

# *Empowering Thai Farmers by Promoting Coconut Cider Vinegar*

*Sponsored by The Chaipattana Foundation*





# Empowering Thai Farmers by Promoting Coconut Cider Vinegar

**An Interactive Qualifying Project submitted to the faculty of Chulalongkorn University and Worcester Polytechnic Institute in partial fulfillment of the requirements for the Degree of Bachelor of Science in cooperation with The Chaipattana Foundation.**

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## Abstract

Poverty is affecting coconut farmers who are abandoning their farms and traditional practices to move to the cities for lucrative jobs. The Chaipattana Foundation addresses this issue to improve farmers' livelihoods by preserving and promoting coconut cider vinegar and other traditional products. Through research, interviews, surveys, and observations our team discovered that the more effective strategies used by a learning center, the better the overall experience for visitors. We formed recommendations to improve the coconut learning center and created and developed materials for coconut cider vinegar. The increased revenue from the coconut cider vinegar will allow coconut farmers to support their families and revitalize the coconut industry in Amphawa, Thailand.

# **Executive Summary**

## **The Problem, Goal, and Objectives**

In many parts of the world, traditional livelihoods are declining due to global development and industrialization. Traditional farming that have been relevant for generations are being abandoned. Some traditional industries that are struggling economically are the sea salt, indigo dye, and coconuts. Traditional products in Thailand are important. However, these industries struggle to provide for their families including those in Amphawa, Thailand as the issue of poverty is impacting coconut farmers who are moving to the cities for employment.

An organization in Thailand that is addressing this issue is The Chaipattana Foundation. The foundation is working to preserve coconut farming in Amphawa. To do this the foundation is commercializing a traditional product, coconut cider vinegar. The director of this project, Mohm Rajawongse Srichalerm Kanjanapoo, says the learning center wants to use the coconut cider vinegar as a standard prototype for other farmers to imitate the product and process. Thus, empowering the farmers to create their own business plan with coconut cider vinegar. This product has a strong potential to increase the income of coconut farmers, which can enhance their livelihoods. This will improve the quality of life for the locals in Amphawa, the coconut industry, and the tradition of making coconut cider vinegar.

The goal of this project was to preserve and promote the coconut community in Amphawa, Thailand, by implementing educational and marketing materials for coconut cider vinegar. Our team accomplished the following objectives to achieve this overall goal:

1. To gain an understanding of the production and benefits of coconut cider vinegar
2. To understand the current perception of the learning center from the sponsor, staff, and tourists
3. To observe other learning centers in order to identify and assess the strategies used
4. To develop effective educational and marketing materials for the learning center to target locals and tourists

To accomplish these objectives, we gathered information through various research methods. We found that educational and marketing materials that promote new products could increase the awareness of the cider vinegar

## **Methodology**

To accomplish our objectives, we interviewed the staff of the learning center, interviewed the sponsor, surveyed tourists, and observed other learning centers. Through our first objective, we sought to understand the production and benefits of coconut cider vinegar. We gathered information from the specialists about the health benefits, the uses of the vinegar, and the production process. We supplemented this with information from online research. From this, we learned about the properties, along with the social and economic implications of the cider vinegar. This information provided content and background in developing materials to support the learning center by providing research into the benefits and a simplified description of the production process.

To understand the perception of the learning center, we surveyed 113 visitors, interviewed the twenty staff members of the learning center and interviewed our sponsor. This provided information about how the learning center impacts these groups and their interactions with the learning center. From the survey, we understood how the visitors discovered the center.

To identify and assess the strategies of other learning centers, we observed five centers. We rated each center based on different strategies and identified the effective materials and

activities in each learning center. From this information, we compiled a list of effective strategies for the coconut learning center.

We used information from our data gathered to create a decision matrix that identified the feasible and effective educational and marketing materials. From this, we designed the materials and improved them after receiving feedback from the sponsor. We completed the materials and developed recommendations and submitted to the learning center and sponsor to implement.

## Recommendations and Findings

The primary focus of this project was to implement a promotional standard that The Chaipattana Foundation can develop and make accessible to coconut farmers in the community. We recommend the educational and marketing materials below which would display information that would appeal to the public. From our findings, we recommend that our sponsor:

- Incorporate interactive activities within the learning center.
- Use multiple languages on all platforms.
- Implement more visuals to improve navigation within the center.
- Use more diverse forms of marketing and update them.
- Implement the educational and marketing materials created

The Amphawa Chaipattananurak learning center lacks interactive activities for the visitors to take part in. We found that successful learning centers use effective strategies which include workshops and demonstrations that are interactive. Active learning promotes better retention of information presented within a learning center (Figure 1). Interactive activities engage visitors in this type of learning. One activity we suggest is a “make your own detox drink” stand. This station would appeal to the health-conscious consumer and capture visitors’ attention. Another idea is an educational interactive floor puzzle. Puzzles often attract the attention of children and some adults, it is a fun activity that visitors would enjoy due to the mental and physical stimulation. The benefit of these activities is that they will cause lasting knowledge of the product and its importance. This helps achieve our goal of spreading awareness about traditional practices, crafts, and occupations in the hopes of creating more interest in them.

We found that most tourists who visit the learning center are Thai, Chinese, and Westerners. The site is equipped with learning materials and skillful staff capable of conveying facts about the learning center, but the problem is that these are only available in Thai. Multiple languages can increase capabilities and public relations. Using multiple languages on all platforms would allow tourists to have a better understanding of the learning center and all the attractions offered.

An increase in the flow of the coconut demonstration farm would create a more enjoyable experience for the visitors. Successful learning centers use effective strategies including navigation which was a category on the observation table for the third objective. A method to accomplish this is to add more signs to the facility. The creation and implementation of the signs are feasible and practical. This ease of navigation would allow them to find their way around the center and allow more time learning through the materials presented. This is



*Figure 1: Interactive demonstration on the process to create silk at the Jim Thompson House.*

important because these areas show the essence of the learning center and are the most appealing aspects of the learning center to the visitors. Another tactic the center can use to create better navigation is with a new map. We have recreated the map for the coconut learning center, to include the new exhibit. We also suggest posting a large map near the main shop by the street. This will draw visitors in and show them an outline of what is available at the center.

Improvements in different marketing techniques could increase awareness of the learning center along with creating a following. From speaking with the staff of the learning center we found that staff members value working for the learning center, yet feels it can improve in public relations. We recommend reaching out to travel agency websites, such as TripAdvisor, Pantip, and Painaidii to improve descriptions and information about the learning center on those sites. From the survey, we found digital marketing was how most people heard about the center. Therefore, we recommend using diverse forms of marketing including digital marketing. The younger generation of tourists uses more social media applications to research tourist destinations. We recommend starting an official Instagram and LINE account. By doing so, it allows an easier platform for tourists to share photos and their experiences while at the learning center. This may increase the number of visitors at the learning center who were previously unaware of it.

We created several educational and marketing materials that we recommend the learning center implement. Throughout the project, we created posters, a brochure (Figure 2), packaging, recipes, a Quick Response (QR) tour, an exhibition design, and an official LINE account manual. These materials promote coconut cider vinegar to preserve this tradition.



Figure 2: One side of the Brochure created to demonstrate the importance of Coconut Cider Vinegar, the production process, and other products sold at the learning center.

## Conclusion

The issue of poverty is affecting young coconut farmers who are abandoning their farms and traditional practices to move to the cities for more lucrative jobs. By increasing the production and sales of this product, coconut farmers can be empowered and improve their livelihoods. To improve the learning center and their marketing of coconut cider vinegar, we made several recommendations for targeting the most effective types of educational materials and marketing strategies. This project will benefit the farmers in Amphawa because the new product will give them an opportunity for increased income. By integrating more effective strategies within the learning center, we hope to increase the center's overall effectiveness to educate the public about coconut cider vinegar and the problems within the coconut industry. The purpose of promoting, marketing, and preserving a traditionally homemade product sold commercially is to help improve the source of income of the coconut farmers.

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## 1.0 Introduction

Thai traditions that have been relevant for generations are being abandoned because of the growing tourism industry in Thailand. Some traditional industries that have been deteriorating are sea salt, indigo dye, and coconut (Chovett et al., 2016). Those who rely on these industries struggle to provide for their families. Traditional products “help maintain family, household and community relations, providing the producers with a sense of symbolic power and maintaining a localized cultural identity” (Scrase, 2003). Though crafts are being challenged by global development and a capitalist economy, some communities are accommodating the needs of the tourist industry. Bharne explores how tourism affects the Asian East in his book *The Emerging Asian City: Concomitant Urbanites and Urbanisms*, there is a notable explanation of the effects on the community, “tourist destinations are now endlessly (re)invented, (re)produced, (re)captured, and (re)created by the simultaneous coexistence of global and local forces.” (Bharne, 2012).

As handmade crafts and cuisines turn into factory-manufactured goods and processed food, various regions around the world experience the consequences of global development. For more than half a century, Thailand went through a tremendous industrial transformation converting the economy from agricultural to industrial manufacturing (Asian Development Bank, 2015). Outside of Bangkok, a once modest-rural town, Amphawa, has become an overflowing-tourist area (Suntikul, 2017). Younger people throughout Amphawa and the rest of Thailand are becoming more apathetic toward their local traditions often moving away from their hometowns (Fuller, 2012). According to Mohm Rajawongse Srichalerm Kanjanapoo, who is the director of the Amphawa Chaipattananurak Conservation Project, due to the fluctuating market and lack of laborers, coconut farmers cannot make a living by themselves for their families (Appendix B).

Previous projects in Amphawa created a basis for future projects with the Amphawa Chaipattananurak Conservation Project, which is helping to preserve traditional lifestyles such as coconut farming. Coconut farming in Amphawa is a great contributor to the national economy as the coconut industry is large within the country, producing over 1,721,640 tons every year (Arancon, 2013). The Foundation is producing coconut palm sugar through their learning center, often selling all of it by the end of the day. The challenge is that it is produced by large-scale production with a high initial start-up cost; this is not feasible for the local farmers (Appendix B).

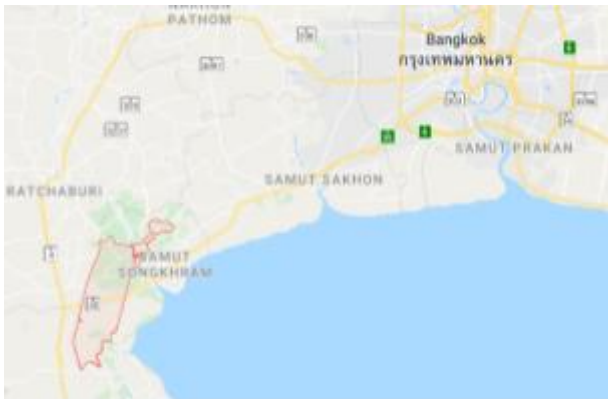
The Chaipattana Foundation planned to use a locally known traditional product, coconut cider vinegar, in its community learning center in Amphawa to promote traditions and empower farmers to create their own businesses (The Chaipattana Foundation, 2017). This is because coconut cider vinegar is easy and cheap to manufacture (Appendix B). Learning centers are local educational centers that are run by residents of the area (UNESCO, 2017). Through education and marketing, these centers strive to spread awareness and preserve traditional goods, crafts, and occupations (Choovet et al., 2016). The learning center in Amphawa lacked materials to market or educate others about the product. From other learning centers, effective strategies for promoting a product and educating the public can be applied to coconut cider vinegar.

The goal of this project was to address the issue of poverty in the coconut farming community in Amphawa, Thailand by recommending ways to use educational and marketing materials for coconut cider vinegar. We used the literature review, held interviews, conducted surveys, and observed various learning centers to create and develop posters, brochures, Quick Response (QR) tour, packaging, and a LINE manual. Through the project, we determined the necessity of multiple languages, the utilization of digital marketing, and the importance of the center to the staff. We recommended increasing the use of interactive activities, improving the navigation, and incorporating more visuals among others. By implementing the materials and recommendations, coconut farmers and the surrounding community can preserve their way of life and have an opportunity for increased income.

## 2.0 Background

In many parts of the world, traditional practices such as coconut farming are declining. Global development is reducing the number of coconut farmers as they move to the cities for more lucrative jobs. This has led to the decline of the coconut industry in Amphawa, making the remaining coconut farmers unable to support themselves or their families, however learning centers can empower the coconut farmers. The centers bring knowledge of the industry and allow others to understand the value of the farmers. Our partnership with The Chaipattana Foundation strives to empower coconut farmers through increasing the awareness and sales of their local traditional product of coconut cider vinegar. In this chapter, we discuss the importance of the coconut industry in Amphawa, along with the effects of global development, the goal of learning centers, and the benefits of coconut cider vinegar.

### 2.1 The Importance of the Coconut Industry in Amphawa



*Figure 2.3: Map of Thailand with Amphawa indicated (Google Maps, 2017)*

Amphawa is a town turned tourist hot-spot in the Samut Songkhram Province of Thailand and is 80 km from Bangkok. Amphawa is a cultural center of Thailand; it has been a popular destination with its river market and rich history of traditions. (Silapacharanan, 2008).

#### 2.1.1 The Coconut Industry

Thailand has quite a few notables industries, such as their coconut farming industry (Arancon, 2013). According to the World Atlas, Thailand is the 9th leading producer of coconuts, with over 216,000 hectares of coconut palm plantations (Arancon, 2013). Coconut plantations are widespread across different regions of Thailand (Kittisenachai,

2016). Farmers can use all parts of the coconut tree creating lasting traditions with its multitude of uses (Tat, 2011). Amphawa is abundant in coconut trees because the farmers have been planting the trees from generation to generation (Sawatdiwat, 2015). The local people of Amphawa have been creating coconut-based products such as coconut palm sugar, coconut candies, and coconut syrup to increase sales and boost revenue as coconut is a predominant part of Thai diets and lifestyles.

## 2.2 Industrialization and Global Development

Although Amphawa flourished for many centuries, the river town experienced a decline in their sense of community and amount of residents from the 1970s until the early 2000s after the construction of roadways (Suntikul 2017). Thailand adheres to the accelerated pace of technological innovations, changing economic status, and the supply and demand called for by the western part of the world causing the declining effects of the coconut industry in Amphawa (Suntikul 2017). This sparks new ideas and values, which affects communities and their way of life. With a change of focus from traditional values and cultural heritage, to industrialization and global development, a community's identity can be lost.

### 2.2.1. Global Development Negatively Affecting Traditions

Industrialization creates workers who can do one simple task repeatedly for minimal pay causing skilled labor to be obsolete. Before Henry Ford developed the assembly line, each car

was “crafted” by skilled laborers (Brinkley, 2004). With the assembly-line, craftsmen were not required. Simple laborers who performed one task repeatedly increased industrialization and the auto-producing craftsman faded into obscurity (Brinkley, 2004). Therefore, more efficient, inexpensive, reliable procedures are ultimately replacing handmade local products with mass-produced, cheap novelties.

As the world continues to grow, the appeal for education and jobs overshadows communities’ interests in local products and traditions. According to Qin, in the ancient village of Dali, China, Dong Women who have been making indigo dye textiles for generations are being threatened by global production (2017). In an era of “Fast Fashion,” Dong women are still devoted to their tradition of making beautiful, dark, glossy cloth. In recent decades, China’s market has grown immensely; well-paying, consistent jobs, and education have become overwhelmingly appealing to the children of these skilled women. They question if they should continue the traditions of indigo dyeing through their family heritage or seek an education or lucrative job in a more feasible part of China.

Amphawa has been affected by the evolving world. By the end of the 20<sup>th</sup> century, with the development of transportation, Amphawa’s community was reduced. With the declining economy, values in the community became clouded (Peerapun, W. 2012). The younger generations are less interested in being a part of traditions and are moving away to pursue an education and explore the working world, causing increasing pressure to keep traditions alive (Fuller, 2012).

### 2.2.2 The Transformation of Amphawa into a Tourist Destination

In 2003, the Thai Cultural Environment Project (TCEP) rehabilitated the traditional river market in Amphawa to make it a tourist destination (Suntikul, 2017). The goal of the TCEP was to serve as a pilot project to aid in the establishment of a comprehensive cultural and

Number of Tourists Over the Years

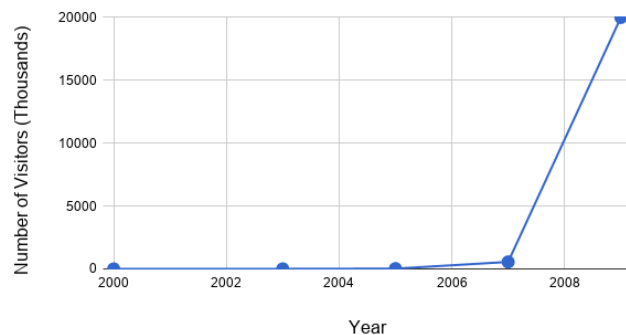


Figure 2.4: Increase of Tourism in Amphawa, adapted from Suntikul, 2017

environmental conservation program in Thailand (“UNESCO Office in Bangkok,” n.d.). The project lasted for 19 months and in August of 2004, the Municipality of Amphawa revitalized the afternoon floating market by request of the locals to promote tourism (Silapacharanan, n.d.) The TCEP altered the lives of residents in Amphawa, an academic journal published a paper titled, “Nostalgia-motivated Thai domestic tourism at Amphawa, Thailand”, reports, “Since the start of the TCEP, many house owners have adapted their houses for homestays . . .

homestays now account for 70% of the accommodation offerings in Amphawa” (Suntikul 2017). Visitors surround the people of Amphawa

and put the locals’ home life on display for tourism. Figure 2.4 displays the dramatic increase of tourists in Amphawa over the years. While the TCEP had success with businesses within the river-market, its cultural significance appears to be missing within the newfound industry in Amphawa. While there is an economic benefit from the initiative, tourism commercialized Amphawa’s charm. The Chaipattana Foundation is working to prevent a drastic alteration of traditions.

## 2.3 Learning Centers: Purpose and Goals

The Chaipattana Foundation uses donated land in ways that benefit the people of Thailand (The Chaipattana Foundation, 2017). One of these uses is to build and develop learning centers. According to the United Nations Educational, Scientific, and Cultural Organization (UNESCO) office in Bangkok, a learning center is, “a local educational institution, usually set up and managed by local people to provide various learning opportunities with the support of the government, NGOs, and private sectors” (UNESCO, 2017). Activities and tours vary with every learning center; some are more hands-on while others are demonstration based. Learning centers are places for local people to educate visitors about culture and history, and this awareness can lead to the spread of interest about the topic (Choovet et al., 2016). The local population and the various sponsors of learning centers make this possible.

### 2.3.1 The Chaipattana Foundation and Amphawa Chaipattananurak Learning Center

The Chaipattana Foundation promotes various learning centers and preservation initiatives. The foundation focuses on farmers, who they consider to be the backbone of Thailand (The Chaipattana Foundation, 2017). They work hard to improve farmers’ social welfare and capacity to become self-reliant through long-term projects that allow for sustainable development (The Chaipattana Foundation, 2017). Her Royal Highness (HRH) Princess Maha Chakri Sirindhorn started a conservation project in the Amphawa Canal Community developing a piece of land, donated by a local farmer to HRH, into a conservation project (Amphawa Chaipattananurak, 2013).

The foundation is working on the Amphawa Chaipattananurak Conservation Project where, “The implementation is focused on local participation with the Chaipattana Foundation as a planner and facilitator to ensure cultural conservation and social development on the path of self-reliance and sustainability” (The Chaipattana Foundation, 2017). This project results from the foundation and government noticing the effects of global development in Amphawa. According to the foundation, “traditional art, culture, architecture, historical sites, and priceless way of life were commercialized and exploited” (The Chaipattana Foundation, 2017). Through this project, the foundation works with local shops such as the Chaan Chala Coffee and Tea House, the Amphawa Community Exhibition, the Agricultural Demonstration Farm, and the Nakhawarang Cultural Playground, and learning centers to promote and educate others about traditional Thai food, crafts, and livelihoods (The Chaipattana Foundation, 2017).

### 2.3.2 Educational and Marketing Methods of Learning Centers

Learning centers promote different aspects of culture, history, and traditions through various educational and marketing methods. They use active learning to promote the intake of information, effective visuals for education and marketing, and digital marketing to spread awareness about the center and its products.

Educational methods associated with active learning allow people to act on available information and formulate their own ideas. This leads to people learning more and retaining knowledge for a longer time. In one study, Johnson, Johnson, and Smith review ninety years of active learning research that shows that active learning has a greater educational improvement compared to other traditional learning methods (cited in Prince, 2004). Learning centers, through the use of workshops and demonstrations, promote active learning to encourage the tourists to retain the knowledge presented in the center.

Along with education, the marketing of the center and its products are important for the learning centers. 65% of people are visual learners, showing that visuals are essential in education (Elmore, 2014). The brain takes in most of the information visually with 30% of the brain's cortex devoted to visual processing, which is more than any of the other senses (Briggs,

2015). Visuals allow for greater retention of information and sparks deeper thinking about the subject. Visual materials can include models, posters, pamphlets, objects, videos, and art in a learning center. Most people process an image and retain the information better; these materials can improve learning by 400% (Elmore, 2014). A variety of useful visuals are important in educating the visitors of a learning center and marketing the center's products.

Many of Thailand's local products are unknown to the general populace because the current marketing strategies are ineffective. As stated by Nielsen, it comprises dispersing information through "word-of-mouth", the method is reliable as it is from authority or a trusted person (2015). However, this method has a limited scope of spreading information. Where other marketing exists, it is in the form of expensive television advertisements. This changes with current digital marketing, as Thailand moves to "Thailand 4.0", where Thailand transitions itself from an industry driven country to a technology and innovation driven country (UIH, 2017). This transition brings forth digital marketing, a marketing strategy that general marketing is leaning toward (Jittivanich, 2017). Digital marketing such as social media and videos can become viral, increase brand awareness, and can lead to an increase in sales while word-of-mouth marketing is what the center depends on (UIH, 2017). For other companies such as Doi Kham, including digital marketing led to an increase in sales and product awareness (Bangkokbiznew, 2017).

All of the above methods of education and marketing aid in visitor retention, the understanding of the material presented, and the increased sales of products. The more information a person recalls the more familiar they are about that topic. All of which helps to achieve the goal of spreading awareness about traditional practices, crafts, and occupations hoping to create more interest in them.

### 2.3.3 The Coconut Learning Center (Tao-Tan)

The community learning center "Tao-Tan" is in Amphawa. Tourists experience firsthand the lifestyle of the coconut farmers and the products they make, this includes the process of making coconut sugar and products made from this sugar. The center produces natural and homemade products and includes workshops and demonstrations for the visitors' edification and enjoyment (Choovet et al., 2016). With the decline of the coconut industry, the farmers are becoming unable to provide for their families. Therefore, the learning center wanted to promote coconut cider vinegar so that farmers can produce and sell it to increase their income. Compared to similar products, farmers can easily produce the coconut cider vinegar throughout the year and sell it without a middleman (Appendix B). This allows the farmers to make a greater profit off of their products and increase the value of their livelihoods. Coconut cider vinegar has a low start-up cost and is simpler to make than other products like coconut sugar. The director of this project, Mohm Rajawongse Srichalerm says the learning center wanted to use the cider vinegar as a standard prototype that farmers can imitate which empowers them to create their own business of coconut cider vinegar (Appendix B).

## 2.4 Coconut Cider Vinegar: Vinegar and Benefits

Locals have produced and consumed coconut cider vinegar for decades. However, the younger people neither use the product nor know about it (Mohm Rajawongse Srichalerm, personal communication, January 17, 2018; Appendix B). Cider vinegar composed of coconut sap is made from the conversion of ethyl alcohol to acetic acid by a genus of bacteria (Zinderman, 2017). The method of production and types of raw materials vary from country to country. Places such as Amphawa traditionally use coconut cider vinegar as a food preservative (Tan, 2005). It is low in acidity, with a unique aftertaste. It is a key ingredient in many Thai dishes used to enhance flavor (Tan, 2005). In Thailand, it can replace other types of vinegar as a healthier alternative.

Amphawa is on the coast of Thailand and has the Mae Klong River running through it. This means it has access to both fresh and saltwater. "Brackish water" is a mixture of fresh and salt water. It contains minerals from the seawater according to a report from North Dakota State University (2014). When it seeps into the soil, it creates a saline soil, which is richer in minerals compared to the normal soil. The coconuts in Amphawa, grown in saline soil and absorb the minerals, making the coconut sap richer in nutrients compared to other areas which grow in clay soil. This is why the coconut cider vinegar has many health benefits.

## 2.5 Summary

The research about Amphawa's coconut industry and its development helped us to better understand the problems that the coconut farmers face and the purpose of promoting and marketing the coconut cider vinegar. The purpose of promoting, marketing, and preserving a traditionally homemade product sold commercially is to help improve the source of income of the coconut farmers. The learning center lacked educational and marketing materials about the social effects and technical aspects of the cider vinegar. Using research from previous studies and the requests of our sponsor, we developed an overarching goal for our project; to preserve and promote the coconut community in Amphawa, Thailand by implementing educational and marketing materials for coconut cider vinegar. Our objectives to achieve this goal were to gain an understanding of the production and benefits of coconut cider vinegar, to understand the current perception of the learning center from the sponsor, staff, and tourists, to observe other learning centers in order to identify and assess the strategies used, and to develop effective educational and marketing materials for the learning center to target locals and tourists. We defined these objectives to guide our methods and our approach to the project. We addressed the absence of the educational and marketing materials about the cider vinegar and realized the most efficient methods to create effective materials. In the next chapter, we discuss the methods we used to achieve the project goal.



### 3.0 Methodology

The goal of this project is to preserve and promote the coconut community in Amphawa, Thailand by implementing educational and marketing materials for coconut cider vinegar. Our team formed the following objectives to achieve this overall goal:

1. To gain an understanding of the production and benefits of coconut cider vinegar
2. To understand the current perception of the learning center from the sponsor, staff, and tourists
3. To observe other learning centers in order to identify and assess the strategies used
4. To develop effective educational and marketing materials for the learning center to target locals and tourists

In the following sections, we describe the process we used to obtain the information. We explain how research methods such as interviews, observations, and surveys were used to gather data.

#### 3.1 Objective 1: To gain an understanding of the production and benefits of coconut cider vinegar

To gain information about the coconut cider vinegar, we found facts about the production process and various health benefits through interviews. Coconut cider vinegar is largely unknown outside of Amphawa, making it hard to understand the product. We used semi-structured interviews to interview specialists to enable a guided discussion of the past, present, and future of coconut cider vinegar (Cohen., & Crabtree, 2006). These specialists were helpful for obtaining research about similar products and understanding the product, coconut cider vinegar, at a chemical level. The limitations of these interviews were the small number of people and issues with the English translation (Cohen., & Crabtree, 2006). This information allowed us to understand the social and economic impacts of the vinegar.

We obtained more information about the product in a meeting with Chulalongkorn University Assistant Professor, Chuenjit Prakitchaiwattana Ph.D., who specializes in ciders and molasses. Talks with King Mongkut's University of Technology Thonburi (KMUTT) Assistant Professor Sivawan Phoolphundh Ph.D. and KMUTT Master's Graduate Naphat Suyapek, who are in charge of the production process of the coconut cider vinegar for the Chaipattana Foundation, gave information about the current production process of the coconut cider vinegar.

#### 3.2 Objective 2: To understand the current perception of the learning center from the sponsor, staff, and tourists

We needed to understand the perception of the learning center from the sponsor, staff, and tourists to tailor the marketing and educational materials to the specific needs of the learning center.

We used a semi-structured interview to interview the sponsor because we could gather more detailed information using this method. We conducted a 2-hour interview with the director of the project, Mohm Rajawongse Srichalerm. We used the information from this interview to create effective education and marketing for the foundation.

To gather more information, we conducted structured interviews to interview the staff because we can gather more detailed information with the small population of twenty staff members. We conducted these interviews on-site. This method may have made staff members unable to articulate their views of the learning center. We conducted twenty-minute structured interviews in Thai comprised of nine questions. Interviews were audio recorded and then we translated and transcribed the interviews from Thai to English (Appendix E). We analyzed the transcriptions using graphs of key phrases within the responses. Information obtained through the interviews gave insight to what was feasible for the center and the staff.

We surveyed the tourists due to the large volume of 113 participants and the ease of drawing connections from this data (Shuttleworth, 2008; Appendix K). This survey had a bias, as not everyone took the survey and many did not explore the entire learning center. This provided an understanding of the different visitors, how visitors interact with the center, and what they take away from it.

These surveys and interviews aided in the formulation of the materials for the learning center and provided a more in-depth understanding of the needs of the center.

### **3.3. Objective 3: To observe other learning centers in order to identify and assess the strategies used**

To better understand the strategies that learning centers used to draw an audience and educate their visitors we observed various centers. Observations allow for the individual to understand the context, the environment, events, activities, and interactions with people, but time constraints limit this method ("Observations", 2014). This led to how we observed each learning center (Appendix H).

We determined strategies for observation based on our previous experiences in museums and similar learning centers (Chovett et al., 2016). We rated the strategies from 0 to 5; zero being not applicable and five being the best-presented strategies. After, we averaged the numeric values for each strategy; averages above a score of 3.0 are "effective strategies." Then we compared the number of effective strategies to the average overall rating.

We visited and evaluated different learning centers to understand what types of strategies work well. We chose each learning center based on their popularity on Thai and American travel websites such as TripAdvisor and Lonely Planet. Afterward, we narrowed the search to cultural centers that educate visitors on a certain discipline or theme. The Jim Thompson House, Bangkok Art & Cultural Center (BACC), Thailand Cultural & Design Center (TCDC), a Sea Salt Farm, and Museum of Siam were all evaluated (Appendix H).

### **3.4 Objective 4: To develop effective educational and marketing materials for the learning center to target locals and tourists**

To preserve and promote the coconut farming community, it is necessary to create promotional materials for the learning center to highlight coconut cider vinegar. We compared the five learning centers to find the effective types of materials. We created a decision matrix to compare the various types of educational and marketing materials to various criteria (Appendix L). To improve these materials, we sought feedback from our sponsor several times to make them accurate and effective.

### **3.5 Summary**

In this chapter, we discussed the methods used to gather data to accomplish our project objectives. We analyzed research papers to find the chemical properties and production. We interviewed with specialists, the staff of the learning center, and our sponsor. We surveyed the visitors of the coconut learning center and observed popular learning centers around Bangkok. We interpreted the collected data and determined educational and marketing materials that would make coconut cider vinegar and the learning center more prosperous.

## 4.0 Results

In this chapter, we present our analyzed data gathered from interviews with specialists, The Chaipattana Foundation, and staff of the coconut learning center in addition to observations of various learning centers. The key findings gathered include health benefits of the coconut cider vinegar, the diversity of visitors, how the Tao-Tan brand affects a visitor's experience, the necessity of digital marketing, and how learning centers use effective strategies.

### 4.1 The Production and Benefits of Coconut Cider Vinegar

Our first objective was to research the health benefits and scientific information of coconut cider vinegar to create promotional educational and marketing materials. To accomplish this objective, we researched studies about coconut cider vinegar and spoke with specialists. The production process is simple and easy to repeat allowing farmers to replicate it on their own.

#### ***Finding 1: Coconut cider vinegar is easy to produce, all natural, and traditional***

Making coconut cider vinegar is traditional knowledge that has been passed down through generations of locals in Amphawa. The Chaipattana Foundation saw this traditional product and desired to produce and market it. Their goal was to improve the quality of life for the locals and to preserve this tradition. The foundation created a production process for the vinegar that is easily replicable by farmers so they can sell this product and increase their overall income.



*Figure 4.5: Mother of Vinegar (Froek, 2018)*

The process of producing coconut cider vinegar is simple. In the interview we conducted with Assistant Professor Sivawan Phoolphundh, we learned that The Amphawa Chaipattananurak learning center uses a one-step process that turns coconut sap into cider vinegar through natural fermentation. The one-step process usually takes 6 months, however, the Chaipattana Foundation followed the recommendation of Assistant Professor Sivawan Phoolphundh which reduces the process to 2 to 3 weeks by using yeast in the initial fermentation (Appendix M). Coconut Farmers can easily repeat this process due to the simplicity and speed.

In the process, through the breakdown of sugar, the sap turns into alcohol (Yetimen et al., 2015). This alcohol is then oxidized by a strain of acetic acid bacteria called *Acetobacter*, turning it into acetic acid (Yetimen et al., 2015). During the fermentation process, a non-toxic layer of acetic acid bacteria and cellulose grows on the top and bottom of the liquid (Yetimen et al., 2015). This layer called "mother of vinegar," seen in Figure 4.5, is a significant bioactive substance. This source of probiotics can influence microbial communities in the intestine and cease the growth of pathogens (Hemarajata et al., 2013). Experts consider vinegar with the "mother of vinegar" to be better due to its health benefits and more traditional background (Froek, 2018). The "mother of vinegar" is an indicator that the vinegar is all natural (Froek, 2018). Use of "mother of vinegar" alludes to a more traditional practice due to the process being natural and without the use of modern technology. This is desirable for consumers and for the Thai people (Appendix M). These positive factors of the cider vinegar are beneficial for marketing; using the health benefits and traditional values to increase sales.

**Finding 2: Coconut cider vinegar helps with weight management and controls blood sugar levels**

Acetic acid, a main component of vinegar, possesses anti-obesity qualities (Beh, 2017). The acidity increases the feeling of being full, therefore reducing the total amount of food consumed (Beh, 2017). The acetic acid suppresses body fat accumulation as it reduces body weight, body mass index (BMI), and body fat mass (Kondo et al.,2009). In addition, the alteration in the gut microbiota by coconut vinegar treatments indirectly helps improve the lipid metabolism and reduce obesity-induced inflammation (Mohamad et al.,2017). This is important because obesity-induced inflammation leads to other chronic diseases including diabetes, cardiovascular disease, hypertension, and even cancer (Mohamad et al.,2017).

Acetic acid decreases blood sugar spikes, leading to a low glycemic index (GI). Despite the subtly sweet flavor of coconut cider vinegar, it only has a 35 GI value on the scale (Elsass, 2017). The GI scale goes from 0 to 100, with food under 55 being low (Elsass, 2017). Research also shows that coconut vinegar cider reduces blood glucose levels at the rate of 28.45% in diabetic groups, total cholesterol levels, and low-density lipoprotein (LDL) levels after continuous consumption (Soltan et al., 2012).

**Finding 3: Coconut cider vinegar is an abundant source of minerals and vitamins**

Biochemical Parameters	Range	Average
pH	6.57-7.50	7.18
Total Sugar(g)	10.08-16.50	15.18
Reducing Sugar(g)	.44-.65	.554
Amino Acids (g)	.12-.34	.245
Protein (g)	.15-.18	.17
Sodium (mg)	146-182	168
Potassium(mg)	146-182	168
Phosphorus (mg)	2.0-6.4	3.9
Manganese(mg)	.009-.014	.012
Copper (mg)	.028-.035	.031
Zinc (mg)	.018-.026	.020
Phenolics (mg)	4.80-5.40	5.10

*Table 4.1: Biochemical and Mineral Composition of Coconut Sap per 100 ml (Hebbar et al., 2015)*

Vitamin	Value (mg/100ml)
Thiamine	77.00
Riboflavin	12.20
Pyridoxal	38.40
Pantothenic acid	5.20
Nicotinic acid	40.60
Biotin	.017
Folic acid	.024
Inositol	127.70
Choline	9.00
Vitamine B12	Trace
Vitamin C	17.5

*Table 4.2: Vitamin Content of Coconut Sap (Hebbar et al., 2015)*

Fresh sap is rich in minerals and vitamins such as phosphorus, potassium, manganese, vitamin C, and B. Tables 4.1 and 4.2 give the biochemical constituents, and the mineral and vitamin composition of freshly collected sap (Hebbar et al.,2015). A similar product, apple cider vinegar, is nutritious and contains high potassium levels (73 mg/100 ml). However, coconut sap has higher levels of potassium (168 mg/100 ml) and more minerals (Table 4.1). Potassium is important in balancing electrolytes, controlling high blood pressure, and processing sugar (Zinderman, 2017). Phosphorus is another predominant mineral, it helps maintain strong bones, balances the body’s pH level, and is necessary for kidney function (Soltan, 2012). Of all the vitamins, phosphorus has the highest inositol (vitamin B8) content. Lack of Inositol may lead to

depression, anxiety, OCD and other psychological disorders that respond to serotonin uptake inhibitors (Bernard, 2017). Vitamin C is an important antioxidant as it prevents the risk of diseases caused by free radicals such as cancer and diabetes. Coconut sap is a better ingredient for coconut vinegar as it has a higher nutritional value when compared to coconut vinegar from coconut water (Joseph, 2016). Coconut vinegar from coconut water is often diluted and contains additives such as cane sugar (Joseph, 2016).

Amino Acid	Value (mg/100g)
Histidine	1.19
Arginine	.035
Aspartic Acid	11.22
Threonine	15.36
Serine	8.24
Glutamic Acid	34.20
Proline	3.42
glycine	.47
Alanine	2.56
Valine	2.11
Isoleucine	.38
Leucine	.48
Tryptocine	.31
Phenylalanine	.78

**Finding 4: Coconut sap contains 17 amino acids, nine of which are essential**

Coconut sap contains 17 amino acids including all 9 essential amino acids. Amino acids play a central role in the cellular metabolism and building proteins (Gutiérrez-Preciado et al.,2010). According to Table 4.3, glutamic acid, threonine, aspartic acid, and serine are the major amino acids in the fresh coconut sap (mg/10g). Glutamic acid plays an important role in protein regeneration, repair, and growth (Karseno et al.,2017). It also regulates the acid-base balance and strengthens the immune system (Kulkarni et al.,2004).

Table 4.3 (Left): Amino Acid Contents of Coconut Sap

## 4.2 The Current Perception of the Learning Center

The second objective was to understand people's perception of the coconut learning center and to understand the center's purpose. This is to cater toward what people want from the center when designing marketing and educational materials. To do this, we interviewed our sponsor and the staff of the learning center. By interviewing the staff and sponsor, we learned about the coconut cider vinegar and the involvement of the learning center.

### 4.2.1 Perceptions of the Learning Center from the Sponsor Interview

**Finding 5: The purpose of the learning center and coconut cider vinegar**

From the interview with our sponsor, we found that the difference between the learning center, museums, and popular tourist sites is that those places are 'fixed' and 'exhibited' (Appendix B). However, Mohm Rajawongse Srichalerm Kanjanapoo also informed us that the learning center aims to portray the 'real life' of the locals and traditional ways of life in Amphawa. The learning center provides on-site demonstrations of different aspects of coconut farming and the production process. Therefore, the goal is not only to create physical educational and marketing materials, but also to create something that brings value back to Amphawa, which is what sets the learning center apart from other places. The foundation focuses on marketing coconut cider vinegar to generate revenue that increases farmers' income. As the value of their product increases, the farmers have increased negotiation power, more job opportunities, and more marketing freedom. Farmers are able to set the price of their products and rely less on middleman merchants. This makes coconut farming more appealing, and as a result, the traditions and practices that have been passed down through generations remain. Our sponsor desired a new appealing product packaging, brochures, and educational posters in both Thai and English; in 'earthy' tones. The sponsor stated that 60% of the tourists are Thai and the rest are Westerners and other Asian foreigners. Additionally, the sponsor

would like this product to appeal to the health-conscious consumer and international tourists. We applied this information to create materials that suited the target market.

#### 4.2.2 Perception of the Learning Center from Staff

The interviews with the staff of the learning center identified what the learning center meant to the staff and what they believe needs improvement. These interviews took place over one day as we interviewed all twenty staff members. We discovered the types of visitors and most popular aspects of the learning center through these interviews.

#### ***Finding 6: Staff members value working for the Learning Center, yet feel it can improve in Public Relations***

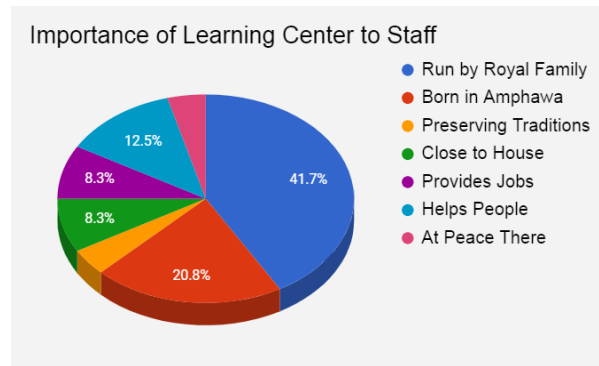


Figure 4.6: Graph of the Important Qualities of the Learning Center to the Staff

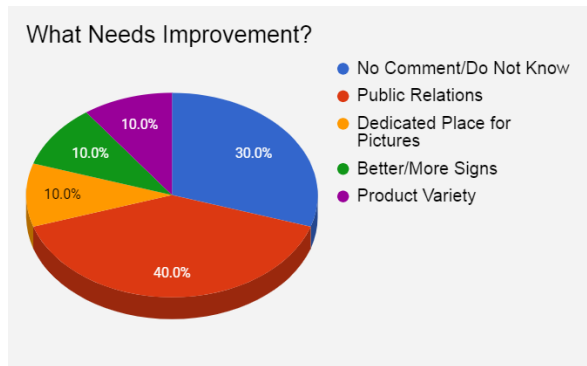


Figure 4.7: Graph of Improvement

As seen in Figure 4.6, many staff members value working for The Royal Family, which they describe as very honorable. Some members of the staff want to help further the area in which they were born and help the other locals. From observations, both factors are very prominent in Thai culture; country and king. This was important to keep in mind when developing educational and marketing materials. As found in Figure 4.7, 40% of the staff members feel that the learning center needs to improve in public relations (PR). An increase in PR will make people more aware of the learning center and what it offers. By improving PR for the learning center and coconut cider vinegar, the center will most likely receive more visitors. This will increase revenue and promote the traditional coconut industry as well as the coconut cider vinegar.

#### ***Finding 7: The visitors of the learning center are mostly Chinese, Thai, and Westerners***

We asked staff members to state the nationality of the visitors that come to the learning center. The majority stated that Chinese and Thai visitors were most common with Westerners following. Other nationalities mentioned were Japanese, Taiwanese, Korean, and French (Appendix F). Observations concluded that foreign visitors were more likely to speak English than Thai. Therefore, our materials are in both Thai and English to accommodate most of the visitors in the learning center.

#### 4.2.3 Perception of the Learning Center from the Tourist Survey

The tourist survey took place over one Saturday and elicited 113 responses. This survey was important to understand how tourists view the center and how they interact with the center. In a summary, the group was mostly Thai speakers, but one in ten spoke another language.

Through the survey, each participant rated the center, two-thirds gave it a perfect score. For further information see Appendix K.

**Finding 8: Digital marketing was how most people heard about the center**

Fifty-six percent of people learned about the center through digital marketing platforms such as Facebook, television, internet articles, or videos on the internet, shown in Figure 4.8.

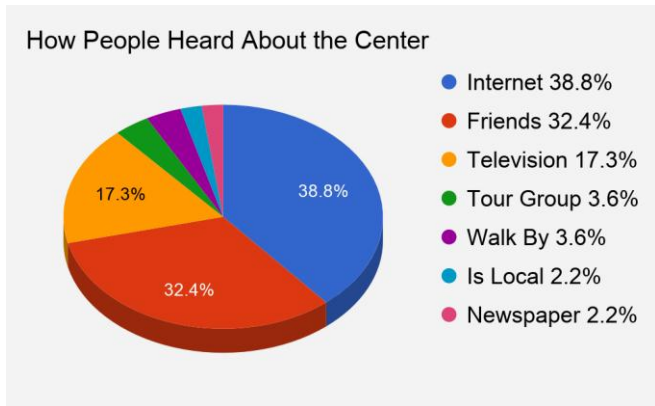


Figure 4.8: Graph of How People Heard of the Site

Digital marketing contains good materials to bring people in when the information online is visually attractive and contains substantial amounts of information. It can create an incentive for people to visit when they see it online. However, word-of-mouth information from friends and family was also important, accounting for 32% of the visitors. This shows that the center impressed the visitors and that they choose to spread awareness about their visit and what they learned from the center.

Currently, the coconut learning center has a website and Facebook page. The center appears on several other websites such as TripAdvisor and Tourism Thailand.

The learning center also has several articles written about it due to the influence and presence of Her Royal Highness Princess Maha Chakri Sirindhorn (“UNESCO Office in Bangkok,” n.d.). This online presence is allowing most visitors to learn about the center. This finding shows that the marketing should be digital to appeal to the audience.

Any digital marketing also needs to be informative and accessible. Of the English speakers that responded, the majority of them were people touring the floating market that visited or heard about the place from friends. From observation, this place is hard to find for non-Thai speakers. To encompass Mohm Rajawongse Srichalerm’s goal of this being available to foreigners, any digital marketing needs to be multilingual in accordance with Finding 7. While the website is in Thai and English, the infrequently updated Facebook page is only in Thai. The website does not contain enough information to make it appealing to a tourist. It contains bare-bones information and the information that is there, is about how the center started and small descriptions of the places in the learning center. It does not contain current information such as how several diplomats came to the center in 2017 or their initiatives with coconut sugar. To appeal to an audience, more current information can make a difference. This finding informs us that marketing materials need to focus on digital marketing, to be informative and accessible to a large audience.

**Finding 9: Tao-Tan brand intrigues visitors**

Of the 43% of people who bought items half of the visitors bought Tao-Tan brand products (Figure 4.9). As stated by the survey (Appendix K), people bought a variety of items from different places in the center, but the most popular one was the coconut sugar. As part of the Tao-Tan brand (Figure 4.10), it plays a large part in creating revenue for the learning center (Appendix B). By mid-afternoon, visitors had bought all of the smaller packages of coconut sugar, further showing the popularity of the brand and product. The Tao-Tan brand and the Tao-Tan building encompass the goal of the learning center; the ability to empower farmers and bring back local traditions. It is part of the prototype the Chaipattana Foundation wants, as it shows other ways to sell products from coconut trees.

## What People Bought

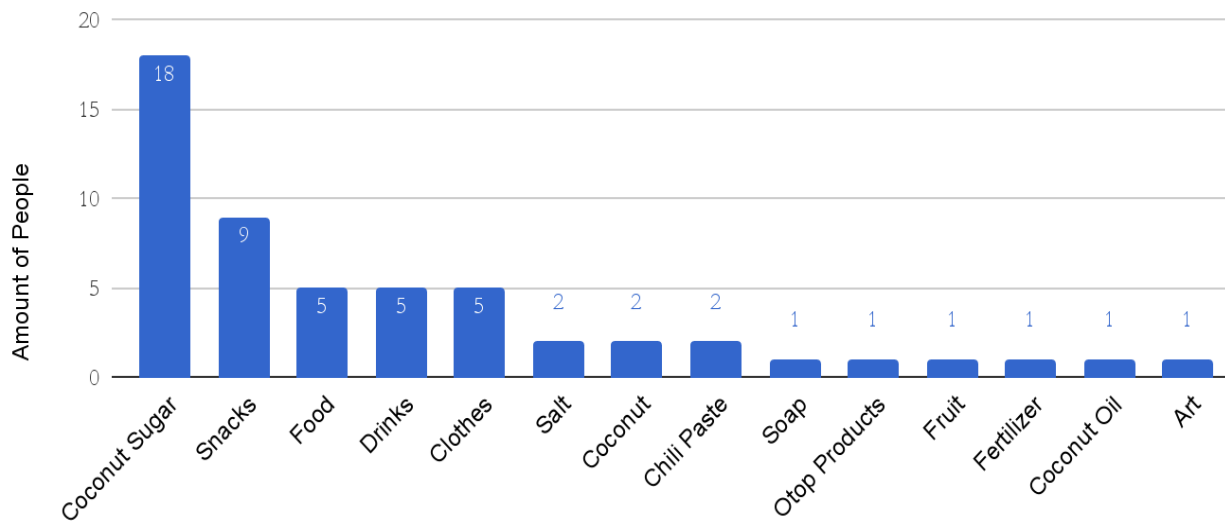


Figure 4.9: Graph Showing Categories of Items Sold

When we asked people if they would recommend the center, 99% of people said that they would. While the largest part of this is due to the environment created by the center, the



next largest part was the education it provides and the ability of the learning center to conserve traditions. Of the many reasons, education and tradition were important to the visitors. One visitor said, “Good local product with high benefits, should continue the foundation because it sets a good example for the local community to follow.” The Foundation is also very beneficial to the local people and “it is a place where culture is preserved and should be preserved for generations.” By placing an emphasis on these ideas when educating visitors, it would be beneficial to draw in customers and keep their attention.

Figure 4.10 (Left): Coconut Sugar at Tao-Tan

### 4.3 To Observe Other Learning Centers in Order to Identify and Assess the Strategies Used

We observed other popular learning centers to identify strategies that are effective and that the learning center can potentially utilize. Using an observation table, we rated and averaged different strategies. These averages determined whether we considered the strategy effective. From our observations of various learning centers in and around Bangkok, we were able to recommend improving Tao-Tan. See Appendix H for a full description.



	TCDC	Jim Thompson House	BACC	Siam	Salt	Chaipattana Foundation
Posters	✓	✓	✓	✓	✓	✓
"Creative" Visuals	✓	✓	✓	✓	X	X
"Tech" Visuals	✓	X	✓	✓	X	X
Workshops	X	X	X	X	X	✓
Demonstrations	X	✓	X	✓	✓	✓
Flow	X	✓	✓	✓	X	X
Brochures	✓	✓	✓	✓	X	✓
English	✓	✓	✓	✓	X	✓
Average Rating	3.33	4.6	3.8	4.85	3.25	N/A

Table 4.4: Marketing and educational tools used at different sites and their average rating

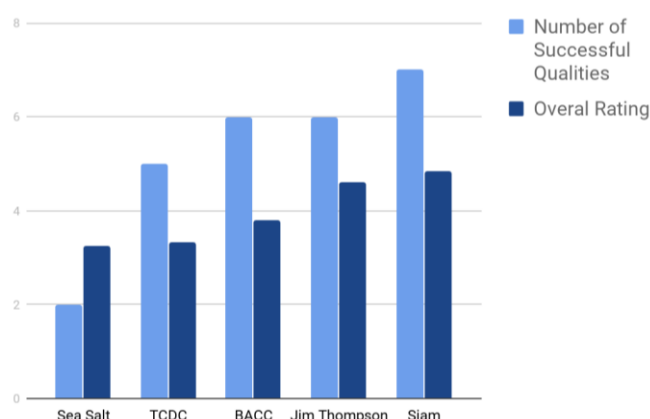
**Finding 10: Successful Learning Centers use Effective Strategies**

Based on our observation of five learning centers in Bangkok, we found that successful centers use posters, creative visuals, technical visuals, effective navigation tools, along with the strategies listed in Table 4.4. The Chaipattana Foundation Learning Center can use these strategies to increase educational value for the learning center and revenue for the coconut farmers. Some examples of different strategies are in Figure 4.11.



Figure 4.11: 4.11a. Robotic demonstration of the progression of Thailand through the years at the Museum of Siam. 4.11b. Farmers harvesting sea salt from the Sea Salt Farm in Amphawa. 4.11c. by scanning a QR code at the Thai Cultural and Design Center, visitors have access to an audio tour.

	Number of Successful Strategies	Average Rating
Sea Salt	2	3.25
TCDC	5	3.33
BACC	6	3.8
Jim Thompson	6	4.6
Siam	7	4.85



*Table 4.5 (Left):* shows the number of successful strategies for each learning center and their average rating. *Figure 4.12 (Right):* Visual representation of successful strategies for each learning center and their average rating.

A center's rating correlates with the number of strategies a learning center uses (see Appendix H, Table 4.5, and Figure 4.12). Strategies that make learning centers effective can be applied to the coconut learning center. These observations gave us the insight to develop the necessary educational and marketing materials.

#### 4.4 To Develop Effective Educational and Marketing Materials for the Learning Center to Target Locals and Tourists

The fourth objective is about determining, making, and reworking the educational and marketing materials. We accomplished this through the findings from the other three objectives. Objective one created content for the materials. Objective two lead to the modes of conveying information that should make the learning center more effective such as increasing public relations and utilizing digital marketing. The second objective also showed types of essential information such as the significance of the coconut cider vinegar and Tao-Tan. Objective three gave different examples of content and various modes of dispersing and displaying information. We formed a list of different types of educational and marketing materials based on this information. We then compiled and evaluated the types of materials in a decision matrix (Table 6 and Appendix L). Once we created the materials, the sponsor and staff of the learning center evaluated them. This allowed us to tailor the materials for the staff and sponsor while validating the methods.

Due to the many ways there are to market and educate visitors about coconut cider vinegar, we used a decision matrix to determine which types of educational and marketing materials were most effective. We developed twenty-three different ideas. Then using previous findings, we determined categories to evaluate each idea. These categories revolved around feasibility and what we can complete in only a few weeks' time. We agreed upon category weights that are in Table 4.6 (Appendix L). We agreed upon the rating for each category and determined these ratings based on previous findings. A more detailed description of the process is in Appendix L. This process allowed us to make an analytical decision based upon group opinions.

The ideas in green are the materials that we completed first, the ones in yellow are materials we could recommend.

Types of Materials	Recommendation from Sponsor	Ease of Team Finishing	Feasibility of Team Finishing	Feasibility for the Center	Ease of Upkeep for the Center	Wow Factor	Cost	Overall Rating
<b>Weights</b>	2.5	2	5	4	3	1	3	
Posters	5	4	5	5	5	3	5	98.5
Brochures	5	5	5	5	4	3	5	97.5
Packaging	5	4	5	5	4	3	4	92.5
Official Line	0	5	5	5	4	2	5	84
Recipes	0	3	4	5	5	4	5	80
Signs	0	4	5	5	5	1	3	78
Design Exhibition	0	3	4	5	5	3	4	76
Social Media	0	5	4	4	3	2	5	72
QR Info Tour	0	3	4	4	4	5	4	71
Promotional Videos	1	3	3	2	5	3	5	64.5
Detox Package	0	3	4	3	4	4	3	63
Puzzle	0	4	3	3	3	3	4	59

Table 4.6: Half of the Decision Matrix

We made and designed each material based on previous findings. Most of them are in Thai and English to appeal to a broader audience because these are the two languages most used by the visitors as seen in Finding 7. During the observations in objective three, one theme was language, how the sites use languages to attract a diverse audience. All posters, brochures, and packaging were in browns and greens to give a more earthy feeling to the product as requested by the sponsor from Finding 5. This is to make the product more cohesive with the rest of the product line which exhibits earth tones. We attached the recipes with twine to give a similar impact. All of the above would provide the learning center with creative visuals.

The Coconut Demonstration Farm has opportunities for improved navigation. The flow or navigation of a center is important and was a category for the observations in Finding 10. Based on staff interviews and observations, fewer people ventured to the demonstration farm without a tour group, leading toward a necessity for the use of signs. We designed an exhibition site to display the materials we created. A QR tour is simple for the center to set up and maintain and it goes along with the signs to encourage visitors to visit all parts of the learning center. The QR tour also fulfills the strategy of a ‘tech’ visual for the learning center from the observation table. Each material works together to create effective educational and marketing materials.

## 4.5 Summary

First, we collected information regarding the health benefits and production of coconut cider vinegar. This information was then used as the content for the educational and marketing materials within the coconut learning center. Second, we collected internal information regarding the coconut learning center through surveys and interviews. Surveys revealed that 56% of all

visitors found out about the center through online resources. We understood the importance of the learning center to the visitors through the survey. Interviews with the staff revealed that improved public relations could increase the center's success. Third, we observed other learning centers to ensure an understanding of strategies that the coconut learning center may not have yet implemented. We evaluated five other centers around Bangkok. We found that the Amphawa Chaipattananurak learning center can use some effective strategies we observed in other learning centers. Lastly, using the information gathered in the other three objectives, we created educational and marketing materials such as descriptive posters, inspiring brochures, eye-catching packaging, and other effective materials. The data we gathered led to several conclusions and recommendations which we discuss in the next chapter.

## 5.0 Recommendations

We describe and explain our recommendations in this chapter. We developed the following recommendations to improve the educational and marketing materials for coconut cider vinegar in the hopes to improve the livelihoods of the coconut farmers. This is intended for use by the Chaipattana Foundation and the Amphawa Chaipattananurak Conservation Project. We developed recommendations based on the literature review and findings in chapter four. These recommendations are to serve as a guide for the learning center in Amphawa and future learning centers. The overall intent of our recommendations is to aid in conserving and promoting the coconut community in Amphawa.

### 5.1 Create a More Stimulating Educational Environment

#### **We recommend incorporating interactive activities within the learning center**

In identifying and assessing strategies used by learning centers, we found that effective learning centers utilize various interactive aspects to promote active learning (see Finding 10 in the results section). Active learning has a greater educational improvement compared to other traditional learning methods (Prince, 2004). One way to incorporate this is to have the learning center staff set up a display for the coconut cider vinegar at different fermentation periods and allow visitors to smell the different stages. This will stimulate the senses for greater retention of information about the production process of coconut cider vinegar. Also, the center staff could provide a small sample of the cider vinegar for each visitor to encourage purchasing.

From Finding 5 in the results section, the learning center and product should appeal to the health-conscious consumer and international tourists. One popular health concept is a detox drink. Therefore, the learning center could implement a “make your own detox drink” (ทำสุตรดีที่ออกซ์ด้วยตัวคุณเอง) stand within the coconut cider vinegar exhibition. See Appendix U for sample detox drink recipes. This stand would contain a multitude of ingredients that are in detox drinks such as cinnamon, honey, chia seeds, ginger, coconut, and other fruit. The visitor would put everything that they want in a bag and would then purchase the bag by weight along with a bottle of the coconut cider vinegar. This would require start-up costs but will most likely increase revenue and appeal to the health-conscious visitors.

To further educate people about coconut cider vinegar and what goes into making it, the center could implement a plastic interactive floor puzzle for all ages. For example, this puzzle could be a coconut tree that has facts about the production process (Finding 1) of the cider vinegar on the back of every piece. Another option is to make the puzzle out of a related picture such as a farmer harvesting the coconut sap. This puzzle will need to be easily replicable in the case that a puzzle piece goes missing or is damaged. This type of interactive activity will appeal to children and adults and engage them in active learning as described in our literature review. Visitors will have fun putting the pieces together physically and mentally about this product.

#### **We recommend implementing more visuals to make navigation within the center easier**

An increase in the flow of the coconut demonstration farm would create a more enjoyable experience for visitors. The flow is the ease of navigation around the learning center. Based on learning center observations, the flow has a direct impact on the visitor's enjoyment of the center and was a category on the observation table for objective three (Appendix H). Hence, we recommend the learning center modifies their navigational information. A method to accomplish this is to add more signs to the facility as observed in other learning centers. The creation and implementation of the signs are financially feasible and practical. According to our sponsor, the foundation has a staff member available who could develop signs similar to the ones already in place within a short amount of time (Appendix B). Figure 5.13b shows the signs the learning center has. All new signs would be of the same format. The sponsor could place

the signs in the major intersections within the center (Figure 5.13a). With placing the signs, visitors would have easy access to directions around the entire learning center. This ease of navigation would allow them to find their way around the center and have more time to learn. The signs would also lead them through the agricultural demonstration farm to the Tao-Tan exhibits. This is important because these areas demonstrate the essence of the learning center and are the most appealing aspects of the learning center to the visitors.

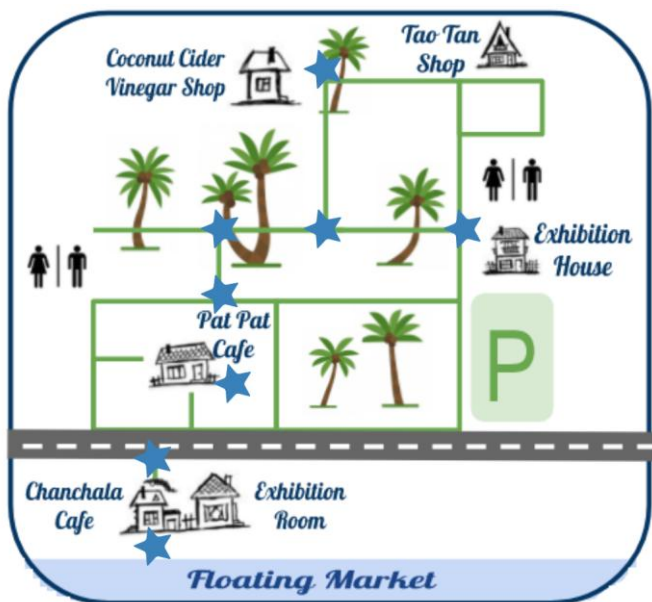


Figure 5.11: 5.11a. (Left) Recreated Map of the Learning Center. 5.11b. (Right) Signpost located in the center.

Another strategy the center can use to create better navigation is a new map, similar to the one in 5.13a and Appendix V. This map would provide a visual outline of the entire center which would make finding the Tao-Tan section of the learning center easier. We have recreated the map for the coconut learning center to put in the new brochure. The previous map did not include the site for the coconut cider vinegar. The center could place the updated map on all of the materials such as brochures. This is to prevent confusion caused by misinformation by the map. We provided computer files that can the staff of the center can change when necessary. The staff could post a large map near the Pat Pat shop by the street as many places from the observations in objective three had. This will draw visitors in and show them an outline of what is available at the center. From there they can target the areas they would like to visit the most.

**We recommend displaying visually appealing materials within the learning center**

According to our literature review, 65% of people are visual learners and an effective visual display can improve learning by 400% (Elmore, 2014). The data from our observations (Finding 10) of learning centers showed that we found out that the use of visual aids is an excellent mode of communication to convey important messages and to provide a more enjoyable experience. We recommend effective posters and brochures that contain various graphics and minimal writing to heighten visitors' interest and retention of detail (see sample materials in Appendix N and O). The materials should contain information from Findings 1-4 and 9, which includes visually stimulating information about the production process and benefits. The graphics on the materials should also appeal to the visitors and be accurate

representations of the coconut learning center. Our posters and brochures are in vivid and contrasting colors to stand out, however, still in 'earthy' tones that complement the natural ambiance of the learning center.

### **We recommend using multiple languages on all platforms**

From the staff interview showed in Finding 7, we found that most tourists who visit the learning center are Thai, Chinese, and Westerners. The site is equipped with learning materials and skillful staff capable of conveying facts about the learning center, but the problem is that these are only available in Thai. The learning center should use multiple languages to increase capabilities and public relations. Utilization of multiple languages on all platforms would allow tourists to have a better understanding of the learning center and all the attractions offered.

## **5.2 Increase the Number of Visitors to the Center through Marketing**

### **We recommend utilizing more diverse forms of marketing and updating them**

We recommend using diverse forms of marketing including digital marketing so that the learning center could increase awareness of the learning center along with creating a following. The interview with the learning center staff suggests that public relations is a strategy that the learning center should improve upon (Finding 6). Thai people often use television and social media to learn about places to visit, as shown in Finding 8. The sponsor should reach out to travel agency websites, such as TripAdvisor, Pantip, and Painaidii to improve descriptions and information about the learning center on those sites. Younger tourists use more social media applications to research tourist destinations. The sponsor should start Instagram and official LINE accounts for the learning center. Instructions to create an Instagram Account are on Instagram's website. Additionally, instructions to create an Official Line Account are in Appendix R. The center should advertise their social media pages with visuals and signs throughout the most popular locations in the learning center to increase a following and interest. By doing so, it allows an easier platform for tourists to share photos and their experiences while at the learning center. The staff should place attractive advertisements throughout the Samut Songkram Province which describe the importance of the center. This could potentially increase the amount the visitors to the learning center who originally were unaware of it.

We recommend using multiple languages in all forms of marketing. Finding 7 shows that most visitors speak Thai, Chinese, and/or English. All marketing materials should cater to suit these visitors. The learning center should update all forms of marketing to draw in maximum visitors. It is important to keep those who follow the learning center informed and interested. This would cause visitors to continue to stay interested and return to the learning center on future visits.

### **We recommend changing the shape of the current vinegar bottle and implementing attractive packaging**

The current coconut cider vinegar bottle has a wide opening and no packaging which might lead to difficulties with using the product. Therefore, we recommend several changes the bottle and to implement packaging to the bottle. The current cider vinegar bottle has a wide opening which makes it difficult to control the amount poured. The foundation had an issue with another product, sea salt, corroding the metal part of the packaging in the past. Cider vinegar, which contains acetic acid, can also corrode the metals in the lid and the oxygen will rust any iron that is present. To prevent and overcome these drawbacks of the current cider vinegar bottle, the learning center should use a different shaped bottle and lid. The sponsor could use a narrow-neck bottle with a plastic flow regulator and a screw cap as the lid. The plastic flow

regulator can help to control the amount of coconut cider vinegar poured, and screw caps are resistant to corrosion from acid and affordable as compared to corks.

For the packaging, earth tones will be the main color scheme, as our sponsor suggested (Finding 5). The sponsor could use green since it complements the color of the coconut cider vinegar. We used coconut flower images in the design to show the contents of the coconut sap.

### **We recommend using various recipes that include coconut cider vinegar**

People generally do not know the uses of the coconut cider vinegar. To overcome this difficulty, we recommend using recipes on coconut shaped tags attached to the bottleneck. See Appendix Q for design and Appendix P for recipes. This will help to promote the product through attractive and eye-catching graphics and potential uses for the product. A brief explanation of coconut cider vinegar and various recipes will be present within this tag to better appeal to consumers.

To attract customers and create value for the coconut cider vinegar, we recommend making assorted recipes using the cider vinegar available. Finding 7 shows that most of the people who visit the learning center are Thai and international. To target these visitors, the list of recipes should include both Thai and international cuisines. A healthy detox drink recipe can appeal to health-conscious consumers.

### **We recommend developing tour groups open to the public**

To increase the diversity and volume of visitors, the learning center should use public tour groups for the coconut learning center. A public group allows anyone interested to visit and has staff guided them through the learning center. The tours are held by different organizations such as universities. The public does not tour through the learning center. Public tours would



*Figure 5.14: Organized Tour at the Learning Center*

lead the visitors throughout the center; the same as the tours currently work. However, one limitation is if visitors are uninterested in taking part. To resolve this, the learning center would need to advertise it. This public tour would encompass the goal of appealing to an international audience. It would also spread the knowledge and interest about traditional products and the coconut industry.

According to Finding 8, a majority of visitors already knew about the learning center before they visited, few people came from seeing it from the Amphawa Floating Market.

Having an organized public tour group would increase the number of people going to the learning center. Observations show that the current tours in the learning center, shown in Figure 5.14, are effective in leading the visitors to the back of the learning center, which is the main area of the center. Groups guided around the learning center allow for them to get the entire experience and understand why the center exists.

Along with the public tour groups, the center should implement QR codes around the learning center. The center should laminate the QR codes and place them near the signs. The QR codes would have information relating the flora and fauna around Amphawa, coconut farming, and about the learning center. Examples of the QR codes, documentation on how to create a QR code, and a poster showing how to scan a QR code are all in Appendix T. The QR codes allow the center to further the visitors' knowledge while taking up minimum space. A QR tour allows for visitors to venture around the learning center by themselves and still have the full experience.



### 5.3 Summary

We formed these recommendations to improve the coconut learning center and created and developed materials for coconut cider vinegar. With recommendations for implementing interactive activities, displaying appealing visuals, improving the navigation, and using multiple languages, the learning center will increase the retention and availability of knowledge in the center. By using digital marketing, changing the look of the bottle, showcasing the uses of the product, and creating public tour groups, the learning center will increase the number of people at the learning center. This will allow the learning center to provide the information to a greater audience. We believe these recommendations have the potential to help promote this traditional product and restore coconut farming in Amphawa.

## 6.0 Conclusion

The goal of this project was to preserve and promote the coconut community in Amphawa, Thailand, by implementing educational and marketing materials for coconut cider vinegar. The coconut farms and their traditional practices have been passed down from generation to generation. With the growth of global development and industrialization, the coconut industry has been declining as more farmers leave their farms for lucrative jobs. To address issues in the coconut industry of the coconut industry, The Chaipattana Foundation developed a local product, coconut cider vinegar, into a commercialized product. The goal of The Chaipattana Foundation is improving farmers' social welfare and capacity to become self-reliant. Therefore, The Chaipattana Foundation asked our team to create marketing and educational materials to spread awareness about the tradition of coconut cider vinegar to increase the income for the local coconut farmers.

To improve the learning center and their marketing of coconut cider vinegar, we made several recommendations for targeting the best types of educational materials and marketing strategies to draw attention to the product while stimulating further interest in the community. We developed materials and recommendations based on research, observations, interviews, and surveys. For future research, we suggest making a generalized template for creating effective learning centers. This project will benefit the farmers in Amphawa and those seeking to increase the effectiveness of educational and marketing materials. In conclusion, implementing more effective strategies using our recommendations and materials, will increase the overall experience for visitors at the learning center (Table 6.7). Therefore, encouraging them to buy the coconut cider vinegar created by the coconut farmers. This would increase profit for the coconut farmers which will allow them to support their families and revitalize the coconut industry in Amphawa.

	Posters	Creative Visuals	Tech Visuals	Workshop	Demo	Flow	Brochure	English
Before	✓	✗	✗	✓	✓	✗	✓	✓
After	✓	✓	✓	✓	✓	✓	✓	✓

*Table 6.7: Before and After*

## References

- Amphawa Chaipattananurak. (2013). Retrieved January 10, 2018, from <http://www.amphawanurak.com/en/amphawanurak/process.php>
- Arancon, R (2013, November, 1). "Market and Trade of Coconut Products". UN Food and Agricultural Organization (FAO). Asian and Pacific Coconut Community (APCC). Retrieved January 22, 2018.
- Asian Development Bank ( 2015). Thailand industrialization and economic catch-up. Retrieved January 15, 2018, from <https://www.adb.org/sites/default/files/publication/178077/tha-industrialization-econ-catch.pdf>
- Bangkokbiznew. (2017, May 02). Strategies for the 'Doi Kham'. Retrieved January 11, 2018, from <http://www.bangkokbiznews.com/news/detail/753001>
- Beh, B, K. Mohamad, N, E. Yeap, S, K. Ky, H. Boo, S, Y. Chua, J, Y, H. Tan, S, W. Ho, W, Y. Sharifuddin, S, A. Long, K. & Alitheen, N, B. (2016, July, 27). Anti-obesity and anti-inflammatory effects of synthetic acetic acid vinegar and Nipa vinegar on high-fat-diet-induced obese mice. Retrieved February 1, 2018, from <https://www.nature.com/articles/s41598-017-06235-7.pdf>
- Bernard, J. (October 03, 2017). Nutrition in Coconut Sugar. Retrieved February 1, 2018, from <https://www.livestrong.com/article/540370-nutrition-in-coconut-sugar/>
- Bharne, V. (2012). The Emerging Asian City: Concomitant Urbanities and Urbanisms.
- Briggs, R. (2015, November 7). Why Visual Literacy Is More Important Than Ever & 5 Ways to Cultivate It. Retrieved December 1, 2017.
- Brinkley, D. G. (Ed.). (2004). *Wheels for the World: Henry Ford, His Company, and a Century of Progress* (Reprint edition). New York: Penguin Books.
- Choovet, N., Chuleekeit, C., Karcini, A., Mulready, K., Sakthanasait, R., Subbanjong, B., & Yabut, J. (2016, March 4). Developing Educational and Marketing Materials to Support the Sea Salt Culture in Samut Songkhram. Retrieved November 3, 2017, from [https://web.wpi.edu/Pubs/E-project/Available/E-project-030416-013514/unrestricted/SeaSalt\\_Report\\_Final.pdf](https://web.wpi.edu/Pubs/E-project/Available/E-project-030416-013514/unrestricted/SeaSalt_Report_Final.pdf)
- Cohen, D., & Crabtree, B. (2006, July). Interviewing. Retrieved December 7, 2017, from <http://www.qualres.org/HomeInte-3595.html>
- Elmore, T. (2014, January 7). "In Other Words" - Why is Teaching with Images so Effective? (Part 1). Retrieved December 1, 2017, from <https://growingleaders.com/blog/why-is-teaching-with-images-so-effective-part-1/>
- Elsass, P. (2017, October 03). What Are the Benefits of Coconut Vinegar? Retrieved January, 10, 2018, from <https://www.livestrong.com/article/262961-what-are-the-benefits-of-coconut-vinegar/>
- Froek, Barbara. "What Are the Health Benefits of Mother of Vinegar?" LIVESTRONG.COM. Accessed February 8, 2018. <https://www.livestrong.com/article/299937-what-are-the-health-benefits-of-mother-of-vinegar/>.
- Fuller, T. (2012, June 4). Thai Youth Seek a Fortune Away From the Farm. The New York Times. Retrieved from <https://www.nytimes.com/2012/06/05/world/asia/thai-youth-seek-a-fortune-off-the-farm.html>
- Gutiérrez-Preciado, A. Hector Romero, H. Peimbert, M. (2010). An Evolutionary Perspective on Amino Acids. Retrieved February 1, 2018, from <https://www.nature.com/scitable/topicpage/an-evolutionary-perspective-on-amino-acids-14568445>
- Hebbar, K, B. Arivalagan, M. Manikantan, M, R. Mathew, A, C. Thamban, C. Thomas, G, V. Chowdappa, P. (2015, October ). Coconut inflorescence sap and its value addition as sugar – collection techniques, yield, properties and market perspective. Retrieved February 1, 2018, from [https://www.researchgate.net/publication/283666441\\_](https://www.researchgate.net/publication/283666441_)

- Coconut Inflorescence Sap and its Value Addition as Sugar -  
 \_Collection Techniques Yield Properties and Market Perspective
- Hemarajata, P. Versalovic, J. (2013, January ). Effects of probiotics on gut microbiota: mechanisms of intestinal immunomodulation and neuromodulation. Retrieved February 1, 2018, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3539293/>
- Jittivanich, M. (2017, July 17). 5 Digital Marketing Trends To Watch For In Thailand. Retrieved January 11, 2018, from <http://apac.thinkwithgoogle.com/articles/five-digital-marketing-Trends-thailand.html>
- Joseph, M. (2016, October 21). Coconut Vinegar: What Are the Health Benefits? Retrieved February 14, 2018, from <https://nutritionadvance.com/coconut-vinegar-health-benefits/>
- Karseno, Erminawati, Tri Yanto, Setyowati, R. Haryanti, P. (2017, September, 2). Effect of pH and temperature on browning intensity of coconut sugar and its antioxidant activity. Retrieved February 1, 2018, from [http://www.myfoodresearch.com/uploads/8/4/8/5/84855864/\\_4\\_\\_fr-2017-175\\_karseno\\_1.pdf](http://www.myfoodresearch.com/uploads/8/4/8/5/84855864/_4__fr-2017-175_karseno_1.pdf)
- Kittisenachai, P. (2016, January 15). Competitiveness of Thai Coconut. Retrieved January 11, 2018, from <http://www.tpsoc.moc.go.th/sites/default/files/1064-img.pdf>
- Kondo, T. Kishi, M. Fushimi, T. Ugajin, S. Kaga, T. (2009, August, 7). Vinegar Intake Reduces Body Weight, Body Fat, Mass, and Serum Triglyceride Levels in Obese Japanese Subjects. Retrieved February 1, 2018, from [https://pdfs.semanticscholar.org/0bf6/0e51496785ba330adb1d72181806a23de98d.pdf?\\_ga=2.246943748.1470970993.1517502799-807538827.1517502799](https://pdfs.semanticscholar.org/0bf6/0e51496785ba330adb1d72181806a23de98d.pdf?_ga=2.246943748.1470970993.1517502799-807538827.1517502799)
- Kulkarni, C. Kulkarni, K, S. Hamsa, B, R. (October 10, 2004). L-Glutamic acid and glutamine: Exciting molecules of clinical interest. Retrieved February 1, 2018, from <http://medind.nic.in/ibi/t05/i3/ibit05i3p148.pdf>
- Mohamad, N, E. Yeap, S,K. Ky, H. Ho, W, Y., Boo, S, Y. Chuaf, J. Beh, B,K. Sharifuddin, S, A. Long, K. Alitheen, N, B. (2017, August, 4 ). Dietary coconut water vinegar for improvement of obesity-associated inflammation in high-fat-diet-treated mice. Retrieved February 1, 2018, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5642190/pdf/zfnr-61-1368322.pdf>
- Nielsen. (2015, October 07). Word-of-Mouth Recommendations Remain the Most Credible. Retrieved January 11, 2018, from <http://www.nielsen.com/id/en/press-room/2015/WORD-OF-MOUTH-RECOMMENDATIONS-REMAIN-THE-MOST-CREDIBLE.html>
- North Dakota State University. (2014). Saline and Sodic Soils . NDSU Extension Service. Retrieved February 8, 2018, from <https://www.ndsu.edu/soilhealth/wp-content/uploads/2014/07/Saline-and-Sodic-Soils-2-2.pdf>.
- Observations. (2014, August 20). Retrieved December 7, 2017, from <https://www.sheffield.ac.uk/lts/strategy/resources/evaluate/general/methods-collection/observation>
- Peerapun, W. (2012). Participatory Planning in Urban Conservation and Regeneration: A Case Study of Amphawa Community. *Procedia - Social and Behavioral Sciences*, 36, 243–252. <https://doi.org/10.1016/j.sbspro.2012.03.027>
- Prince, M. (2004). Does Active Learning Work? *Journal of Engineering Education*, 93(3), 223–231. <https://doi.org/10.1002/j.2168-9830.2004.tb00809.x>
- Qin, A. (2017, November 12). Chinese Village Keeps Alive a Tradition of Indigo Dyeing. *The New York Times*. Retrieved from <https://www.nytimes.com/2017/11/12/world/asia/china-indigo-dyeing.html>
- Sawatdiwat, T. (2015, April 30). Amphawa Development Chaipattana . Retrieved January 11, 2018, from <https://www.thairath.co.th/content/491115>
- Scrase, T. (2003). Precarious production: globalization and artisan labor in the Third World *Third World Quarterly*, 24, 449-461. Retrieved from <http://courses.arch.vt.edu/courses/wdunaway/gia5434/scrase.pdf>

- Shuttleworth, M. (2008, July 5). Survey Research Design - How to Conduct Surveys. Retrieved December 7, 2017, from <https://explorable.com/survey-research-design?gid=1582>
- Silapacharanan, S. (n.d.). Amphawa and Its Cultural Heritage. *Faculty of Architecture, Chulalongkorn University*, Retrieved from <http://www.arch.chula.ac.th/nakhara/files/article/1mbKZmD2d4Sun20415.pdf>
- Silapacharanan, Siriwan. "Amphawa: Saving Its Spirits of Place," 1–15. Canada, 2008. [http://www.international.icomos.org/quebec2008/cd/toindex/77\\_pdf/77-koba-15.pdf](http://www.international.icomos.org/quebec2008/cd/toindex/77_pdf/77-koba-15.pdf).
- Soltan, S, S, A. Shehata, M, M, E.M. (2012). Antidiabetic and hypocholesterolemic effect of different types of vinegar in rats. Retrieved from [http://www.lifesciencesite.com/lisj/life0904/319\\_12252life0904\\_2141\\_2151.pdf](http://www.lifesciencesite.com/lisj/life0904/319_12252life0904_2141_2151.pdf)
- Suntikul, Wantanee. "Nostalgia-Motivated Thai Domestic Tourism at Amphawa, Thailand." *Asia Pacific Journal of Tourism Research* 22, no. 10 (October 3, 2017): 1038–48. <https://doi.org/10.1080/10941665.2017.1363064>.
- Tan, San Chiang. (2005). Vinegar fermentation. Retrieved January 10, 2018, from <http://ucfoodsafety.ucdavis.edu/files/192137.pdf>
- Tat. (2011, November 9). Coconuts in Thai life. Retrieved December 15, 2017, from <http://www.pattayamail.com/travel/coconuts-in-thai-life-7538>
- The Chaipattana Foundation. (2017). Ampawa-Chaipattananurak. Retrieved November 18, 2017, from <http://www.chaipat.or.th/eng/key-projects/ampawa-chaipattananurak-conservation-project/item/4148-ampawa-chaipattananurak.html>
- UIH. (2017, January 5). What is Thailand 4.0? Retrieved January 11, 2018, from <https://www.uih.co.th/en/knowledge/thailand-4.0>
- UNESCO. (2017). Community Learning Centres. Retrieved November 18, 2017, from <http://www.unescobkk.org/education/literacy-%20and-lifelong-%20learning/community-learning-centres-clcs/>
- UNESCO Office in Bangkok: Amphawa Canal Community. (n.d.). Retrieved January 11, 2018, from <http://www.unescobkk.org/fr/culture/heritage/awards/previous/2008/award-winners/2008hm5/>
- Yetiman, A, E. Kesmen, Z. (2015, March, 21). Identification of acetic acid bacteria in traditionally produced vinegar and mother of vinegar by using different molecular techniques. Retrieved February 1, 2018
- Zinderman, C. (2017, April 30). This Just In: Coconut Vinegar Is the New Apple Cider Vinegar. Retrieved January 11, 2018, from <https://www.rd.com/health/wellness/coconut-vinegar/>

## Authorship

Section	Primary Writer	Secondary Writer	Initial Edits	Final Edits
Abstract	Olivia	Sarah	Sarah/Alex	All
Executive Summary	Alex/Emily	Alex/Olivia/Sarah/Emily	Sarah/Alex	All
Introduction	All	All	Sarah/Alex	All
Background 2.1	Emily/Pichada	Emily/Pichada	Sarah/Alex	All
Background 2.2	Olivia	Olivia	Sarah/Alex	All
Background 2.2.1	Olivia	Olivia	Sarah/Alex	All
Background 2.2.2	Emily	Emily	Sarah/Alex	All
Background 2.3	Sarah	Sarah	Sarah/Alex	All
Background 2.3.1	Sarah/Alex	Sarah/Alex	Sarah/Alex	All
Background 2.3.2	Alex/Haroon	Alex	Sarah/Alex	All
Background 2.3.3	Alex/Pichada/Jinsol	Alex/Pichada/Jinsol/Pornthep	Sarah/Alex	All
Background 2.4	Jinsol	Jinsol/Pornthep	Sarah/Alex	All
Background 2.5	All	All	Sarah/Alex	All
Methods 3.1	Alex/Gina	Alex	Sarah/Alex	All
Methods 3.2	Sarah/Jinsol	Sarah	Sarah/Alex	All
Methods 3.3	Olivia/Haroon	Olivia	Sarah/Alex	All
Methods 3.4	Emily	Alex	Sarah/Alex	All
Methods 3.5	All	Sarah/Alex	Sarah/Alex	All
Results 4.1	Jinsol/ Emily	Jinsol	Sarah/Alex	All
Results 4.2	Sarah/Pornthep/Pichada/Alex	Sarah/Pornthep/Pichada/Alex	Sarah/Alex	All
Results 4.3	Olivia	Olivia	Sarah/Alex	All
Results 4.4	Alex	Alex	Sarah/Alex	All
Results 4.5	All	All	Sarah/Alex	All
Recommendations	All (Each wrote one)	All (Each edited their own)	Sarah/Alex	All

Conclusion	Emily/Olivia	Olivia/Sarah	Sarah/Alex	All
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Materials	English	Thai Translation	Final Version
Poster	Jinsol	Jinsol	Jinsol
Brochure	Haroon	Haroon	Haroon
Packaging	Pichada	Pichada	Pichada
Tags	Sarah/Pichada	Pichada	Pichada
Recipes	Sarah	Pichada	Sarah/Pichada
Signs	Emily	N/A	Emily/Olivia
QR Tour	Alex	Pornthep/Jinsol/Pichada	Alex
Exhibition Layout	Alex	N/A	Alex
Map	Olivia	N/A	Olivia
Team Meeting Materials	Olivia	N/A	Olivia
Calendar	Olivia	N/A	N/A
Cluster Presentation 1	Pornthep	N/A	Pornthep
Cluster Presentation 2	Olivia	N/A	Olivia
Final Presentation	Olivia/Pornthep	N/A	Pornthep/All
Cover Page	N/A	N/A	Jinsol

## Appendices

### Appendix A: Questions for Interview with Sponsor, Mohm Rajawongse Srichalerm Kanjanapoo

#### Learning Center Questions:

- Why has the Chaipattana Foundation been focused on developing Learning Centers?
- What are the unique aspects of learning centers as compared to museums and comparable places?
- What is the current public perception of the learning center?
- What is the intended target audience for the Learning Center?
- From past work, what are the strong points and weak points for the center?
- Based on past work, what are your recommendations for our team's course of action within the learning center?

#### Coconut Cider Questions:

- What caused cider to come to your attention to develop as a product as opposed to another product?
- Do you have any more helpful information about the cider that we have not covered?
- What is the intended future impact due to the Learning Center and the coconut palm sugar cider?

#### Past Projects Questions:

- What are the expectations for this project?
- Since the Chaipattana Foundation has worked with WPI and BSAC students many times in the past, how can we improve the experience for the Chaipattana Foundation as a sponsor for this project?

Below are statements based on the questions. These are what was sent to the sponsor prior to the interview.

- The intended future impact due to the Learning Center and the coconut palm sugar cider.
- Chaipattana Foundation focuses on developing Learning Centers.
- The unique aspects of learning centers as compared to museums and comparable places.
- The current public perception of the Learning Center.
- The intended target audience for the Learning Center.
- Recommendations for our team's course of action within the Learning Center.
- The reason for marketing the cider instead of another product.
- Helpful information about the cider.
- The expectations for this project.
- How our team can improve the experience for The Chaipattana Foundation for this project.



## Appendix B: Interview Data with Sponsor, Mohm Rajawongse Srichalerm Kanjanapoo

Amphawa Chaipattananurak: the word “Pattana” is translated to “to develop” and “Anurak” stems from a Thai word that means “to conserve”. This conservation center is following the King Rama IX’s theory of “sufficient economy” and to create jobs for the locals, which are the fundamental objectives for the whole ‘Chaipattana Foundation’.

What Chaipattana wants to do is to be the prototype for everyone in the community to follow. For example, when Chaipattana decided to market the coconut sugar, the product became widely known and from the demand, the local community can make the same product, use the same production process, and use the same sort of packaging by themselves to generate income. They accomplish this through learning center.

What differentiate the learning centers from other museum and touristy sites are that those sites are ‘fixed’ and ‘exhibited’. But learning centers are what portray the ‘real life’ of the locals and how people in the past have been living their lives. Learning centers provide demonstrations - it is product- and production-based where people who come and visit the site will be able to understand the value of the local community and the local wisdom. Such as, how coconut sugar is traditionally made, how coconut leaves are weaved into baskets etc. They want to create something that will allow farmers sell their own products so that the farmers don't have to rely or depend on the middleman merchants and economic fluctuation.

Why coconut cider vinegar?; They would like to add more value to coconut sugar by extending product line and introduce coconut cider vinegar. Actually, coconut cider vinegar production is less complex than coconut sugar which allows a farmer to make them at home. The cider has been made and consumed by the locals for decades. The aim of this project is to be able to bring out this product to be sold (with standardized production process and cleanliness) and basically to add in value for this local product and make it become attracted/known to the public.

Not only that it is less complex to make, coconut cider vinegar can also generate income which increases the stability of the source of income for the farmer. By creating a new product also allow a farmer to have more flexibility in the product they create, for an example, they can choose to make cider vinegar when coconut flower syrup is in low season as the cider vinegar required lesser starting material compared to coconut sugar. Coconut vinegar also gives the local more opportunity as now they will have more knowledge and market power to set price and rely less on the middle man as they have an alternative product to sell in case coconut sugar demand fall. They also hope that this is a kickstart for farmer to try and develop their own different product in the future and understand the value of the learning center and the opportunity that lies in the future.

They want public relation material for information about the cider in Thai and English  
Want public relation material for information possibly in Thai and English. Most people who buy products are Thai and Chinese. They want this product to appeal to health-conscious market - mostly appeal to international tourists. Preliminary, they would like to see deliverables such as attractive label packaging, brochure and, poster - preferably in ‘earthy’ tones.

## Appendix C: Questions for Assistant Professor Chuenjit Prakitchaiwattana, Ph.D.

Q: What is the difference between cider and vinegar?

A: For cider, some of the bacteria in the initial product are partially converted to acetic acid (not fully fermented and usually left with subtle sweetness) For vinegar, it is a composition between alcohol and acetic acid. The bacteria is fully converted to alcohol and eventually acetic acid.

Q: What is your understanding of the health benefits of this specific cider?

Q: What is a difference between coconut sap cider vinegar and other cider vinegar?

A: You need to research further in coconut sap. Usually, the nutrients present in coconut sap will be present in its fermented form.

Q: Kind of coconut syrup Chaipattana uses are 100% organic - no added sweeteners. Most farmers around the area would add in sweeteners and dilute the syrup. The problem is that there is not enough raw material for production and for the demand. Are there substitutes of the raw material in order to fix this problem? (For example, crush the meat and ferment?)

A: You can use coconut meat or coconut juice to make cider vinegar. However, you have to see whether if it is what your sponsor wants to market. Different parts of the coconut have different properties that will influence the final product. For example, palm sap has a sweetness factor 10-12 degree Brix (sweetness factor using refractometer) and coconut water has 4-8 degree Brix, and coconut meat is 5-6 degree Brix.

Q: Online, there is a lot of information regarding the benefits of the cider such as the amino acids, the minerals, and its low glycemic index, are you aware of any research to back up these claims?

A: You should find information about the composition of sap first, find the mechanism of yeast fermentation, and metabolism of the process to see what type of metabolite could be generated from this. Properties of apple and coconut sap are different. Apple has sugar, natural acids, high amount of phenolic compound which can be converted to many substrates and into other compounds. Coconut sap may not have as high phenolic compound as apple.

Q: Is it correct that raw coconut sugar cider usually has zero calories?

A: Yes, it should be 0 kcal.

Q: Is it correct that raw coconut sugar cider has a neutral Ph balance?

A: The coconut sap is neutral. The acidity will make yeast perform better.

Q: At Chaipattana, the staffs do 3 months fermentation. What is an ideal fermentation period/method?

A: You can actually speed up the fermentation rate by adding microorganism. What is important is that you need to standardize your process. I suggest the sponsor to buy refractometer to measure sugar level (sweetness) of coconut sap and use pH paper to measure acidity.

Q: How to get rid of the precipitate?

A: You can filter out colloid or use egg whites to form precipitation which can be separated out. Or you can precipitate by differences in freezing points.

## Appendix D: Questions for Interview with Learning Center Staff

These interviews comprised of nine open-ended questions. Example questions for these interviews can be found in Appendix B. All 20 staff members were interviewed for approximately 20 minutes each. With permission, the audio of select interviews was recorded. These recordings remained anonymous and were deleted at the end of the project. Due to the low English proficiency of the staff, all interviews were conducted in Thai. These were later translated and transcribed by Thai and English speakers into English and transcribed using a google document to compile the information. Along with the staff, the sponsor was interviewed, as stated in objective one, to understand their perception of the learning center.

Q: What is your position at the learning center?

Q: How long have you been working here?

Q: Why are Amphawa Chaipattananurak and the learning center important to you?

Q: What do you think is the purpose of the learning center?

Q: What is the most popular exhibit here?

Q: What is the best selling product here?

Q; Tourist Behavior: How many people come and visit the learning center each week? What kind of people come to visit?

Q: What are the peak times of the center?

Q: In your opinion, what do you think can be implemented to improve the learning center?

## Appendix E: Raw Data of the Interview with Learning Center Staff

What is your position at the center?

- Manager of the Chan Chala shop, take care of the shop
- Housekeeper
- Housekeeper
- Housekeep
- PR - manages the social sites such as facebook page
- Housekeeper (toilet cleaner)
- Housekeeper
- Housekeeper (at Tao-Tan)
- Housekeeper (gardener)
- Housekeeper
- Manager of Pat-Pat shop

How long have you been here?

- 12 years, since the area was the newly established and when Chan Chala was only been building.
- 7 years
- Not yet 1 year
- 4 years
- 2+ years
- 8 months
- 6 years
- More than 2 years
- 2 years
- 7-8 years
- 8 years

Why is the center important to you?

- I'm here for 12 years. I am a local and I was raised here. I would jump into the river here when I was a kid. It has an emotional sentiment to me. And I am working for Princess Sirindhorn - get to serve her from time to time. I get excited when I have the chance to meet her. So I've developed the love and loyalty. Everybody here loves the Princess.
- I want to work for the Princess and the royal family.
- I live near, but I kind of look past the local values and traditions. I don't think it's just me but most of the people area are similar. I want to conserve the losing traditions. I used to be a teacher before.
- Doing this for the King and provides a work
- They provided him a work
- Actually, it is important for everyone because we are working for the King and princess. I'm the local in Amphawa, so I wanna be working for my own community.
- Because it belongs to princess and he wants to help
- Because it belongs to the royal family and near his house
- Emotional value. Her mom loves the princess and she we applied.

What do you think is the purpose of the learning center?

- Can educate tourists and tell people about some interesting things in Amphawa have eg. sugar production
- Everything is good, have improvement.
- Can educate people about coconut sugar (most of the people doesn't know the real process of it) but also LC helps to preserve the tradition of coconut sugar business.
- Sugar
- Educate people by activities and demonstrations
- Family and kids and experience and do activities in not expensive price.

What is the most popular exhibit?

- Tao-Tan. The visitors get to see all the steps of production. They are able to smell the fresh sugar that is lovely.
- Tao-Tan.
- Tao-Tan. And Chan Chala shop
- Tao-Tan.
- Tao-Tan
- Tao Tan
- Sugar production site
- Every site, but mostly Tao Tan.
- Tao Tan
- Tao Tan
- Thai snack making and coloring (kids)

What is the best selling product?

- Coconut sugar (but usually not enough for the demand). The other stalls would also sell but the sugar here is 100% organic although a little more expensive.
- Chinese enjoy Muang-Cheun drink and toasts - they would show the picture they have online (probably it's been shared online in China and they would come and order the same thing)
- Coconut sugar and Muang-Chuen drink.
- Coconut sugar

- Coconut sugar: the sugar here is 100% organic - no added sugar; not diluted; although a little more expensive. Not fattening; no preservatives. Because this has to be sent to the royal project and serve to the royal family so it has to be up to standard.
- Coconut-sugar; it is 100% organic and it's pretty hard to find 100% organic sugar
- Sugar, fruits (pomelo and mango)
- Sugar, sea salt, coconuts
- Sugar and syrup and Thai dessert
- Sugar, clothes, butterfly pea juice
- Lotion, shampoo, clothes
- Coconut oil, and sea salt and products that are not expensive

#### Tourist nationality?

- Thai, Chinese, some French who walk by.
- A lot of Chinese, Taiwanese - they would come every weekend.
- Tourist groups and students. (Thai)
- Diverse nationalities
- Lots of Chinese. Sometimes I think it's another Chinatown. They would walk around the center too but won't purchase a lot. Won't purchase things at Pat Pat, not coconut sugar. They would only buy drinks and on-spot eating. They would also buy butterfly pea tea (they make hot tea out of it).
- People who would purchase coconut sugar are mostly Thais (people from southern Thailand).
- Diverse- but mostly Thai and Chinese

#### How much tourists each weekend & Peak time?

- Thousands of tourists each weekend; 3-4pm. This market is supposed to be an evening market
- A lot on the weekend. But 4-5 years ago, there were 10 times the tourists. Before, there was constant advertisement all over. There has been less advertisement since the new mayor came into the position.
- A lot on the weekend
- Depends on the weekend, if it is the weekend at the beginning of the month or mid-month or by the end of the month. But during the holiday seasons, people would flood in.
- 4 pm; the area would be packed. Chan Chala is closed at 9 pm but people can walk around the area until midnight.

#### What can be improved at the center

- A landmark or a nice setup background to take a pic. Since most of the time, people would walk here by chance so I want this place to be a 'must-come' place. Not a place just to walk by.
- May need more PR and promotion
- No comment - no idea.
- No comment - depends on the board.

#### Interview 1:

1. Aid to travel manager
2. 1 month
3. I was born in Amphawa. I like to work close to my house. I hope to get to know different people and get to know more about Amphawa.

4. The learning center is very good. It makes visitors more aware of the coconut industry. It also helps locals and gives them aid faster than the government getting involved. The foundation is a marketing channel for Samut Songkhram to sell coconut sugar.
5. Tau Tan is the most popular
6. The coconut sugar is the most popular product
7. 200 people per weekday and 1,000 people in total for the week. Thai families, Chinese, and westerners.
8. Friday-Sunday
9. Side note: People don't know much about the process.

Interview 2:

1. In charge of overall travel and preserving traditions
2. 11 months
3. I am from Amphawa and working for the king is an honor. I get to help to develop the area where I was born.
4. The staff needs improvement. Need staff who really know what they're doing. (More specialized staff)
5. Tau Tan and is the most popular
6. The coconut sugar is the most popular and the butterfly pea drink is the second most popular
7. 1,000 people per week. 60% Thai (salt, sugar, and krap), 20% Chinese (butterfly peas and sea salt), 20% Westerners (don't buy anything).
8. Weekends
9. The learning center needs better PR. They need to raise awareness of the place. There is a sign but it is small and ineffective.

Interview 3:

1. Finding raw materials for the production processes
2. 6 years
3. I used to work at the coffee shop part-time. The Foundation is important to me because they help the community and I get to help people.
4. The learning center should improve on informing people that this location is part of the Chaipattana Foundation/creating a PR
5. People like to see the traditions (crafting, and Thai bands)
6. (same as above)
7. 1,000 per week. Chinese (butterfly peas, salt, and sugar), Japanese (butterfly peas), Thai, and Western (beauty products and handcrafted goods). The number of visitors was cut in half because an artificial floating market was built.
8. Weekends
9. The learning center should improve on informing people that this location is part of the Chaipattana Foundation/creating a PR

Side Note: The production of sugar is low now because of the weather. They take in 80L of sap now compared to 400L in the best season.

Interview 4:

1. Accountant
2. 6 months
3. I used to work at the coffee shop. I came to work here because it is an honor to work for the king. Also, the cost of living in Amphawa is lower than other places.
4. The learning center and the Chaipattana Foundation creates opportunities for people to help them sell their local products. They do not charge the locals as much as other

places do to be able to sell their goods at a stand there. They also have standards for the products that are sold. One is that the seller has to make it themselves.

5. Tau Tan is the most popular. It was on TV and got very popular
6. Coconut sugar is the most popular product
7. 1,000 people per week.
8. Weekends
9. There should be more of a variety of products and they should be unique like the butterfly pea drink.

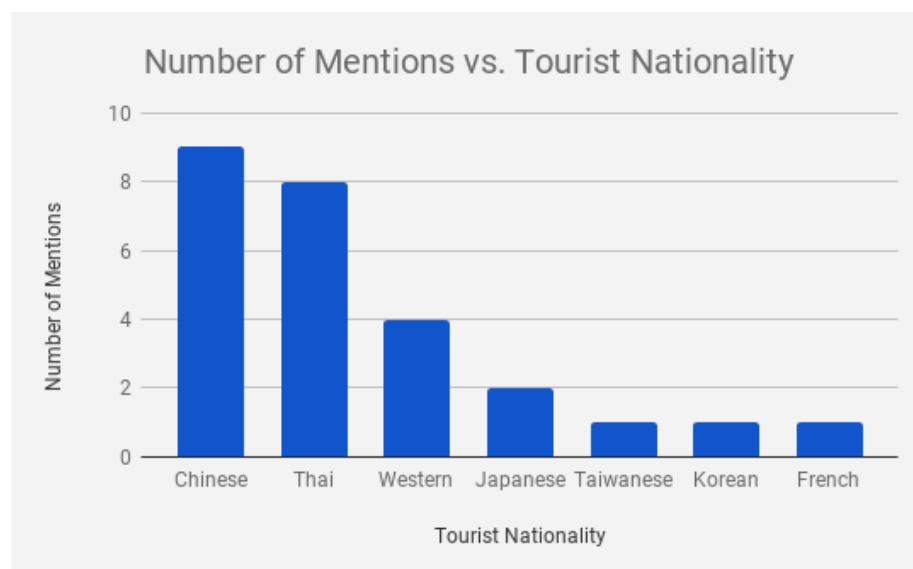
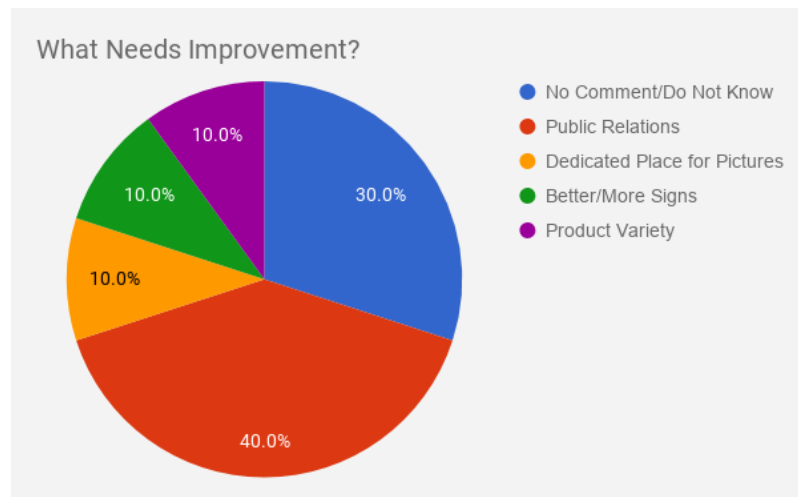
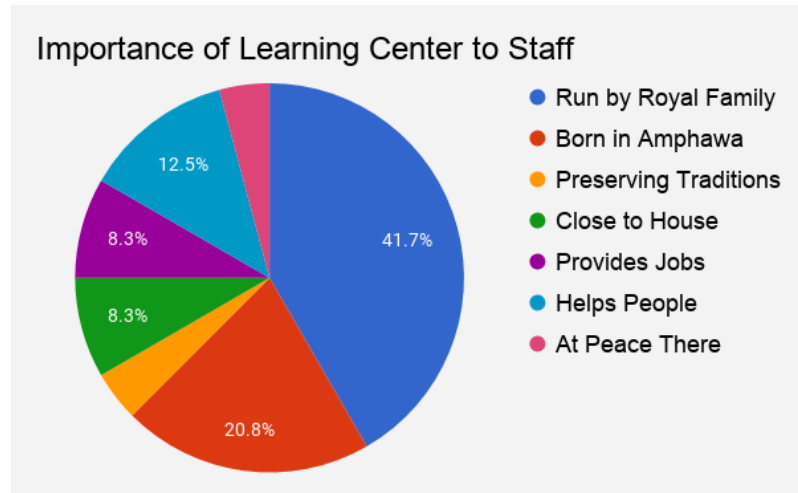
#### Interview 5:

1. Manager
2. 6 years
3. It is important to me because she was born in Amphawa. It is an honor to work with the foundation and to help the people here. Especially because the foundation is run by the royal family.
4. The learning center has a great impact on the lives of the locals. It makes their lives better because it gives them the opportunity to sell and market their products. The market has become lively because of the draw to tourists.
5. Tau Tan is the most popular.
6. The best selling product is the coconut sugar because it is very pure.
7. 1,000 people. Mostly Thai, Chinese, and Western
8. Weekends
9. The learning center should improve the organization of the products and public relations.

#### Interview 6:

1. Cleaner/Organizer
2. 1.5 years
3. I work here because I am at peace here and I get to learn new things. It is very important to me.
4. The learning center is a really helpful place. A lot of people learn a lot of things.
5. Tau Tan is the most popular
6. The best selling product is the coconut sugar. They run out every day!
7. Chinese, Japanese, and Korean.
8. Weekends
9. The learning center is already good and so is the foundation.

## Appendix F: Interview Data from Learning Center Staff





# Appendix G: Amphawa Chaipattananurak Conservation Project Brochure



**The Office of the Chaipattana Foundation** has supported the development of the project in local around the way of life of the people in Amphawa. It has implemented H.A. King Bhuvanad Aduladej's development philosophy of "spiritual condition" and the idea of the "sufficiency economy" as a main goal for the development of the area. The main aim is to be the people in Amphawa join in the project by preserving and reviving the culture of the Amphawa community. In 2011, the community can sustain living, environmental, sustainable, and happy, small-scale local change.



**Full Fat Shop** is one of the Amphawa Chaipattananurak Conservation Project. It was established to provide strategic marketing assistance for SMEs and function as a community shop selling products from Santol, Nakhon and nearby provinces, including the products of the Chaipattana Foundation. For the shop, facilities for development around the local way of life so that people have jobs and are able to sustain their living. Apart from that, the shop sometimes also provides a place for the people to share their experiences and knowledge in having local products. For the shop also promote local goods so that they become well known.



**The Agricultural Demonstration Garden for Knowledge Sharing** is an integral part of the project. It is a place where people can learn and gain to know the local wisdom and local ways of life centered in agriculture in the Amphawa community. The main focus is on the cultivation of various kinds of local crops which are important for Amphawa. The Garden is also a center where agricultural activities, lessons, and experiences of other interested people can gather and share knowledge with each other.



**The Nakawang Community Market** is a marketplace area where activities related to the lifestyle of the people along the Mae King River are demonstrated. These activities are, for example, the traditional music, drum performances, the traditional Thai washed dance, rhythmic drumming of the preparation in local items, such as the town's Thai drum performance, and other traditional music and song performances. These activities are held on a regular basis. The market also provides a place for the people to share their experiences and knowledge in having local products. For the market also promote local goods so that they become well known.



The Amphawa River is a significant part of the local culture and history. It provides a natural habitat for various species of fish and other aquatic life. The river is also a source of water for irrigation and other agricultural activities. The Amphawa River is a beautiful and scenic area that attracts many tourists and visitors.



The local market is a vibrant and bustling area where people come to buy and sell their goods. It is a place where people can find a wide variety of local products, including fresh produce, handicrafts, and traditional goods. The market is a great place to experience the local culture and lifestyle.



**"Chan Chala Shop" (The Platform Shop)** sells beverages and snacks made from a variety of local ingredients. The shop is a great place to enjoy the local culture and lifestyle. It is a place where people can find a wide variety of local products, including fresh produce, handicrafts, and traditional goods.



**The Community Exhibition Room** is a place where people can learn about the local culture and history. It is a place where people can find a wide variety of local products, including fresh produce, handicrafts, and traditional goods. The room is a great place to experience the local culture and lifestyle.



**Amphawa Chaipattananurak Conservation Project Map**

The map shows the location of the Amphawa Chaipattananurak Conservation Project. It includes the Amphawa River, the Amphawa Community Market, the Amphawa River Bridge, and the Amphawa River Dam. The map also shows the location of the Amphawa Chaipattananurak Conservation Project Office, the Amphawa Chaipattananurak Conservation Project Center, and the Amphawa Chaipattananurak Conservation Project Exhibition Room.



The Amphawa River is a beautiful and scenic area that attracts many tourists and visitors. It provides a natural habitat for various species of fish and other aquatic life. The river is also a source of water for irrigation and other agricultural activities. The Amphawa River is a beautiful and scenic area that attracts many tourists and visitors.

**Amphawa Chaipattananurak Conservation Project**



The Chaipattana Foundation has gratefully shared in carrying on the legend of Amphawa "From past to present the lifestyle of the river folk continuously flows onward"

## Appendix H: Observation Tables and Data

In order to decide which strategies we would observe within learning centers, the team referred to table 4.1 in the “Developing Educational and Marketing Materials to Support the Sea Salt Culture in Samut Songkhram” IQP and our previous experiences in museums and other learning centers. The team picked the learning centers that we visited based on their ratings on popular Thai and American travel websites such as TripAdvisor and Lonely Planet. We observed these learning centers at their peak times as found on Google.

When observing the learning centers, we rated each strategy on a scale of zero to five. If a strategy received a score of zero then it was not present in the learning center. A score of five indicated that it was presented very well in the learning center. The team made comments in a separate column addressing why we gave strategies a specific rating. Any strategies rated 3.0 or greater were considered effective strategies that were present in the learning center. The team averaged all of the strategy ratings on the sheet to come up with an individual overall rating for the center. We took all of the individual overall ratings and averaged them into one team rating for the learning center.

Each of the team ratings were then compared to the number of effective strategies within the learning centers. We found that the greater the number of effective strategies within a center, the higher the team rating. To compare this finding to another source, the team went onto TripAdvisor and found the ratings for each learning center. We found this data to be skewed due to the varying number of responses for each center. Therefore, this comparison does not accurately reflect the data collected from the team observations.

Rank									
Categories	0 (N/A)	1 (Low)	2	3	4	5 (High)	General Notes		
Types of Visuals									
Use of Visuals									
Interactive Workshops									
Demonstrations									
Products Sold									
Websites									
Social Media									
Brochures									
Languages used (spoken)									
Languages used (written)									
Ease of Navigation									
Overall Rating									
Goal of the Center									

### Thailand Cultural & Design Center

TCDC	Avg	Comments
Types of visuals	4.43	<ul style="list-style-type: none"> <li>- QR audio info</li> <li>- Great visuals</li> <li>- Ipads, shadow boxes, posters</li> <li>- Not many visuals in English</li> <li>- Videos, displays</li> <li>- Displays behind glass, gardens</li> <li>- QR Codes &amp; materials &amp; 3D printing &amp; sensory info</li> <li>- Small board to talk about each item being shown/lots of <b>some things</b> to see and touch</li> </ul>
Use of Visuals	4.14	<ul style="list-style-type: none"> <li>- QR code for audio or videos,(useful when there)</li> <li>- Lots of visitors compared to number of staffs available</li> <li>- QR Codes with info</li> </ul>
Interactive Workshops	1.14	<ul style="list-style-type: none"> <li>- Exhibits and workshops dates online, you can choose to come (not shown every day)</li> <li>- Sign up for Makerspace</li> <li>- They have a communication board where visitors can comment</li> </ul>

		<ul style="list-style-type: none"> <li>- Lectures in lecture halls</li> <li>- N/A</li> <li>- 3D Printing</li> </ul>
Demonstrations	1.57	<ul style="list-style-type: none"> <li>- They have (but we didn't see) exhibition</li> <li>- Not available today</li> <li>- Lecture in hall</li> <li>- N/A</li> <li>- 3D printing/materials</li> </ul>
Products Sold	3.29	<ul style="list-style-type: none"> <li>- Cafe, 3d printing products, designer products</li> <li>- Nice products but they don't explain "the history behind it"</li> <li>- Gift shop selling creative stuff</li> <li>- Coffee shop</li> <li>- Variety of gift shop items right when you walk in</li> <li>- The local craft/design products</li> </ul>
Website	4.60	<ul style="list-style-type: none"> <li>- English and Thai versions</li> <li>- Updated frequently and recent</li> <li>- Easy to use</li> <li>- Easy to navigate, good info, visually appealing</li> </ul>
Social Media	4.00	<ul style="list-style-type: none"> <li>- IG but hard to find</li> <li>- Facebook</li> <li>- Updated frequently</li> <li>- Not advertised well in museum</li> </ul>
Brochures	3.83	<ul style="list-style-type: none"> <li>- Thai and English, great style</li> <li>- Some just in Thai</li> <li>- Great visuals</li> <li>- Had a minimap, of outside and map of inside</li> <li>- Yes</li> <li>- Mostly in Thai</li> <li>- Too wordy/ needs more pictures</li> </ul>
Languages Spoken	2.60	<ul style="list-style-type: none"> <li>- Some staff can speak English (information)</li> <li>- Qr codes audio in Thai and English</li> <li>- Thai mostly</li> </ul>
Languages Written	3.60	<ul style="list-style-type: none"> <li>- English, Thai</li> <li>- Mostly Thai, descriptions don't have en</li> <li>- Direction Thai +English</li> <li>- Description Thai</li> </ul>
Ease of Navigation	3.43	<ul style="list-style-type: none"> <li>- Membership makes it hard to go in</li> <li>- Very easy, map</li> <li>- Got lost at the beginning</li> <li>- Easy to look around with directory brochure</li> <li>- Good signs</li> <li>- Sign in English but little flow</li> </ul>
Overall Rating	3.33	<ul style="list-style-type: none"> <li>- Have many interesting aspects</li> </ul>
Goal Of Center		<ul style="list-style-type: none"> <li>- Creative space/ library / workspace</li> <li>- Offers business consultant</li> <li>- Showcase of artwork (for sales too)</li> <li>- To promote creative thought and creativity into everyday life</li> <li>- To provide materials and information for research and studies</li> <li>- Provide a space for doing and learning about creative design</li> </ul>

Jim Thompson House:

Jim Thompson	Avg	Comments
Types of visuals	4.60	<ul style="list-style-type: none"> <li>- Antiques: pottery, pictures, statues</li> <li>- Antiques: art, furniture, horoscopes</li> <li>- Cool but little explanation beyond the tour</li> <li>- Variety of visuals</li> </ul>
Use of Visuals	4.80	<ul style="list-style-type: none"> <li>- Shows the history and culture of the period</li> <li>- Very aesthetically pleasing</li> <li>- Visuals were informative</li> </ul>
Interactive Workshops	0.0	<ul style="list-style-type: none"> <li>- None to be found</li> </ul>
Demonstrations	4.0	<ul style="list-style-type: none"> <li>- In front of entrance</li> <li>- Visitors easily get attracted</li> <li>- Small not very informative</li> <li>- No explanation</li> <li>- Demo of what the house is for (silk)</li> <li>- Demonstrated silk processing by hand well</li> </ul>
Products Sold	5.0	<ul style="list-style-type: none"> <li>- Silk products \$\$\$</li> <li>- Buy products because of the brand</li> <li>- Books, horoscope charts things representing the history of the place</li> <li>- Restaurant -&gt; mainly Thai food but some western</li> <li>- Variety in gift shop</li> </ul>
Website	4.20	<ul style="list-style-type: none"> <li>- English/Thai</li> <li>- Easy and clear</li> <li>- Informative, well done</li> <li>- Functional, homepage looks appealing/ want to explore more</li> <li>- Contains a lot of info and pictures</li> <li>- Mostly mobile friendly</li> <li>- Colorful and easy to navigate (English/Thai)</li> </ul>
Social Media	4.0	<ul style="list-style-type: none"> <li>- Beautiful</li> <li>- Regularly update</li> <li>- Not about the house</li> <li>- Well-known, advertised through many places</li> <li>- Facebook, Instagram, Twitter advertised on website</li> <li>- Facebook- updated weekly about the place</li> <li>- Instagram -updated more than daily about silk</li> <li>- Twitter - updated monthly</li> <li>- Present and up to date</li> </ul>
Brochures	3.40	<ul style="list-style-type: none"> <li>- Informative about the history of the place</li> <li>- Minimal pictures</li> <li>- Advertise website</li> <li>- Multiple lang</li> <li>- All info from the tour</li> </ul>
Languages Spoken	5.0	<ul style="list-style-type: none"> <li>- English, French, Spanish, Thai, Chinese</li> <li>- Books/ products for selling had multiple languages</li> <li>- Many languages</li> </ul>
Languages Written	4.80	<ul style="list-style-type: none"> <li>- Korean, English, Thai, Chinese</li> </ul>
Ease of Navigation	4.60	<ul style="list-style-type: none"> <li>- No map but tour guide</li> <li>- Everything was close together with a central street</li> <li>- Tour guide available</li> </ul>
Overall Rating	4.60	<ul style="list-style-type: none"> <li>- Amazing, more about house than jim or silk</li> </ul>

Goal of the Center		<ul style="list-style-type: none"> <li>- Explore the history of Jim and the culture of silk</li> <li>- Show history of Jim Thompson</li> <li>- Preserve Thailand's rich artistic and cultural heritage</li> <li>- To educate visitors about Jim Thompson and his silk history</li> </ul>
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Bangkok Art & Cultural Center:

BACC	Avg	Comments
Types of visuals	3.83	<ul style="list-style-type: none"> <li>- Art exhibition</li> <li>- Crafts</li> <li>- Pictures</li> <li>- Films</li> <li>- Posters</li> <li>- Statutes</li> <li>- Videos, photos, abstract art</li> <li>- Variety of visuals</li> </ul>
Use of Visuals	4.33	<ul style="list-style-type: none"> <li>- As there was no tour guide, there was an audio file with headphones</li> <li>- Had explanations but you wouldn't understand without it</li> <li>- Headphones audio for some visuals</li> <li>- More artistic with less info</li> <li>- Hard to know what something was about w/o the brochure</li> </ul>
Interactive Workshops	1.33	<ul style="list-style-type: none"> <li>- Some places were interactive</li> <li>- Has workshops advertised for children</li> <li>- Advertises a lot of workshops in brochure (for locals mainly)</li> </ul>
Demonstrations	1.83	<ul style="list-style-type: none"> <li>- Videos, long, wouldn't understand unless you watched the entire thing</li> <li>- Has some on 7th floor (at certain times)</li> <li>- Bottom floors have talks and such</li> <li>- Confusing</li> </ul>
Products Sold	4.50	<ul style="list-style-type: none"> <li>- People's drawings</li> <li>- BACC souvenirs</li> <li>- Crafts</li> <li>- Represent what the museum is about</li> <li>- Variety in gift shop</li> </ul>
Website	4.50	<ul style="list-style-type: none"> <li>- Multiple Languages</li> <li>- Colorful</li> <li>- Easy to understand</li> <li>- Informative</li> <li>- Fun</li> <li>- Childlike</li> <li>- Hard to use on mobile (switch to other pages w/o knowing, click on random things when scrolling)</li> <li>- Colorful and easy to navigate</li> <li>- Thai/English</li> </ul>
Social Media	4.33	<ul style="list-style-type: none"> <li>- Facebook</li> <li>- Instagram</li> <li>- Frequent Updates</li> <li>- Fun</li> <li>- Only in Thai</li> <li>- Up to date</li> </ul>
Brochures	4.00	<ul style="list-style-type: none"> <li>- Beautiful brochures</li> </ul>

		<ul style="list-style-type: none"> <li>- Colorful</li> <li>- Informative but overwhelming</li> <li>- Multiple brochures</li> <li>- Details future events, map, workshops</li> </ul>
Languages Spoken	2.17	<ul style="list-style-type: none"> <li>- Thai</li> <li>- Mostly Thai (or w/ English subtitles)</li> </ul>
Languages Written	4.50	<ul style="list-style-type: none"> <li>- Thai</li> <li>- English</li> <li>- French brochure</li> <li>- Used a good mix of Thai and English for descriptions and brochures</li> </ul>
Ease of Navigation	4.00	<ul style="list-style-type: none"> <li>- Open Area</li> <li>- Walk in circles</li> <li>- Hard to tell exhibit is on top</li> <li>- Direct routes, map on brochure</li> <li>- Flow of the places works well, going from one place to another</li> <li>- Not so clear where to go</li> </ul>
Overall Rating	3.80	<ul style="list-style-type: none"> <li>- Fun</li> <li>- Hard to tell to tell the point</li> </ul>
Goal of the Center		<ul style="list-style-type: none"> <li>- Showcases artwork</li> <li>- Promote culture and art in Thailand</li> <li>- To promote local art and artists</li> </ul>

Museum of Siam:

Siam	Avg	Comments
Types of visuals	5	<ul style="list-style-type: none"> <li>- Variety, all the rooms were different types</li> <li>- Best visual</li> <li>- Staff helpful in explaining</li> <li>- Qr code, use of projector</li> <li>- Exhibitions, show, Thai objects, a lot of things about Thai culture</li> <li>- Shadow boxes, posters</li> </ul>
Use of Visuals	5	<ul style="list-style-type: none"> <li>- They all depict the story well</li> <li>- They used the visuals into the flow of the place and did well in conveying the information</li> <li>- The information displayed didn't overlap much with brochure/ audio guide</li> <li>- Gives better understanding, it is attractive and interesting</li> <li>- A lot of sounds</li> <li>- Everything made sense with the visuals</li> </ul>
Interactive Workshops	2.86	<ul style="list-style-type: none"> <li>- Didn't go to any</li> <li>- Most of the place was interactive, from pulling drawers to discover exhibits to puzzles, clothing, etc</li> <li>- They have talks</li> <li>- Interactive activities and hands-on games</li> <li>- Variants of activities that visitors can try</li> <li>- Game to play</li> </ul>
Demonstrations	3.43	<ul style="list-style-type: none"> <li>- Told the story well</li> <li>- Lightbox demo, both in Thai and English</li> <li>- Mostly exhibition not demonstration</li> <li>- Audio told you how to do things, but still confusing</li> </ul>

Products Sold	4.14	<ul style="list-style-type: none"> <li>- A variety (gift shop)</li> <li>- About the museum</li> <li>- Represent the museum not what it exhibits</li> <li>- Many products sold</li> <li>- Non-local craft most modern and expensive</li> <li>- Interesting products, affordable</li> <li>- Postcard, Thai soap, doll of hanomari</li> <li>- General museum stuff</li> </ul>
Website	3.57	<ul style="list-style-type: none"> <li>- Present</li> <li>- Good and functional,</li> <li>- Not everything is translated when in English side</li> <li>- Has all important notices and information</li> <li>- TH and EN</li> <li>- Activities and new info in Thai</li> </ul>
Social Media	4.14	<ul style="list-style-type: none"> <li>- Present</li> <li>- Facebook, Instagram, Twitter</li> <li>- Updated a lot</li> <li>- Youtube</li> </ul>
Brochures	3.57	<ul style="list-style-type: none"> <li>- Cool but in Thai</li> <li>- Creative</li> <li>- No English</li> <li>- Hard to put back to original folding</li> <li>- Attractive</li> <li>- Gives info on how to get there</li> <li>- Very good look brochures</li> </ul>
Languages Spoken	4.14	<ul style="list-style-type: none"> <li>- Thai and English</li> <li>- Really good English, not many grammar issues</li> <li>- Audio guide was in good English</li> </ul>
Languages Written	4.14	<ul style="list-style-type: none"> <li>- Thai and English</li> <li>- Minus brochure, many part of the museum had Thai and English Descriptions</li> </ul>
Ease of Navigation	4.43	<ul style="list-style-type: none"> <li>- Rooms numbered</li> <li>- Easy to follow routes</li> <li>- Could explore by self</li> <li>- Was quite lost in the beginning but generally easy to walk around</li> <li>- Open area, so it was easy to move to other places</li> </ul>
Overall Rating	4.86	<ul style="list-style-type: none"> <li>- Really good for foreigners to go</li> <li>- Excellent/I learned a lot</li> </ul>
Goal of the Center		<ul style="list-style-type: none"> <li>- To educate visitors on Thai-ness</li> <li>- Decoding Thai</li> <li>- Showcase their exhibitions about Thailand to the best of their abilities, making it fun and interactive</li> <li>- Informative exhibits to talk about "Thailand"</li> <li>- Not like other visual museums with displays"</li> </ul>

Sea Salt Farm:

Sea Salt	Avg	Comments
Types of visuals	3.75	<ul style="list-style-type: none"> <li>- A variety</li> <li>- Types of salt</li> <li>- Some posters and types of salt</li> <li>- Poster (Th)</li> </ul>



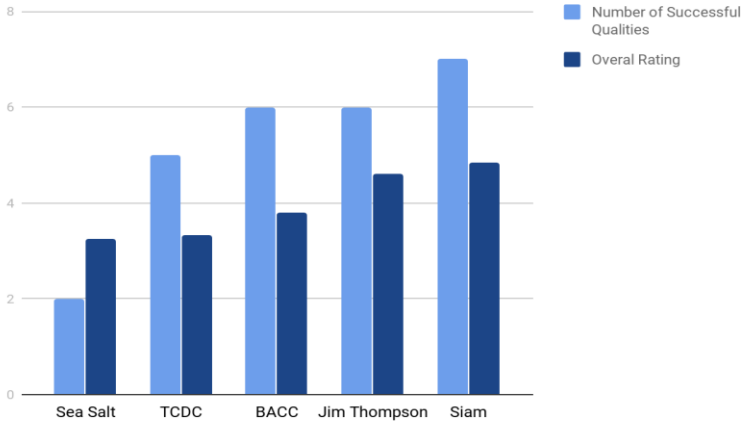
		- Seeing actual sal farm
Use of Visuals	3.25	- Actual fields - LED poster - Informative with a flow - Didn't refer to most of the posters
Interactive Workshops	0.75	- Didn't go to any - Can go to sea salt harvested. can try salt
Demonstrations	3.5	- Infield - Harvesting of salt - Showcase all the fields and how they harvest
Products Sold	4.25	- Variety - All about the salt - Little info in EN
Website	0	- None
Social Media	0	- None
Brochures	0	- None
Languages Spoken	2	- Only Thai - Spoke little English
Languages Written	2	- Only Thai - Needs to be shown
Ease of Navigation	2.75	- Tour guide - Hard to navigate by self - Tour guide goes really fast - Can easily get lost - Need someone to take you around
Overall Rating	3.25	
Goal of the Center		- Sea salt products - To teach about sea salt production and industry - Demonstrate sea salt farming to groups - Educate visitors about local sea salt product and benefits

## Appendix I. List of Trends from the Observation Charts

Site	Effective Modes of Information
TCDC	<ul style="list-style-type: none"> <li>- QR codes</li> <li>- Creative ways of displaying information</li> <li>- Creative products for sale</li> <li>- Good brochure, displayed the necessary information</li> </ul>
Jim Thompson	<ul style="list-style-type: none"> <li>- Physical objects used to display information (antiques)</li> <li>- Easy to navigate</li> <li>- Social media updated frequently and is what the site is about</li> </ul>
BACC	<ul style="list-style-type: none"> <li>- Audio headphones for videos</li> <li>- Multiple platforms of social media</li> <li>- Open easy to see everything</li> </ul>
Siam	<ul style="list-style-type: none"> <li>- Creative visuals</li> <li>- Tech visuals</li> <li>- Audio tour that supplemented the materials presented</li> <li>- Told a story</li> <li>- Excellent navigation from exhibit to exhibit</li> </ul>
Salt	<ul style="list-style-type: none"> <li>- Demonstrations</li> <li>- Demonstrated the products they sold</li> </ul>

	TCDC	Jim Thompson House	BACC	Siam	Salt	Chaipattana Foundation
Posters	✓	✓	✓	✓	✓	✓
"Creative" Visuals	✓	✓	✓	✓	✗	✗
"Tech" Visuals	✓	✗	✓	✓	✗	✗
Workshops	✗	✗	✗	✗	✗	✓
Demonstrations	✗	✓	✗	✓	✓	✓
Flow	✗	✓	✓	✓	✗	✗
Brochures	✓	✓	✓	✓	✗	✓
English	✓	✓	✓	✓	✗	✓
Overall Rating	3.33	4.6	3.8	4.85	3.25	N/A

	Number of Successful Qualities	Overall Rating
Sea Salt	2	3.25
TCDC	5	3.33
BACC	6	3.8
Jim Thompson	6	4.6
Siam	7	4.85



## Appendix J: Questions for Tourist Survey (In Thai and English)

Description:

Please take a few minutes to complete this survey !

The goal of this project is to preserve and promote the coconut community in Amphawa, Thailand by implementing educational and marketing materials for the new product of Amphawa Chaipattananurak, 'coconut sugar cider'. The purpose of this survey is to provide us with an understanding of how you interacted with the learning center as well as what you took away from it and what you enjoyed. The survey will take approximately five minutes and will be a mixture of multiple choice and short answer questions. \*All participants will remain anonymous during and after completion of the survey\*

จุดมุ่งหมายของการโปรเจกต์นี้คือเพื่อที่จะอนุรักษ์และส่งเสริมชุมชนมะพร้าวในอำเภออัมพวา ประเทศไทย โดยใช้วิธีการทำการตลาดและสื่อการเรียนรู้ในสินค้าใหม่ของโครงการอัมพวาชัยพัฒนานุรักษ์ 'น้ำส้มสายชูหมักจากมะพร้าว' แบบสอบถามนี้ถูกสร้างมาเพื่อศึกษาว่าคุณมีปฏิกิริยาอย่างไรกับศูนย์การเรียนรู้ ข้อมูลที่ได้รับจากศูนย์ และความพึงพอใจของการมาเยี่ยมชม แบบสอบถามนี้จะใช้เวลาเพียงแค่ 5 นาที ซึ่งจะประกอบไปด้วยข้อกาและข้อเขียนสั้นๆ \*ตัวตนของผู้ทำแบบสอบถามทุกท่านจะไม่ถูกเปิดเผยระหว่างและหลังการทำแบบสอบถามนี้\*

### Survey Questions:

Q: What is your gender? / โปรดระบุเพศของท่าน

Female / หญิง

Male / ชาย

Q: What is your age? / โปรดระบุอายุของท่าน

Under 18 / น้อยกว่า 18ปี

18-24

25-34

35-44

45-54

55 and over / 55 ปี หรือ มากกว่า 55 ปี

Q: What language(s) do you speak and read fluently? | ภาษาที่คุณใช้พูดและเขียนได้คล่อง

English อังกฤษ

Thai ไทย

Chinese จีน

Other: \_\_\_\_\_

Q: How did you hear about the Amphawa Chaipattananurak? | คุณรู้จักโครงการอัมพวาชัยพัฒนานุรักษ์มาจากช่องทางใด

Internet / อินเทอร์เน็ต

Newspaper / หนังสือพิมพ์

Television / โทรทัศน์

Friends / เพื่อนแนะนำ

Other / อื่นๆ: \_\_\_\_\_

Q: Are you a part of a tour group? | คุณมาคณะกลุ่มทัวร์หรือไม่

Yes / ใช่

No / ไม่ใช่

Q: Rank experience | โปรดให้คะแนนความพึงพอใจ

1 (= Poor / เลวๆ)

2

3

4

5 (= Fantastic / ประทับใจมาก)

Q: Did you buy anything from Amphawa Chaipattananurak? (If yes, please state) | คุณได้ซื้อสินค้าจาก  
โครงการอัมพวาชัยพัฒนานุรักษ์กลับไปไหม (ถ้าซื้อ โปรดระบุ)

A: \_\_\_\_\_

Q: Would you recommend the centre to someone? | คุณคิดว่าจะแนะนำศูนย์อัมพวาชัยพัฒนานุรักษ์ให้คนอื่นรู้จักมาเยี่ยมชมไหม

Yes, I would recommend / แนะนำ

No I won't / ไม่แนะนำ

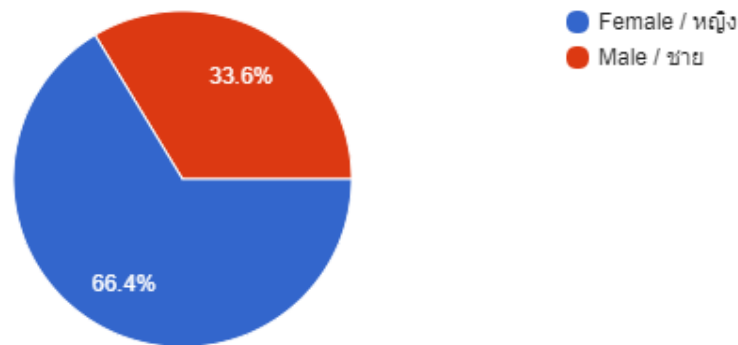
Q: Why would you recommend this place? | ทำไมถึงต้องการจะแนะนำสถานที่นี้ให้ท่านอื่น

A: \_\_\_\_\_

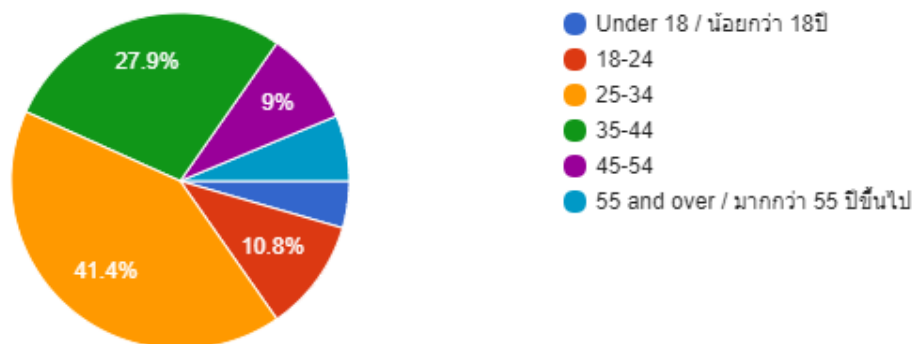
## Appendix K: Data from the Tourist Survey

We conducted a survey involving 113 visitors of the coconut learning center after receiving permission from the learning center staff. Participants received full written disclosure of the project and gave consent to participate in the study by completing the survey. The visitor survey process took place over one Saturday, which is a busy time for the center. Each survey was a mixture of multiple choice and short answer questions (See Appendix C). Each participant used programs such as LINE or Wechat to scan a QR code for the online questionnaire. These QR codes were distributed throughout the area to allow a random sampling of individuals. The tour guides were asked to inform their group about the survey during their tour experience. All participants remained anonymous during and after the completion of the survey. The goal was to obtain 100 visitor surveys by the end of the survey period.

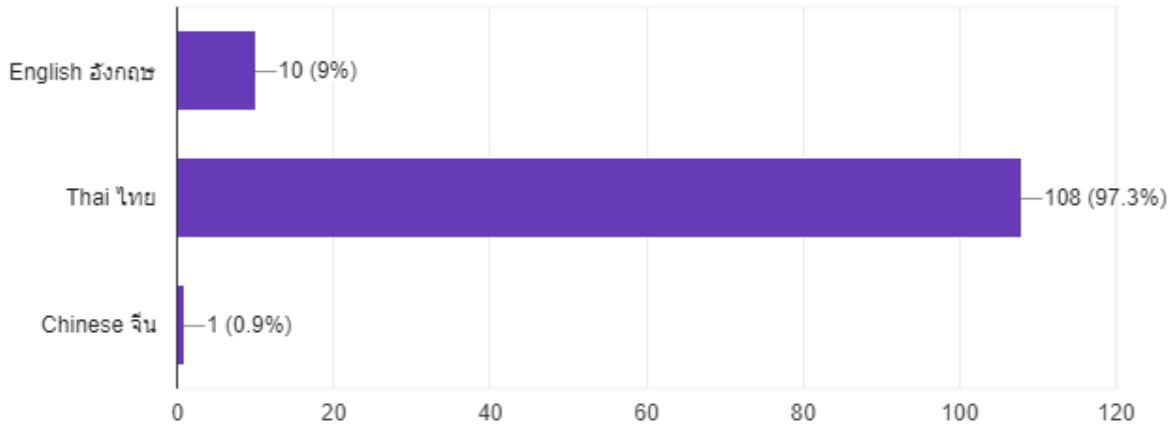
Gender:



Age:



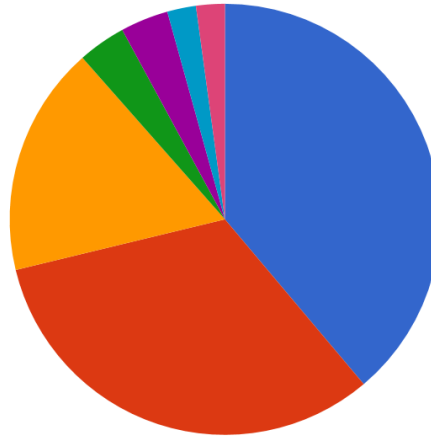
Languages Spoken and Read (They Could Pick Multiple):



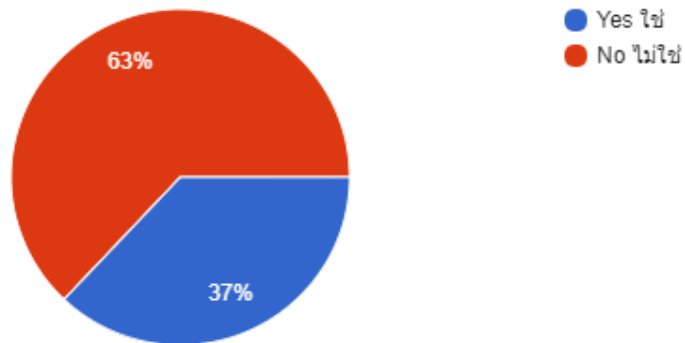
Hear about Learning Center:

How People Heard About the Center

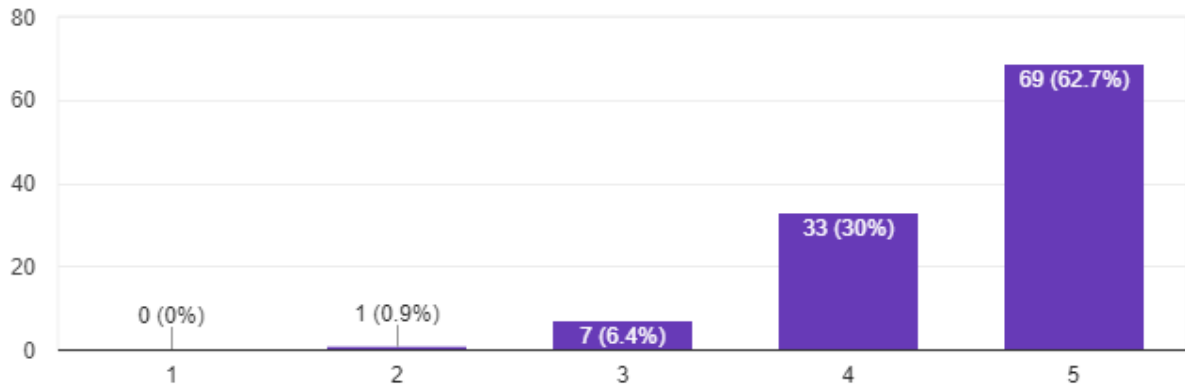
- Internet 38.8%
- Friends 32.4%
- Television 17.3%
- Tour Group 3.6%
- Walk By 3.6%
- Is Local 2.2%
- Newspaper 2.2%



Amount from Tour Groups (Yes in Tour Group, No not in a Tour Group):

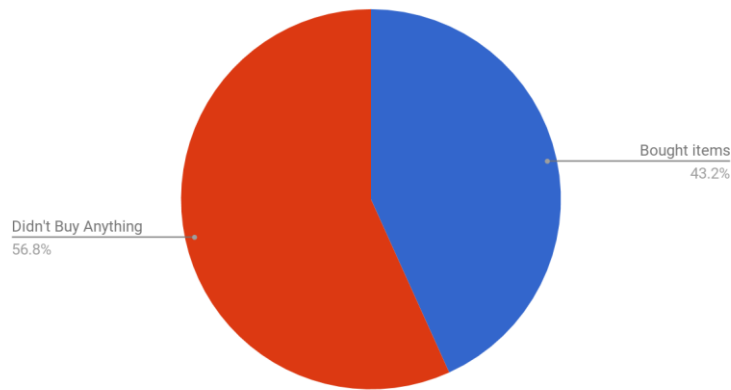


Ranked Experience (5 Fantastic, 1 Not so Good):



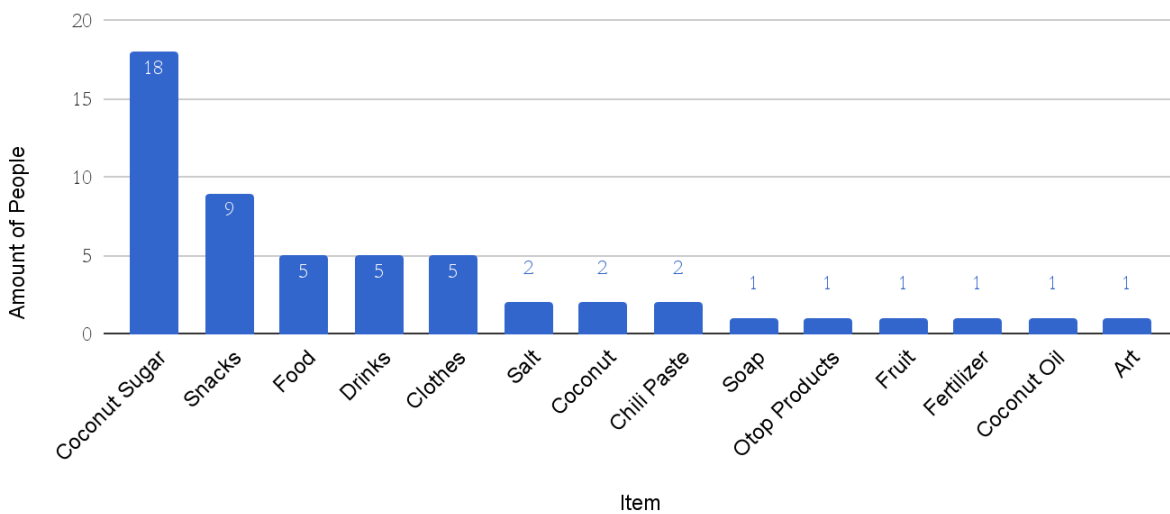
Amount of People Who Bought Items:

Amount of People That Bought Items



Items Bought:

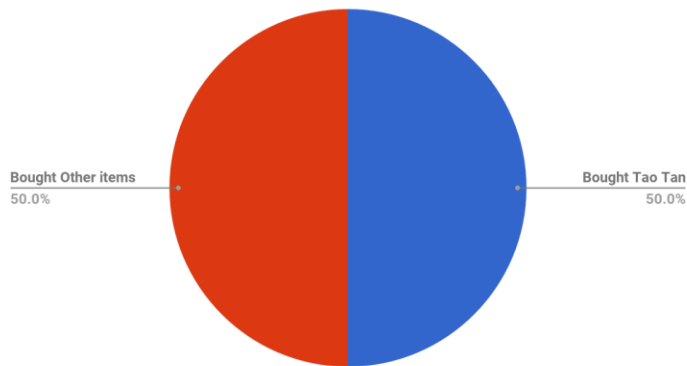
What People Bought



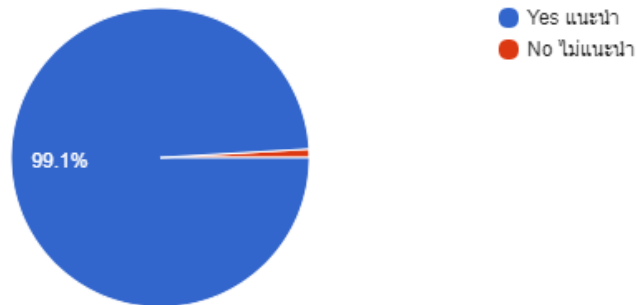


Amount of Tao Tan Brand Items Bought:

Amount of Tao Tan Items Bought

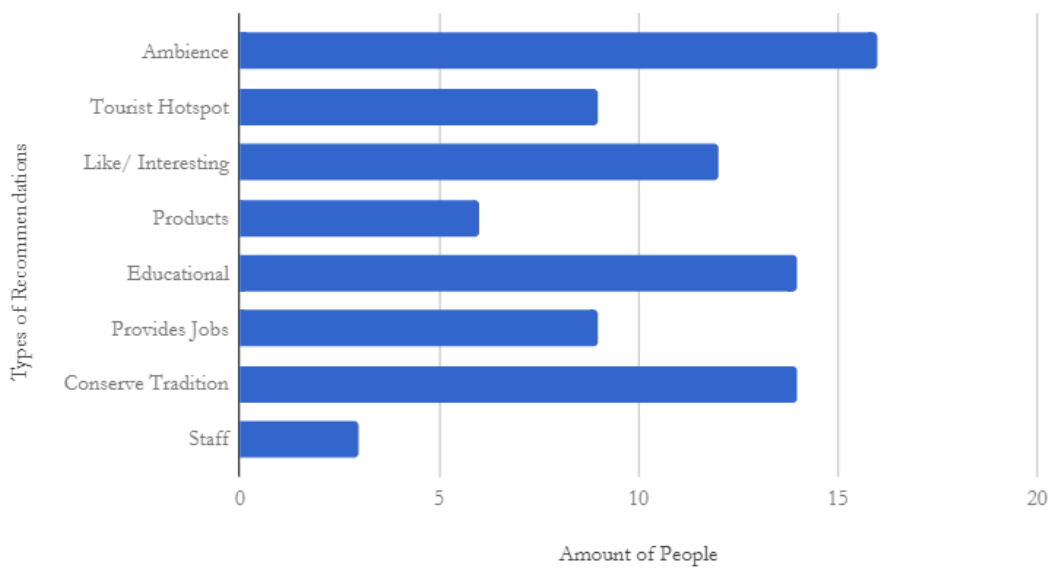


How Many Would Recommend the Center:



Why People recommend the center:

Why People Will Recommend This Place



Some Responses About Why People will Recommend the Learning Center:

- It is a place where culture is preserved and should continue to be preserved for other generations.
- I want to come and admire the way of life of the people in Amphawa and people living around Amphawa Floating Market
- Important for the conservation of Thai traditions and is a place that helps subsidize the villagers in the area.
- Should preserve "Thainess" for the generations to see.
- I used to be a farmer too so I am proud of the local practices.
- Can provide jobs for the locals.
- Chaipattana has unique characteristics, beauty, Thainess and a guarantee in the quality of their products.
- Good local products with high benefits. The foundation needs to be established because it sets a good example for the local community to follow. The foundation is also very beneficial to the local people.
- Learning about Thainess and Tao Tan is interesting.

## Appendix L: Decision Matrix

A decision matrix allows for a group to identify, analyze, and rate different ideas based on a set criteria. Each row in a decision matrix is a different idea, and each column is a different criteria. The group identified different ideas based on our past experiences at different learning centers. Then the criteria was identified based on what effects the creation and implementation of the educational and marketing materials. Each criteria was weighted based on group agreement and how much it affects the project. Then, one by one, each idea was given a rank in each criteria. The rank was from 0-5, with five being best outcome for the criteria and zero being not applicable. So if it received a five in ease of upkeep for the center, then it is easy for the center to maintain. In terms of cost, a five means that it costs a minimal amount and a zero means that it costs a lot. We decided on each ranking as a group. A unanimous or almost unanimous decision was needed. When people disagreed, their opinions were heard until the team made a decision. Afterward, each rank for the criteria was multiplied by the weight for the criteria. Then the rankings were summed up for each idea. The matrix was then sorted to put the highest ranking idea at the top.

Types of Materials	Recommendation from Sponsor	Ease of Us Accomplishing	Feasibility of Us Accomplishing	Feasibility for the Center	Ease of Upkeep for the Center	Wow Factor	Cost	Overall Rating
<b>Weights</b>	2.5	2	5	4	3	1	3	
Posters	5	4	5	5	5	3	5	98.5
Brochures	5	5	5	5	4	3	5	97.5
Packaging	5	4	5	5	4	3	4	92.5
Official Line	0	5	5	5	4	2	5	84
Recipes	0	3	4	5	5	4	5	80
Signs	0	4	5	5	5	1	3	78
Design Exhibition	0	3	4	5	5	3	4	76
Backdrop for Photos	0	3	4	5	5	4	3	74
Social Media	0	5	4	4	3	2	5	72
QR Info Tour	0	3	4	4	4	5	4	71
Promotional Videos	1	3	3	2	5	3	5	64.5
Cooking Class with Vinegar	0	3	4	4	3	4	3	64
Detox Package	0	3	4	3	4	4	3	63
Puzzle	0	4	3	3	3	3	4	59
Audio Tour	0	1	1	3	4	4	4	47
Detox Workshop	0	3	3.5	2	2	4	1	44.5
Sell Product with Vinegar	0	1	2	4	2	4	2	44

Games/ Something for Kids	0	2	2	3	2	2.5	3	43.5
Demonstrations	0	1	1	4	2	4	3	42
Endorsement	0	1	1	1	5	5	3	40
Production Video	1	0	1	0	5	1	5	38.5
Interactive Workshop	0	1	1	3	2	4	2	33
Vlogging	0	1	1	1	1	4	5	33

## Appendix M: Interview with KMUTT's Assistant Professor Sivawan Phoolphundh and KMUTT Master's Graduate Naphat Suyapek

Assistant Professor Sivawan Phoolphundh and (Milk's name) have been working with the Chaipattana Foundation on the production process of the coconut cider vinegar at Amphawa. In order to know the exact steps of production as adopted at the learning center, an interview was conducted.

Q: What is the production process of the coconut cider vinegar? Is it a 1-step fermentation or 2-steps fermentation?

A: There are two traditional ways to produce coconut cider vinegar - a single-step process and a double-step process. However, the process used at Amphawa is the traditional single-step, which involves oxidation of coconut sap syrup into alcohol through the help of yeast, and alcohol is fermented to acetic acid (specifically called *Acetobacter*) through natural fermentation. The single-step is used since it is less complicated and the locals are able to adopt it easily. Naturally, the fermentation period can be up to 6-12 months long. The coconut syrup has natural yeast that can be fermented into alcohol. But in order to fasten the fermentation rate, yeast bacteria can be introduced into the beginning of the production. Our goal acidity is no less than 4% acetic acid.

Production process as adopted by the staffs at Tao-Tan Coconut Learning Center:

1. Fresh coconut sap is collected day-by-day from coconut tree trunk.
2. The collected sap is filtered using white cloth.
3. Coconut sap is then pasteurized by boiling for 15 minutes - leave to cool down.
4. Transfer the liquid into a container - fill up to only  $\frac{3}{4}$  of the container's level and leave to ferment.
5. Put in yeast (yeast powder used to make bread is acceptable - it can be found easily) not exceeding 5% weight by volume. For example, 1L of sap; use 5g yeast
6. Leave to ferment for 5-7 days. It should be alcohol by now and has a little sweetness.
7. Use pH paper to measure the acidity. Target acidity is pH 4.
8. When fermentation is finished - the product does not need to be heated to pasteurize because passing the product through heat will reduce the natural coconut fragrance and reduce essential minerals.
9. The product can be filtered before putting into the bottle container to remove some of the large strains of 'mother' of cider vinegar. This process will help halt fermentation (since there is less and remove precipitation. A or add egg whites into the product, stir well and let precipitate, in which the precipitate can be removed).
10. Fill the product into a bottle container. It won't be fermented any further because some of the mother of vinegar has been removed. The product should be refrigerated after opened.

Q: Can this process be done at home and on a smaller scale?

A: The one-step process can definitely be done at home by the locals.

Q: What are the potential uses of coconut cider vinegar?

A: Can be used as an ingredient in many dishes. In Thailand, we use it for sauces. Foreigners usually use it for cleansing/detox drink.

Q: Has there been any chemical analysis of the coconut cider vinegar?

A: No scientific test has been done on our coconut cider vinegar.

Q: What is the fermentation period of coconut cider vinegar and why?

A: Naturally it can be done within 6-8 months but by adding yeast we can obtain the cider vinegar within no more than 1 month (2-3 weeks).

Q: Why is the product called “coconut cider vinegar” and not “coconut vinegar”? Does it have to do with the percentage of acetic acid?

A: ‘Cider vinegars’ usually have acidity that is no less than 4% acetic acid. However, some ‘vinegars’ can also contain 4% acetic. There is no technical difference so we can call it ‘cider vinegar’.

Q: What are the current safety protocols with the coconut cider vinegar?

A: The product should be kept refrigerated after it is opened.

Q: How much sap does it take to make the coconut cider vinegar?

A: The amount of sap you use for fermentation will be the amount of cider vinegar you get.

Q: Why do you think the coconut cider vinegar is important?

A: All the minerals in coconut sap will be a presence in coconut cider vinegar so you do some research into coconut sap. It can help reduce blood sugar level and be consumed by diabetic patients.

Additional Information:

If you instead wish to create a beverage cider that is ‘drinkable’, you may dilute the cider vinegar with water, add some coconut syrup and bottle it up for sale.

‘Mother’ of vinegar is acetic acid bacteria that can be seen as thick extracellular cellulose forming on the surface and at the bottom of vinegar when left standing for some time. Mother of vinegar is full of bioactive components and is not dangerous for consumption. It can be filtered out and used as the ‘starter cultures’ for fermentation of another batch, however, this technique is going to take longer than using yeast. Mother of vinegar is a unique characteristic only exist in vinegars that are fermented in the traditional way.

All nutrients present in coconut sap will be present in the coconut cider vinegar. Since the product is not pasteurized, it should remain all the minerals initially present. The words ‘traditionally-fermented’ and ‘unpasteurized’ can be used as our product strengths for marketing.

Acetic acid bacteria in coconut cider vinegar is similar to lactic acid bacteria in yogurt, which is an excellent source of probiotic. When acetic bacteria is present in the colon, it causes an acidic environment and other infectious bacteria will not grow there.

Appendix N: Posters Created  
 (Thai versions were given to sponsor)



..... *By our farm*

*Cider Profile*

“Coconut Cider Vinegar” has been produced and consumed by locals for decades. However, the younger people neither use the product nor know about it. Cider vinegar is produced using coconut sap through the conversion of ethyl alcohol to acetic acid by a genus of bacteria. The method of production and types of raw materials vary greatly from country to country. Coconut cider vinegar is traditionally used as a food preservative nationally, especially in Amphawa. It is low in acidity, with a unique aftertaste. It is a key ingredient in many Thai dishes, used as a condiment to enhance its flavor. It can also replace other types of vinegar as a healthier alternative.

*For more details see QR code*

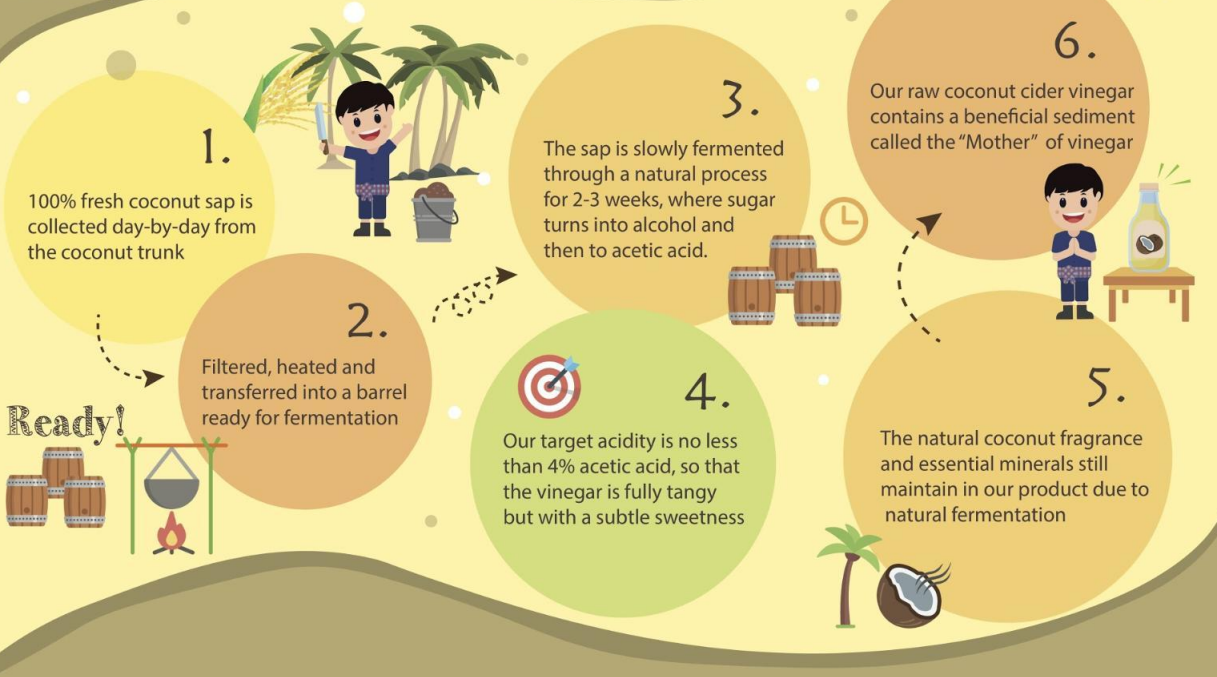


## How to make?

# COCONUT CIDER VINEGAR

เตา  
ต๊าก

จาก  
อัมพวาจังหวัดสมุทรสงคราม



## MOTHER OF VINEGAR

Mother of vinegar is a unique characteristic that only exists in vinegars that are fermented in the natural way. It is acetic acid bacteria that can be seen as thick extracellular cellulose forming on the surface and at the bottom of vinegars when left standing for a period of time.

Mother of vinegar is full of bioactive components and is not dangerous for consumption. It can be filtered out and used as the 'starter cultures' for fermentation of another batch along with yeast.



The "mother"



For more details see QR code



ALL ABOUT



# AMPHAWA CHAIPATTANANURAK

The Chaipattana Foundation works hard to improve farmers' social welfare and capacity to become self-reliant through long-term projects that allow for sustainable development



## “Background Story”

Amphawa is in the Samut Songkram province, which is on the coast of Thailand and has the Mae Klong River running through it. This means that it has access to both fresh and saltwater. “Brackish water”, a mixture of fresh and salt water, contains minerals from seawater that have been dissolved in it. When it seeps into the soil, it creates a saline soil, which is richer in minerals compared to normal soil. The coconuts in Amphawa are grown in saline soil, absorbing the minerals, making the coconuts more rich in nutrients compared to other areas which grow then in clay soil.

Coconut plantations are widespread around different regions of Thailand. Amphawa is abundant in coconut trees because the farmers have been planting the trees from generation to generation.

The Chaipattana Foundation wishes to utilize a locally-known traditional product to promote traditions and empower farmers to create their own businesses as the product is easy and cheap to manufacture. By introducing coconut cider vinegar to the center, they want to bring back farmers and improve their livelihoods.

### GULF OF THAILAND ★

Community Learning Centers are local educational centers that are run by residents of the area. Through education and marketing, these centers strive to spread awareness and preserve traditional goods, crafts, and occupations. Tao- Tan, a learning center, produces organic and homemade products and includes workshops and demonstrations for the visitors' education and enjoyment. They create coconut-based products such as coconut palm sugar, coconut candies, coconut syrup, and coconut cider vinegar.

## “Coconut cider vinegar”

has been produced and consumed by locals for decades. However, the younger people neither use the product nor know about it. Cider vinegar is produced using coconut sap and made from the conversion of ethyl alcohol to acetic acid by a genus of bacteria.

The method of production and types of raw materials vary greatly from country to country. Coconut cider vinegar is traditionally used as a food preservative nationally, especially in Amphawa. It is low in acidity, with a unique aftertaste. It is a key ingredient in many Thai dishes, used as a condiment to enhance its flavor. It can also replace other types of vinegar as a healthier alternative.



# Health Benefits of Coconut Cider Vinegar



**PROBIOTIC Properties** | **65 VITAL MINERALS** | **AMINO ACIDS 17** | **LOW GI** | **100% NATURAL**



## Low Glycemic Index (GI)

Despite its sweet flavor, cider vinegar has a very low GI, only 35 on the scale. This indicates that it does not raise blood sugar levels.



## Contains 17 amino acids

Sap contains amino acids, which helps to repair and rebuild muscle tissues. It also balances pH levels and keeps the body detoxified from impurities.



## Contains probiotics

It supports and promotes gastrointestinal health and digestion.



## Fights infection and illnesses

Similar to all types of vinegars, it has antimicrobial and antibacterial properties, which helps to fight off infections and illnesses.



## Weight Loss

It contains acetic acid which helps to suppress appetite and regulate blood sugar levels.



## Rich in minerals and vitamins

The sap used to make the cider vinegar is highly rich in nutrients, as the tree is grown in nutrient-rich soil. The sap contains 65 vital minerals such as phosphorus, potassium, iron, magnesium, sulphur, vitamin C, and B.

จาก  
อินพาริตีฟาร์มทิวทัศน์



# Appendix O: Brochures

**คุณประโยชน์**

GI 100%  
65 Vital Minerals 17 Low GI 100% Organic

**ธรรมชาติ 100%**  
ผลิตจากน้ำผลไม้สดและน้ำตาลอินทรีย์

**อุดมไปด้วยวิตามินและสารสำคัญ**  
ช่วยเสริมสุขภาพและชะลอวัย

**น้ำตาลที่ต่ำมาก (6) ค่า**  
ช่วยควบคุมน้ำตาลในเลือด

**คุณประโยชน์ทางตรึง**  
ช่วยเสริมสุขภาพกระดูก

**มีไฟเบอร์ในอุดมคติ**  
ช่วยเสริมสุขภาพลำไส้

**ช่วยลดน้ำหนักได้**  
ช่วยเสริมสุขภาพหัวใจ

**มีกรดอะมิโน 17 ชนิด**

**สถานประกอบการ**

**ร้านกาแฟสุขภาพ**  
จำหน่ายเครื่องดื่มสุขภาพ

**คลินิกธรรมชาติ**  
ให้บริการตรวจสุขภาพและให้คำแนะนำ

**ฟาร์มอินทรีย์**  
ผลิตผลไม้สดและน้ำตาลอินทรีย์

**งานอบรมสัมมนาวิถีชีวิต**  
จัดอบรมวิถีชีวิตสุขภาพดี

**ตลาด**

**เตา ตาล**

**น้ำส้มสายชู**  
หมักจากน้ำหวานดอกมะพร้าว

**BENEFITS Exhibitions**

**100% Organic**  
Made from 100% fresh organic sap. No sugar or water added, no preservatives.

**Rich in Vitamins & Minerals**  
The sap is highly rich in nutrients, as the tree is grown in natural soil with a variety of essential minerals such as Phosphorus, Potassium, Iron, Magnesium, Sulphur, Vitamin C, and E.

**Low Glycemic Index (GI)**  
Despite its subtle sweetness, cider vinegar has a very low GI, only 35 on the scale. Therefore, it does not raise blood sugar levels.

**Fights Infection and Illnesses**  
Similar to all types of vinegars, it has antimicrobial and antibacterial properties, which helps to fight off infections and illnesses.

**Contains Probiotics**  
It supports and promotes gastrointestinal health and digestion.

**Weight Loss**  
Sap contains acetic acid which helps to suppress appetite and regulate blood sugar levels.

**Contains 17 Amino Acids**  
Sap contains amino acids which helps to repair and rebuild muscle tissues.

**Chan-Cha-La Café**  
Conveniently located near the river, this café offers a variety of food and beverage options.

**Community Exhibition Room**  
This engaging exhibition conveys the story of the history and culture of Amphawa.

**Pat Pat Shop**  
A shop located in the center of the Foundation, selling a variety of Thai specialties.

**Flavoring Market**  
A shop located in the center of the Foundation, selling a variety of Thai specialties.

**Subserving Cultural Lawn**  
This is a multipurpose area for people to sell local goods and to hold various cultural events.

**Educational Demonstration Farm (Tao Tan)**  
This learning center focuses on traditional coconut agriculture. Visitors can see how coconut products are made here.

**COCONUT Cider Vinegar**

**มากก่ามะพร้าว**

ดื่มหวาน ชื่นชื่นธรรมชาติ

จากลูกสุกเต็ม จากเมล็ดสุกเต็ม มะพร้าวได้จุดประกายความมุ่งมั่น ในตัวเมืองชาตรีเพื่อสานต่อวิถีถิ่นของชาวไทยในการปลูกมะพร้าว และพึ่งอุปถัมภ์จากหน่วยงานราชการ ได้สร้างผลิตภัณฑ์จากน้ำหวานดอกมะพร้าว ที่คุณได้ลองชิมอย่างยาวนาน ให้คุณได้ลอง ณ วันนี้

**วิจิตรพลดิษฐ์**

1. ปีพฤษภาคมที่จังหวัดสุพรรณบุรีและจังหวัดฉะเชิงเทรา นำเมล็ดมะพร้าวสุกมาตากแห้งและใส่ในถังหมักเพื่อผลิตน้ำหวานดอกมะพร้าว
2. นำน้ำหวานดอกมะพร้าวที่หมักแล้วมากรองและเติมน้ำตาลอินทรีย์จากมะพร้าว
3. นำส่วนผสมมาพรวนหมักในถังหมักแบบปิดที่อุณหภูมิประมาณ 35-40 องศาเซลเซียส เป็นเวลาประมาณ 3-4 สัปดาห์
4. หลังจากหมักเสร็จแล้วให้นำส่วนผสมมากรองและใส่ในถังหมักแบบเปิดที่อุณหภูมิประมาณ 35-40 องศาเซลเซียส เป็นเวลาประมาณ 3-4 สัปดาห์
5. นำส่วนผสมที่หมักแล้วมากรองและใส่ในถังหมักแบบปิดที่อุณหภูมิประมาณ 35-40 องศาเซลเซียส เป็นเวลาประมาณ 3-4 สัปดาห์
6. นำส่วนผสมที่หมักแล้วมากรองและใส่ในถังหมักแบบเปิดที่อุณหภูมิประมาณ 35-40 องศาเซลเซียส เป็นเวลาประมาณ 3-4 สัปดาห์

**สินค้าอื่นๆ ในโครงการ**

**เตา ตาล**

**น้ำหวานดอกมะพร้าว**

**น้ำตาลมะพร้าว**

**กระป๋องหวาน**

**ดกเกลือ**

**ติดต่อเรา**  
Amphawa Chaipattananurak Project Tel. 034 753243  
www.amphawa.com  
E-mail: amphawa\_chaipattananurak@hotmail.com  
facebook.com/amphawa\_chaipattananurak

**More Than Coconut**

Amphawa Chaipattananurak

From seed to tree. From generation to generation. The coconut is the spark which ignites the passion within farmers who work to keep their traditional industry thriving. To ignite the passion within you, Tao-Tan is releasing a traditional legacy, coconut cider vinegar.

**Production**

1. 100% fresh coconut sap is collected day by day from the coconut trees.
2. Filtered, heated and transferred into a barrel ready for fermentation.
3. The sap is slowly fermented through a natural process for 2-3 weeks, where sugar turns into alcohol and then to acetic acid.
4. Our target acidity is no less than 4% acetic acid, so that the vinegar is truly tangy but with a subtle sweetness.
5. Our taro coconut vinegar is naturally clear with a subtle sweetness.
6. After fermentation is complete, the natural coconut vinegar and water are mixed for the final fermentation process.

**Other PRODUCTS**

**เตา ตาล**

**FRESH SYRUP**

**COCONUT SUGAR**

**TANGY SWEET DIP**

**SEA SALT**

**Contact Information**  
Amphawa Chaipattananurak Project Tel. 034 753243  
www.amphawa.com  
E-mail: amphawa\_chaipattananurak@hotmail.com  
facebook.com/amphawa\_chaipattananurak

Appendix P: Recipes



*Direction*  
Use as salad dressing or dilute with water to drink. Also a great ingredient for cooking, dipping, and marinating meat.

**วิธีรับประทาน**  
สามารถรับประทานได้ทั้งแบบสดหรือผสมน้ำผลไม้ที่ชอบและดื่ม สามารถนำไปใช้ประกอบอาหารทานได้ทั้งร้อนหรือเย็นก็ได้

**Detox Recipe:**  
1 tbsp coconut cider vinegar  
1 tbsp coconut syrup  
1 glass water  
1 tbsp chia seeds  
Mix the liquid ingredients and sprinkle in chia seeds. Let sit for 10 mins until they expand. Drink in the morning to cleanse off toxins.

**เครื่องดื่มดีท็อกซ์**  
ส่วนผสม:  
น้ำมะพร้าวคั้น 1 ช้อนโต๊ะ  
น้ำเชื่อมมะพร้าว 1 ช้อนโต๊ะ  
น้ำเปล่า 1 แก้ว (300 มล.)  
เมล็ด Chia 1 ช้อนโต๊ะ (หรือเมล็ดแมงลัก)  
ผสมส่วนผสมทั้งหมดเข้าด้วยกัน รอเมล็ด Chia เติบโต 10 นาที เพื่อให้เมล็ด Chia ขยายตัวขึ้นก่อนดื่มเพื่อช่วยในการล้างพิษ

**Salad Dressing:**  
1/8 cup coconut oil  
2 tbsp coconut cider vinegar  
1/2 tsp honey  
salt to taste  
Whisk coconut oil and cider vinegar until thickened. Add honey and salt, and mix until well combined.

**น้ำดื่มดีท็อกซ์**  
ส่วนผสม:  
น้ำมะพร้าวคั้น 1 ช้อนโต๊ะ  
น้ำเชื่อมมะพร้าว 1/4 ถ้วย  
น้ำดื่ม 1/2 ถ้วย  
เมล็ด Chia 1 ช้อนโต๊ะ  
ผสมส่วนผสมทั้งหมดเข้าด้วยกัน รอเมล็ด Chia เติบโต 10 นาที เพื่อให้เมล็ด Chia ขยายตัวขึ้นก่อนดื่มเพื่อช่วยในการล้างพิษ

**Vegan Coconut Pancake Recipe**  
ส่วนผสม:  
น้ำมะพร้าวคั้น 1 ช้อนโต๊ะ  
แป้งข้าวเจ้า 1 ถ้วย  
น้ำ 1/2 ถ้วย  
กล้วยสุก 1 ลูก  
นมถั่วเหลือง 1 ถ้วย  
น้ำมันพืช 1 ช้อนโต๊ะ  
เกลือ 1/4 ช้อนชา  
น้ำตาลทรายแดง 1 ช้อนโต๊ะ  
น้ำมะพร้าวคั้น 1 ช้อนโต๊ะ  
น้ำเชื่อมมะพร้าว 1 ช้อนโต๊ะ

Scan the QR code for more recipes!  
และ QR Code เพื่อดูสูตรอาหารเพิ่มเติม



## Appendix Q: Packaging

*4% acidity*  
*100% natural*

*Raw; unpasteurised*  
ไม่ผ่านการพาสเจอร์ไรส์  
*NO added sugar*  
ไม่มีน้ำตาลทรายผสม  
*NO preservatives*  
ไม่มีสารกันบูด

*Product of Thai Royal Project*  
ผลิตภัณฑ์จากโครงการอันเนื่องมาจากพระราชดำรินานาชาติ

ควรเก็บในตู้เย็นหลังจากการเปิด  
Keep refrigerated after opened.

BBF:



น้ำส้มสายชูจากน้ำหวานดอกมะพร้าว

# COCONUT CIDER VINEGAR

FROM COCONUT SAP



*Naturally fermented using the traditional method from 100% Thai coconut sap - giving depth of flavour, a golden colour and natural fragrance. Our product contains beneficial sediment called "Mother of Vinegar" that is filled with minerals, amino acids and is a source of probiotics.*

น้ำส้มสายชูของเราทำโดยวิธีธรรมชาติจากน้ำหวานดอกมะพร้าวแท้ 100% ทำให้ได้รสชาติที่กลมกล่อม สีสันทอง และมีกลิ่นหอมเย็นเป็นเอกลักษณ์ สีสันคล้ายนมมีตะกอนธรรมชาติเรียกว่า "Mother of Vinegar" ที่มีไฟเบอร์โพลีคอสโตรเจน เป็นแหล่งรวมแร่ธาตุ และการสะสมอินทรีย์จำเป็นต่อร่างกาย ซึ่งไม่เป็นอันตรายต่อการรับประทาน



*Probiotic*  
ช่วยในระบบทางเดินอาหาร



*LOW GI*  
ไม่มีผลต่อระดับน้ำตาล

## Appendix R: Official Line

Electronic copy given to sponsor

First page:

1. ดาวน์โหลดแอปพลิเคชัน LINE@ มาติดตั้งก่อน ซึ่งมีทั้งเวอร์ชันสำหรับ Android และ iOS

2. เมื่อทำการสมัคร LINE@



ID



หลังจากดาวน์โหลดและฯ LINE@ ผ่านทาง AppStore หรือ Play Store แล้วให้รายละเอียดขั้นตอนการสมัคร เมื่อ  
เปิดและฯ LINE@ จะมีตัวเลือกด้วยกัน 2 อย่าง ได้แก่

- Start with LINE ให้เลือกหากต้องการเชื่อมต่อกับ LINE ในตัวเครื่อง
- Login with LINE account เพื่อกรอกอีเมลและรหัสผ่านของ LINE ที่ลงทะเบียนไว้ใหม่หรือเก่า

Appendix S: Exhibition Design

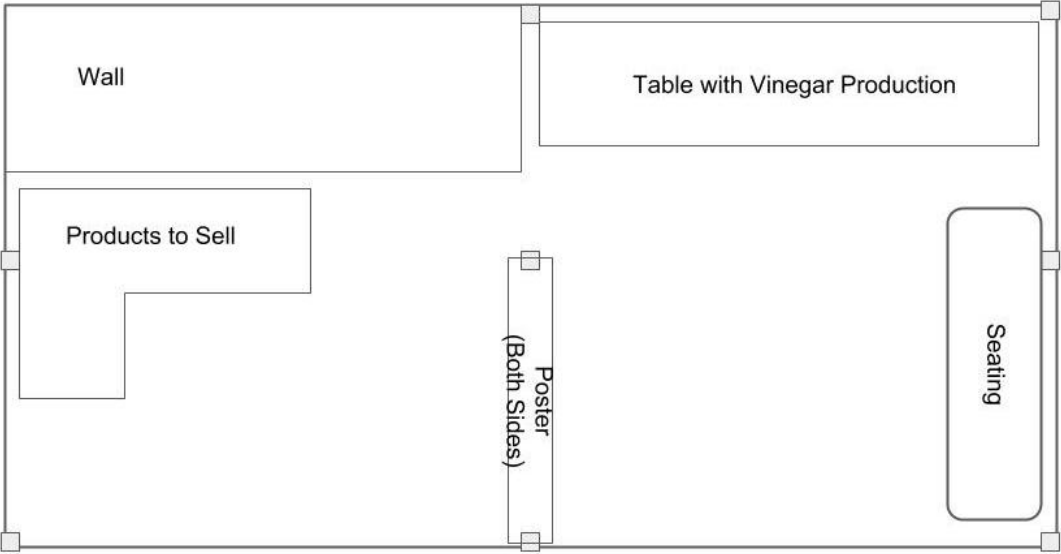


Table with Vinegar Production: Has the current vinegar production up to show, maybe with additional information

Products to Sell: Have the products for sale here

## Appendix T: QR Codes

How to document given to sponsor.





# HOW TO SCAN A QR CODE

**1** Download and install a QR reader for the phone such as LINE, QR Reader or WeChat.

**2** Open the app and point the phone at a QR code.

**3** Scan the QR code. Enjoy!



# วิธีสแกน QR CODE

**1** ดาวน์โหลดแอปที่สามารถสแกน QR code ได้ เช่น LINE, QR Reader หรือ WeChat

**2** เปิดแอปและยกโทรศัพท์เคลื่อนที่ไปสแกนที่ภาพ

**3** สแกน QR code Enjoy!



## Appendix U: Detox Drinks

### **Cranberry Juice Detox Drink Ingredients:**

- 1 Tbsp coconut cider vinegar
- $\frac{3}{4}$  cup water
- $\frac{1}{2}$  cup cranberry juice
- Splash of lime juice

Combine all ingredients in a glass.

### **CCV and Chia Detox Drink**

- $\frac{1}{2}$  Lime
- 1 Tbsp Coconut Cider Vinegar
- 1  $\frac{1}{2}$  Cups Water
- 1 Tbsp Chia Seeds

Combine the juice from the half lime, 1 tablespoon Coconut Cider Vinegar, and 1  $\frac{1}{2}$  cups water and then sprinkle in a tablespoon of chia seeds. Let it sit; after about 10 minutes, you'll notice that the chia seeds have expanded. Occasionally stir the mixture.

Appendix V: Map

