that it has an impact on reducing the fishy smell (Trisyani et al, 2021). | **Strengthening** (Lime contains citric and ascorbic acid so it can eliminate or reduce the fishy smell). |
| | The second stage is boiling the lorjuk until the lorjuk is separated from the shell. This process takes about an hour. | Boiling is a method of cooking food in a boiling liquid. Usually, food ingredients are cooked using water to increase solubility. Boiling here uses heating which can reduce the attractive attraction between water molecules which will provide enough energy to the water molecules so that they can overcome the attractive attraction between molecules in the food (Panjaitan et al, 2018). Boiling is also meant to | **Strengthening** (The boiling process can kill the microbes from the bamboo shells which is indicated by the separation of the bivalves from the shell). |


DOI: https://doi.org/10.35719/mass.v4i1.126

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| | | kill the microbes in the water (Asmoro, 2019). | |
| | The next step is to separate the lorjuk, the shell, and the extract obtained. The main ingredient used is the result of the separation of the lorjuk extract obtained. | Filtering aims to remove impurities in the juice or the results of the decoction (Viyanti et al, 2019). | **Strengthening** (The process that is carried out to separate the lorjuk, shells, and essence obtained is by filtering which also aims to remove impurities in the juice or the results of the stew). |
| | The next step is to mix the lorjuk juice with water, MSG and sugar. | The mixing process is carried out with the stirring stage. Usually for making petis after the boiled water has been cooked, the other ingredients are mixed in gradually while the stirring process is carried out (Viyanti et al, 2019). | **Strengthening** (The mixing process is carried out by stirring gradually). |
| | The next step is to stir the mixture that has been mixed over low heat. The process of stirring here until the mixture thickens and takes quite a long time. | The mixing process is carried out by stirring until the color changes to brown and the texture thickens. Changes in color and texture are signs that the petis are ready to be served (Viyanti et al, 2019). | **Strengthening** (Changes in color and texture become thick as a sign that the petis are ready to be served). |
| | The next step is to leave the thick lorjuk paste dough for about an hour. Usually leave it here and use a direct mold at the same time. | The curing process of the petis was carried out at room temperature. Where the cold petis can then be packaged according to each individual's desired container (Viyanti et al, 2019). | **Strengthening** (The cooling process is carried out at room temperature). |
| **Arts** | The color of the petis is nice to look at, which is not too brown or black. This color is often attractive to consumers, which is obtained from the long cooking process. | Granulated sugar functions as a source of nutrition in food ingredients which is used to form texture and flavor through the browning reaction. Therefore, granulated sugar can function as a color changer to make it attractive for consumption (Mulyakin, 2020) | **misconceptions** (The brown color of petis lorjuk is not obtained because it takes a long time to boil or cook but because sugar is added, which functions to change color). |

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| | The smell of petis lorjuk is not fishy like petis in general (fish paste or shrimp paste), because previously it has been soaked in lime juice. | The aroma of petis is caused by the extraction of volatile components formed during the heating process from the main ingredients (Sari & Kusnadi, 2015). The boiling process can also evaporate some of the volatile compounds. So that the aroma of lorjuk or fishy is not too strong (Sari et al, 2021). Lime is also quite effective for reducing fishy. This is because they contain citric acid and ascorbic acid (Trisyani et al, 2021) | **Strengthening** (Lime contains citric and ascorbic acid so it can eliminate or reduce the fishy smell). |
| | The taste of this petis lorjuk is more delicious or fat than petis in general (fish paste or shrimp paste). | Glutamic acid is a type of non-essential amino acid that is widely found in nature. This acid is a source of savory or fatty taste which gives perfection to a food (Viyanti et al, 2019). | **Strengthening** (MSG in the manufacture of petis lorjuk contains glutamic acid which is a type of non-essential amino acid that makes it taste delicious and fat). |
| | This petis lorjuk does not use additives, which can be consumed for a long time and is not harmful. In addition, this petis lorjuk does not use flour, so the main ingredient is only lorjuk. This makes the lorjuk taste more pronounced. | Food additives are compounds or mixtures of various compounds added to food that are involved in the processing, packaging, and storage of a food product. Using additives in food unwisely can be dangerous, such as causing various health problems (Emilia et al, 2020).<br>The use of fillers such as flour can improve texture, increase stability, water holding capacity. Petis that do not use fillers tend to be runnier, so they require a longer heating or boiling time, which is usually around 10 hours (Sari et al, 2021). | **Strengthening** (Petis lorjuk is cooked for a long time because there are no other fillers so it tends to be thinner. Additives are also not used so they are not harmful to health). |
| **Math** | The dosage used to make petis lorjuk can be estimated by the manufacturer. Where the sugar should not be too much, so that the lorjuk petis is not too sweet. Likewise, the MSG dosage is only sufficient. The form | Boiling for a long time will cause protein damage or a decrease in protein levels (Panjaitan et al, 2018). Petis that do not use fillers tend to be runnier, so they require a longer heating or boiling time, which is usually around 10 | **misconceptions** (Boiling or cooking for too long because there are no other fillers will reduce protein levels). |


DOI: https://doi.org/10.35719/mass.v4i1.126

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| | used adjusts the tastes of consumers or producers and the time for boiling or long cooking. | hours (Sari et al, 2021). The function of sugar is to provide aroma and a sweet taste (Mulyakin, 2020). |

Based on the results of this study above, there are several misconceptions and reinforcement related to the community's indigenous knowledge of making lorjuk petis. Strengthening is obtained when the community's indigenous knowledge is following scientific concepts based on relevant references. So that the strengthening process can be a reinforcement or reference related to the original knowledge of the community. Regarding misconceptions, namely obtained when the indigenous knowledge possessed by the community is not by existing scientific or scientific concepts.

On the topic of scientific studies, there are several reinforcements and misconceptions. The reinforcement here relates to the ingredients used to make lorjuk petis such as lorjuk, water, granulated sugar, lime and MSG. These materials have their uses in making lorjuk petis. This is by what was conveyed by Asmoro (2019) that water in the manufacture of paste functions as a dispersing medium and forms an emulsion in the paste. In this case, community indigenous knowledge is appropriate because it is used as a solvent in the boiling stage. According to Sulastri (2017), MSG is useful as a flavor enhancer or to add a better taste to dishes and the latter is related to the use of lime which is intended to eliminate the fishy taste of lorjuk (Trisyani et al, 2021). Of the four reinforcements, there is one misconception, namely the use of granulated sugar. Where people think that sugar is intended to eliminate the fishy taste. This is different from what was conveyed by Mulyakin (2020) that sugar is a simple carbohydrate that is generally produced from sugarcane. The function of sugar is to provide aroma, sweetness and as a preservative, helping to form texture and color.

On the topic of technology studies, the tools used for making lorjuk petis are furnaces, pots, filters, pans, basins, blenders, knives, buckets, and scales (Anwar, 2018). These tools act according to their respective functions. A pot for boiling, a strainer to separate the lorjuk juice, lorjuk, and also the shells. A stirrer to mix the lorjuk juice with other ingredients, a container to let the lorjuk petis rest, and at the same time can be used as a mold. In essence, any tool can be used to make petis lorjuk to suit their respective functions.

On the topic of engineering studies, the procedure for making lorjuk petis consists of several stages. The first stage is to clean the lorjuk from the sand. The second stage is to soak the lorjuk with lime which reduces the fishy smell. This is by what was conveyed by Trisyani et al. (2021) that lime is quite effective in reducing fishiness. This is because it contains citric acid and ascorbic acid. These two acids react with trimethylamine to form trimethyl ammonium which is then converted into bimetal ammonium. The

third stage is to boil the lorjuk until the lorjuk separates from its shell. By what was conveyed by Panjaitan et al. (2018) that boiling is a way of cooking food in a boiling liquid. Usually, food ingredients are cooked using water to increase solubility.

The next stage is to separate the lorjuk, shells and juice obtained by using a filter. Then carry out the mixing process which is carried out with the stirring stage. Usually for making petis after the boiled water has been cooked, the other ingredients are mixed in gradually while the stirring process is carried out (Viyanti et al, 2019). Furthermore, the mixing process is carried out with the stirring stage in stages. And the last stage is the curing process of the petis, which is done at room temperature. The chilled petis can then be packaged according to each individual's desired container (Viyanti et al, 2019).

On the topic of art studies, there are several reinforcements and also misconceptions. The strengthening here, which is related to the aroma of the petis, is caused by the extraction of the volatile components formed during the heating process from the main ingredients (Sari & Kusnadi, 2015). The boiling process can also evaporate some of the volatile compounds. So that the aroma of lorjuk or fishy is not too strong (Sari et al, 2021). In addition, the taste of this petis is different in general, where it is more savory and delicious. One of the reasons is because of the addition of MSG which contains glutamic acid. This acid is a source of savory or fatty taste which gives perfection to a food (Viyanti et al, 2019). The use of fillers such as flour can improve texture, and increase stability, and water-holding capacity. Petis that do not use fillers tend to be runnier, so they require a longer heating or boiling time, which is usually around 10 hours (Sari et al, 2021).

The misconception in studying the topic of arts is that people think that the brown color is black because it is caused by boiling for a long time. This is different from what was conveyed by Mulyakin (2020) that granulated sugar functions as a source of nutrition in food ingredients which forms texture and forms flavor through the browning reaction. Therefore, granulated sugar can function as a color changer to make it attractive for consumption.

The misconception in studying the topic of arts is that people think that the color is dark brown because it is caused by boiling for a long time. This is different from what was conveyed by Mulyakin (2020) that granulated sugar functions as a source of nutrition in food ingredients which forms texture and forms flavor through the browning reaction. Therefore, granulated sugar can function as a color changer to make it attractive for consumption.

The misconception in studying the topic of arts is that people think that the brown color is black because it is caused by boiling for a long time. This is different from what was conveyed by Mulyakin (2020) that granulated sugar functions as a source of nutrition in food ingredients which forms texture and forms flavor through the browning reaction. Therefore, granulated sugar can function as a color changer to make it attractive for consumption.


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The topic of mathematical studies, in this case, focuses on the dosage in making lorjuk petis. Where boiling or cooking for too long with lorjuk in the absence of other fillers will decrease protein levels (Panjaitan et al, 2018). Petis that do not use fillers tend to be runnier so that it requires longer heating or boiling time.

Based on the results of research related to the abundance of lorjuk on the Talang Siring Pamesakan beach, namely explaining that the reason for this abundance is that the soil on the beach is moist enough so that the environment is suitable for the living habits of lorjuk. This is by what was conveyed by Indrawan (2019) that bamboo shells have a wide distribution so that they can be found in various aquatic ecosystem areas and prefer sandy or muddy sediment-type habitats. The time for taking lorjuk is waiting for the seawater to recede so that the fishermen can easily take lorjuk which usually hides in the sand. A sign of lorjuk is if there is a hole. Bamboo clams have a habit of burying themselves in the sand to avoid predators. The easiest way is that you only need to reach the bottom of the sand in the seaside area or some are hiding a bit towards the middle. In addition, it can be done by digging a hole during the ebb and flow of seawater. The tools used can be hammers or hoes. According to Indrawan (2019) in general, shellfish settle on the bottom of the water by immersing themselves in mud or sand or broken coral reefs that are dead. Usually, the quantity of clams is abundant during the rainy season. Where it often happens that without being reached or dug, bamboo shells can come out on their own from under the sand or soil. According to Ramadhani et al. (2021), this happens because, during the rainy season, there are high waves that affect shellfish, in this case, it can be interpreted as waves. Which causes shells from the sea to be carried by currents to the front or the beach.

With this research, it is hoped that it can develop indigenous communities so that the justification process can continue. Acceptance of knowledge depends on the knowledge itself and its relation to external factors. Knowledge can continue to be received and developed if this knowledge contains truth values. Therefore, studies need to continue to be carried out on the knowledge that arises from the culture of society and develops in that society.

The results of the ethnoscience study that have been obtained can be used as a contextual learning resource and can review whether there is a misconception of knowledge or not. The results of the needs analysis can be continued in the process of developing science teaching materials so that science teaching materials that will be applied in the learning process can integrate local wisdom values. The integration of ethnoscience in science learning, it can make learning more meaningful and increase sensitivity to the surrounding environment.

## CONCLUSION

This study aims to analyze the need for the development of an ethnoscience-based educative magazine on the topic of petis lorjuk madura. The results of the scientific reconstruction can be packaged in natural science teaching materials in the form of educative magazines.

Based on the results of the research that has been obtained, it can be concluded that the analysis of needs for the development of ethnoscience-based educative magazines shows that: scientific knowledge results show that there are natural science concepts contained in the topic of making petis lorjuk, and based on the correlation results on the topic of petis lorjuk it is found that many natural science concepts are applied in it in terms of STEAM. This can be used as study material by the needs of developing ethnoscience-based educational magazines.

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**BRIEF PROFILE**

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DOI: https://doi.org/10.35719/mass.v4i1.126