**BAMBOO SHOOTS (BAMBUSA VULGARIS) AS AN ALTERNATIVE**

**ASIAN DUMPLING PORK MEAT (SIOMAI)**

A Research paper presented to the faculty of

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Malubago, Sipocot, Camarines Sur

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**BAMBOO SHOOTS (Bambusa Vulgaris) AS AN ALTERNATIVE**

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2024

**ABSTRACT**

This research study explores the potential of bamboo shoots (Bambusa vulgaris) as an alternative filling for Asian dumplings and has garnered attention due to its potential health benefits, sustainability, and unique texture. Bamboo shoots, a popular ingredient in many Asian cuisines, offer a crisp, slightly sweet flavor and a high fiber content while being low in fat and calories. This study explores the feasibility of substituting traditional pork filling with bamboo shoots in dumplings, assessing the sensory qualities, nutritional profile, and consumer acceptability. Results suggest that bamboo shoots can mimic the texture and moisture retention of pork, providing a plant-based alternative without compromising on taste. Additionally, bamboo shoots offer an environmentally friendly option due to their rapid growth and minimal resource requirements. The findings highlight the potential for bamboo shoots to contribute to the growing demand for plant-based, sustainable culinary innovations while maintaining the cultural and sensory integrity of traditional Asian dumplings.

Keywords: *Bambusa Vulgaris*, Bamboo Shoots, Siomai, Alternative, Asian Dumpling, Pork

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**CHAPTER I**

**INTRODUCTION**

The culinary world is experiencing a shift towards incorporating alternative ingredients, driven by the increasing demand from health-conscious and environmentally aware consumers. Bamboo shoots, renowned for their distinct texture and nutritional advantages, are being explored as a promising main dish component. This research investigated the potential of bamboo shoots as a viable alternative to Asian dumpling meat, emphasizing crucial variables such as taste, cost, and appearance. Furthermore, the study explored the practical aspects of ingredient availability. It explored various characteristics and levels of acceptability to assess the feasibility of integrating bamboo shoots into culinary practices as a sustainable and healthy alternative.

Food innovation must adhere to food safety and labeling regulations to ensure that new ingredients meet consumer protection and quality standards. However, there is a lack of research on the feasibility of using bamboo shoots as an alternative dish, particularly regarding acceptability and characteristics. It is crucial to address this gap to determine the viability of bamboo shoots as a mainstream ingredient in siomai.

The purpose of this study is to explore the potential of using bamboo shoots as a substitute for pork meat in siomai. The study evaluated the characteristics and acceptability of this alternative. By addressing this research gap, the study aimed to determine whether bamboo shoots can effectively replace traditional siomai pork meat, potentially offering advantages in terms of health and culinary variety.

**Statement of the Problem**

This study aimed to determine whether bamboo shoots (Bambusa Vulgaris) can be an alternative to Asian dumpling pork meat.

Specifically, it answered the following questions:

1. What are the characteristics of siomai-made bamboo shoots compared to traditional dumpling pork meat in terms of:

a. Taste

b. Texture

c. Shelf-life

1. What is the level of acceptability of bamboo shoots as an alternative pork dumpling in terms of:

a. Appearance

b. Flavor profile

c. Satisfaction level

d. Perceived healthiness

1. Is there a significant relationship between the characteristics and the level of acceptability of siomai-made bamboo shoots as an alternative dumpling pork meat?

**Objectives of the Study**

The following objectives guided the study:

1. Identify the characteristics of siomai-made bamboo shoots compared to traditional dumpling pork meat in terms of taste, texture, and shelf-life.
2. Determine the level of acceptability of bamboo shoots as an alternative pork dumpling in terms of appearance, flavor profile, satisfaction level, and perceived healthiness.
3. Evaluate the significant relationship between the characteristics and the level of acceptability of siomai-made bamboo shoots as an alternative dumpling pork meat.

**Scope and Limitations**

This study investigated whether bamboo shoots can be used as an alternative pork filling for Asian dumplings (siomai) at King Thomas Learning Academy, Inc., for the school year 2024–2025. The study provided an opportunity to conduct a survey and taste tests, with the students participating as consumers.

This study was limited to health-conscious consumers. It involved analyzing the flavor, texture, shelf life, appearance, flavor profile, satisfaction level, and perceived healthiness of producing bamboo shoot siomai compared to traditional siomai, considering ingredient availability and processing methods.

**Significance of the Study**

The paper will be beneficial to the following:

**Department of Agriculture.** The Department of Agriculture would benefit from this study as it encourages the use of locally sourced, sustainable, and nutritious ingredients. This approach supports farmers' livelihoods, reduces dependence on imported pork, and creates new market opportunities. Ultimately, it strengthens local economies and enhances food security.

**Entrepreneurs.** The study emphasizes opportunities for food entrepreneurs to create bamboo shoot-based dumplings, targeting health-conscious and eco-friendly consumers. This innovation can help businesses gain a competitive edge, attract more customers, and increase revenue while offering new income sources for agricultural traders.

**Consumer.** Bamboo shoots offer a nutritious, plant-based alternative to pork, making siomai accessible for vegetarians and those reducing meat consumption, while maintaining a similar taste and texture to traditional siomai.

**Small Vendors.** Small vendors would benefit from using bamboo shoots in siomai because it provides a more affordable and readily available ingredient compared to pork, helping them reduce costs and avoid supply chain disruptions, while offering a unique product that can attract a wider range of customers, increasing sales and profitability.

**Student.** Students may benefit from bamboo shoot-based siomai because it offers an affordable, nutritious, and vegetarian-friendly alternative to traditional meat-filled siomai, providing a healthier and budget-conscious option for their meals, especially for those with dietary restrictions or limited budgets.

**Researchers.** The researchers benefited by contributing to the preservation of traditional culinary practices, gaining hands-on experience in food processing, and enhancing their skills in food innovation and sustainability.

**Future Researchers.** The study will open doors for future researchers to refine and expand studies related to alternative siomai, serving as a source of information for improving the production of alternative siomai.

**CHAPTER II**

**REVIEW OF RELATED LITERATURE AND STUDIES**

This paper introduced and presented a review of related literature and studies bearing upon the present pursuit of knowledge. The clear understanding and ideas procured from this review provided the researchers with useful and worthy insight to support the study.

**Review of Related Literature**

China National Research Bamboo Centre (2024) states that it is important to consider bamboo shoots as a functional food given the increasing trend in the world for functional foods to support future human food security. This interest is because bamboo is one of the fastest growing and renewable plants, which the world needs to produce sufficient food. The possibility of creating new tasty and nutritious products from bamboo shoots may allow solving the problem of food scarcity and instability to a greater extent, as well as opening new product categories.

Yue Zhang et al. (2024) pointed out that bamboo shoots are among the food resources that have been utilized as food in the past and have attracted attention from researchers and the food industry regarding the future population’s nutritional demands and food security. Nevertheless, with these possibilities, the current use of bamboo shoots in the food industry is limited by toxicity and or sensory qualities needed for acceptance on the international market. It is therefore crucial for the food industry to fight challenges experienced in shoot-based functional foods production for scaling up.

According to Merano V. (2024), traditional siomai can last up to 3 months in the freezer, making it ideal for meat preparation or pre-made siomai sold in the market. In connection to the study, using bamboo shoots as an alternative filling can offer a shelf life of up to 2 months, providing a sustainable, nutritious, and cost-effective option that benefits both vendors and consumers while maintaining convenience, quality, and reducing the need for potentially harmful preservatives.

Bambusa vulgaris is a type of bamboo known for its straight growth, year-round green foliage, and clustered formation. According to Fern K. (2024), this highly versatile plant is particularly significant in tropical countries, where it is cultivated for decoration and various other uses, including as food. Its ability to grow continuously makes Bambusa vulgaris a reliable and sustainable resource. In tropical and subtropical regions, young shoots can grow rapidly, developing stems that reach heights of 3 to 4 meters within just two weeks (Brink M., 2008).

Oinam Santosh et al. (2021) pointed out that bamboo is defined as a perennial plant with several functions. It has thus been found to be very useful in the generation of functional foods due to the following components. The evident use of bamboo in the food diet as well as beneficial purposes shows that it has remained relevant all along.

As per Marcos Silva et al. (2020), the fresh bamboo culm, particularly the young one, has the potential to be used as a source of fiber and/or starch for food utilization. Bamboo shoot fiber is one of the most common bamboo products used in the food processing sector. In the eastern countries, it is taken in as preserves and snacks while it is used in fiber processing at the industrial levels. These fibers are popular in the export market, in addition to being used in the preparation of different food items including breads, pasta, meats, cheese, and yogurt.

Jonathan Tariga (2020) pointed out that considering the nutritional importance of bamboo shoots as a natural food, their importance appears to be underestimated. Unfortunately, the public still lacks knowledge of the various advantages of consuming these nuts. Standardized ready-to-eat bamboo shoot dishes may be introduced as an awareness-raising platform for the public about the importance of indigenous raw materials. This would create awareness about the nutritional value of the bamboo shoots and help consumer uptake of the food product.

**Review of Related Studies**

Rusch F. et al. (2022) explored the potential for using young bamboo culms and shoots as food for human consumption. The study revealed that products derived from these ingredients possess characteristics that meet the standards of most food industries, ensuring stability and preserving nutritional value. Furthermore, the researchers highlighted the environmental benefits of incorporating bamboo into diets, as it is a sustainable resource that can be cultivated with minimal environmental impact. This innovation could also contribute to food security by providing an alternative source of nutrition in various regions.

Tamayo F. et. al. (2020) conducted a study entitled “Sensory Evaluation, Acceptability and Proximate Analysis of Bambusa Blumeana as Bamboo Shoot Cupcake: A Product Development”. This study was to prepare bamboo shoots in cupcakes form and assess their acceptability by consumers. The results showed that bamboo shoots as an ingredient with high nutritional values can be incorporated into baking products such as cupcakes. According to the study, potential consumers accepted the idea of including shredded bamboo shoots in the cupcake recipe. This shows the applicability of bamboo shoots which are regarded as an important source of nutrients that will meet the growing demand for alternative plant-based products with good sensory characteristics and nutritional profiles.

Santosh O. et al. (2019) attempted to investigate the possibility of including functional biscuits from bamboo shoots. The aim was to produce nutritious food that adds helpful nutrients to the food chain of the populace. The study showed that there were increased nutrient and bioactive compound levels in the biscuits which had the bamboo shoot paste as an ingredient from the control biscuits. This indicates that bamboo shoots being a rich source of nutrients and bioactive compounds could be a potential source for the development of raw materials for products and healthy snacks. Perhaps these findings can be utilized to solve the problem of hidden hunger and respond to the increasing consumer demand for functional foods and nutraceuticals.

Maroma, D. (2015) conducted a study to promote the consumption of bamboo shoots as a better snack. In this study, the researcher management aimed at identifying whether it is possible to formulate a product out of labong which is bamboo shoots. This evidence points to the conclusion that bamboo shoots can introduce a healthful food that can literally compete with existing commercial food products and simultaneously fulfill particular nutritive needs or preferences such as for digestive disorder sufferers or children with picky eating habits.

Nongdam P. et al. (2014) sought to develop qualitative research on the nutritional and health values of bamboo shoots, and their nutritional and health importance as identified from the culinary point of view. Their thorough probe exposed that bamboo shoots contain proteins, necessary amino acids, carbohydrates, useful minerals, and vitamins endowed with scarce fat content. The following points supporting the dependence on bamboo shoots are considered convincing evidence that points to this product’s ability to become an important part of the balanced diet.

**Synthesis**

Different from earlier studies which concern the use of bamboo shoots mainly in snacks, bakery products, or as functional foods, this study aimed at examining the importance of substituting meat in Asian dumplings. Rusch F. et al. (2022) and Tamayo F. et al. (2020) focused on the effect of bamboo shoots in baked products and the sensorial evaluation as well as the stability and safety of bamboo shoots in ready-to-eat products, respectively; however, they did not explore the capability of bamboo shoots for developing a direct meat substitute. This is important as it opens up a new perspective on what the company is offering which in turn can be used as a direct replacement for some of the traditional fillings in dumplings based on meats for instance.

In the same way, Santosh O. et al., (2019) and Maroma, D. (2015) emphasize the potential of bamboo shoots as an ingredient in healthy food product development with the concerning research investigating the application of bamboo shoots in functional biscuits. These findings underscore a shared theme: As per nutritional value and medicinal properties, bamboo shoots are a good ingredient due to their high nutritional value which would have great potential if incorporated in new generation food products such as meatless dumplings. The chemical composition provided by Nongdam P. et al. (2014) clearly shows that bamboo shoots contain several nutrients which according to the purpose of this study to use bamboo shoots as a healthy substitute for meat. The study aimed at conducting experimental research on "Bamboo Shoots (Bambusa Vulgaris) as an Alternative Asian Dumpling Pork Meat (Siomai)” has similarity to the previous research conducted on bamboo shoots or can be said that this research is an extension of previous research based on the nutritional and health benefits of bamboo shoots.

The uniqueness of the study is based on the fact that this research is specific to bamboo shoots and is only focused on its use as a meat substitute for Asian dumplings that are culturally relevant to cuisines within the Asia Pacific region. In contrast to the existing work that targeted the vague use of bamboo shoots in food products, this study was designed to investigate the acceptability of bamboo shoots for both their sensory qualities and consumer acceptance. Therefore, in addition to advancing the knowledge base of the subject matter, on bamboo shoots, the study suggests a specific innovative application that might translate to new uses of bamboo shoots in traditional cuisine for plant-based meat alternative products, hence increasing the utilization of bamboo shoots in food markets around the world.

**Theoretical Paradigm**

This study was anchored on the following theories:

**Plant-Based Meat and Consumer Perception Theory** by Azzurra, A. et al., (2021), this theory emphasizes consumer attitudes toward plant-based meats, focusing on perceived health benefits, sustainability, and ethical consumption. It suggested that the growing interest in plant-based alternatives is driven by both personal health concerns and

Plant-Based Meat and Consumer Perception Theory

(Azzurra et al., 2021)

Theory of Consumer Willingness to Pay for Healthier Foods

(Spence, 2020)

Sustainable Food Innovation Theory (Brunner&Nitzko, 2021)

**BAMBOO SHOOTS (*Bambusa Vulgaris*) AS AN ALTERNATIVE ASIAN DUMPLING PORK MEAT (SIOMAI)**

Figure 1. Theoretical Framework

environmental sustainability. Azzurra et al. (2021) emphasize that plant-based products are not only viewed as healthier but also more sustainable in terms of reducing carbon emissions and the use of natural resources like water and land. This perception shift is critical as it drives consumer behavior toward seeking plant-based alternatives.

Bamboo shoots, as a plant-based alternative, align well with consumers' increasing demand for sustainable and healthier meat substitutes. The theory can help frame the study’s focus on consumer acceptance, especially among health-conscious individuals who are more likely to embrace bamboo shoots as a siomai filling.

**Sustainable Food Innovation Theory** by Brunner, T. A., & Nitzko, S. (2021) is a theory that deals with innovation in the food industry, particularly the development of sustainable alternatives to traditional meat. It posits that innovative, plant-based solutions are gaining popularity due to concerns over environmental degradation and ethical meat consumption. The theory highlights that food innovation is not just about creating novel products but also about meeting the ethical and ecological demands of modern consumers.

Bamboo shoots provide a sustainable alternative to traditional siomai meat fillings. This theory supports the idea that using bamboo shoots addresses both environmental sustainability and ethical concerns, thus aligning with modern consumer values.

**Theory of Consumer Willingness to Pay for Healthier Foods** by Spence, C. (2020). This theory examines consumers' willingness to pay premium prices for healthier, plant-based food options. Factors such as perceived health benefits, natural ingredients, and clean labels influence purchasing decisions. This theory underscores the notion that consumers perceive higher-priced items with health benefits as higher quality and more worth the investment.

Bamboo shoots are marketed as a low-calorie, high-fiber alternative to meat, which appeals to consumers looking for healthier options. Understanding the willingness of consumers to pay for such alternatives is critical for pricing and marketing strategies for bamboo shoot-based siomai.

These three theories provide a solid theoretical foundation for studying bamboo shoots as a siomai meat alternative. They emphasize the importance of consumer perception, sustainability, and pricing in introducing a new food ingredient. By understanding these aspects, the present study can effectively assess the feasibility of using bamboo shoots as a healthy, sustainable, and acceptable meat substitute in siomai production.

**Conceptual Paradigm**

**Input.** The input indicated that the problem statement centers on bamboo shoots as a substitute for traditional pork meat in Asian dumplings. It examined the taste, texture, and shelf life of bamboo shoots, as well as whether people find their appearance, flavor profile, satisfaction level, and perceived healthiness acceptable.

**Process.** The process thoroughly explained the contents of the study and showed how bamboo shoots taste compared to traditional Asian dumpling pork meat.

**Output.** The output is the result and conclusion of the study.

Feedback is the element of control. If an output is not subjected, the procedure must be changed.

**BAMBOO SHOOTS (*Bambusa Vulgaris*) AS AN ALTERNATIVE**

**ASIAN DUMPLING PORK MEAT (SIOMAI)**

**OUTPUT**

1. Findings showed the data gathered using the indicators that the product is acceptable.
2. The siomai-made bamboo shoots got positive results and it's proven that it's effective as an alternative siomai.
3. The researchers use the statistical treatment Weighted Mean and Pearson Product-Moment Correlation Coefficient (PPMCC) to determine the significant relationship between the characteristics and the level of acceptability of Siomai-Made Bamboo Shoots as an alternative Dumpling Pork Meat.

**PROCESS**

1. The researchers created the chapters 1-3.
2. The researchers created a questionnaire to gather the data needed from the respondents.
3. The researchers experimented to determine whether bamboo shoots can be an alternative to traditional dumpling pork meat.
4. The researchers then created the product used to gather the data.
5. The researchers gathered the data from the respondents.
6. The researchers then created the chapters 4-5 after gathering the data.

**INPUT**

1. Identify the characteristics of siomai-made bamboo shoots compared to traditional dumpling pork meat in terms of taste, texture, and shelf-life.
2. Determine the level of acceptability of bamboo shoots as an alternative pork dumpling in terms of appearance, flavor profile, satisfaction level, and perceived healthiness.
3. Evaluate the significant relationship between the characteristics and the level of acceptability of siomai-made bamboo shoots as an alternative dumpling pork meat.

Feedback

Figure 2. Conceptual Framework

**Definition of Terms**

A conceptual and operational definition of the term was given to clarify the meaning of the terms used in this study.

**Alternative**

Cambridge Dictionary defines it as not being such as something else especially from the traditional, providing for the option selection. It was used in the study to find out whether bamboo shoots would be an appropriate pork meat substitute for siomai.

**Flavor Profile**

According to the definition in Culinary Pro, the term "flavor profile" describes the overall taste characteristics and sensory attributes of a dish or recipe. It included the combination and balance of various flavors such as sweet, salty, sour, and bitter. This definition was used to evaluate whether bamboo shoots are a more appealing alternative to traditional siomai meat.

**Perceived Healthiness**

According to the National Institutes of Health, perceived healthiness is the interest of consumers in the consumption of healthy food, whereas the interest of food manufacturers is that consumers recognize the produced healthier food item on the shelves, so they can satisfy their demands. This study aimed to know if bamboo shoots as an alternative siomai meat are healthier, compared to traditional siomai meat, and more convenient compared to traditional pork.

**Satisfaction Level**

According to Science Direct, a positive response to food occurs after individuals perceive it and experience sensations related to physical and psychological well-being. This study assessed whether participants are satisfied with the taste and texture of bamboo shoots as an alternative pork meat for siomai dumplings, as well as their satisfaction with the appearance, flavor profile, and perceived healthiness of this alternative.

**Taste**

As per the definition in the Oxford Dictionary, taste is the [sensation](https://www.google.com/search?sca_esv=24d1c3d5cf171cb0&sxsrf=ADLYWIIz-KYuPpaZ13nxtsLFiKhWto8HCQ:1733181236756&q=sensation&si=ACC90nxMSPeZfdJJjQgDsdZJuFuJgyi9C-xkZDRS0Sva0wU8L3P61nb07mnoU69ZqvSn-yJ0KwBVDQOixfojmjF5GDEpQvWg_UkNTJAyMCnzAAQ0Epxk_6U%3D&expnd=1&sa=X&ved=2ahUKEwiezcqfm4qKAxXPZWwGHevdKlwQyecJegQILBAO) of flavor perceived in the mouth and throat on contact with a substance; a person's liking for particular flavors. This study aimed to know the taste between the traditional meat siomai to alternative siomai meat made with bamboo shoots.

**Texture**

According to the Oxford Dictionary, texture refers to the feel, appearance, or consistency of a surface or substance. This study investigated the texture of bamboo shoots used as an alternative to traditional siomai meat. Specifically, it determined whether there is a difference in texture between traditional siomai meat and the alternative made from bamboo shoots.

**Assumption of the Study**

This study is based on the following assumptions:

1. The characteristics of siomai-made of bamboo shoots compared to traditional dumpling pork meat were achieved in terms of
2. Taste
3. Texture
4. Shelf-life
5. The level of acceptability of bamboo shoots as an alternative dumpling was determined in terms of
6. Appearance
7. Flavor profile
8. Satisfaction level
9. Perceived healthiness
10. There is a significant relationship between the characteristics and the level of acceptability of siomai-made bamboo shoots as an alternative dumpling pork meat.

**Hypothesis**

H0: The hypotheses suggested that there is no significant relationship between the characteristics and the level of acceptability of siomai-made bamboo shoots as an alternative dumpling pork meat.

**CHAPTER III**

**METHODOLOGY**

This chapter described the study's research design and instrument additionally, it contains the respondents, research setting, data-gathering procedure statistical treatment, and more information and understanding.

**Research Design**

The research method used in the study is an experimental research design. This research design enabled the researcher to investigate the relationship between the independent and dependent variables and it is possible to determine the cause-and-effect relationship. This method was used to evaluate the potential for using bamboo shoots as a meat substitute for Asian dumplings since it allowed the researchers to compare bamboo shoots with traditional meat when analyzing the characteristics and consumers’ preferences.

**Research Setting**

The research was conducted at King Thomas Learning Academy Inc., located in Malubago, Sipocot, Camarines Sur. It focused on the grade 11 ABM students currently enrolled at the academy. The primary aim of this study was to evaluate the feasibility of substituting bamboo shoots for conventional pork meat in Asian dumplings, specifically siomai. The process of making bamboo shoot siomai took place at Zone 1-A Calagbangan, Sipocot, Camarines Sur. Data was collected through taste tests, surveys, and feedback sessions, allowing the researchers to assess the acceptability and potential of bamboo shoots as a meat substitute in traditional recipes.

**Research Respondents**

Participants for the study were selected by the researchers from the Grade 11 ABM students of King Thomas Learning Academy Inc. Specifically, 37 students came from the ABM 1 class, while the remaining 22 students were drawn from ABM 2. The study employed a purposive sampling technique, with a total of 59 respondents.

**Research Instrument**

The data collection instruments employed were the taste test and checklists. The taste test was utilized to gather data on consumer preferences and perceptions. Taste tests and checklists served as the instruments for grade 11 students at King Thomas Learning Academy Inc. The questionnaire included a range of potential answers and options for students to select from the two sections of the grade 11 ABM strand.

**Validity and Reliability**

After confirming the study's validity and reliability, the researchers informed the research adviser about the tool used, ensuring it was accurate and applicable to the study. The panelists reviewed and validated the observation sheets before they were distributed. The researchers then distributed observation sheets to 59 selected Grade 11 ABM respondents from King Thomas Learning Academy, Inc., who were capable of providing all the necessary data.

**Statistical Treatment**

**Weighted mean** is used to determine the characteristics of siomai-made bamboo shoots in terms of flavor, texture, and shelf-life, and acceptability of siomai-made bamboo shoots in terms of appearance, flavor profile, satisfaction level, and perceived healthiness from the most efficient up to the least through the results.

**Ranking Technique** is used to evaluate different siomai attributes. Where it is ranked from most to least preferred for each criterion. This statistical tool helps identify the most acceptable characteristic and acceptability of siomai-made bamboo shoots as alternative dumpling pork meat.

**Pearson Product-Moment Correlation Coefficient (PPMCC)** was used to determine the significant relationship between the characteristics and the level of acceptability of siomai-made bamboo shoots as alternative dumpling pork meat.

**Data Gathering Procedure**

Data was gathered in King Thomas Learning Academy, Inc., where a focus group was conducted to assess a specific food product. Siomai, featuring bamboo shoots as a key ingredient, was the main item served during this activity. A select group of students from Grade 11 ABM was chosen to participate in the investigation.

The participants were first given a brief introduction that outlined the purpose and significance of the investigation. After this, the students were invited to taste the siomai. Following the tasting, they completed a checklist designed to evaluate various characteristics of the product, such as taste and texture, as well as their overall level of acceptance of the dish.

It’s important to note that the anonymity of all respondents was preserved throughout the process; their inputs were collected in a way that ensured their privacy and encouraged honest feedback.

**Materials**

The following are the materials and ingredients with their quantities and uses that the researchers used in the study:

**Table 1. Materials used in the study.**

|  |  |  |
| --- | --- | --- |
| Materials /Ingredients | Quantity | Use/s |
| Bamboo Shoots | 1 kl | It is used as a replacement for a pork filling in siomai. |
| Water | As many as needed | It is used to boil the bamboo shoots to clean and remove toxins. |
| Siomai Wrapper | 200 g | Used as a container for the siomai meat. |
| Carrot | 0.13 kg | It enhanced the texture and flavor and provided a vibrant color. |
| Soy Sauce | 42.52 g | It is used to enhance the taste of the siomai. |
| Egg | 2 pcs | The egg is used to help bind the ingredients together. |
| Pepper | ½ tbsp | It is used to add flavor to the siomai. |
| Flour | ½ kl | Helped bind the ingredients together, particularly the meat filling, ensuring that the siomai doesn't fall apart during cooking. |
| Vinegar | 3 tbsp | Vinegar is added on the boiling water to remove the bitterness of bamboo shoots when it is being boiled. |
| Salt | 2 tbsp | Salt is added on the boiling water to remove the bitterness of bamboo shoots when it is being boiled. |

**Process**

**Step 1: Prepare the Bamboo Shoots**

1. **Clean the Bamboo Shoots:** Remove the tough, outer layers of the bamboo shoots until you reach the tender core.
2. **Boil the Shoots:** Place the bamboo shoots in a pot of water and bring to a boil. Add 2 tbsp of salt and 3 tbsp of vinegar to remove the bitterness. Let it boil for 2 hours, then drain and allow the shoots to cool.
3. **Slice Thin Sheets:** Once cooled, use a sharp knife or a chopping machine to slice the bamboo shoots into thin pieces. Place the sliced bamboo shoots in a bowl.

**Step 2: Prepare the Filling**

1. **Combine Ingredients:** In a bowl, mix the bamboo shoots, soy sauce, egg, flour, and pepper. Stir well until all ingredients are thoroughly incorporated.

**Step 3: Assemble the Siomai**

1. **Prepare the Wrappers:** Lay out your siomai wrappers on a clean surface.
2. **Fill the Wrappers:** Place a small tablespoon of the bamboo shoot filling in the center of each wrapper.
3. **Shape the Siomai:** Gently fold the edges of the wrapper up around the filling, pinching and pleating the edges to seal the siomai. Ensure the edges overlap slightly to hold the filling securely in place.
4. **Steam the Siomai:** Once all siomai are assembled, steam them over boiling water for 15-20 minutes or until fully cooked.
5. **Preheat Oil:** Heat enough oil in a pan or deep fryer over medium heat.
6. **Fry the Siomai:** Place the siomai in the hot oil and fry for about 5-7 minutes until golden brown.

**CHAPTER IV**

**RESULTS AND DISCUSSION**

This chapter presented the results and findings, analysis, and interpretation of data gathered by letting the respondents answer the survey checklists with taste tests. It included the presentation of the following: (a) characteristics of siomai-made bamboo shoots as an alternative dumpling pork meat (b) the level of acceptability of siomai-made bamboo shoots as an alternative dumpling pork meat (c) the significant relationship between the characteristics and the level of acceptability of siomai-made bamboo shoots as an alternative dumpling pork meat.

**Characteristics of Siomai-Made Bamboo Shoots Compared to Traditional Dumpling Pork Meat**

This analysis discusses the characteristics of siomai-made bamboo shoot compared to traditional dumpling pork meat. The data were gathered through survey and statistically treated using weighted mean and ranking technique.

The interpretation in Table 2.1 (see on page 24) regarding the characteristic of siomai-made bamboo shoots, particularly in terms of taste, are well-supported by the existing literature. The respondents' strong agreement that bamboo shoot siomai is tasty (WM, 4.576) aligns with research by Rusch et al. (2022), who emphasized that bamboo products, including shoots, have distinct sensory qualities that make them appealing to consumers. It is also strongly agreed that siomai-made bamboo shoots impart a unique flavor, which distinguishes it from pork dumplings (WM, 4.559). The agreement that the taste of bamboo shoots in siomai is more subtle than pork (WM, 4.119), tastier

**Table 2.1. Characteristics of siomai-made bamboo shoots compared to traditional dumpling pork meat in terms of** **taste.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Statement** | **Weighted Mean** | **Rank** | **Interpretation** |
| 1. Bamboo shoots impart a unique taste to siomai. | 4.559 | 2.5 | Strongly Agree |
| 2. Siomai-made bamboo shoots are tasty. | 4.576 | 1 | Strongly Agree |
| 3. There is a subtle taste of bamboo shoots in siomai. | 3.983 | 10 | Agree |
| 4. The tastes of the ingredients in the bamboo shoot siomai are blended equally. | 4.441 | 4 | Strongly Agree |
| 5. Bamboo shoot siomai pairs well with dipping sauces, enhancing its taste. | 4.339 | 5 | Strongly Agree |
| 6. Bamboo shoots bring a unique taste distinguishing siomai from pork dumplings. | 4.559 | 2.5 | Strongly Agree |
| 7. The equally blended tastes of the ingredients in bamboo shoot siomai are comparable to pork dumplings. | 4.322 | 6 | Strongly Agree |
| 8. Siomai-made bamboo shoots are tastier than pork dumplings. | 4.034 | 9 | Agree |
| 9. Siomai made with bamboo shoots feels less greasy than pork dumplings, enhancing its taste. | 4.153 | 7 | Agree |
| 10. The taste of bamboo shoots in siomai is more subtle than the pork flavor. | 4.119 | 8 | Agree |
| **TOTAL** | **4.308** |  | **Strongly Agree** |

Legend:

4.20 – 5.00 Strongly Agree 1.80 – 2.59 Disagree

3.40 – 4.19 Agree 1.00 – 1.79 Strongly Disagree

2.60 – 3.39 Neutral

(WM,4.034), and has a subtle taste of bamboo shoots (WM, 3.983) is also consistent with findings from other studies. For instance, Marcos Silva et al. (2020) noted that bamboo shoots have a mild and delicate flavor, which may be why respondents in the study found the bamboo shoot flavor to be subtler compared to the stronger pork taste. The overall weighted mean of the characteristics of siomai-made bamboo shoots in terms of taste is 4.308, which is strongly agreed.

**Table 2.2.** **Characteristics of siomai-made bamboo shoots compared to traditional dumpling pork meat in terms of texture.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Statement** | **Weighted Mean** | **Rank** | **Interpretation** |
| 1. The texture of the siomai-made bamboo shoot meets my expectations for a dumpling. | 4.136 | 4.5 | Agree |
| 2. Siomai made with bamboo shoots has a smooth texture. | 4.119 | 6 | Agree |
| 3. Bamboo shoots contribute a unique texture that enhances the siomai satisfaction. | 4.288 | 2 | Strongly Agree |
| 4. Siomai made with bamboo shoots has a firm texture. | 4.136 | 4.5 | Agree |
| 5. I enjoy the smooth, rough, and chewy textures in siomai made with bamboo shoots. | 4.339 | 1 | Strongly Agree |
| 6. Siomai made with bamboo shoots is tenderer than traditional pork dumplings. | 4.153 | 3 | Agree |
| 7. Siomai made with bamboo shoots has a firmer texture than traditional pork meat dumplings. | 3.814 | 8 | Agree |
| 8. The texture of bamboo shoot siomai is more chewy compared to that of pork meat dumplings. | 3.678 | 9 | Agree |
| 9. Siomai made with bamboo shoots has a rougher texture than traditional pork meat dumplings. | 3.61 | 10 | Agree |
| 10. The texture of bamboo shoot siomai is less dense than pork meat dumplings. | 3.831 | 7 | Agree |
| **TOTAL** | **4.010** |  | **Agree** |

Legend:

4.20 – 5.00 Strongly Agree 1.80 – 2.59 Disagree

3.40 – 4.19 Agree 1.00 – 1.79 Strongly Disagree

2.60 – 3.39 Neutral

The interpretation in Table 2.2 about the characteristic texture of siomai-made with bamboo shoots, in comparison to traditional pork dumplings, provides significant insights that can be compared and contrasted with existing literature. Respondents strongly agreed that they enjoy the smooth, rough, and chewy textures of bamboo shoot siomai (WM, 4.339). This finding aligns with the observations of Santosh O. et al. (2019), who noted that bamboo shoots when used in food products, contribute a unique texture that is well-received by consumers. Additionally, the unique texture of bamboo shoot siomai was found to enhance overall satisfaction (WM, 4.288). Respondents also agreed that bamboo shoot siomai is tenderer than traditional pork dumplings (WM, 4.153). In contrast, the study found that bamboo shoot siomai has a firmer texture compared to traditional pork dumplings (WM, 3.814), and is more chewy and rougher (WM, 3.678 and 3.610). These textural differences are consistent with the research of Maroma, D. (2015), who explored the potential of bamboo shoots as a snack with desirable texture characteristics. Bamboo shoots, when incorporated into various food products, often display a balance of firmness and chewiness, which can be appealing to consumers who prefer a more substantial bite in their food. The overall average weighted mean for texture characteristics is 4.010, which is labeled as agreed.

The statements and remarks provided in Table 2.3 (see of page 29) indicated that siomai made with bamboo shoots can last up to 73 days stored in a freezing temperature, remaining in an "acceptable" condition throughout this period. The product maintained its desirable qualities—such as taste, texture, aroma, and absence of spoilage signs like sourness, mold growth, or bad odors—both before and after the third month of storage. This aligned with the research by Merano V. (2024), which highlights that traditional siomai can last up to three months in the freezer, a period that is ideal for pre-made siomai sold in the market.

**Table 2.3.** **Characteristics of siomai-made bamboo shoots compared to traditional dumpling pork meat in terms of shelf-life.**

|  |  |
| --- | --- |
| **Statements** | **Remarks** |
| 1. Siomai made with bamboo shoots can be stored for two months or longer. | Acceptable |
| 2. Siomai made with bamboo shoots is still edible. | Acceptable |
| 3. Siomai made with bamboo shoots didn't smell bad. | Acceptable |
| 4. Bamboo shoot siomai did not have a sour taste. | Acceptable |
| 5. The taste, texture, and aroma of siomai-made bamboo shoots remained unchanged. | Acceptable |
| 6. Siomai made from bamboo shoots shows no mold growth. | Acceptable |
| 7. Siomai made with bamboo shoots retained its flavor. | Acceptable |
| 8. Siomai made from bamboo shoots has a delightful aroma. | Acceptable |
| 9. The siomai made bamboo shoots still has a smooth texture. | Acceptable |
| 10. Siomai made with bamboo shoots still tastes good. | Acceptable |

Legend:

73 days and above Highly Acceptable

55-72 days Acceptable

37-54 days Neutral

19-36 days Unacceptable

1-18 days Highly Unacceptable

The study suggested that using bamboo shoots as an alternative filling can provide a shelf life of up to 73 days, making it a practical, nutritious, and cost-effective option. This approach helps vendors offer a product with an extended shelf life without relying on potentially harmful preservatives. Additionally, it supported both the convenience of pre-made food and the preservation of quality, benefitting consumers by offering a sustainable option that remains safe and tasty.

**Level of Acceptability of Siomai-Made Bamboo Shoots Compared to Traditional Dumpling Pork Meat**

This analysis discusses the level of acceptability of siomai-made bamboo shoot compared to traditional dumpling pork meat. The data were gathered through survey and statistically treated using weighted mean and ranking technique.

**Table 3.1**. **Level of acceptability of siomai-made bamboo shoots compared to traditional dumpling pork meat in terms of appearance.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Statement** | **Weighted Mean** | **Rank** | **Interpretation** |
| 1. Bamboo shoot dumplings have an appealing color. | 4.153 | 4 | Agree |
| 2. Bamboo shoot dumplings look delicious. | 4.424 | 2 | Strongly Agree |
| 3. The appearance of bamboo shoot dumplings makes them suitable for a business. | 4.458 | 1 | Strongly Agree |
| 4. The appearance of bamboo shoot dumplings is the standard for dumplings. | 4.254 | 3 | Strongly Agree |
| 5. Bamboo shoot dumplings are more appealing due to the fillings visible on their surface. | 4.017 | 5 | Agree |
| 6. The color of bamboo shoot dumplings is paler than that of traditional pork dumplings. | 3.356 | 10 | Neutral |
| 7. Bamboo shoot dumplings look more delicious than traditional pork dumplings. | 3.797 | 8 | Agree |
| 8. Bamboo shoot dumplings and traditional pork dumplings have the same appearance. | 3.966 | 6 | Agree |
| 9. Bamboo shoot fillings appear more eye-catching than the pork fillings of a dumpling. | 3.814 | 7 | Agree |
| 10. I prefer the shape of bamboo shoot dumplings over traditional pork dumplings. | 3.779 | 9 | Agree |
| **TOTAL** | **4.002** |  | **Agree** |

Legend:

4.20 – 5.00 Strongly Agree 1.80 – 2.59 Disagree

3.40 – 4.19 Agree 1.00 – 1.79 Strongly Disagree

2.60 – 3.39 Neutral

The interpretation presented in Table 3.1 on the acceptability levels of bamboo shoot dumplings, focusing specifically on appearance, showed a positive reception towards the visual appeal of these dumplings. Respondents strongly agreed that bamboo shoot dumplings are suitable for business (WM, 4.458) and look delicious (WM, 4.424). This is consistent with the research of Santosh O. et al. (2019), which suggests that bamboo shoots, when used in food products, not only enhance the flavor and texture but also contribute to the visual appeal of the dish. The appearance of bamboo shoot dumplings is the standard for dumplings (WM, 4.254) is also strongly agreed.

Respondents also agreed that bamboo shoot dumplings look more delicious than traditional pork dumplings (WM, 3.797) and preferred the shape of bamboo shoot dumplings over pork dumplings (WM, 3.779). However, the study also revealed that the color of bamboo shoot dumplings was considered paler than traditional pork dumplings (WM, 3.356), which falls into the neutral category. This is consistent with research by Rusch et al. (2022), who highlighted that while bamboo-based products have unique and appealing characteristics, certain sensory factors, such as color, may differ from those of traditional meat-based products, potentially requiring adjustments to meet consumer expectations. The overall weighted mean of 4.0018 for the appearance of bamboo shoot dumplings reflects an overall positive agreement with the idea that bamboo shoot dumplings are visually acceptable and attractive.

The interpretation in Table 3.2 (see on page 30) regarding the acceptability levels of bamboo shoots as an alternative to pork meat in dumplings, with a specific focus on the flavor profile, highlighted the positive response to bamboo shoot siomai's flavor profile. Respondents agreed that the taste of bamboo shoots complements the other ingredients in the dumplings (WM, 4.102) which aligns with the findings of Rusch et al. (2022), who noted that bamboo shoots have distinct yet harmonious flavors that can be successfully integrated into various food products. Additionally, the study shows that the saltiness of bamboo shoot siomai balances well with its other flavors (WM, 3.983) and agrees that

**Table 3.2.** **Level of acceptability of siomai-made bamboo shoots compared to traditional dumpling pork meat in terms of flavor profile.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Statement** | **Weighted Mean** | **Rank** | **Interpretation** |
| 1. The saltiness of bamboo shoot siomai balances well with its other flavors. | 3.983 | 2 | Agree |
| 2. The slight bitterness in bamboo shoots siomai contributes to its overall taste. | 3.746 | 9 | Agree |
| 3. The bamboo shoot siomai has a slightly sweet flavor. | 3.966 | 3 | Agree |
| 4. Bamboo shoot siomai has a pleasant sourness that enhances its flavor. | 3.712 | 10 | Agree |
| 5. The taste of bamboo shoots complements with the other ingredients in dumplings. | 4.102 | 1 | Agree |
| 6. Bamboo shoot dumpling is more delicious than traditional pork dumplings. | 3.881 | 6.5 | Agree |
| 7. The saltiness of bamboo shoot siomai balances well with its other flavors compared to pork siomai. | 3.881 | 6.5 | Agree |
| 8. The bamboo shoot siomai has a slightly sweet flavor, which tastes better than pork siomai. | 3.932 | 5 | Agree |
| 9. Bamboo shoot siomai has a pleasant sourness that enhances its flavor compared to pork siomai. | 3.847 | 8 | Agree |
| 10. Bamboo shoot siomai provides a unique blend of flavors that I prefer over pork siomai. | 3.949 | 4 | Agree |
| **TOTAL** | **3.900** |  | **Agree** |

Legend:

4.20 – 5.00 Strongly Agree 1.80 – 2.59 Disagree

3.40 – 4.19 Agree 1.00 – 1.79 Strongly Disagree

2.60 – 3.39 Neutral

bamboo shoot siomai has a slightly sweet flavor (WM, 3.966).

The data also showed that bamboo shoot siomai has a pleasant sourness that enhances its flavor (WM, 3.712) compared to pork siomai (WM, 3.847). This sourness could come from the natural characteristics of bamboo shoots or the preparation method used, which could highlight a sour profile. This observation resonated with the findings of Marcos Silva et al. (2020), who mentioned that bamboo shoots possess a range of flavors, including sourness, which could make them an attractive alternative to pork-based fillings in dumplings. Furthermore, respondents agreed that a slight bitterness in the bamboo shoots contributes positively to the overall taste (WM, 3.746). The overall weighted mean is 3.900, which is labeled as agree.

**Table 3.3.** **Level of acceptability of siomai-made bamboo shoots compared to traditional dumpling pork meat in terms of satisfaction level.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Statement** | **Weighted Mean** | **Rank** | **Interpretation** |
| 1. The taste of bamboo shoot dumplings is satisfying to me. | 4.322 | 1 | Strongly Agree |
| 2. The texture of the bamboo shoot dumplings is satisfying. | 4.271 | 2 | Strongly Agree |
| 3. I am satisfied with the appearance of the bamboo shoot dumpling. | 4.102 | 8 | Agree |
| 4. The bamboo shoot dumpling has a satisfying savory and slightly sweet flavor. | 4.085 | 9 | Agree |
| 5. I’m satisfied with bamboo shoot dumplings as a healthy food choice. | 4.153 | 4 | Agree |
| 6. The taste of siomai-made bamboo shoots is more satisfying to me than the traditional pork dumplings. | 4 | 10 | Agree |
| 7. The bamboo shoot dumplings have a texture that is just as satisfying as the traditional pork dumplings. | 4.136 | 5.5 | Agree |
| 8. Compared to traditional pork dumplings, I find the appearance of the bamboo shoot dumplings satisfying. | 4.119 | 7 | Agree |
| 9. The bamboo shoot siomai has a satisfying flavor similar to the traditional pork dumplings. | 4.136 | 5.5 | Agree |
| 10. I’m satisfied with bamboo shoot dumplings as a healthier alternative to traditional pork dumpling. | 4.22 | 3 | Strongly Agree |
| **TOTAL** | **4.154** |  | **Agree** |

Legend:

4.20 – 5.00 Strongly Agree 1.80 – 2.59 Disagree

3.40 – 4.19 Agree 1.00 – 1.79 Strongly Disagree

2.60 – 3.39 Neutral

The interpretation presented in Table 3.3 on the acceptability levels of bamboo shoots as an alternative to pork meat in dumplings, focusing on satisfaction levels, indicated a strong positive response from respondents. Participants strongly agreed that the taste of bamboo shoot dumplings is satisfying (WM, 4.322). This finding is consistent with the results in the previous sections, where respondents noted that the taste of bamboo shoots complements other ingredients and has a balanced flavor profile. Research by Santosh O. et al. (2019) supports this, highlighting that bamboo shoots can contribute to satisfying, well-rounded flavors in food products. In addition to the taste, respondents also strongly agreed that the texture of bamboo shoot dumplings is satisfying (WM, 4.271). Participants also expressed satisfaction with bamboo shoot dumplings as a healthier alternative to traditional pork dumplings (WM, 4.22).

Respondents agreed that they were satisfied with the appearance of the bamboo shoot dumplings (WM, 4.102). Furthermore, respondents noted that the bamboo shoot dumplings have a satisfying savory and slightly sweet flavor (WM, 4.085). Finally, respondents felt that the taste of bamboo shoot siomai is more satisfying than that of traditional pork dumplings (WM, 4). This result further emphasizes the acceptance of bamboo shoots as a flavorful and satisfying alternative to pork, as consumers appreciate the unique taste and health benefits offered by bamboo-based dumplings. The overall total weighted mean for the satisfaction level of bamboo shoot dumplings is 4.1544, which is categorized as agree.

**Table 3.4.** **Level of acceptability of siomai-made bamboo shoots compared to traditional dumpling pork meat in terms of perceived healthiness.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Statement** | **Weighted Mean** | **Rank** | **Interpretation** |
| 1. The fiber content in bamboo shoots enhances their health benefits. | 4.322 | 2 | Strongly Agree |
| 2. The nutritional value of bamboo shoot dumplings affects my decision of trying them. | 4.119 | 7 | Agree |
| 3. Bamboo dumplings can fit into a vegan or vegetarian diet. | 4.203 | 5.5 | Strongly Agree |
| 4. Bamboo shoot dumplings are much easier to digest than pork dumplings. | 4.017 | 9 | Agree |
| 5. Bamboo shoots are a good source of plant-based protein. | 4.356 | 1 | Strongly Agree |
| 6. Bamboo shoots are less processed than traditional pork dumplings. | 4.085 | 8 | Agree |
| 7. Bamboo shoots are a better source of fiber compared to pork dumplings. | 4.288 | 3 | Strongly Agree |
| 8. Bamboo shoot dumplings can accommodate more dietary restrictions than pork dumplings. | 4.254 | 4 | Strongly Agree |
| 9. Bamboo shoots have fewer calories than pork dumplings. | 4.203 | 5.5 | Strongly Agree |
| 10. I would choose bamboo shoot dumplings over traditional dumplings for health reasons. | 3.78 | 10 | Agree |
| **TOTAL** | **4.163** |  | **Agree** |

Legend:

4.20 – 5.00 Strongly Agree 1.80 – 2.59 Disagree

3.40 – 4.19 Agree 1.00 – 1.79 Strongly Disagree

2.60 – 3.39 Neutral

The interpretation presented in Table 3.4 focused on participants' perceptions of bamboo shoots as a healthy alternative to pork in dumplings, revealing strong positive responses. The findings suggested that bamboo shoots are viewed as a good source of plant-based protein, with a weighted mean (WM) of 4.356. It aligned with the observations made by Oinam Santosh et al. (2021), who identified bamboo as a viable source of plant-based protein, making it a suitable alternative to animal products like pork. Bamboo shoots are increasingly recognized for their potential to support plant-based diets while fulfilling protein needs.

Respondents also strongly agreed that the fiber content of bamboo shoots enhances their benefits, with a WM of 4.322, and indicated that bamboo shoots are a better source of fiber than pork, achieving a WM of 4.288.

In addition to these nutritional benefits, participants expressed a preference for bamboo shoot dumplings over traditional pork dumplings for health reasons, receiving a WM of 3.78. The study further revealed that respondents believe bamboo shoot dumplings are easier to digest than pork dumplings, evidenced by a WM of 4.017. Lastly, the results indicated that respondents perceive bamboo shoot dumplings as less processed compared to traditional pork dumplings, with a WM of 4.085. It aligned with the growing consumer demand for minimally processed foods, as individuals increasingly seek whole, natural ingredients in their diets. Bamboo shoots, being a more natural and less processed ingredient compared to pork, fulfill this demand for cleaner, healthier food options. Overall, the perceived healthiness of bamboo shoot dumplings achieved a weighted mean of 4.163, which is categorized as "agree."

**Significant Relationship Between the Characteristics and the Level of Acceptability of Siomai-Made Bamboo Shoots as an Alternative Dumpling Pork Meat**

This analysis discusses the significant relationship between the characteristics and the level of acceptability of siomia-made bamboo shoots as an alternative dumpling pork meat. The data were gathered through survey and statistically treated using Pearson Product-Moment Correlation Coefficient (PPMCC).

**Table 4.1.** **Relationship between the characteristics and the level of acceptability of bamboo shoots** *(Bambusa Vulgaris)* **as an alternative Asian dumpling pork meat** *(siomai)* **based on Taste.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Source of Relationship** | **Correlation** | **Interpretation** | **P-value** | **Decision** | **Interpretation** |
| Appearance and Taste | 0.315 | Moderately Positive Correlation | 0.015 | Reject H0 | Significant |
| Flavor Profile and Taste | 0.228 | Very Small Positive Correlation | 0.082 | Failed to Reject H0 | Not Significant |
| Satisfaction Level and Taste | 0.124 | Very Small Positive Correlation | 0.348 | Failed to Reject H0 | Not Significant |
| Perceived Healthiness and Taste | 0.516 | High Positive Correlation | 0.000 | Failed to Reject H0 | Not Significant |

Legend:

1.0 Perfect Positive Correlation

0.75 – 0.99 Very High Positive

0.50 – 0.74 High Positive Correlation

0.25 – 0.49 Moderately Positive Correlation

0.01 – 0.24 Very Small Positive Correlation

0 No Correlation

The analysis in Table 4.1 of bamboo shoots as a pork alternative in dumplings revealed key insights into consumer acceptability. A moderate positive correlation (0.315, p-value = 0.015) was found between appearance and taste, emphasizing that visual appeal significantly influences perceived taste. However, the flavor profile showed a minimal effect on taste perception (0.228, p-value = 0.082), indicating that the unique flavors of bamboo shoots are underappreciated despite their health benefits.

Satisfaction with bamboo shoot dumplings was not significantly correlated with taste (0.124, p-value = 0.348), aligning with research that highlights the importance of texture and appearance over taste. Although perceived healthiness correlated with taste (0.516), it was statistically insignificant (p-value = 0.000), suggesting that health benefits do not substantially influence taste perception.

Overall, while this study reinforced bamboo shoots' nutritional potential and addresses the need for improved sensory qualities to enhance market acceptance, it highlights that factors such as appearance and texture play a more critical role in consumer preferences than health benefits alone.

**Table 4.2.** **Relationship between the characteristics and the level of acceptability of bamboo shoots** *(Bambusa Vulgaris)* **as an alternative Asian dumpling pork meat** *(siomai)* **based on Texture**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Source of Relationship** | **Correlation** | **Interpretation** | **P-value** | **Decision** | **Interpretation** |
| Appearance and Texture | 0.042 | Very Small Positive Correlation | 0.753 | Failed to Reject H0 | Not Significant |
| Flavor Profile and Texture | 0.531 | High Positive Correlation | 0.000 | Failed to Reject H0 | Not Significant |
| Satisfaction Level and Texture | 0.358 | Moderately Positive Correlation | 0.005 | Reject H0 | Significant |
| Perceived Healthiness and Texture | 0.206 | Very Small Positive Correlation | 0.117 | Failed to Reject H0 | Not  Significant |

Legend:

1.0 Perfect Positive Correlation

0.75 – 0.99 Very High Positive

0.50 – 0.74 High Positive Correlation

0.25 – 0.49 Moderately Positive Correlation

0.01 – 0.24 Very Small Positive Correlation

0 No Correlation

The analysis in Table 4.2 of bamboo shoots (Bambusa vulgaris) as an alternative to pork in siomai revealed key insights about texture and consumer acceptability. A very small correlation (0.042, p-value = 0.753) between appearance and texture suggests that visual appeal does not significantly affect texture perception. Conversely, the flavor profile's correlation with texture was strong (0.531, p-value = 0.000) but not statistically significant, indicating that flavor and texture may function independently in consumer preferences.

In particular, texture was moderately positively correlated with satisfaction (0.358, p-value = 0.005), highlighting its critical role in acceptability. However, the connection between perceived healthiness and texture was weak (0.206, p-value = 0.117), indicating that health benefits do not heavily influence texture perception.

**CHAPTER V**

**SUMMARY, CONCLUSION, AND RECOMMENDATION**

This chapter presents the summary findings, conclusions, and recommendations of the study. From the findings, conclusions were drawn from which the recommendations were based.

**Summary**

The study focused on bamboo shoots (Bambusa vulgaris) as an alternative to pork meat in Asian dumplings. The specific problems addressed in the research are as follows: 1) What are the characteristics of siomai made with bamboo shoots compared to traditional pork dumpling meat in terms of flavor, texture, and shelf life? 2) What is the level of acceptability of bamboo shoots as an alternative to pork dumplings regarding appearance, flavor profile, satisfaction level, and perceived healthiness? 3) Is there a significant relationship between the characteristics of siomai made with bamboo shoots and the level of acceptability as an alternative to pork dumpling meat? The total number of respondents in the study was 59, consisting of 37 students from the ABM 1 strand and 22 students from the ABM 2 strand at King Thomas Learning Academy Inc., selected using purposive sampling. The researchers employed an experimental research design to assess the potential of using bamboo shoots as a substitute for pork meat in Asian dumplings. Statistical tools, including Weighted Mean and Pearson Product-Moment Correlation Coefficient (PPMCC), were utilized to analyze the data. The findings of this study could provide valuable insights for food producers and consumers seeking healthier and more sustainable alternatives to traditional Asian cuisine.

**Problem 1**

**What are the characteristics of siomai-made bamboo shoots compared to traditional dumpling pork meat in terms of:**

**a. Taste**

**b. Texture**

**c. Shelf-life**

**Findings**

The study revealed significant differences between siomai made with bamboo shoots and traditional pork dumplings in terms of taste, texture, and shelf-life. Regarding taste, respondents strongly agreed that bamboo shoot siomai is tasty and imparts a unique flavor, distinguishing it from traditional pork dumplings. Additionally, bamboo shoot siomai was perceived to have a subtler flavor compared to pork, and respondents found it tastier than traditional pork dumplings. For texture, respondents appreciated the smooth, rough, and chewy qualities of bamboo shoot siomai, agreeing that the texture enhances overall satisfaction. Bamboo shoot siomai was also rated as more tender and firmer than pork dumplings, with a more chewy and rough texture. Regarding shelf-life, bamboo shoot siomai lasts for 2 months in the freezer, compared to 3 months for traditional pork siomai.

**Conclusion**

The findings indicated that siomai made with bamboo shoots provides a distinct alternative to traditional pork dumplings in terms of taste, texture, and shelf life. In terms of flavor, bamboo shoot siomai is perceived as tastier and more unique, featuring a subtler taste compared to pork. This suggests that bamboo shoots can be an appealing substitute for consumers seeking variety or those who prefer a more plant-based option in their diets.

The texture of bamboo shoot siomai is highly appreciated as well, with respondents describing it as more tender, firmer, and chewier than pork dumplings. This can enhance the sensory experience for consumers who are interested in trying novel food textures.

However, bamboo shoot siomai has a shorter shelf life of 2 months compared to pork siomai, which lasts up to 3 months. This could pose a challenge for long-term preservation and commercial viability, highlighting the need for the development of preservation techniques to extend its shelf life.

**Recommendation**

Based on the findings and conclusions of the study, it is recommended that researchers must put the siomai in the freezer to address its shorter shelf life. This could include exploring vacuum sealing or using freezing technique to extend freshness. The unique taste and texture of bamboo shoot siomai should be highlighted as a key selling point, positioning it as a healthier, plant-based alternative to traditional pork siomai. Furthermore, strategies to increase the shelf life of bamboo shoot siomai, such as optimizing freezing methods or employing drying techniques, should be investigated to enhance its commercial viability.

**Problem 2**

**What is the level of acceptability of bamboo shoots as an alternative pork dumpling in terms of:**

**a. Appearance**

**b. Flavor profile**

**c. Satisfaction level**

**d. Perceived healthiness**

**Findings**

The study indicated a favorable level of acceptability for bamboo shoot dumplings as an alternative to traditional pork dumplings, assessed across four key attributes: appearance, flavor profile, satisfaction level, and perceived healthiness.

Regarding appearance, bamboo shoot dumplings were generally perceived as suitable for commercial presentation and visually appealing. Respondents noted they looked more appetizing and had a preferred shape compared to pork dumplings, although they remarked that the color appeared paler. In terms of flavor profile, participants agreed that bamboo shoots complemented the other ingredients, offering a well-balanced combination of saltiness, slight sweetness, and pleasant sourness that enhanced the overall taste.

The satisfaction level for bamboo shoot dumplings was notably high, with respondents expressing strong contentment with their taste, texture, and the health benefits associated with the product. When it came to perceived healthiness, bamboo shoots were recognized as a good source of plant-based protein and fiber. Respondents preferred bamboo shoots for health reasons and noted that they are easier to digest compared to pork dumplings. Additionally, many participants appreciated that bamboo shoots are lower in fat and calories, making them a healthier alternative for those mindful of their dietary intake.

**Conclusion**

The findings indicated that bamboo shoot dumplings are widely accepted as a viable alternative to traditional pork dumplings in terms of appearance, flavor, satisfaction, and health benefits. Respondents appreciated the appealing appearance of bamboo shoot dumplings, which they felt were suitable for commercial purposes. They preferred the shape and overall look of these dumplings, even though they have a paler color.

The flavor profile of bamboo shoot dumplings was well-received, featuring a pleasant balance of saltiness, sweetness, and sourness, along with a slight bitterness that positively contributed to the overall taste. Many respondents reported high satisfaction levels, particularly regarding taste and texture, suggesting that bamboo shoot dumplings provide a satisfying eating experience.

Furthermore, the perceived health benefits of bamboo shoots—such as their plant-based protein, fiber content, and digestibility—position bamboo shoot dumplings as a healthier alternative to pork dumplings. This aspect is especially appealing to health-conscious consumers.

**Recommendation**

To take advantage of the positive response to bamboo shoot dumplings, efforts should be made to enhance their marketability by emphasizing their attractive appearance, unique flavor profile, and health benefits. It is advisable to promote the health advantages of bamboo shoot dumplings, particularly their plant-based protein and fiber content, to attract health-conscious consumers. Additionally, product development should focus on improving the color of the dumplings to better resemble traditional pork dumplings, which could enhance their visual appeal. Since consumer satisfaction with the taste and texture has been high, it is crucial to maintain or improve these qualities to ensure ongoing acceptance. Marketing strategies should position bamboo shoot dumplings as a healthier and more easily digestible alternative to pork, appealing to those seeking nutritious, plant-based food options.

**Problem 3**

**Is there a significant relationship between the characteristics and the level of acceptability of siomai-made bamboo shoots as an alternative dumpling pork meat?**

**Findings**

The findings revealed both significant and insignificant relationships between various characteristics and the acceptability of bamboo shoots (Bambusa vulgaris) as an alternative to pork meat in siomai. Regarding taste, the appearance of bamboo shoot dumplings was found to have a significant positive relationship with taste, evidenced by a correlation of 0.315 and a p-value of 0.015. However, other characteristics, such as flavor profile, satisfaction level, and perceived healthiness, did not show statistically significant relationships with taste, as their p-values exceeded the 0.05 threshold. For texture, the satisfaction level demonstrated a significant positive correlation, with a correlation of 0.358 and a p-value of 0.005. In contrast, the relationships between appearance, flavor profile, and perceived healthiness with texture were not significant.

**Conclusion**

The results indicated that the appearance of bamboo shoots in siomai plays a significant role in its acceptability, particularly influencing its taste. This suggested that consumers are more likely to enjoy the taste of bamboo shoot siomai if its appearance is appealing. However, other factors such as the flavor profile and perceived healthiness do not significantly affect taste, which indicated that while these aspects are important to some consumers, they are not key determinants of the overall taste experience. The satisfaction level with the texture of bamboo shoot dumplings is significantly influenced by their texture, suggesting that consumers value the mouthfeel of bamboo shoots in siomai. On the other hand, the relationship between perceived healthiness and texture was not found to be significant, indicating that health perceptions may not strongly influence how the texture is accepted.

**Recommendation**

To enhance the appeal of bamboo shoot siomai, it is important to focus on improving and highlighting its appearance, as this has been shown to significantly influence taste. Making bamboo shoot dumplings visually appealing can contribute to a more positive reception. Additionally, although the flavor profile and health benefits of bamboo shoots did not significantly affect taste or texture, marketing efforts should aim to educate consumers about the health advantages of bamboo shoots. This could attract health-conscious buyers. Since texture is a crucial factor in overall satisfaction, it is essential to refine and optimize the texture of bamboo shoot dumplings to ensure a delightful eating experience.

**APPENDICES**

**APPENDIX A**

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**APPENDIX B**

**COMMUNICATION LETTER**

October 16, 2024

**GEM ERDY D. CAMINO**

Panelist

King Thomas Learning Academy Inc.

Sir:

Greetings of peace.

Undertaking a study titled **"BAMBOO SHOOTS (BAMBUSA VULGARIS) AS AN ALTERNATIVE ASIAN DUMPLING PORK MEAT (SIOMAI)",** the undersigned STEM 5 students in Grade 12 at King Thomas Learning Academy Inc. I hope this message finds you well. We respectfully ask for your consent to validate the linked questionnaire for the rating tools. We would greatly appreciate your assistance and knowledge with this academic project.

Respectfully yours,

**PAUL ERIC BELMONTE**

**GINEL F. DEL ROSARIO**

**NICKA JOY L. HELLERA**

**JUDE A. MASOTES**

**REYNALYN A. OYA**

**GABRIEL D. SANIEL**

**ZEUS VILMORE C. SEBELLO**

Researchers

Noted:

**ROSELLE S. ESTOY**

Research Adviser

Approved:

**GEM ERDY D. CAMINO**

Panelist

November 6, 2024

**CHERRY S. HUELVA**

Panelist

King Thomas Learning Academy Inc.

Ma’am:

Greetings of peace.

Undertaking a study titled **"BAMBOO SHOOTS (BAMBUSA VULGARIS) AS AN ALTERNATIVE ASIAN DUMPLING PORK MEAT (SIOMAI)",** the undersigned STEM 5 students in Grade 12 at King Thomas Learning Academy Inc. I hope this message finds you well. We respectfully ask for your consent to validate the linked questionnaire for the rating tools. We would greatly appreciate your assistance and knowledge with this academic project.

Respectfully yours,

**PAUL ERIC BELMONTE**

**GINEL F. DEL ROSARIO**

**NICKA JOY L. HELLERA**

**JUDE A. MASOTES**

**REYNALYN A. OYA**

**GABRIEL D. SANIEL**

**ZEUS VILMORE C. SEBELLO**

Researchers

Noted:

**ROSELLE S. ESTOY**

Research Adviser

Approved:

**CHERRY S. HUELVA**

Panelist

November 13, 2024

**CELESTINE MAE T. ANSANO**

Panelist

King Thomas Learning Academy Inc.

Ma’am:

Greetings of peace.

Undertaking a study titled **"BAMBOO SHOOTS (BAMBUSA VULGARIS) AS AN ALTERNATIVE ASIAN DUMPLING PORK MEAT (SIOMAI)",** the undersigned STEM 5 students in Grade 12 at King Thomas Learning Academy Inc. I hope this message finds you well. We respectfully ask for your consent to validate the linked questionnaire for the rating tools. We would greatly appreciate your assistance and knowledge with this academic project.

Respectfully yours,

**PAUL ERIC BELMONTE**

**GINEL F. DEL ROSARIO**

**NICKA JOY L. HELLERA**

**JUDE A. MASOTES**

**REYNALYN A. OYA**

**GABRIEL D. SANIEL**

**ZEUS VILMORE C. SEBELLO**

Researchers

Noted:

**ROSELLE S. ESTOY**

Research Adviser

Approved:

**CELESTINE MAE T. ANSANO**

Panelist

November 13, 2024

**PIA A. PECASO**

Panelist

King Thomas Learning Academy Inc.

Ma’am:

Greetings of peace.

Undertaking a study titled **"BAMBOO SHOOTS (BAMBUSA VULGARIS) AS AN ALTERNATIVE ASIAN DUMPLING PORK MEAT (SIOMAI)",** the undersigned STEM 5 students in Grade 12 at King Thomas Learning Academy Inc. I hope this message finds you well. We respectfully ask for your consent to validate the linked questionnaire for the rating tools. We would greatly appreciate your assistance and knowledge with this academic project.

Respectfully yours,

**PAUL ERIC BELMONTE**

**GINEL F. DEL ROSARIO**

**NICKA JOY L. HELLERA**

**JUDE A. MASOTES**

**REYNALYN A. OYA**

**GABRIEL D. SANIEL**

**ZEUS VILMORE C. SEBELLO**

Researchers

Noted:

**ROSELLE S. ESTOY**

Research Adviser

Approved:

**PIA A. PECASO**

Panelist

November 13, 2024

**ANGELI P. MORADA**

Academic Officer/ Principal – SHS Department

King Thomas Learning Academy Inc.

Thru:

**MARY JOYCE N. RAMOS**

Assistant Principal – SHS Department

King Thomas Learning Academy Inc.

Ma’am:

Greetings of peace.

We, STEM 12 – SEAWORTH students of King Thomas Learning Academy, Inc., are currently conducting a research study on **"BAMBOO SHOOTS (BAMBUSA VULGARIS) AS AN ALTERNATIVE ASIAN DUMPLING PORK MEAT (SIOMAI)",** as partial fulfillment of the requirements for the subject Practical Research II.

We are in the process of gathering data through a likert scale and taste test that will be utilized for our study. Regarding this matter, we would like to ask for your permission to conduct a survey and taste test for the Grade 11 students of King Thomas Learning Academy Inc. By doing so, we believe this will help us obtain the information needed for our study.

We would greatly appreciate your consent to our request.

Respectfully Yours,

**PAUL ERIC BELMONTE**

**GINEL F. DEL ROSARIO**

**NICKA JOY L. HELLERA**

**JUDE A. MASOTES**

**REYNALYN A. OYA**

**GABRIEL D. SANIEL**

**ZEUS VILMORE C. SEBELLO**

Noted:

**ROSELLE S. ESTOY**

Research Adviser

Approved:

**MARY JOYCE N. RAMOS**

Assistant Principal – SHS Department

**ANGELI P. MORADA**

Academic Officer/ Principal – SHS Department

October 2024

**GRADE 11 ADVISER**

Senior High School Teacher

King Thomas Learning Academy Inc.

Ma’am/Sir:

Greetings of peace.

We, STEM 12 – SEAWORTH students of King Thomas Learning Academy, Inc. are currently conducting a research study entitled, **" BAMBOO SHOOTS (BAMBUSA VULGARIS) AS AN ALTERNATIVE ASIAN DUMPLING PORK MEAT (SIOMAI)"**, as partial fulfillment of the requirements for the subject Practical Research II.

In this regard, we are seeking your consent to request your students' participation through a taste test and by answering our questionnaire. Rest assured that all information derived herein will be treated with utmost confidentiality.

Respectfully Yours,

**PAUL ERIC BELMONTE**

**GINEL F. DEL ROSARIO**

**NICKA JOY L. HELLERA**

**JUDE A. MASOTES**

**REYNALYN A. OYA**

**GABRIEL D. SANIEL**

**ZEUS VILMORE C. SEBELLO**

Noted:

**ROSELLE S. ESTOY**

Research Adviser

Approved:

**PIA A. PECASO CHERRY S. HUELVA**

Panelist Panelist

**GEM ERDY D. CAMINO CELESTINE MAE T. ANSANO**

Panelist Panelist

Approved:

**Grade 11 Advisers**

|  |  |
| --- | --- |
| **Names** | **Signature** |
| Janie G. Andres (ABM 1) |  |
| Evelyn D. Atchero (ABM 2) |  |

**APPENDIX C**

**SAMPLE QUESTIONNAIRE**

OBSERVATION SHEET

**BAMBOO SHOOTS (*Bambusa Vulgaris*) AS AN ALTERNATIVE**

**ASIAN DUMPLING PORK MEAT (SIOMAI)**

Kindly fill out the information needed below.

Name (Optional): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Gender: Male Female

Age: \_\_\_\_\_\_\_\_

Kindly read the questions and put a checkmark (/) for your answers in the box.

Legend: 5 – Strongly Agree 2 – Disagree

4 – Agree 1 – Strongly Disagree

3 – Neutral

PART I: Characteristics of siomai-made bamboo shoots compared to traditional dumpling pork meat

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1. **TASTE** | 5 | 4 | 3 | 2 | 1 |
| 1. Bamboo shoots impart a unique taste to siomai. |  |  |  |  |  |
| 2. Siomai-made bamboo shoots are tasty. |  |  |  |  |  |
| 3. There is a subtle taste of bamboo shoots in siomai. |  |  |  |  |  |
| 4. The tastes of the ingredients in the bamboo shoot siomai are blended equally. |  |  |  |  |  |
| 5. Bamboo shoot siomai pairs well with dipping sauces, enhancing its taste. |  |  |  |  |  |
| 6. Bamboo shoots bring a unique taste distinguishing siomai from pork dumplings. |  |  |  |  |  |
| 7. The equally blended tastes of the ingredients in bamboo shoot siomai are comparable to pork dumplings. |  |  |  |  |  |
| 8. Siomai-made bamboo shoots are tastier than pork dumplings. |  |  |  |  |  |
| 9. Siomai made with bamboo shoots feels less greasy than pork dumplings, enhancing its taste. |  |  |  |  |  |
| 10. The taste of bamboo shoots in siomai is more subtle than the pork flavor. |  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1. **TEXTURE** | 5 | 4 | 3 | 2 | 1 |
| 1. The texture of the siomai-made bamboo shoot meets my expectations for a dumpling. |  |  |  |  |  |
| 2. Siomai made with bamboo shoots has a smooth texture. |  |  |  |  |  |
| 3. Bamboo shoots contribute a unique texture that enhances the siomai satisfaction. |  |  |  |  |  |
| 4. Siomai made with bamboo shoots has a firm texture. |  |  |  |  |  |
| 5. I enjoy the smooth, rough, and chewy textures in siomai made with bamboo shoots. |  |  |  |  |  |
| 6. Siomai made with bamboo shoots is tenderer than traditional pork dumplings. |  |  |  |  |  |
| 7. Siomai made with bamboo shoots has a firmer texture than traditional pork meat dumplings. |  |  |  |  |  |
| 8. The texture of bamboo shoot siomai is more chewy compared to that of pork meat dumplings. |  |  |  |  |  |
| 9. Siomai made with bamboo shoots has a rougher texture than traditional pork meat dumplings. |  |  |  |  |  |
| 10. The texture of bamboo shoot siomai is less dense than pork meat dumplings. |  |  |  |  |  |

PART II: Acceptability level of bamboo shoots as an alternative dumpling

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1. **APPEARANCE** | 5 | 4 | 3 | 2 | 1 |
| 1. Bamboo shoot dumplings have an appealing color. |  |  |  |  |  |
| 2. Bamboo shoot dumplings look delicious. |  |  |  |  |  |
| 3. The appearance of bamboo shoot dumplings makes them suitable for a business. |  |  |  |  |  |
| 4. The appearance of bamboo shoot dumplings is the standard for dumplings. |  |  |  |  |  |
| 5. Bamboo shoot dumplings are more appealing due to the fillings visible on their surface. |  |  |  |  |  |
| 6. The color of bamboo shoot dumplings is paler than that of traditional pork dumplings. |  |  |  |  |  |
| 7. Bamboo shoot dumplings look more delicious than traditional pork dumplings. |  |  |  |  |  |
| 8. Bamboo shoot dumplings and traditional pork dumplings have the same appearance. |  |  |  |  |  |
| 9. Bamboo shoot fillings appear more eye catching than the pork fillings of a dumpling. |  |  |  |  |  |
| 10. I prefer the shape of bamboo shoot dumplings over traditional pork dumplings. |  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1. **FLAVOR PROFILE** | 5 | 4 | 3 | 2 | 1 |
| 1. The saltiness of bamboo shoot siomai balances well with its other flavors. |  |  |  |  |  |
| 2. The slight bitterness in bamboo shoots siomai contributes to its overall taste. |  |  |  |  |  |
| 3. The bamboo shoot siomai has a slightly sweet flavor. |  |  |  |  |  |
| 4. Bamboo shoot siomai has a pleasant sourness that enhances its flavor. |  |  |  |  |  |
| 5. The taste of bamboo shoots complements with the other ingredients in dumplings. |  |  |  |  |  |
| 6. Bamboo shoot dumpling is more delicious than traditional pork dumplings. |  |  |  |  |  |
| 7. The saltiness of bamboo shoot siomai balances well with its other flavors compared to pork siomai. |  |  |  |  |  |
| 8. The bamboo shoot siomai has a slightly sweet flavor, which tastes better than pork siomai. |  |  |  |  |  |
| 9. Bamboo shoot siomai has a pleasant sourness that enhances its flavor compared to pork siomai. |  |  |  |  |  |
| 10. Bamboo shoot siomai provides a unique blend of flavors that I prefer over pork siomai. |  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1. **SATISFACTION LEVEL** | 5 | 4 | 3 | 2 | 1 |
| 1. The taste of bamboo shoot dumplings is satisfying to me. |  |  |  |  |  |
| 2. The texture of the bamboo shoot dumplings is satisfying. |  |  |  |  |  |
| 3. I am satisfied with the appearance of the bamboo shoot dumpling. |  |  |  |  |  |
| 4. The bamboo shoot dumpling has a satisfying savoury and slightly sweet flavour. |  |  |  |  |  |
| 5. I’m satisfied with bamboo shoot dumplings as a healthy food choice. |  |  |  |  |  |
| 6. The taste of siomai-made bamboo shoots is more satisfying to me than the traditional pork dumplings. |  |  |  |  |  |
| 7. The bamboo shoot dumplings have a texture that is just as satisfying as the traditional pork dumplings. |  |  |  |  |  |
| 8. Compared to traditional pork dumplings, I find the appearance of the bamboo shoot dumpling satisfying. |  |  |  |  |  |
| 9. The bamboo shoot siomai has a satisfying flavor similar to the traditional pork dumplings. |  |  |  |  |  |
| 10. I’m satisfied with bamboo shoot dumplings as a healthier alternative to traditional pork dumpling. |  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1. **PERCEIVED HEALTHINESS** | 5 | 4 | 3 | 2 | 1 |
| 1. The fiber content in bamboo shoots enhances their health benefits. |  |  |  |  |  |
| 2. The nutritional value of bamboo shoot dumplings affects my decision of trying them. |  |  |  |  |  |
| 3. Bamboo dumplings can fit into a vegan or vegetarian diet. |  |  |  |  |  |
| 4. Bamboo shoot dumplings are much easier to digest than pork dumplings. |  |  |  |  |  |
| 5. Bamboo shoots are a good source of plant-based protein. |  |  |  |  |  |
| 6. Bamboo shoots are less processed than traditional pork dumplings. |  |  |  |  |  |
| 7. Bamboo shoots are a better source of fiber compared to pork dumplings. |  |  |  |  |  |
| 8. Bamboo shoot dumplings can accommodate more dietary restrictions than pork dumplings. |  |  |  |  |  |
| 9. Bamboo shoots have fewer calories than pork dumplings. |  |  |  |  |  |
| 10. I would choose bamboo shoot dumplings over traditional dumplings for health reasons. |  |  |  |  |  |

**APPENDIX D**

**STATISTICAL COMPUTATIONS**

**Characteristics of Siomai-Made Bamboo Shoots Compared to Traditional Dumpling Pork Meat**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **TASTE (Question)** | **5** | **4** | **3** | **2** | **1** | **N/A** |
| 1 | 36 | 20 | 3 | 0 | 0 |  |
| 2 | 36 | 21 | 2 | 0 | 0 |  |
| 3 | 27 | 19 | 8 | 2 | 0 | 3 |
| 4 | 32 | 21 | 6 | 0 | 0 |  |
| 5 | 38 | 12 | 6 | 0 | 0 | 2 |
| 6 | 37 | 18 | 4 | 0 | 0 |  |
| 7 | 30 | 21 | 7 | 0 | 0 | 1 |
| 8 | 18 | 28 | 12 | 1 | 0 |  |
| 9 | 18 | 32 | 9 | 0 | 0 |  |
| 10 | 20 | 26 | 13 | 0 | 0 |  |

Weighted Mean:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **TEXTURE (Question)** | **5** | **4** | **3** | **2** | **1** | **N/A** |
| 1 | 21 | 26 | 11 | 1 | 0 |  |
| 2 | 20 | 28 | 9 | 2 | 0 |  |
| 3 | 23 | 30 | 6 | 0 | 0 |  |
| 4 | 16 | 36 | 6 | 1 | 0 |  |
| 5 | 28 | 25 | 4 | 2 | 0 |  |
| 6 | 19 | 30 | 10 | 0 | 0 |  |
| 7 | 10 | 31 | 17 | 0 | 0 | 1 |
| 8 | 9 | 29 | 15 | 5 | 1 |  |
| 9 | 10 | 26 | 14 | 8 | 1 |  |
| 10 | 16 | 19 | 22 | 2 | 0 |  |

Weighted Mean:

**Level of Acceptability of Siomai-Made Bamboo Shoots Compared to Traditional Dumpling Pork Meat**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **APPEARANCE (Question)** | **5** | **4** | **3** | **2** | **1** | **N/A** |
| 1 | 23 | 25 | 9 | 1 | 1 |  |
| 2 | 32 | 23 | 3 | 0 | 0 | 1 |
| 3 | 33 | 21 | 4 | 1 | 0 |  |
| 4 | 27 | 23 | 8 | 0 | 0 | 1 |
| 5 | 12 | 36 | 11 | 0 | 0 |  |
| 6 | 8 | 19 | 21 | 8 | 3 |  |
| 7 | 16 | 21 | 18 | 3 | 0 | 1 |
| 8 | 17 | 27 | 13 | 1 | 0 | 1 |
| 9 | 16 | 21 | 17 | 5 | 0 |  |
| 10 | 10 | 26 | 23 | 0 | 0 |  |

Weighted Mean:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **FLAVOR PROFILE (Question)** | **5** | **4** | **3** | **2** | **1** | **N/A** |
| 1 | 16 | 30 | 9 | 4 | 0 |  |
| 2 | 10 | 32 | 10 | 6 | 1 |  |
| 3 | 16 | 19 | 17 | 5 | 2 |  |
| 4 | 20 | 23 | 11 | 4 | 1 |  |
| 5 | 22 | 24 | 12 | 0 | 0 | 1 |
| 6 | 16 | 23 | 17 | 3 | 0 |  |
| 7 | 16 | 27 | 10 | 5 | 1 |  |
| 8 | 19 | 23 | 12 | 4 | 1 |  |
| 9 | 14 | 26 | 15 | 4 | 0 |  |
| 10 | 20 | 22 | 13 | 3 | 0 | 1 |

Weighted Mean:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SATISFACTION LEVEL (Question)** | **5** | **4** | **3** | **2** | **1** | **N/A** |
| 1 | 31 | 19 | 6 | 3 | 0 |  |
| 2 | 22 | 31 | 6 | 0 | 0 |  |
| 3 | 23 | 25 | 7 | 3 | 0 | 1 |
| 4 | 20 | 26 | 11 | 2 | 0 |  |
| 5 | 27 | 18 | 10 | 4 | 0 |  |
| 6 | 22 | 20 | 14 | 1 | 2 |  |
| 7 | 23 | 23 | 11 | 2 | 0 |  |
| 8 | 22 | 24 | 11 | 2 | 0 |  |
| 9 | 27 | 17 | 11 | 4 | 0 |  |
| 10 | 30 | 14 | 13 | 2 | 0 |  |

Weighted Mean:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **PERCEIVED HEALTHINESS (Question)** | **5** | **4** | **3** | **2** | **1** | **N/A** |
| 1 | 24 | 31 | 3 | 1 | 0 |  |
| 2 | 20 | 28 | 9 | 2 | 0 |  |
| 3 | 22 | 27 | 10 | 0 | 0 |  |
| 4 | 19 | 25 | 14 | 0 | 0 |  |
| 5 | 30 | 20 | 9 | 0 | 0 |  |
| 6 | 20 | 24 | 15 | 0 | 0 |  |
| 7 | 25 | 28 | 4 | 2 | 0 |  |
| 8 | 24 | 26 | 9 | 0 | 0 |  |
| 9 | 22 | 27 | 10 | 0 | 0 |  |
| 10 | 19 | 21 | 13 | 2 | 1 |  |

Weighted Mean:

**Significant Relationship Between the Characteristics and the Level of Acceptability of Siomai-Made Bamboo Shoots as an Alternative Dumpling Pork Meat**

|  |  |  |  |
| --- | --- | --- | --- |
| **Taste - Appearance** |  | **Texture - Appearance** |  |
| Pearson R | 0.314960925 | Pearson R | 0.0418336 |
| Degree of Freedom | 57 | Degree of Freedom | 57 |
| x | 2.505416935 | x | 0.3161138 |
| p-value | 0.015111866 | p-value | 0.7530708 |
| Correlation | 0.314960925 | Correlation | 0.0418336 |
| **Taste - Flavor Profile** |  | **Texture - Flavor Profile** |  |
| Pearson R | 0.227977621 | Pearson R | 0.5307447 |
| Degree of Freedom | 57 | Degree of Freedom | 57 |
| x | 1.767744416 | x | 4.7278878 |
| p-value | 0.0824558 | p-value | 1.531E-05 |
| Correlation | 0.227977621 | Correlation | 0.5307447 |
| **Taste - Satisfaction Level** |  | **Texture - Satisfaction Level** |  |
| Pearson R | 0.124362507 | Pearson R | 0.358016 |
| Degree of Freedom | 57 | Degree of Freedom | 57 |
| x | 0.946262315 | x | 2.8948451 |
| p-value | 0.34800912 | p-value | 0.0053682 |
| Correlation | 0.124362507 | Correlation | 0.358016 |
| **Taste - Perceived Healthiness** |  | **Texture - Perceived Healthiness** |  |
| Pearson R | 0.515873417 | Pearson R | 0.2060746 |
| Degree of Freedom | 57 | Degree of Freedom | 57 |
| x | 4.546420938 | x | 1.5899553 |
| p-value | 2.89319E-05 | p-value | 0.1173766 |
| Correlation | 0.515873417 | Correlation | 0.2060746 |

Pearson Product-Moment Correlation Coefficient (PPMCC):

**APPENDIX E**

**DOCUMENTATION**

**Process:**

**  **

Researchers gathering Researchers weighing Researchers mixing the

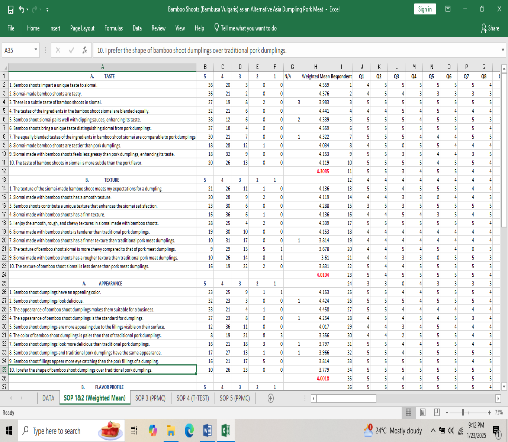
bamboo shoots. the ingredients. ingredients.

****

Researchers frying the

bamboo shoot siomai.

**Data Gathering:**

**  **

Respondents tasting the Respondents answering Gathered data was computed using

finished product. The survey. Weighted Mean and PPMCC.

**Shelf-life:**

** **

The siomai after 20 days in the freezer. The siomai after 50 days in the freezer.

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The siomai after 70 days in the freezer.

**APPENDIX F**

**CURRICULUM VITAE**

**PAUL ERIC BELMONTE**



Zone 8. Calagbangan, Sipocot Camarines Sur 4408

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| **OBJECTIVE:**  To transform research into practical innovations and improves lives by enhancing healthcare. |
| **PERSONAL BACKGROUND:**  **Date of Birth: August 9, 2007**  **Age: 18**  **Religion: Church of Christ**  **Civil Status: Single**  **Gender: Male**  **Citizenship: Filipino**  **Languages: English, Tagalog**  **Height: 5'7**  **Weight: 57**  **Hair Color: Black Shade**  **Father’s Name: John Mark A. Floresca**  **Mother’s Name: Eden B. Floresca** |
| **EDUCATIONAL ATTAINMENT:**  **Secondary: KING THOMAS LEARNING ACADEMY INC.**  **MALUBAGO, SIPOCOT, CAMARINES SUR**  **2024-2025**  **Elementary: SERRANZ LEARNING INC.**  **296 San Juan Avenue, North Centro, Sipocot, Camarines Sur**  **2017-2018** |
| **STRENGTH AND QUALIFICATION:**   * **Strategic Planning** * **Conflict Resolution** * **Active Listening** |
| **RESEARCH UNDERTAKEN:**  **• MORALIST CRITICISM APPROACH BY MICHAEL JACKSON'S "HEAL THE WORLD"**  **• BAMBOO SHOOTS (Bambusa Vulgaris) AS AN ALTERNATIVE ASIAN DUMPLING PORK MEAT (SIOMAI)** |
| **CHARACTER REFERENCES:**  • **FLORIAN M. ECALNER**  Senior High School Teacher at King Thomas Leaming Academy Inc.  Malubago, Sipocot, Camarines Sur  • **ROSELLE S. ESTOY**  Senior High School Teacher at King Thomas Leaming Academy Inc.  Malubago, Sipocot, Camarines Sur |

**GINEL F. DEL ROSARIO**



Zone 1A Calagbangan, Sipocot, Camarines Sur 4408

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Facebook: Ginel F. Del Rosario

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| **OBJECTIVE:**  To explore new ideas, contribute to existing knowledge, and potentially make new discoveries. |
| **PERSONAL BACKGROUND:**  **Date of Birth: December 12, 2006**  **Age: 18**  **Religion: Roman Catholic**  **Civil Status: Single**  **Gender: Female**  **Citizenship: Filipino**  **Languages: English, Filipino**  **Height: 5’0**  **Weight: 48 kg**  **Hair Color: Black**  **Father’s Name: Noel B. Del Rosario**  **Mother’s Name: Ginalyn F. Del Rosario** |
| **EDUCATIONAL ATTAINMENT:**  **Secondary: KING THOMAS LEARNING ACADEMY INC. (SHS)**  **MALUBAGO, SIPOCOT, CAMARINES SUR**  **S/Y 2024-2025**  **KING THOMAS LEARNING ACADEMY INC. (JHS)**  **MALUBAGO, SIPOCOT, CAMARINES SUR**  **S/Y 2022-2023**  **Elementary: SOLEDAD R. VILLAFUERTE ELEMENTARY SCHOOL**  **BOLO NORTE, SIPOCOT, CAMARINES SUR**  **S/Y 2018-2019** |
| **STRENGTH AND QUALIFICATION:**   * **Quick thinker** * **Time Management** * **Flexible** |
| **RESEARCH UNDERTAKEN:**   * **IMPACT OF HALF-DAY CLASSES ON THE LEARNING STYLE OF THE 11 STEM STUDENTS OF KING THOMAS LEARNING ACADEMY, INC. IN THE SCHOOL YEAR 2023-2024** * **BAMBOO SHOOTS (*Bambusa Vulgaris*) AS AN ALTERNATIVE ASIAN DUMPLING PORK MEAT (SIOMAI)** |
| **CHARACTER REFERENCES:**  **• FLORIAN M. ECALNER**  Senior High School Teacher at King Thomas Leaming Academy Inc.  Malubago, Sipocot, Camarines Sur  • **ROSELLE S. ESTOY**  Senior High School Teacher at King Thomas Leaming Academy Inc.  Malubago, Sipocot, Camarines Sur |

**NICKA JOY L. HELLERA**

Calampinay, Sipocot Camarines Sur 4408

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Facebook: Nicka Hellera

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| **OBJECTIVE:**  To improve my skills in writing, analysis, and data interpretation, which are essential for my academic success. |
| **PERSONAL BACKGROUND:**  **Date of Birth: Dec 12, 2006**  **Age: 18**  **Religion: Roman Catholic**  **Civil Status: Single**  **Gender: Female**  **Citizenships: Filipino**  **Languages: Tagalog**  **Height: 5’1**  **Weight: 45kg**  **Hair Color: Black**  **Father’s Name: Eduardo V. Hellera Jr**  **Mother’s Name: Bernadeth M. Lubrica** |
| **EDUCATIONAL ATTAINMENT:**  **Secondary: Anib National HighSchool**  **Anib, Sipocot, Camarines Sur**  **2022-2023**  **King Thomas Learning Academy Inc.**  **Malubago, Sipocot, Camarines Sur**  **2024-2025**  **Elementary: Camngyanan Elementary School**  **Camangyanan, Sta Maria Bulacan**  **2018-2019** |
| **STRENGTH AND QUALIFICATION:**   * **Motivation** * **Communication** |
| **RESEARCH UNDERTAKEN:**   * **ACCEPTABILITY OF LGBTQIA+ DRESS CODE AMONG SENIOR HIGH SCHOOL STUDENTS IN KING THOMAS LEARNING ACADEMY INC.** * **BAMBOO SHOOTS (*Bambusa Vulgaris*) AS AN ALTERNATIVE ASIAN DUMPLING PORK MEAT (SIOMAI)** |
| **CHARACTER REFERENCES:**   * **ROSELLE S. ESTOY**   Senior High School Teacher at King Thomas Leaming Academy Inc.  Malubago, Sipocot, Camarines Sur |

**JUDE A. MASOTES**



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| **OBJECTIVE:**  To expand knowledge and add fresh insights to address practical issues, providing actionable insights and practical solutions that can drive innovation, improve decision-making processes, and positively impact communities, industries, or societies. |
| **PERSONAL BACKGROUND:**  **Date of Birth: March 03, 2007**  **Age: 17**  **Religion: Roman Catholic**  **Civil Status: Single**  **Gender: Male**  **Citizenship: Filipino**  **Languages: Filipino**  **Height: 5'8**  **Weight: 49**  **Hair Color: Black**  **Father’s Name: Dennis F. Masotes**  **Mother’s Name: Juliet A. Masotes** |
| **EDUCATIONAL ATTAINMENT:**  **Secondary: KING THOMAS LEARNING ACADEMY INC. (SHS)**  **MALUBAGO SIPOCOT CAMARINES SUR**  **S/Y 2024-2025**  **BOLO NORTE NATIONAL HIGH SCHOOL (JHS)**  **BOLO NORTE SIPOCOT CAMARINES SUR**  **S/Y 2022-2023**  **Elementary: SOLEDAD R. VILLAFUERTE ELEMENTARY SCHOOL**  **BOLO NORTE SIPOCOT CAMARINES SUR**  **2018-2019** |
| **STRENGTH AND QUALIFICATION:**   * **Computer Skills** * **Communication Skills** * **Time management** |
| **RESEARCH UNDERTAKEN:**  **• MORALIST CRITICISM APPROACH BY MICHAEL JACKSON'S "HEAL THE WORLD"**  **• BAMBOO SHOOTS (Bambusa Vulgaris) AS AN ALTERNATIVE ASIAN DUMPLING PORK MEAT (SIOMAI)** |
| **CHARACTER REFERENCES:**  **• FLORIAN M. ECALNER**  Senior High School Teacher at King Thomas Leaming Academy Inc.  Malubago, Sipocot, Camarines Sur  • **ROSELLE S. ESTOY**  Senior High School Teacher at King Thomas Leaming Academy Inc.  Malubago, Sipocot, Camarines Sur |

**REYNALYN ANN A. OYA**

San Isidro, Sitio South Timbaan, Sipocot Camarines Sur

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| **OBJECTIVE:**  To improve my skills like writing, analysis, and data interpretation, which are essential for my academic success. |
| **PERSONAL BACKGROUND:**  **Date of Birth: May 16, 2007**  **Age: 17**  **Religion: Roman Catholic**  **Civil Status: Single**  **Gender: Female**  **Citizenships: Filipino**  **Languages: Bicol, Tagalog**  **Height: 5’1**  **Weight: 51kg**  **Hair Color: Black**  **Father’s Name: Reynaldo Ll. Oya**  **Mother’s Name: Maribeth A. Oya** |
| **EDUCATIONAL ATTAINMENT:**  **Secondary: Felix O. Alfelor S. Foundation College Inc.**  **San Juan Avenue, Sipocot, Camarines Sur**  **2022-2023**  **King Thomas Learning Academy Inc.**  **Malubago, Sipocot, Camarines Sur**  **2024-2025**  **Elementary: Sipocot North Central School**  **Impig, Sipocot, Camarines Sur**  **2018-2019** |
| **STRENGTH AND QUALIFICATION:**   * **Patience** * **Time Management** |
| **RESEARCH UNDERTAKEN:**   * **ACCEPTABILITY OF LGBTQIA+ DRESS CODE AMONG SENIOR HIGH SCHOOL STUDENTS IN KING THOMAS LEARNING ACADEMY INC.** * **BAMBOO SHOOTS (*Bambusa Vulgaris*) AS AN ALTERNATIVE ASIAN DUMPLING PORK MEAT (SIOMAI)** |
| **CHARACTER REFERENCES:**  • **ROSELLE S. ESTOY**  Senior High School Teacher at King Thomas Leaming Academy Inc.  Malubago, Sipocot, Camarines Sur |

**GABRIEL D. SANIEL**



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Facebook: Gabriel D. Saniel

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| **OBJECTIVE:**  To expand knowledge and add fresh insights to address practical issues, providing actionable insights and practical solutions that can drive innovation, improve decision-making processes, and positively impact communities, industries, or societies. |
| **PERSONAL BACKGROUND:**  **Date of Birth: January 13, 2007**  **Age: 17**  **Religion: Iglesia ni Cristo**  **Civil Status: Single**  **Gender: Male**  **Citizenship: Filipino**  **Languages: Filipino**  **Height: 5’7**  **Weight: 60 kg**  **Hair Color: Black**  **Father’s Name: Roel C. Saniel**  **Mother’s Name: Lilith D. Saniel** |
| **EDUCATIONAL ATTAINMENT:**  **Secondary: KING THOMAS LEARNING ACADEMY INC. (SHS)**  **MALUBAGO, SIPOCOT, CAMARINES SUR**  **S/Y 2024-2025**  **COLACLING NATIONAL HIGH SCHOOL (JHS)**  **COLACLING, LUPI, CAMARINES SUR**  **S/Y 2022-2023**  **Elementary: COLACLING ELEMENTARY SCHOOL**  **COLACLING, LUPI, CAMARINES SUR**  **S/Y 2018-2019** |
| **STRENGTH AND QUALIFICATION:**   * **Leadership** * **Time Management** * **Communication Skills** |
| **RESEARCH UNDERTAKEN:**   * **IMPACT OF HALF-DAY CLASSES ON THE LEARNING STYLE OF THE 11 STEM STUDENTS OF KING THOMAS LEARNING ACADEMY, INC. IN THE SCHOOL YEAR 2023-2024** * **BAMBOO SHOOTS (*Bambusa Vulgaris*) AS AN ALTERNATIVE ASIAN DUMPLING PORK MEAT (SIOMAI)** |
| **CHARACTER REFERENCES:**  **• FLORIAN M. ECALNER**  Senior High School Teacher at King Thomas Leaming Academy Inc.  Malubago, Sipocot, Camarines Sur  • **ROSELLE S. ESTOY**  Senior High School Teacher at King Thomas Leaming Academy Inc.  Malubago, Sipocot, Camarines Sur |

**ZEUS VILMORE C. SEBELLO**

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| **OBJECTIVE:**  Helps me gain knowledge and help me find information and easily apply it effectively. It also improves my problem-solving skills and it is a way of learning something new. |
| **PERSONAL BACKGROUND:**  **Date of Birth: October 18, 2007**  **Age: 17**  **Religion: Roman Catholic**  **Civil Status: Single**  **Gender: Male**  **Citizenship: Filipino**  **Languages: English, Tagalog**  **Height: 5’0**  **Weight: 57**  **Hair Color: Black**  **Father’s Name: Marvin A. Sebello**  **Mother’s Name: Amor C. Sebello** |
| **EDUCATIONAL ATTAINMENT:**  **Secondary: KING THOMAS LEARNING INC.**  **MALUBAGO, SIPOCOT CAMARINES SUR**  **2024-2025**  **Elementary: LUPI CENTRAL SCHOOL**  **POBLACION, LUPI CAMARINES SUR**  **2018-2019** |
| **STRENGTH AND QUALIFICATION:**   * **Good at Critical Thinking** * **Good at Communication** * **High School Graduate** |
| **RESEARCH UNDERTAKEN:**   * **ACCEPTABILITY OF LGBTQIA+ DRESS CODE AMONG SENIOR HIGH SCHOOL STUDENTS IN KING THOMAS LEARNING ACADEMY INC.** * **BAMBOO SHOOTS (*Bambusa Vulgaris*) AS AN ALTERNATIVE ASIAN DUMPLING PORK MEAT (SIOMAI)** |
| **CHARACTER REFERENCES:**  • **IRENE C. ALBALATE**  School Principal 2 at Lupi Central School  Lupi, Camarines Sur  • **ANGELI P. MORADA**  School Principal at King Thomas Learning Academy, Inc.  Malubago, Sipocot, Camarines Sur |