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The Development Of Green Community Through Technology And Innovation In Pak Nam Prasae Subdistrict, Rayong Province, Thailand

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Rayong Province is significant for Thailand's economy, industry, tourism, and agriculture. This research project builds on the U2T project, a Thai government initiative aimed at assisting communities affected by the COVID-19 pandemic between 2021-2023. The research team conducted fieldwork in Pak Nam Prasae Subdistrict, Rayong Province, during this period and found a large amount of organic waste, specifically from the leaves of the mangrove tree Excoecaria agallocha, which is abundant in the Thung Prong Thong nature tourism area. The community expressed a desire to process these leaves into environmentally friendly products to generate income. Additionally, the community aimed to attract more tourists after the COVID-19 pandemic. Therefore, this research project aimed to develop environmentally friendly products and create a green tourism route in Pak Nam Prasae Subdistrict using the BCG Model, as well as to develop promotional media using participatory media production and media innovation concepts. This research employed participatory action research and evaluation research methodologies. The project's outputs include prototypes of dyed fabrics and biodegradable plant pots made from Excoecaria agallocha leaves, a green tourism route, and promotional media for these products and the green tourism route. The project positively impacted the economy by increasing the income of participating community enterprises through product sales and green tourism packages. Socially, the community has become more sustainable and self-reliant, leading to community cohesion and the efficient use of available resources.

KEYWORDS Green community, innovation, Pak Nam Prasae.

INTRODUCTION

Rayong Province plays a crucial role in Thailand's economy, industry, tourism, and agriculture, attracting up to 6.65 million tourists annually (Department of Tourism, 2015). However, this influx of tourists has led to environmental problems, including waste management issues, with the province generating 973 tons of solid waste per day (Pollution Control Department, Ministry of Natural Resources and Environment, 2015). Additionally,

Rayong is an agricultural area with key economic crops such as durian, mangosteen, and pineapple (Rayong Provincial Agricultural Office, 2020). During the fieldwork for the University to Tambon (U2T) project conducted between 2021-2023 in Pak Nam Prasae Subdistrict, Klaeng District, Rayong Province—a project aimed at assisting communities during the COVID-19 pandemic—researchers found a significant amount of organic waste in the community, particularly Excoecaria agallocha leaves, which are abundant in the Thung Prong Thong natural tourism area within the community. The community expressed a desire to process these leaves into environmentally friendly products to generate income. Additionally, due to the decline in tourist visits during the COVID-19 pandemic, the community wanted to attract more tourists. Thus, this research project aimed to address these issues, using the BCG Model as a conceptual framework along with media innovation and participatory media production concepts to develop and promote environmentally friendly products and sustainable green tourism within the community.

OBJECTIVES

1. To develop environmentally friendly products and green tourism in Pak Nam Prasae Subdistrict, Rayong Province using the BCG Model.
2. To develop promotional media for environmentally friendly products and green tourism in Pak Nam Prasae Subdistrict, Rayong Province using the BCG Model.

LITERATURE REVIEW

Concept of BCG Economy

The BCG Economy aims to enhance the country's strengths, particularly in biodiversity and cultural diversity, by leveraging science, technology, and innovation to produce high-value goods and services. This concept aligns with the philosophy of the Sufficiency Economy, which promotes growth that leaves no one behind and fosters sustainable development. The BCG Economy consists of three main components: **B (Bio Economy):** Focuses on the efficient use of biological resources. **C (Circular Economy):** Which emphasizes maximizing the reuse of materials. **G (Green Economy):** Which aims to address pollution problems and reduce environmental impact sustainably (NSTDA, 2020).

In this research, the concept of the Circular Economy was applied by utilizing natural waste materials, specifically the leaves of the Excoecaria agallocha tree, abundantly found in Thung Prong Thong, a major tourist attraction in the Pak Nam Prasae community, to develop two environmentally friendly products: Excoecaria agallocha leaf-dyed fabric and biodegradable plant pots made from the same leaves, which help reduce the use of black plastic bags typically used for seedlings.

SWOT and TOWS Matrix Analysis

SWOT analysis (Nattapatch Wongriengthong, 2023) is a business analysis process used to assess and understand the external and internal environment of community enterprises. The analysis includes: **Strengths:** The potential and factors leading to the success of the Prasae Homestay community enterprise, a model community enterprise for producing Excoecaria agallocha leaf-dyed fabric and biodegradable plant pots. **Weaknesses:** The problems or

limitations currently faced by the community enterprise that may pose risks or affect operations. **Opportunities:** The factors that the community enterprise can leverage to create growth and development opportunities. **Threats:** Situations or problems that may pose dangers or risks to the community enterprise.

The TOWS Matrix is another tool for creating new strategies based on the current environment and situation of the community enterprise. It follows the SWOT analysis and involves the following strategic pairings: **SO (Strength-Opportunity) Strategy:** Using the business's strengths to capitalize on opportunity. **WO (Weakness-Opportunity) Strategy:** Focusing on addressing weaknesses by leveraging opportunities to overcome or conceal them. **ST (Strength-Threat) Strategy:** Using strengths to avoid threats. **WT (Weakness-Threat) Strategy:** Minimizing weaknesses and avoiding threats.

Green Tourism

Green tourism activities are designed to provide learning experiences for tourists without harming the environment (Somchai Benjachai, 2006). These activities are also in harmony with the values of natural resources and the environment at tourist sites, offering enjoyment, fun, and opportunities for learning and gaining new experiences for tourists. They aim to minimize the impact on resources and the environment. This concept of tourism activities promotes environmental education, conservation, and job creation, as well as income generation for the community in Pak Nam Prasae Subdistrict, which features unique natural attractions like Thung Prong Thong and other cultural sites within the community.

Participatory Development and Design of Promotional Media

Community participation in the development and design of promotional media consists of three aspects (Kanjana Kaewthep, 2015): **Participation by Person:** Community members participate as part of the research team, known as the community research team. **Participation by Content:** The community enterprise in Pak Nam Prasae Subdistrict participates by providing information on problems and obstacles related to products, target customers, and marketing communication, which is used to create promotional media, such as video clips of the production process for Excoecaria agallocha leaf-dyed fabric and biodegradable plant pots, and infographics introducing green tourism routes. **Participation by Process:** The community enterprise participates in the process of developing promotional media, including design and decision-making on the final media products, such as the three media mentioned above.

Media Innovation

Media innovation involves the creative development of media and content using new methods, leading to changes in knowledge, attitudes, and behavior of both senders and receivers, at the individual and societal levels. This involves using new communication technologies or building upon existing ones. Key characteristics of media innovation include: 1. Emphasizing interdisciplinary knowledge and interaction in the design, production, and dissemination of content. 2. Using new methods to make information accessible to recipients. 3. Creating new channels or content, or building upon existing ones. 4. Impacting and influencing changes in

knowledge, attitudes, and behavior at both individual and societal levels (National Innovation Agency, 2021).

Media innovation can be categorized into four types: **Product Media Innovation:** Involves developing changes related to technology, services, and media content. **Process Innovation:** Involves changes in the production process, distribution, and organizational structure of media enterprises. **Positioning Innovation:** Related to changes in the context or nature of media and services, such as changes in brand identity, strategy, or target audience. **Paradigm Innovation:** Involves changes in organizational attitudes, values, and revenue models. (Sakulsri Srisakham, 2018)

RESEARCH METHODS

Research Procedure for Objective 1: Participatory Action Research Using Focus Group Discussions.

Primary Informants:
The primary informants are six volunteers who represent government agencies and community enterprises. The selection criteria include being representatives of government agencies and community enterprises within the research area, specifically the Pak Nam Prasae Subdistrict Municipality and the Prasae Homestay Community Enterprise.

Research Instruments:
The research instrument used was a focus group discussion guide, which included predetermined questions aimed at fostering understanding and participation. Before using the instrument, the researcher ensured its quality by having three experts review it for content validity, language appropriateness (Wording), and question clarity.

Data Collection:
The research team used the focus group discussion guide to collect data. During the discussions, permission was sought to take notes, record audio, and take photographs.

Data Analysis:
The analysis involved systematically describing the content, categorizing it based on the study's key topics, and synthesizing the data to draw conclusions and make recommendations.

Research Procedure for Objective 2: Evaluation Research.

Sample Group:
The sample group consisted of 100 volunteers, including members of community enterprises, local residents, and tourists in Pak Nam Prasae Subdistrict.

Research Instruments:

Three public relations media pieces: 1. A video clip on developing dyed fabrics from the leaves of the "Prong Thong" plant. 2. A video clip on developing biodegradable pots from "Prong Thong" leaves. 3. An infographic introducing green tourism routes.

Public relations media satisfaction questionnaire, which included closed-ended questions, multiple-choice questions, and a 5-point Likert scale. Before administering the satisfaction questionnaire, the researcher preliminarily assessed the instrument's quality by evaluating the consistency between the questions and the characteristics of the variables being measured. The instrument's quality was further validated by three experts who assessed content validity by calculating the Item-Objective Congruence (IOC). Only questions with an IOC value of 0.50 or higher were selected.

Data Collection:
The level of satisfaction with the public relations media was measured by distributing and collecting the questionnaires.

Data Analysis:
Descriptive statistics, including percentages, mean, and standard deviation, were used for data analysis.

RESULTS

Objective 1: Developing Environmentally Friendly Products and Green Tourism in Pak Nam Prasae Subdistrict, Rayong Province Using the BCG Model

Objective 1 includes four key study areas: 1. Analysis of the potential and strategy formulation for tie-dyed products and biodegradable pots made from "Prong Thong" leaves. 2. Development of tie-dyed products and biodegradable pots made from "Prong Thong" leaves 3. Management of green tourism within the Pak Nam Prasae community. 4. Green tourism routes within the Pak Nam Prasae community.

1. Analysis of the Potential and Strategy Formulation for Tie-Dyed Products and Biodegradable Pots Made from Prong Thong Leaves

The analysis of potential and strategy formulation for tie-dyed products and biodegradable pots made from Prong Thong leaves involves the use of SWOT and TOWS Matrix tools. This ensures that the product development aligns with the context and culture of the Pak Nam Prasae community in Rayong Province. The target markets for these products are: **Primary Target Market:** Nature-loving tourists, both male and female, with a focus on working-age individuals with purchasing power. **Secondary Target Market:** Online media users, particularly young people who are environmentally conscious. This group represents a future opportunity for expanding online market distribution channels.

Table 1: Analysis of Potential and Strategy Formulation for Tie-Dyed Products and Biodegradable Pots Made from Prong Thong Leaves.

Internal Factors / External Factors	**Strengths**	**Weaknesses**
	- Uses natural, local materials from the community. - Reflects the unique identity of the Thung Prong Thong community. - Low production costs. - Promotes income for the community.	- As a new product, it has fewer designs. - Being new, there is a lack of expertise in production techniques.
Opportunities	**SO Strategies**	**WO Strategies**
- Government policies support Soft Power, encouraging the creation of Soft Power products. - Entering the market for eco-friendly products, which is gaining popularity among consumers. - Thung Prong Thong is a popular tourist attraction. - Increased product distribution channels through online platforms.	- Brand creation that reflects the unique identity of Thung Prong Thong. - Implementing Skimming Price strategy (initially setting a high price and gradually lowering it), suitable for new trending products.	- Linking products with tourism activities in Thung Prong Thong. - Establishing online distribution channels through websites, Facebook, and online marketplaces.
Threats	**ST Strategies**	**WT Strategies**
- Limited technology for production and marketing communication. - Seasonal tourist fluctuations.	- Marketing communication for Soft Power community products through storytelling about Thung Prong Thong.	- External technical training. - Knowledge management to transfer production technology outside the community. - Participating in exhibitions and trade shows to promote and sell products.

2. Development of Tie-Dye Products and Biodegradable Pots from Pong Thong Leaves

Design and development of tie-dye products from Pong Thong leaves involve using a community-based product development process. This aims to create new market products by enhancing value based on the community's wisdom, culture, and way of life. The project focuses on: 1. Utilizing community resources, specifically Pong Thong leaves and bark, for natural dyeing. This helps reduce organic waste in the community. 2. Leveraging the community's identity related to Pong Thong marshlands and connecting it with their lifestyle and culture through storytelling and Soft Power. 3. Introducing new products such as muslin

shirts, t-shirts, headscarves, hats, and bags, which serve as souvenirs from the Pong Thong marshlands.

The design and development of tie-dye patterns involve creating designs on fabric by blocking certain areas from absorbing dye, then dyeing the fabric using techniques like tying, folding, binding, and stitching. Various techniques can create beautiful and unique patterns on fabric. The techniques used for tie-dyeing products from Pong Thong leaves include: 1. Arashi (storm) tie-dyeing 2. Kumo (cloud) tie-dyeing 3. Other methods such as pleating, crumpling, and using cords to bind sections of the fabric, as well as gradient dyeing.

The production process of tie-dyeing with Pong Thong leaves involves: 1. Creating the desired pattern on the fabric. 2. Boiling the dye by finely chopping Pong Thong leaves or bark and boiling them in hot water. Use 5 liters of water per batch of Pong Thong leaves (green leaves produce a light yellow color while dry leaves produce an orange-brown hue) or 500 grams of bark (which yields an orange-red color). Boil for about 2 hours, strain the dye using a sieve or fine cloth, then boil further until 3 liters of dye remain or until the desired color is achieved. 3. Adding 1 tablespoon of alum and 1 tablespoon of salt to the dye, stirring until dissolved. Boil the patterned fabric in the dye for an additional 3 hours. 4. After dyeing, rinse the fabric to remove residue and dry it in a shaded area. It's important to use natural fiber fabrics like cotton or linen because synthetic fabrics often have coatings that inhibit natural dye absorption. Additionally, pre-wash the fabric to remove any surface residues before dyeing.

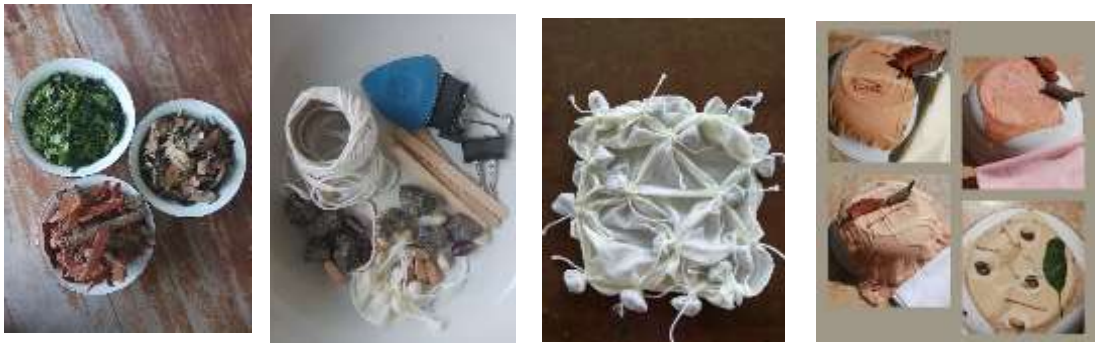


Figure 1: Tie-Dyeing Fabric Using Pong Thong Leaves and Bark

Table 2: Design and Development of Tie-Dye Products from Pong Thong Leaves

Tie Dye Products	**Product Picture**	**Cost per Unit**	**Selling Price per Unit**

Muslin Shirt	 	90 baht	199 baht
T-Shirt		95 baht	199 baht
Hair Scarf	 	55 baht	119 baht
Hat		75 baht	199 baht
Bag		85 baht	199 baht

Design and Development of Biodegradable Pots from Pong Thong Leaves

The use of plastic bags or plastic pots for seedling cultivation is a contributing factor to global warming. This has led to the development of environmentally friendly biodegradable pots made from Pong Thong leaves, which help reduce the use of plastic materials. The goal is to use locally available resources, specifically dried Pong Thong leaves, which are low-cost and add value to waste materials according to the BCG principles.

The process of producing biodegradable pots from Pong Thong leaves, specifically for seedling pots, involves: 1. Drying the Pong Thong leaves and then grinding or shredding them into fine pieces. Wet starch is used as a binder to help the leaves adhere together. 2. Molding the mixture by hand using a plant pot as a form. The steps are as follows: 1. Combine the shredded, dried Pong Thong leaves with wet starch until the mixture has a clay-like consistency. 2. Place a plastic bag inside a larger pot and a smaller pot over the plastic bag. 3. Fill the larger pot, lined with a plastic bag, with the wet Pong Thong leaf mixture up to about

half of the pot's height. 4. Insert the smaller pot, covered with a plastic bag, into the larger pot, pressing down until the Pong Thong leaf mixture overflows. Smooth the edges as needed. 5. Allow the pot to dry in the sun for about 3-4 hours until completely dry, then remove the smaller pot.

Figure 2: Making a biodegradable pot from Prong Thong leaves.

The results from using pots made from golden palm leaves showed that these biodegradable pots are suitable for growing seedlings for a short period before transferring them to the soil. The entire pot can be buried, which makes handling easier and prevents damage to the plant roots compared to removing seedlings from black plastic bags before planting. When the pots are exposed to continuous moisture, they gradually decompose naturally. However, a limitation is that unused pots must be stored in a dry place to maintain their shape. Pots that have been used for planting seedlings but not yet transferred to the soil can maintain their shape for about 60 days (Jaruwan Nitipaiboon et al., 2024).

Table 3: Design and development of biodegradable pot products from Prong Thong leaves.

Product	**Product Picture**	**Cost per Unit**	**Selling Price per Unit**
Pot size diameter 5 inches with seedlings		22 baht	50 baht
Pot size diameter 5 inches		3.50 baht	10 baht

After receiving the two product prototypes, the researcher tested them for sale, as shown in Figure 3.

Figure 3 A booth selling tie-dyed fabric products and biodegradable nursery pots.
and the researchers took the product to participate in mangrove planting activities with Bridgestone Thailand Co.,Ltd. and Pak Nam Prasae Subdistrict Municipality

3. Green Tourism Management in Pak Nam Prasae Community

The green tourism management in Pak Nam Prasae Community consists of five key components: 1. Learning management 2. Community organization 3. Community identity 4. Natural resource management 5. Green tourism management

3.1 Learning Management

In Pak Nam Prasae, learning management is carried out by the local municipality. The Pak Nam Prasae Municipality plays a crucial role in supporting, promoting, and advancing tourism within the community. The municipality is tasked with organizing various training activities according to the central government's policies.

The municipality serves as the central hub for information about local tourism attractions, including historical, cultural, and tourism resource data. It is also responsible for formulating tourism management policies for Pak Nam Prasae. These resources are essential for the community's tourism development.

The municipality collects tourism-related information, organizes and presents it in an accessible format, both online through the municipality's website and offline as brochures. This information is then shared with the community to ensure they have accurate knowledge about tourist sites and can use it for sustainable development.

The information is passed on to the community tourism management committee, which includes various groups such as the Young Tour Guides, Boat Tour Operators, Tricycle Tour Operators, Homestays, Souvenir Sellers, and Restaurant Vendors. They use the information to provide tourists with live, engaging descriptions of natural and cultural attractions, as well as regulations for visiting these sites.

3.2 Community Organization

The community organization in Pak Nam Prasae is divided into two main groups, each playing a distinct role in tourism development:

Group One: Government Agencies This group includes agencies such as the municipality, Department of Marine and Coastal Resources, Harbor Department, Fisheries Department, schools, banks, Ministry of Tourism and Sports, Ministry of Agriculture and Cooperatives, and Rayong Ministry of Industry. These agencies support, promote, and publicize tourism, provide funding, and offer training to the local population. They also create promotional materials and compile knowledge to develop the community into an innovative village, focusing on community development.

Group Two: Local Residents This group includes the Young Tour Guides, Boat Tour Operators, Tricycle Tour Operators, Homestays, Souvenir Sellers, and Restaurant Vendors. They provide direct services to tourists and play a crucial role in creating a memorable experience for visitors.

Managing Community Organizations The primary organization management comes from government agencies that support, promote, and publicize tourism. Regular meetings are held twice a year to focus on service, hospitality, annual events, and major tourism activities. The municipality sets policies, plans, and presents these policies to the community groups, allowing them to participate in planning and offering feedback.

The Role of Government in Community Organization Management The municipality acts as a mediator in managing, controlling, solving problems, and planning the distribution of income and benefits to tourism-related professions in the community. This ensures smooth and sustainable tourism operations in Pak Nam Prasae. With an effective management structure, Pak Nam Prasae can develop itself into an attractive tourist destination and generate sustainable income for the community.

3.3 Community Identity

The identity of Pak Nam Prasae is a valuable tourism resource and can be categorized into: 1. Natural tourism resources: mangrove forests, golden palm fields, red hawks, fiddler crabs, various bird species, and Ta-khian trees. 2. Man-made tourism resources: the Royal Navy Ship Memorial, ancient hundred-year-old houses, the Shrine of Prince Chumphon, Teochew Chinese Trade Museum, and Ta-khian Ngam Temple.

3.4 Natural Resource Management

Effective management of natural resources is crucial for sustainable tourism development. Currently, 74 households are involved in tourism-related businesses, organized according to their skills. Village leaders and the municipality work together as a leadership team to establish rules and regulations to meet their shared goals.

The Role of the Leadership Team in Resource Management. The leadership team, consisting of village leaders and municipal officials, is responsible for maintaining natural resources, repairing and upgrading tourist facilities, and setting access zones and activity regulations in tourist sites. The municipality initiates resource management, with community members overseeing it. If issues arise that the community cannot resolve, the municipality intervenes. The leadership team also fosters community strength and unity.

Resource Management Methods. Village leaders and the municipality hold community meetings to gather issues and needs from each village. They prioritize these issues to find solutions or provide support. The issues are then presented at municipality meetings for resolution and appropriate action.

3.5 Green Tourism Management

Green tourism in Pak Nam Prasae is managed through collaboration among various community groups, including boat tour operators, tricycle tour operators, homestays, souvenir sellers, and restaurant vendors. The municipality oversees, supports, and facilitates various aspects, including training and promoting tourism broadly.

4. Green Tourism Routes in Pak Nam Prasae Community

Pak Nam Prasae currently offers two main tourism routes, designed to help visitors experience key attractions in the area:

Route One: Starts at the Royal Navy Ship Memorial, includes the Old House, Prince Chumphon Shrine, Golden Palm Fields, Ta-khian Ngam Temple, and Laem Son Temple Bridge, ending back at the Royal Navy Ship Memorial. This route covers several important tourist sites.

Route Two: Starts at Golden Palm Fields, includes Ta-khian Ngam Temple, Prince Chumphon Shrine, Old House, Royal Navy Ship Memorial, and ends back at Golden Palm Fields. This route focuses on natural attractions.

Tour Duration Both routes take approximately 2 hours each, allowing tourists to enjoy and explore various sites conveniently. The systematic route management and municipal oversight help attract more visitors and generate sustainable income for the community.

Figure 4: Green Tourism Package. Price: 500 Baht per person. Duration: Half-day

This package offers a green tourism route designed to give visitors a comprehensive and enjoyable experience in a half-day tour.

Objective 2: Development of Eco-Friendly Promotional Materials and Green Tourism for Pak Nam Prasae Subdistrict, Rayong Province Using the BCG Model

This objective includes four study topics: 1. Study of the needs of community enterprises. 2. Analysis of issues with the promotional materials of community enterprises. 3. Development and design of promotional materials with community participation. 4. Evaluation of promotional materials

1. Study of the Needs of Community Enterprises

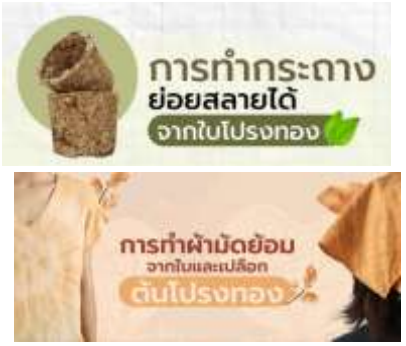
The study of community needs involved group discussions to gather information for developing promotional materials. It was found that the community requires materials that demonstrate how to make tie-dye fabric and biodegradable seedling pots. Since both products involve multiple steps, there is a need for materials that can be reviewed repeatedly. Additionally, there is a demand for infographic materials recommending green tourism routes to be published online to expand awareness of the tourism routes beyond the community.

2. Analysis of Issues with Promotional Materials of Community Enterprises

Although online media have been used in the community, the main issue is that the community consists of older adults and children, while teenagers and working-age individuals tend to study and work outside the community. Thus, the creation and use of online media among these groups have been slow. To address this issue, the researchers produced video clips and infographics and disseminated them through online media for the community.

3. Development and Design of Promotional Materials with Community Participation

The researchers created and produced promotional materials with active community participation. Three types of promotional materials were produced: 1. A video clip on making tie-dye fabric from golden palm leaves. 2. A video clip on producing biodegradable seedling pots from golden palm leaves. 3. An infographic recommending green tourism routes.



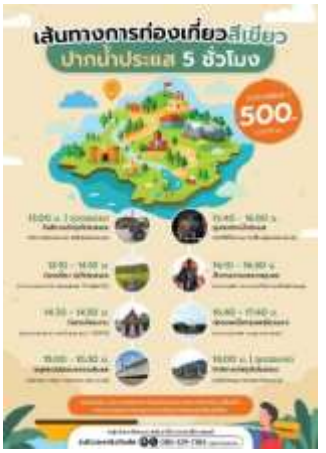


Figure 5 : video clips

Figure 6 : Infographic

4. Evaluation of Promotional Materials

The evaluation results of the three promotional materials are as follows:

Table 4: Results of Satisfaction Evaluation for Promotional Materials.
n=100

Topics	**Video Clip Tie-Dye Fabric**		**Video Clip Biodegradable Seedling Pots**		**Infographic**	
	χ	SD	χ	SD	χ	SD
1. The use of illustrations are appropriate.	3.48	.771	3.61	.741	3.58	.777
2. The use of characters is appropriate.	3.06	.586	3.39	.775	3.19	.818
3. The composition of the image is appropriate.	3.59	.728	3.62	.829	3.45	.680
4. The use of colors is appropriate.	3.73	.733	3.64	.662	3.17	.632
5. Media can create knowledge and understanding.	3.77	.861	3.69	.888	3.92	.799
6. Can be utilized effectively.	3.84	.816	3.80	.945	3.36	.935
7. Overall satisfaction with the media	3.90	.809	3.84	.874	3.88	.898

DISCUSSION

The design and development of the tie-dye fabric product from golden palm leaves utilized a community-based product development approach. This process integrates the community's traditional knowledge, culture, and lifestyle to add value and introduce new products to the market. It aligns with the research by Thirawara Buasithipoom et al. (2022), which suggests that developing tie-dye products helps enhance the quality and uniqueness of community products, thereby fostering a strong local economy through the utilization of existing resources and promoting sustainable income for the community. This approach improves the community's standard of living and provides knowledge that can be adapted for other products.

The development of biodegradable seedling pots from golden palm leaves, which are environmentally friendly, reduces the use of plastic materials such as plastic bags and pots. Using locally available dried golden palm leaves, which are low-cost and repurpose waste materials, contributes to a circular economy by converting waste into a revenue source. This adds value for existing businesses and opens economic opportunities for new entrepreneurs, while also addressing waste management issues (NSTDA, 2020).

However, the limitation of biodegradable pots from golden palm leaves is that they must be stored in a dry place to maintain their shape. Pots that have been used for planting seedlings but not yet transferred to the ground can maintain their shape for about 60 days. This is consistent with the study by Nipon Tanpaibulkun et al. (2022), which observed that biodegradable pots from water hyacinths began deteriorating from the third week and lost their shape by the seventh week during a 12-week cultivation of coriander.

The outputs of this research are classified as product media innovation, involving the development of promotional media content related to the knowledge transfer of the production of Excoecaria agallocha leaf-dyed fabric and biodegradable plant pots, and the introduction of green tourism routes in Pak Nam Prasae Subdistrict. The design of this promotional media reflects the community identity of Thung Prong Thong, fosters community participation, and leads to changes in knowledge, attitudes, and behavior, contributing to the sustainable use of local natural resources and income generation within the community. (Sakulsri Srisakham, 2018)

CONCLUSION

New Situations and Changes.

Members of the Pae Sae Homestay community enterprise received knowledge through training and video clips. Group discussions revealed that members gained increased knowledge about tie-dyeing and making pots from golden palm leaves, with high satisfaction levels. While the community previously engaged in tie-dyeing, they had not used golden palm leaves, a local waste material, for dyeing. Additionally, they had not produced biodegradable pots before. The new skills and creativity in designing tie-dye patterns led to the creation of new products beyond shirts, such as hair coverings, hats, and bags. These products are unique, beautiful, and utilize waste materials in line with the BCG concept, alongside the compelling story of golden palm leaves as a soft power element that adds value to the products. Furthermore, the community now has promotional materials available online.

Success Factors.

The products are environmentally friendly and reflect the local identity of golden palm leaves. The community, with its natural tourism attractions, attracts regular visitors. The tie-dye products are suitable as souvenirs and appeal to those who appreciate quality natural products. Fashion trends do not affect these products as they remain relevant over time. Additionally, using natural waste materials reduces production costs and increases profitability.

Pae Sae Sub-district is also a mangrove forest and large aquatic nursery area, attracting both public and private organizations to engage in social activities like mangrove planting and releasing juvenile aquatic animals. Biodegradable seedling pots meet the needs of environmentally conscious organizations.

Using video clips as promotional materials allows community members to access information anytime, anywhere, while infographics recommending green tourism routes help spread awareness through online media. The researchers have also provided all promotional materials to the Pae Sae Sub-district Municipality to expand the development of products and promote tourism routes to other areas within the sub-district.

Impacts and Sustainability of Changes.

Social and economic impacts include skill development and enhancement (Upskill, Reskill, Newskill) among the Pae Sae Homestay community enterprise members, leading to increased income for both individuals and the community. This development fosters the creation of soft power products derived from the community's social capital, lifestyle, and culture. The collaboration between Pae Sae Sub-district Municipality, community enterprises, and Rajamangala University of Technology Tawan-ok continues to support these efforts.

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