



# Economic Empowerment of Coastal Communities with Making Processed Crab By-Products in Tanjung Mas Village-North Semarang

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**Abstract.** Language instruction has changed with online education, enabling self-learning. Listening abilities are crucial to language acquisition, and task-based language teaching can improve EFL students' autonomy. This study seeks to a) Determine the effectiveness of technology-mediated TBLT on learners' autonomy in listening comprehension and b) Explore the challenges of acquiring listening skills. Mixed methods were conducted using Likert scale surveys for quantitative data and open-ended survey questions for qualitative data. 81 EFL students in the second year at English education department participated in this study. According to the research, EFL learners believe they can study independently through online assignments, especially in listening subjects. The results reveal that Online assignments are viable for self-directed learning, but opinions vary. EFL learners study daily content and complete online listening activities quickly, although opinions differ, as seen by the more significant standard deviation. The challenges the learners encounter in mastering listening skills include pronunciation, unfamiliar vocabulary, comprehension, technical issues, motivation, interactivity, digital literacy, speech rate, and time management. Targeted methods and support are needed to address these issues. Central Java Province is a central area for crabs. One of the crab breeding areas in Central Java is the Crab Pond in Tanjung Mas Village, Semarang City, Central Java. With the high total production of crab, the process produces by-products that have not been utilized so that crab shell waste is often found, especially during the crab season around the processing industry. This has had an environmental impact in Tanjung Mas Subdistrict, where many crab shell waste from small to large sizes are found around residential areas. So the aim of this activity is to utilize crab shell waste into products as raw materials for flavoring, instant stock and stuffed crab. The activities that will be carried out include training and direct assistance to the community in making products and marketing the product so that the community is able to manage crab shell waste and it has economic value for them. The results of this activity were three products that were very good in flavoring food which gave a savory taste to the dishes they were added to. The conclusion from this activity is that crab shells can be used as processed products to add flavor to the dishes they are added to and reduce waste in the Tanjung Mas sub-district.

Keywords: Empowerment, Economy, By-products, Crab, Tanjung Mas..

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## 1. Introduction

Tanjung Mas is one of the crab producers with a total of 10,803 tonnes of crab produced in Tanjung Mas Village, Semarang city, Central Java. It is estimated that 150.02 tons of shell waste is produced every crab season. A high number of crab shells are thrown away as waste every season in the breeding area because they are not utilized by residents in Tanjung Mas Village. The majority of the residents of Tanjung Mas Village, some of whom are fishermen and pond crab farmers, only sell the meat but without thinking about the waste or by-products of crab products. So far, the results from fishermen and pond farmers have not been able to improve the welfare of the community.

Waste processing can be an environmental and economic solution for society. As well as, supporting government programs to create a blue economy. The lack of skills in processing crab shell waste into products with added value is still a problem in the Tanjung Mas Village community. Through community service, processing crab by-products into value-added products provides opportunities for applying innovation to the community in order to transfer knowledge, knowledge and technology by means of counseling, demonstrations on making processed flavoring products, broth and stuffed crab. This processed product is promoted and sold to cooperatives and various other partners so that it can increase income and improve the welfare of the families of fishermen and farmers in Tanjung Mas Village. Tanjung Mas Village is one of the villages with the most potential in Gayamsari District for developing the marine sector and marine products.

### Problem

Based on the results of visits and field observations, the problems are:

1. The environmental and community problem is that the waste produced by crab pond fishermen every year cannot be completely resolved because it has not been utilized. This has an impact on environmental pollution and public health.
2. The individual problem of the Tanjung Mas sub-district community: the lack of community skills in managing crab waste, even though the shells from the crabs themselves can still be utilized because they have economic value if processed properly.

### Problem Solution

The solution to the problem in Tanjung Mas sub-district is as follows:

1. Reducing crab shell waste which cannot be completely resolved in the community by optimally utilizing crab shells while also having an impact on the cleanliness and beauty of the Tanjung Mas sub-district, as well as increasing the level of community health.

2. Providing education, training and assistance in managing crab shell waste using simple tools to make products that have selling value.
3. Guiding the waste processing process up to the marketing of the products produced.

## **2. Methods**

After conducting a preliminary survey and interviews with partners, the issues that will be discussed include:

1. Reducing the impact of crab shell waste on the environment. The activity that will be carried out is providing education to the Tanjung Mas Village community about the management and utilization of crab shell waste into processed products for flavoring, stock and stuffed crab.
2. Creating a clean environment and reducing unpleasant odors in the Tanjung Mas Village area. The activities that will be carried out are 1) Providing waste crab shell collection bags at each spot and certain location. 2) Providing information and exchanging ideas as well as how to care for the environment well and comfortably for residents. 3) Directly observing the results from several local residents' homes.
3. Creating additional innovation opportunities for business income and channeling the proceeds from sales of processed crab shell products to various sectors. Activities to be carried out: 1) Develop a concept plan for a partnership network targeting penetration into modern supermarkets and e-commerce. 2) Provide direction regarding information and understanding of Tanjung Mas Village residents regarding processed products from crab shell waste.

## **3. Results and Discussions**

This activity aims to provide additional information about how crab shell waste can still be used as a product. So it's like a cooking seasoning and instant crab broth which is practical for culinary businesses. Don't forget to make the environment more comfortable and clean and get additional income from crab shell waste. The implementation and assistance in making products is explained below:

### **Counselling on Crab Shell Management**

Outreach and training activities for the people of Tanjung Mas Subdistrict were carried out by delivering material from lecturers at the University of Muhammadiyah Semarang on the use of crab shell waste and the importance of environmental cleanliness. Participants who attended this outreach were families of crab farmers and then representatives from

community groups so that the expected targets were achieved. Increased understanding from the public will have an impact on knowledge of our activities in product manufacturing training so that the results obtained are maximum and have high economic value. However, in this counseling, we will focus first on the impact of reducing crab shell waste in the surrounding environment.

The aim of this counseling is also to make people aware of the importance of using it as efficiently as possible in managing their time to work and make money. Apart from the fact that people work with their income from crab meat, on the other hand, they can make use of their other time by innovating crab waste which can also be done by mothers or those who have free time. The biggest target achieved in this activity is also to improve the community's economy by certifying a food ingredient so that producers have more additional income.

### **Product Manufacturing Training**

The aim of this training is to obtain products that can be produced from crab shell waste other than meat. Food diversification is an effort to vary food ingredients so that it is not focused on just one type. In this crab food ingredient, we take 3 products, namely crab stock, stuffed crab, and flavoring. Making the bottom is very easy to do because it uses simple tools at home, so people can do it. The procedure for making it will be explained below:

1. Making broth is done by first washing the shells to make them clean, then heating the water until it boils and placing the shells in it. After that, stir and wait until the broth appears from the crab shell.
2. Making stuffed crab is done by washing it first and then placing the food in the shell. After that, steam until the food is cooked and the aroma changes to a savory one.
3. In making flavorings, the first step is to wash and dry the crab shells. Then grind it with a blender and sift it to get fine flour. After that, mix the salt, sugar and pepper and blend again so that the aroma and taste of the crab become stronger.



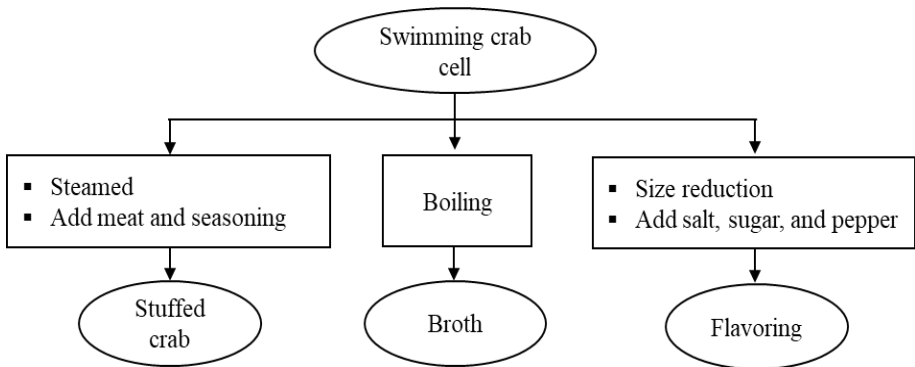
**Fig 1.** Flavoring products ready to be marketed (Source: Personal documentation)

The possible use of crab shells as a flavoring agent has attracted recent interest. The reason is, natural ingredients are now the main source of flavoring. Radam et al. (2010) stated that there is significant demand and will continue to increase in the consumption of "Non MSG" products in Malaysia. This trend is also motivating Malaysian food makers to look for umami-source products that are free of MSG. Customers in the United States often dislike MSG, exacerbating the situation. However, umami extract from natural sources is the best substitute for MSG because of the high need for umami sources in this country (Wang & Adhikari, 2018). Globally, the need for umami ingredients is very large, so crab shell seasoning products have a big opportunity. The selling value of the product will increase if it is further processed into cooking spices. This practice also helps protect fisheries ecosystems (Yusuf, 2021).

The next product is broth which is obtained by boiling crab shells which will produce soup. The aroma and taste of crab are very strong, especially in the water the shells are boiled in, so they are suitable for use as a flavoring agent (Faruqi, 2020). People enjoy a variety of spices with a strong local taste resulting from the distinctive aroma of the sea combined with salt, sugar, pepper and native spices (Yusuf, 2021).

Stuffed crab is the easiest application of crab shells. Because real crab shells contain flavor components from amino acids, using them as a container for processed foods will improve the taste of the food. Developed countries, including the United States, Japan and several European countries, are the main markets for stuffed crab products. According to Rajamohan and Jedaburai (2014), India has been the main supplier of stuffed crabs to these countries to date. Meanwhile, Indonesia is expected to be able to compete with India in the export market in the coming years because of its easy processing and abundant supply of crab shells.

The flow diagram for making various products from crab shell waste is as follows:



**Fig 2.** various products from crab shell waste

#### 4. Conclusions

Empowering the use of crab shell waste in the community of Tanjung Mas sub-district, Semarang City as various products, namely broth, stuffed crab and flavorings, it can be concluded that crab meat is not only used for consumption, but can also be the latest preparations that have economic value . Apart from that, reducing waste from crabs also has an impact on environmental cleanliness so that people become comfortable in living their daily lives.

#### Authors Contributions

All authors contributed to the design and implementation of the research, to the analysis of the results and to the writing of the manuscript.

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