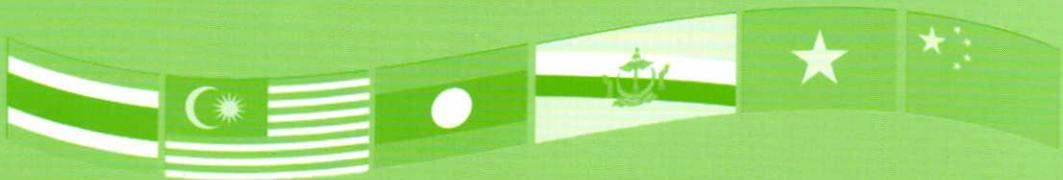




The National and International Conference  
on Rajabhat Research :The Research-driven  
Community Engagement for Community Empowerment



16-17 August 2012

The Office of the President, Lampang Rajabhat University

Lampang Rajabhat University  
Uttaradit Rajabhat University



**National and international Conference on Rajabhat Research:  
Research driven Community Engagement for Community Empowerment  
16-17 August 2012**

**The Office of the President, Lampang Rajabhat University**

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## Editor

The Proceeding Research presentation on public services is the collection of research papers which were selected to Present at National and International Conference on Rajabhat Research : Research driven Community Engagement for Community EmPowerment on August 16-17, 2012 at the office of the President,Lampang Rajabhat University .

The conference held in cooperation with Lampang Rajabhat University and Uttaradit Rajabhat University. There are 6 countries Participated in the conference : Federation of Malaysia,State of Brunei Darussalam,The Lao People's Democratic Republic,The Socialist Repuldic of Vietnam, The People's Republic of China and Kingdom of Thai.

The purpose of the conference is to be center for presenting Knowledge, creativity and innovation to public which come from researches, creative works or Research presentation on public services of lecturers, researcher and students of Lampang Rajabhat University and Uttaradit Rajabhat University,Institule of Education and other institutes.Results of researches can be adapt for involved works or in advanced works.

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**National and international Conference on Rajabhat Research: Research-driven  
Community Engagement for Community Empowerment  
16<sup>th</sup> -17<sup>th</sup> August 2012**

**The Office of the President Lampang Rajabhat University**

**Rationale**

As the philosophy of Lampang Rajabhat University is to be a university focused on local development, the university has pledged itself to four primary missions. The university will provide excellent education, based on local wisdom and global knowledge. The university will produce qualified graduates who are morally conscious, grateful to the motherland, proud of the local community and are lifelong learners. The university will strengthen ties with the local community, religious leaders and political leaders to promote democracy, morality and local development. The university will connect to and collaborate with other universities, local communities and other organizations locally and internationally.

Along with the university's philosophy, each teacher at the tertiary level is obliged to pursue another four goals: teaching, researching, providing academic services and promoting culture. As a result, the university encourages teachers to integrate their teaching with research projects and the provision of public services. Teachers are also encouraged to study the community's potential, needs, and to investigate whether the local community is experiencing problems that might be in need of research or public service. As a result, a considerable number of research papers are regularly published and disseminated for the purposes of community development.

Following the 6th meeting of the committee of civil servants in higher education on the 5th of September 2011 and the 7th meeting on the 10th of October 2011, the committee agreed to allow academics applying for an academic title to use public services which aimed to solve local problems or develop local communities as qualifying evidence. The sub-committee has studied the possibility of this and submitted a proposal on 'The criteria for public services to be considered in support of academic titles'. This is now awaiting the decision of committee of civil servants in higher education and a decision is expected in 2012.

At the international level, as Thailand is moving towards the creation of the ASEAN community in the year 2015, the three pillars of its community, namely the ASEAN Political-Security Community (APSC), the ASEAN Economic Community (AEC) and the ASEAN Socio-Cultural Community (ASCC), have been used as guidelines for the integration of the ten countries in Southeast Asia. As a consequence, Lampang Rajabhat University, Uttaradit Rajabhat University and the Institute of Research and Development have jointly collaborated to organise a conference with the title “Rajabhat research: public services for the ASEAN community” with the aim of encouraging teachers and researchers to conduct research relevant to the integration of the ASEAN community and to increase teachers’ production of worthwhile research, as well as to provide a public service and to promote culture, all as part of the university’s mission.

### **Objectives**

1. To provide a platform for presenting research papers, disseminating knowledge, And introducing innovations from teachers, researchers, and students from the two organizing universities, and other universities and organizations.
2. To provide a forum for exchanging knowledge, experience, and research between educational institutes, and local and international organizations.
3. To promote academic collaborations with other universities, locally and overseas.

### **Project indicators**

1. The number of research papers in public services presented at the conference.
2. The number of projects, research papers and innovations discussed in the project.
3. The number of participants in the project.
4. The level of collaboration with other universities, locally and overseas.

### **Key performance indicators**

1. To disseminate research papers, innovations and public services at the conference.
2. To produce guidelines for the dissemination of research papers, innovations and public services at the conference.
3. To produce guidelines for the encouragement of the participation of undergraduates and postgraduates in the presentation of research at national and international conferences.
4. To disseminate the knowledge gained from public services to the public.

### **The Venue**

The meeting halls, A, B, C, D, E, F and G at the office of the President, Lampang Rajabhat University.

### **Duration**

The 16th -17th August 2012

### **The participants**

The conference will be open to teachers, academics, researchers, and students from participating universities and other organizations. (Estimated 120 participants).

### **The organizer**

The Institute of Research and Development, Lampang Rajabhat University and The Institute of Research and Development, Uttaradit Rajabhat University.

### **Research forum**

Plenary lecture on “From public services to ASEAN Community”, by Prof. Dato' Dr. Saran Kaur Gill - Deputy Vice-Chancellor (Industry and Community Partnerships) Universiti Kebangsaan Malaysia. - Executive Director, Asia Engage (Asia-Talloires Network of Industry and Community Engaged Universities (ATNEU) and ASEAN University Thematic Network on USR&S.

Plenary lecture on “Producing research to serve society and to apply for academic titles”, by Professor Dr. Piyawat Boon-Long, Executive Director of the Knowledge Network Institute of Thailand.

Plenary lecture on “U.S.R in ASEAN Country”, by Assoc. Prof. Dr. Nantana Gajaseni, Ph.D, Executive Director of AUN(Asean University Network).

Panel discussion on “The role of the university in public services”, by representatives from Malaysia, Brunei, Laos, Vietnam, China and Thailand, chaired by Assoc.Prof.Dr.Avon Opatpatanakit.

Panel discussion on “ Universities for public services”, by Dr. Silaporn Buasai, Assoc. Prof. Dr. Supavinee Sattayaporn, Asst. Prof. Dr. Chatnapa Promma, Assoc. Prof. Dr. Avorn Opatpatanakit, Asst. Prof. Dr. Duangjan Diewvilai, Assoc. Prof. Dr. Boontawan Vingvorn, Asst. Prof. Chamlong Khamboonchu, chaired by Asst. Prof. Patcharin Damrangkittikul.

- English oral presentations on public services.
- Pilot presentations in accordance with public service indicators.
- Project presentations from undergraduates.
- Poster presentation from academics, teachers and researchers from Lampang Rajabhat University and Uttaradit Rajabhat University.
- Meeting to investigate academic collaborations with local and international institutes.



**National and international Conference on Rajabhat Research: Research-driven  
Community Engagement for Community Empowerment  
16-17 August 2012.  
The Office of the President, Lampang Rajabhat University**

**(Thursday, 16 August 2012)**

<b>Time</b>	<b>Schedule</b>	<b>Venue</b>
8.00-8.45	Registration	Hall A
8.45-9.00	Welcome speech by Assistant Professor Lek Saengmee-anuplab	Hall A
9.00-9.15	Conference opening by President of the University Council, Lampang Rajabhat University	
9.15-10.40	Plenary lecture on "From public services to ASEAN Community", by Professor Dr. Saran Kaur Gill, Ph.D, Vice Chancellor for Industrial and Community Engagement, Kebangsaan University Malaysia (UKM).	
10.40-12.00	Panel discussion on "The role of the university in public services", by representatives from Malaysia, Brunei, Laos, Vietnam, China and Thailand, chaired by Assoc. Prof. Dr. Avorn Opatpatanakit.	
12.00-12.15	Question and answer session	
12.15-13.00	Lunch	Students' Union Building (Opposite to the Office of the President)
<b>(2 parallel sessions)</b>		
13.15-16.30	Panel discussion on "Universities for public services", by Dr.Silaporn Buasai, Assoc. Prof. Dr. Supavinee Sattayaporn, Asst. Prof. Dr. Chatnapa Promma, Assoc. Prof. Dr. Avorn Opatpatanakit, Asst. Prof. Dr. Duangjan Diewvilai, Assoc. Prof. Dr. Boontawan Vingvorn, Asst. Prof. Chamlong Khamboonchu, chaired by Asst. Prof. Patcharin Damrangkittikul.	Hall A
	Poster Presentations	Hall B and C

(Friday, 17 August 2012)

Time	Schedule	Venue
8.30-9.00	Registration	Hall B
9.00-9.30	Plenary lecture on “Producing research to serve society and to apply for academic titles”, by Professor Dr. Piyawat Boon-Long, Executive Director of the Knowledge Network Institute of Thailand.	Hall B
9.30-10.00	Plenary lecture on “U.S.R in ASEAN Country”, by Assoc. Prof. Dr. Nantana Gajaseni, Ph.D, Executive Director of AUN (Asean University Network).	Hall: B
10.00-10.10	Coffee break	Hall B
<b>10.10-12.00</b>	<b>Two parallel sessions: Oral presentation (national and international level)</b>	
	Oral Presentation Group 1	Room D 38331
	Oral Presentation Group 2	Room E 38332
	Oral Presentation Group 3	Room F 38334
	Oral Presentation Group 4	Room G 38335
	Undergraduates’ presentation	Hall C
12.00-13.00	Lunch	Students’ Union Building
<b>13.00-16.00</b>	<b>Three parallel sessions: Presentation (national level)</b>	
	Research presentation or pilot presentations in accordance with public service indicators	Hall B
	Poster Presentation	Hall C
14.30-14.40	Coffee break	
13.30-16.00	Meeting to investigate academic collaborations with local and international institutes.	The meeting room (10 <sup>th</sup> floor of the office of the president)
16.00	Closing ceremony	Hall B



**Table of Research Presentation on public services,English Version,Group 1**

**Research presentation on public services**

**On August 17,2012 at 10.00 - 12.00 ,Room 3872**

**The Office of the President Lampang Rajabhat University**

<b>Field</b>	<b>Speaker</b>	<b>Author</b>	<b>Article</b>
Technology and education	1. Professor Dr. Piyawat Boon-Long	1. Assoc.Prof.Nguyen Duc Vu Quang Binh University	Bulding environment of educational Research in university of education
	2. Assoc. Prof. Dr. Chatnapa Promma  Secretary: Asst. Prof. Dr. Duangjan Diewvilai	2. Dr.Gunt Intuwong Uttaradit Rajabhat University	An Action research on the Training on the Value Development of Innovation technology in the Form of Participatory Technology Transfer

**Table of Research Presentation on public services,EnglishVersion,Group 2**

**Research presentation on public services**

**On August 17,2012 at 10.00 - 12.00 ,Room 3874**

**The Office of the President Lampang Rajabhat University**

<b>Field</b>	<b>Speaker</b>	<b>Author</b>	<b>Article</b>
Society And the environment	1. Professor Dr. Sanchai Jaturasitha	1. Assoc. Prof. Dr.Boonthawan Wingwon Lampang Rajabaht University	Effects of Community Capability toward the Development of Small and Medium Industrial Enterprises: Case Study of Processed Woods Entrepreneurs at Pongyangkok, Hangchat District, Lampang Province
	2.Dr.Suchin Petcharugha		
	<b>Secretary:</b> Chutima Khamboonchu	2. Dr.Nicharee Jaikhamwang Uttaradit Rajabhat University	Health Promotion On Sufficiency Health of People from Flash Floods and Mudslide Disaster in Laplae District , Uttaradit Province.
		3. Dr.Bounxom Sriharath National University of Laos	Development of herbal products for the tourism location: Case study Vang Vieng Vientiane

**Table of Research Presentation on public services,Thai Version,Group 1.  
On August 17,2012 at 10.10 - 12.00 ,Room 38331  
The Office of the President,Lampang Rajabhat University**

<b>Field</b>	<b>Speaker</b>	<b>Author</b>	<b>Article</b>
Technology	1.Dr.Surapol Dumrongittigule	1. Kanop Wattana Uttaradit Rajabhat University	Information Technology for Construction Inspection
	2.Assoc.Prof.Dr.Chatnapa Promma	2.Thanapoom Fuangpian Uttaradit Rajabhat University	Automatic Visual Inspection of Head Gimbals Assembly Burning
	<b>Secretary:</b> Assoc.Prof.Dr.Boontawan Wingwon	3.Jensak Koschanin Uttaradit Rajabhat University	Creating Instructional Media from Deflection Structure Equipment
		4.Warakom Wongchai Lampang Rajabhat University	Study of Waste Heat Energy from Ceramic Shuttle Kiln for Green Ceramic Drying Process

**Table of Research Presentation on public services,Thai Version,Group 2.**  
**On August 17,2012 at 10.10 - 12.00 ,Room 38332**  
**The Office of the President,Lampang Rajabhat University**

<b>Field</b>	<b>Speaker</b>	<b>Author</b>	<b>Article</b>
Agriculture	1.Asst.Prof.Pacharin dumronggitigule 2. Assoc. Prof.Dr.Avorn Opatpatanakit	1. Piyawan Palas Uttaradit Rajabhat University	Appropriate Approach to Improve Standard Quality of Khaocab in Municipal Sriphanommat,Lablae District,Uttaradit Province
	<b>Secretary:</b> Tiparat Tikapunya	2. Asst.Prof.Dr.Chedsada Mingchai Uttaradit Rajabhat University	Area-based Research and Development by Faculty of Agriculture,URU: A case Study of Alternative Energy for Small Scale Farmers
		3. Dr.Pichai Chaikla Uttaradit Rajabhat University	Study of the Development of Durian (Durio zibethinus Murr.) cv.Long Lab-Lae and Lin Lab-Lae in Agro-forest System.
		4. Pairote Nathiana Uttaradit Rajabhat University	The development of a Chip on Bamboo Stamping Machines.To Raise The Productivity of the Community: a case study of bamboo products,wicker basket for a sub-partition province's districts.

**Table of Research Presentation on public services,Thai Version,Group 3.  
On August 17,2012 at 10.10 - 12.00 ,Room 38334  
The Office of the President,Lampang Rajabhat University**

<b>Field</b>	<b>Speaker</b>	<b>Author</b>	<b>Article</b>
Society and Occupation	Dr.Sidthinat Prabudhanitisarn	1.Asst.Dr.Duangchan Diowvilai	Establishment of a Network to Promte university social responsibility:Concept and Experience from Lampang's academic institutional project.
	<b>Secretary:</b> Dr.Thanawat Jomprasert	2.Dr.Duangjai Pille	A study of the development and participation of children and adolescents in the planning of local government youth strategy.
		3.Kajornsak Wongwirat	Occupation Grouping to Aged Community of Create Better of Life of People in Tambol Maemoh, Maemoh District, Lampang Province.





## Creating an Environment Conducive to Educational Research in a University of Education

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### ABSTRACT

To promote scientific research in pedagogic universities requires developing an educational research environment. This environment is a system of internal and external environments with different components and factors. The internal environment includes: objectives, contents, methods, facilities and research resources. The external environment includes: management staff, lecturers, scientists, experts in educational science, and co-workers; lectures and students; the beneficiaries of research results; the scientific and technological environment; and the socioeconomic environment. To create an environment conducive to educational research requires paying careful attention to these factors.

### THE IMPORTANCE OF BUILDING A RESEARCH ENVIRONMENT IN UNIVERSITIES

Universities today play an important role in research cooperation and technology transfer, helping to solve scientific problems at the local and national level. To do so, alongside teaching, they must create an environment conducive to research.

For higher education in Vietnam, the Education Law as amended in 2005 stipulates:

*The method of training college and university level must attach importance to fostering self-discipline in learning, skills self learning, self study, develop creative thinking, train practical skills, enable students to participate in research, experimentation and application (Article 40) [1].*

For Vietnam then, universities are increasingly focusing on research, contributing to raising the qualification of teachers, improving the quality of training, and affirming their position and prestige in society. Scientific technology research helps address society's problems, while producing new knowledge and thinking that helps improve the quality and effectiveness of university teaching. Lecturers who also conduct research both create and stay abreast of new knowledge in their field, and incorporate this into their lectures and teaching. This focus on research is equally important in teacher training universities.

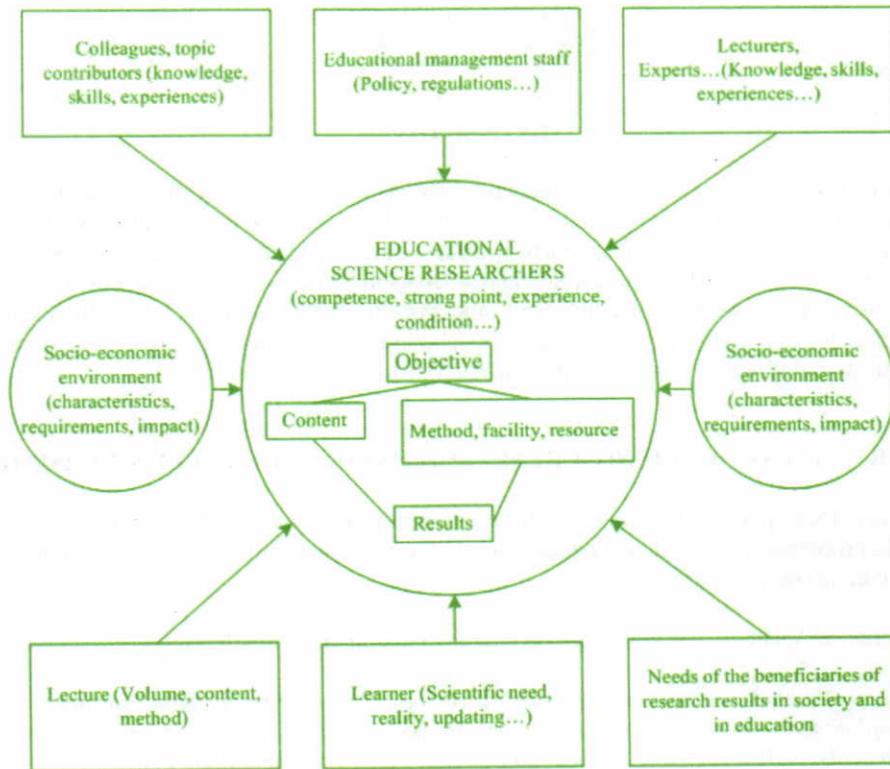
### CHARACTERISTICS AND STRUCTURE OF AN EDUCATIONAL RESEARCH ENVIRONMENT IN A UNIVERSITY OF EDUCATION

Educational research is systematic and complex, with many different components in close relationship with each other (teachers, learners, objectives, content, methods, facilities, and assessment and evaluation). Changing one educational component will entail a series of changes in other components. An important characteristic of educational science is predictability, which is essential to ensure results can be controlled, particularly given human beings are the objects of research, with all the diversity in psychological and socio-cultural aspects this entails. Unlike many other sciences, results in educational research often require follow-up over long periods of time. These characteristics of educational research

require a systematic approach controlling for and measuring impacts over both time and space. Creating a university environment conducive to this research must take into account all of these varied factors.

A university environment conducive to educational research requires combining these various components and factors in close relation as shown in Figure 1.

Structure of the environment of educational research can be shown as in Figure 1.



**Figure 1: Environment for conducting educational research in a university of education**

The research environment has two main parts – internal and external.

The internal environment consists of elements relating to the researcher, including the research objectives, content, methods, means and resources available to the researchers. The objective governs the content, methods, means, resources and research results. These factors depend on the capabilities, strengths, experience and research conditions of the researchers.

The external environment includes educational management officials; senior lecturers, scientists and experts in educational research; co-workers and team members participating in the research; university lectures and learners; the needs of the beneficiaries of the research results in society, including education and training; and the socioeconomic, scientific and technological environment. Each component, with many sub-components, affects the internal environment of the researcher differently. Based on their effects, we can divided the external environment into three sub-environments: the conditional effective environment (educational management staff; senior lecturers, scientists, research experts; co-workers, team members); the required effective environment (university lectures, learners; needs of the beneficiaries of the research results in society); and the effective environment, which is both conditional and required (the socioeconomic, scientific and technological environment).

The educational management staff affects researchers through policies, regulations and rules. These factors can be institutionalized to strengthen management, requiring researchers to voluntarily transform the external environment into the internal environment, creating incentives for research.

Senior lecturers, experts, and leading scientists affect researchers through their capability, skills and research experience. Through consultation, guidance and organization, specialists create the most favorable external environment for conducting research. To benefit from this environment, the researcher must be self-motivated and an active learner.

Colleagues and research team members are both supporting and cooperative agents, and a factor in creating healthy competition and incentives for research as well as developing research capacity. By sharing experiences and finding ways to solve problems together, collaboration creates a research community and creates an environment necessary for developing research capacity.

Students benefit from the research results being incorporated into lectures. Scientific research allows for lectures with high scientific content. Experienced lecturers can then help students approach and solve problems through self-study, foster learner attitudes, enhance educational and scientific research abilities, and improve the quality and effectiveness of training.

The socioeconomic and scientific environment enables researchers to develop the internal research environment as well as sets out requirements and internal environmental regulations.

Whatever the nature of the specific sub-environment and its effects, the overall impact of the external environment is to support, facilitate and set out the requirements for research. If researchers create a strong internal environment, they can use the external environment to their advantage. Conversely, if the internal environment is not well prepared, the external environment is wasted.

### **SOLUTIONS FOR CREATING AN ENVIRONMENT CONDUCTIVE TO EDUCATIONAL RESEARCH IN A UNIVERSITY OF EDUCATION**

Measures can be taken to control and adjust each factor in the internal and external environment, making them more conducive to education research. From the analysis of the structure of the research, we can identify a number of solutions to build an environment of educational research in pedagogic universities as follows:

#### **Solutions to improve the managerial, organizational and fostering environment**

- Organizing training workshops for improving the research capacity of lecturers.
- Construct a legal regime so that the development of educational research is not the task of an individual, but the overall development strategy of the university, the common task of each unit (department/faculty). In particular, the faculties and senior lecturers must lead staff in fostering and promoting the scientific research capacity of lecturers. Faculties must organize professional activities (including seminars and special talks on teaching and conducting research) to foster and enhance the research capacity of lecturers.
- Promote cooperation and scientific exchanges between teacher training universities and intensify collaborative research programs on topics in educational science that have regional and international implications.
- Institutionalize the social requirements of scientific research results and enable lecturers to apply research findings to teaching programs or publish books for the public.
- Encourage and enable lecturers to participate in educational research, consistent with their qualifications.
- Set up large scientific programs with branches attracting a large number of teaching staff.

- Combine scientific research with training graduate and undergraduate levels, facilitate graduate student involvement in research with lecturers and link master and PhD students' theses with scientific research.
- Require young teachers (aged 35 years or less) to conduct research (e.g., publish one paper in a scientific journal per year or conduct one research project every two years) and offer awards for outstanding achievements in order to encourage scientific research.
- Organize scientific conferences every year so that young lecturers have an opportunity to exchange ideas and publish in conference proceedings. Find and encourage young lecturers with strong research skills to participate in research, both within and outside the university. Provide funding to young teachers to study and/or conduct research at prestigious research institutions domestically and abroad.

#### **Solutions to enhance self-fostering activities of lecturers**

- Develop the scientific research capacity of lecturers. Help researchers to be self-motivated and enhance research capacity.
- Create clubs at the university that allow researchers to interact, cooperate and exchange ideas.

#### **Solutions to facilitate conducting research**

- Build and develop facilities to better serve research and teaching.
- Create a friendly, democratic and equitable environment, with open and transparent regulations that provide the basis for promoting self-discipline and an awareness of community responsibility.

### **REFERENCES**

1. Educational Law (revised) 2005, Education Publishing House, 2006.

## Technology Transfer to Communities through Knowledge Management in Community Action

Gunt Intuwong

Dr., Technology Program in Industrial Technology, Faculty of Industrial Technology, Uttaradit Rajabhat University, Uttaradit, Thailand

### INTRODUCTION

The industrial sector can access new knowledge and technology at low cost compared to other alternatives. When the educational and industrial sectors collaborate, joint research benefits both. Industrial enterprises can save on in-house research and development. Educational institutions conduct considerable research related to the industrial sector. External agencies grant research funds to university instructors and students. However, the research outcomes are not well disseminated compared to research on innovative inventions.

Developing innovative invention technology creates production value and market expansion. This can be done by technology transfer training through community participation, adding value to the research.

In this technology transfer training, researchers employed innovative inventions used by community enterprises as a tool for technology transfer. Community participation, through a knowledge management project, adds value to innovation, helping ends users better understand the uses and benefits of the new technology.

This study sought to introduce two new technologies – a peanut pod-picking machine and a cashew nut cracking machine – using knowledge management transfer and participatory action research through a knowledge management training project in Uttaradit Province, Thailand.

### METHODOLOGY

This participatory action research focused on the technology transfer process between the technology owner and users.

#### Data and Data Sources

Primary data were gathered from a field survey as well as interviews, focus group discussions and assessment. Secondary data were collected from documents, articles, and textbooks, including community participatory knowledge management.

#### Target Community Groups

The target group consisted of entrepreneurs in two communities in Uttaradit Province: Numrid and Jarim Sub-District. A peanut pod-picking machine was introduced to Numrid and a cashew nut cracking machine to Jarim. Twenty-five people were targeted in each community.

#### Research Tools

Research tools in this study included:

- A technology transfer process using knowledge management (community action)
- A pilot machine for demonstration

- Media for technology transfer
- A set of questionnaires for satisfaction assessment of the machine users
- Assessment forms to evaluate the training and technology transfer

### Data Analyses

Descriptive statistics (percentage and mean) were used for data obtained from the questionnaire. Content analysis was used for qualitative data. Results obtained from data analyses were developed into a model of knowledge management for business. The model obtained from the focus group discussions was used as a basis for the development and creation of the machine's value.

### Technology transfer process

A participatory action process was employed. This consisted of the research team and a group of machine producers. Their mutual training tasks consisted of five steps as shown in Figure 1.

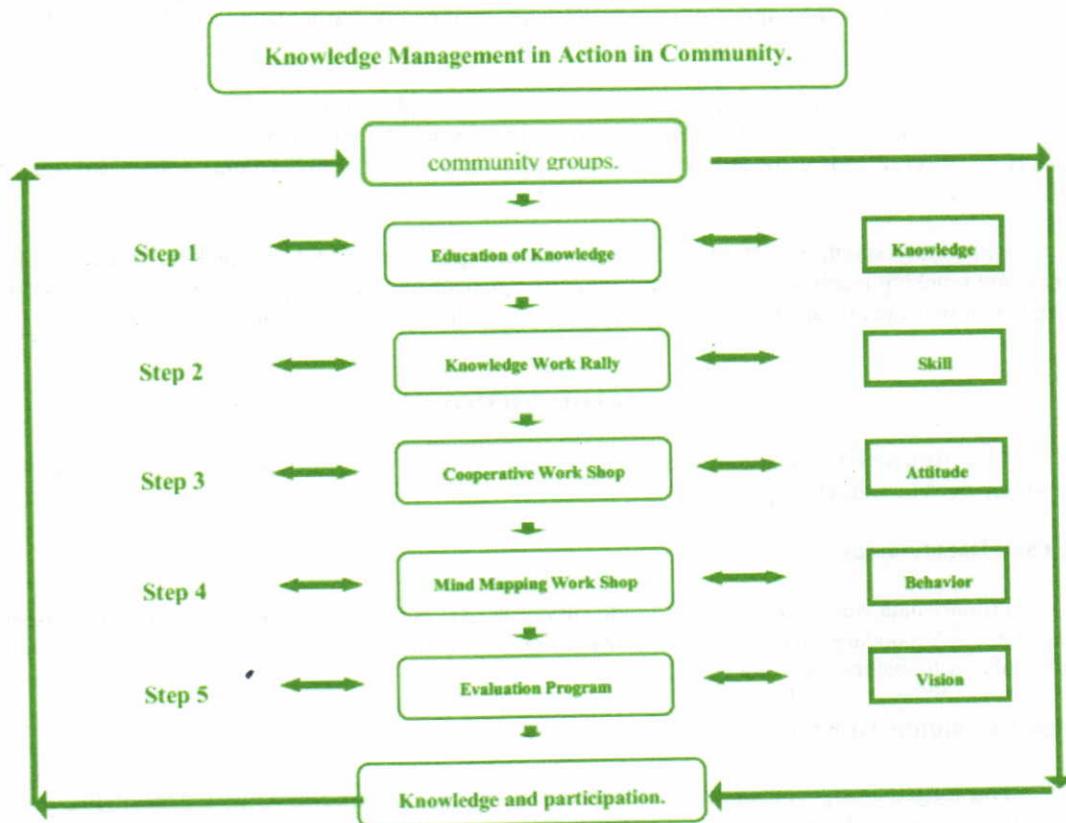


Figure 1: Participatory action process

Source: Gunt Intuwong (2011).

*Step 1: Education of Knowledge.* Discussions were informal, beginning with the presentation of the significance and objectives of the study as well as expected outcomes. Committee members and group members were invited to discuss problems and help create a guideline for technology transfer. The researchers asked permission to take pictures and record conversations.

*Step 2: Knowledge Work Rally.* Participants observed the functional principles of each machine and were trained in use of the machines.



**Figure 2: Participants are trained to use the machines**

*Step 3: Cooperative Workshop.* The focus group participants were provided an opportunity to express their opinions and brainstorm on the added value of the introduced machinery. They worked in groups, each given a topic on the role of community and entrepreneur participation in the value added of product innovation activities.

*Step 4: Mind Mapping Workshop.* The training participants discussed each issue of value added of product innovation activities for the community, encouraging them to participate and exchange ideas.

*Step 5: Evaluation Program.* The training participants assessed the project with the research team informing the participants of the assessment results.

## RESULTS

Based on the questionnaire, most respondents were female, 36-45 years old, with less than a bachelor's degree. They were satisfied with the project.

The results of the study on satisfaction with the knowledge management project (community action) for the peanut pod picking machine was based on four aspects: a high level for holistic project implementation (mean of 4.54, S.D. = 0.81); a high level for knowledge and competency of resource persons (4.45, S.D. = 0.76); a high level for training activities preparation (4.42, S.D. = 0.76); and a high level for readiness and implementation support (4.34, S.D. = 0.68). Overall findings showed a high level of satisfaction, knowledge and understanding (4.32, S.D. = 0.87).

The results of the study on satisfaction with the knowledge management project (community action) for the cashew nut cracking machine was based on four aspects: a high level for holistic project implementation (4.44, S.D. = 0.85); a high level for knowledge and competency of resource persons (4.35, S.D. 0.78); a high level for training activities preparation (4.33, S.D. = 0.76); and a high level for readiness and implementation support (4.24, S.D. = 0.68). Overall findings showed a high level of satisfaction, knowledge and understanding (4.42, S.D. = 0.87).

The results of comparing the satisfaction with the technology transfer by using knowledge management (community practice) found that most of the respondents were highly satisfied with the project implementation and their knowledge and understanding about the project (4.30, S.D. = 0.74). In detail, they were satisfied with project implementation (4.47, S.D. = 0.72); knowledge and competency of the resource person (4.40, S.D. = 0.70); 3); the preparation of training activities (4.39, S.D. = 0.77); and the readiness and supporting equipment (4.21, S.D. = 0.67).

## DISCUSSION

The yield management model obtained from this study is responsive to the needs of the community. The training project on knowledge management (community action) is an activity that conforms to the principle of value chain creation. It consists of five activities in which the value chain can be applied if the results of the study are used in actual situations.

The training session with its five steps discussed in the methodology is systematic and conforms to a study of Panit (2003) that knowledge management for society includes six activities as follows:

- Determining knowledge needed for workplace or organizational activities
- Seeking needed knowledge
- Improving, adapting or creating knowledge appropriate for the workplace
- Applying knowledge
- Noting experience obtained from knowledge exchange
- Noting knowledge source and core for later use

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## Community Capacity and Development of Small and Medium Industrial Enterprises in Thailand: A Case Study of Processed Wooden Product Entrepreneurs

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### ABSTRACT

This research analyzed the processed wooden product industry in Pongyangkok Sub-district, Hangchat District, Lampang Province, Thailand from two perspectives: 1) community capacity, particularly stakeholder participation, and 2.) entrepreneurial development. We used participatory action research – including interviews, forums, and conferences – and SWOT analysis. The research revealed community strengths in support of the processed wooden product industry of plentiful natural resources, convenient transportation, well-preserved cultural traditions, strong familial bonds, and the passing down of local knowledge across generations. The participatory research proposed establishing a handicraft and wooden products cooperative under the *Thip Chang* brand to drive entrepreneurial competitive capacity toward better business sustainability.

**Keywords:** Community capacity, Small and medium industrial enterprises, Processed wooden product entrepreneurs

### INTRODUCTION

Traditionally in Thailand, the highly educated have pursued professional employment while those with limited education have gravitated to entrepreneurial trades. Many of these entrepreneurial trades, including the processed wooden product industry in Lampang, are small or household level enterprises that use local resources to produce traditional products with a unique identity or cultural heritage. They have low production costs, relying on internal community resources and skills. They reflect local knowledge and provide a primary income source for many under-developed communities (Tangkittipaporn, J., 2005, p. 3). However, these entrepreneurs often lack the management and business background necessary to compete effectively in the open market against larger domestic and international competitors.

In terms of numbers of entrepreneurs, the processed wooden product industry is Lampang's third most important (Office of Industry at Lampang Province, 2010). In Lampang, Hangchat District has the most processed wooden product entrepreneurs. They primarily produce wooden furniture – including tables, chairs and beds – that are made and shipped as ready-to-assemble, for easy transport. The industry currently faces a range of obstacles: out-of-date government regulations, constant labor force movement, price cutting for fast sales, limited product variety, lack of product development, and lack of coordination among entrepreneurs. The community also lacked skilled workers for polishing and painting. Most of the local entrepreneurs require government support to build networks, add value to their products, conserve energy resources during production, and ensure business sustainability.

To help address these problems, this research:

- Analyzed the community capacity in Pongyangchat for supporting the processed wooden product industry.
- Identified directions for further developing this entrepreneurial sector.

### METHODOLOGY

Participatory action research – including interviews, forums, and conferences – was used, along with data analysis. The sample population comprised 100 processed wooden product entrepreneurs (30-40 households) and related stakeholders in Pongyangchat Sub-district, Hangchat District, Lampang Province, Thailand. The research required one year, from initial surveys to disseminating the research findings with the community.

#### Conceptual framework

From the participatory discussion with relevant stakeholders, the following conceptual framework was developed:

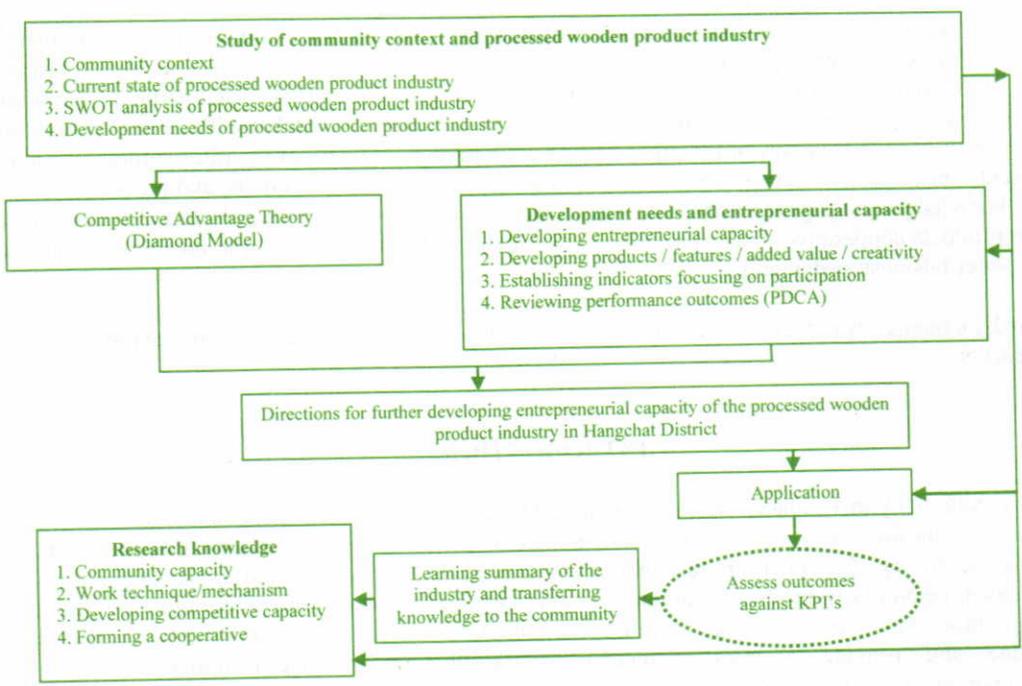


Figure 1: Conceptual framework

## RESULTS

### Current community capacity

From the participatory community forum to assess the community context and capacity for supporting the processed wooden product industry, the following was learned:

- The required natural resources were plentiful and the community was knowledgeable and involved with natural resource and environmental conservation.
- Transportation routes were sufficient within the district, with easy access to the main highways, including Highway 11 (Chiang Mai – Lampang) and Highway 1034 (Hangchat – Kokkha).
- Land was expensive, given its suitability for agriculture as well as industry and easy access to the major highways.
- The community was a peaceful residential area with no congestion. It offered a stable social, cultural and economic location with a good community administration system.
- The community promoted valuing and preserving its cultural identity, and as a result had well-preserved traditions.
- The community provided scholarships for members to pursue self-development and education.
- Residents, government officials, and the private sector participated in community projects and religious and social events.
- The community leaders were strong and well recognized by the residents. This in turn created harmony within the community and accountability across households, organizations and the society as a whole.
- Familial relationships provided strong support, unity and bonds within the community and across generations.
- Local knowledge was passed down across generations.

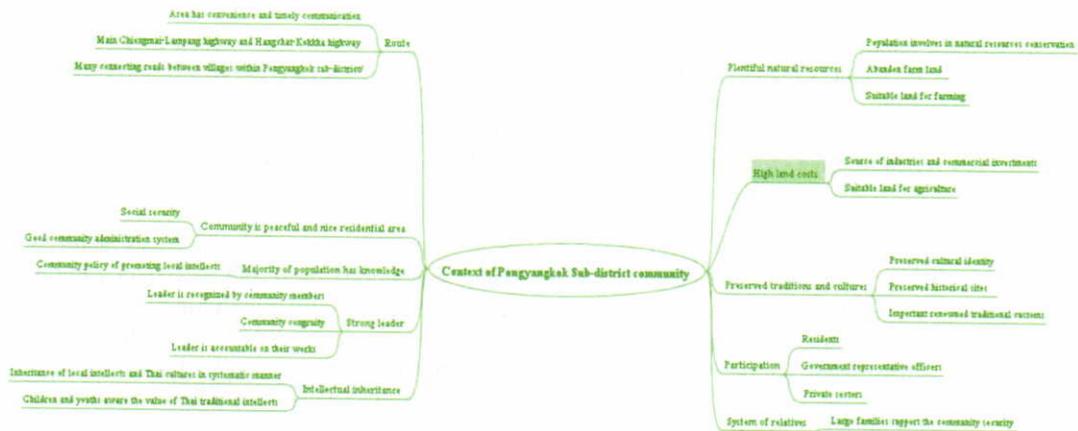


Figure 2: Community Context in Pongyangkok

## Status of processed wooden products industry

The survey of the processed wooden products industry revealed three types of industries: household, small and medium (Table 1).

**Table 1:** Operational conditions of the processed wooden products industry in Pongyangkok

Size	Conditions of industry
1. Household	<ol style="list-style-type: none"> <li>1. Produce small quantities to order</li> <li>2. Small investment using private funds</li> <li>3. Buy raw materials from the community and nearby provinces (wood from Jack Fruit, Longan, Samanea Saman, Mango, Leucaena, Eucalyptus, Maceca, Padauk and Red Cotton)</li> <li>4. Production dependent on diligence and commitment of household labor</li> <li>5. Customers mainly within the area or nearby provinces</li> <li>6. Products are varied using traditional processes</li> <li>7. Knowledge and skills passed down generations</li> </ol>
2. Small (SMEs)	<ol style="list-style-type: none"> <li>1. Focus on product differentiation</li> <li>2. Sell products regionally and nationally</li> <li>3. Laborers from outside the family (primarily Burmese and Laotian workers)</li> <li>4. Raw materials sourced from factories (timber mills) and household industries</li> <li>5. In-process raw materials often sourced from household industries</li> </ol>
3. Medium (export factory)	<ol style="list-style-type: none"> <li>1. Variety of product lines and continued design development</li> <li>2. Sell products domestically and internationally</li> <li>3. Mass production</li> <li>4. High-efficiency machines and equipment</li> <li>5. Large labor force (primarily Burmese and Laotian workers)</li> <li>6. High capital investment from private funds and financial institutions</li> <li>7. Quality products with a high standard</li> <li>8. Use a variety of raw materials</li> </ol>

Two to three hundred households in Ban Jum village of Pongyangkok Sub-district participated in the processed wooden products industry – primarily by accepting work orders from the export factories and producing pieces at home (household industry) with their own machines and tools. For these households, this was their primary income source. They produced tables, chairs and other processed wooden products with an average monthly income of THB 15-20,000 (Interviewed Mr. Maitri Pradit on 25 September, 2010).

Skills were handed down from generation to generation. Many started working in small factories in the processed wooden products industry and then with their experience, skill and sufficient capital, started their own business. Most borrowed from the Bank for Agriculture and Agricultural Cooperatives (BAAC) to purchase equipment and tools. Most started with processed wood from within their families and then accepted orders from middlemen by processing from big logs. Subsequently, they processed from wood scraps, selling the sawdust to merchants and leftover scraps of wood to charcoal factories (Interviewed Mrs. Nuch Tandee, 2012).

Another type of entrepreneur only processed high-grade “A” wood and sold through merchants in Chiang Mai Province. Their remaining small pieces of woods were sold to the small processed wooden product entrepreneurs within the villages to be further processed into wooden products. These high-grade entrepreneurs sourced their own wood, primarily Samanea Saman, from Mae Prik District in Lampang Province and from Phrae Province, during the dry season when transport was easier (Interviewed Mrs. Krisana Keenark, 2012).

The processed wooden product entrepreneurs supported reforestation. While the types of wood varied, including Jack Fruit, Longan, Mango, Leucaena, and Eucalyptus, the majority used Samanea Saman and Red Cotton for their good wood texture and abundance.

Pongyangkok had 155 processed wooden product enterprises, in 7 of its 15 villages (Table 2).

**Table 2:** Processed wood product industries data in Pongyangkok

Village	Type of industry	Number of factories / households
Moo #1	Industrial Factories (Parawood/Pinwood /Sonwood)	3
Moo #2	Household Industries	5
	Industrial Factory (Eel Li / Siriwat)	2
Moo #5	Household Industries	6
Moo #6	Timber Mills	10
	Household Industries	3
Moo #7	Timber Mills	57
	Household Industries	23
Moo #8	Household Industry	1
Moo #12	Household Industries	4

Source: Chief of Villages Seminar Forum; 7 Villages, 155 Wood Industries

The Pongyangkok community mostly followed His Majesty the King of Thailand's Sufficiency Economy Philosophy as guiding principles: (1) local intellects to global, (2) self reliance and creative thinking and (3) developing human resources with the capacity and integrity to uplift themselves for a better standard of living for the community by producing or managing available local resources as quality products with added value, with an identity representing community cultures and able to distribute to both internal and external markets.

The processed wooden product industry has been operating in the area for over 100 years (Figure 3). But during this time, the enterprises have worked independently of each other and the distribution channel was limited to an existing customer base. In addition, the industry, while utilizing local traditions and resources, has not developed new products, applied modern marketing techniques, nor analyzed consumer behavior. The industry has relied on low price products and producing assembled parts for other industries elsewhere.

**Figure 3:** The processed wooden products industry

### SWOT analysis of processed wooden product industry

The SWOT analysis of the processed wooden products industry in Pongyangkok can be summarized as follows (Table 3):

**Table 3:** SWOT analysis of processed wooden product industry in Pongyangkok

Strengths	Weaknesses
<ol style="list-style-type: none"> <li>1. Entrepreneurs strengths were varied and different</li> <li>2. Entrepreneurs were well recognized by community and owned business with strong finances</li> <li>3. Strong group leaders and full participation within group members and community</li> </ol>	<ol style="list-style-type: none"> <li>1. Entrepreneurs lacked operational management knowledge</li> <li>2. Short term operational plan</li> <li>3. Low profit as no value added products</li> <li>4. Doing business isolated from each other</li> <li>5. Lack of engagement among similar industry</li> <li>6. Processed wood impacted environment</li> </ol>
Opportunities	Threats
<ol style="list-style-type: none"> <li>1. Available markets: retail, mobile sales units and wholesale to other provinces throughout the country</li> <li>2. Production: assemble parts for wholesale and high quality products up to customer standards</li> <li>3. Operation: developing skills and professionalism among members</li> <li>4. Products: optional diversification</li> <li>5. Local office (municipal): supporting equipment and tools</li> </ol>	<ol style="list-style-type: none"> <li>1. Limited capital: leading to no cash flow</li> <li>2. Raw materials: seasonally high costs</li> <li>3. Raw materials: shortages in certain circumstances</li> <li>4. Competition: competition within community in selling wood at cut rate prices</li> <li>5. Meeting: Some members of industry group did not have time to join the meeting with research team</li> </ol>

Based on the above SWOT analysis, the researchers and community team (local officials, networking group, and industry members) jointly identified solutions for the processed wooden product industry in the Pongyangkok community. The group agreed that establishing a cooperative was of critical importance. A cooperative would help the local industry members to:

- Negotiate better prices for raw materials from other areas
- Better manage production costs
- Decrease production time
- Shorten delivery time
- Prevent transport damage
- Produce higher quality products
- Build an entrepreneur network within the community

These benefits would enhance competitive capacity over the long term.

The group sought to establish a cooperative: The Handicraft and Wooden Products Cooperative *Thip Chang* Limited. The group discussed the positive and negative aspects of establishing the cooperative.

The positive aspects included:

- Group investment came from membership shares, which members could decide to increase, withdraw or borrow from the cooperative under the group described regulations and conditions.
- The cooperative network consisted of member entrepreneurs in the 13 villages of Pongyangkok.
- The cooperative would increase the capability of the industrial group and strengthen the job security of group members.
- Enlarging the production capacity to include the assemble part production (wholesale) and quality products to meet customer standards.
- Expanding the marketing to cover retail, mobile sales units and wholesale across the country under the handicrafts and wooden products cooperative *Thip Chang* system.

The negative aspects included:

- Limited capital investment to cover the processed woods and occasional lack of long-term cash flow investment.
- Seasonally high costs of raw materials resulting in shortages.

The *Thip Chang* Cooperative would help to:

- Promote economic and social benefits of group members through self-reliance and group support.
- Promote and expand the processed wood industry as household professions.
- Promote the knowledge of industrial production in order to develop a profession that offered a secure source of income and produced quality products.
- Procure required production equipment and tools for members.
- Secure markets and distribution channels of processed woods for members.
- Gather products from members for market sale distribution.
- Provide loans to members, including supporting cash flow needs.
- Establish a source of funds for members at low interest rates.
- Receive cash deposits from members to help save as a source for financing cash flows.
- Promote fringe and welfare benefits for members and family, e.g. educational scholarship for children and members.

The membership enrollment fee consisted of the application fee of THB 100 per person and a minimum cooperative share of THB 10 per share, with a maximum purchase of 100 shares per member.

The researchers then organized training for the processed wooden product industry entitled *Principle, Philosophy and Methodology in Cooperative Establishment*, providing the background required to establish the *Thip Chang* Cooperative, led by Mr. Piyanun Sakorn of the Cooperative Office, Lampang Province. Creation of the cooperative will help the processed wooden product industry in Pongyangkok become more competitive over the long term.

### ACKNOWLEDGEMENTS

The research team would like to express sincere appreciation to the Administration Committee of Lampang Rajabhat University for providing financial support.

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## **Promoting Sufficiency Health: Case Study of Lab Lae District, Uttaradit, Thailand**

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### **ABSTRACT**

The purpose of this study was to: 1) investigate the activities and factors relating to health promotion in three districts of Uttaradit Province and 2) find appropriate guidelines for health promotion and network building. Data were collected through questionnaires, in-depth interviews and group discussions. The collected data were analyzed by frequency distribution, percentage, mean and standard deviation, while the descriptive data were grouped and interpreted in line with the study objectives.

**Keywords:** Health promotion, Sufficiency health

### **INTRODUCTION**

In May 2006, flash floods and mudslides struck three districts (Lab Lae, Muang and Tapla) in Uttaradit Province, affecting 214 villages with 128,800 residents. Thirty-seven thousand houses were destroyed, with a value of 243 million Thai baht (Department of Prevention and Lessen Public Disaster, Ministry of the Interior, 2549). The disaster had wide ranging effects on the residents and the local ecology, economy and sociocultural environment. With the complete destruction of some of the agricultural land, many residents lost their livelihood. Following the disaster, some of the displaced remained in resettlement areas set aside by the government, while others have returned to repair and rebuild their homes. For the locals, the health effects were both short and long-term, affecting four dimensions: physical, spiritual, social and psychological. To address these health concerns, a health promotion project was launched (Persit Khamnuansil, 2544).

This researcher was interested in developing a sufficient health promotion pattern for residents suffering from flash floods and mudslides. This pattern should help fulfill their needs and keep a balance of physical, mental, social and spirit (or wisdom). This pattern should include team building for experience and an exchange of ideas among the people, community leaders, stakeholders and policymakers relating to health promotion. The pattern should encourage them to share understanding and attitudes for creating stronger health promotion program networks to strengthen residents' self-reliance for healthcare.

### **METHODOLOGY**

This study was conducted in six disaster-affected areas of Lab Lae District, Uttaradit Province: Maepoon Sub-district, Failuang Sub-district, Chaichumpon Sub-district, Sripanommas Municipality, Nanokkok Municipality and Huadong Municipality of Lab Lae District, Uttaradit Province, Thailand.



This study classified the population into two groups: affected families and key informants.

**Affected Families:** In the study area of four sub-districts and two municipalities of Lab Lae District, 18,508 families suffered from the flash flood and mudslide disaster of 2006. A multi-stage cluster and systematic random sampling technique was applied to select a sample of 400. Those selected for the sample had to meet the following criteria: suffering family representatives older than 15 years, literate, currently living in Lab Lae District for more than 6 months and willing to cooperate with the study.

**Key Informants:** The key informants were divided into four sub-groups:

- Family household leaders suffering from the disaster: youth leaders, Buddhist monks, aged people and housewives.
- Community leaders: village headmen, village committee members, health volunteers.
- Community stakeholders: staff of the local hospital, health center and health insurance office.
- Policymakers: high ranking administrators working in the Uttaradit Health Administration Office, Uttaradit Public Health Office, Lab Lae District Office, Lab Lae District Hospital, Lab Lae Public Health Center and Lab Lae Local Administration Office.

The data collection instruments consisted of questionnaires for the affected families and in-depth interviews, non-participant observation and group discussions for the key informants. Questionnaires were used to collect data from the 400 family representative samples. The questionnaires were tested using Chronbach's Alpha Coefficient with a 0.95 level of reliability. Guidelines were developed for the in-depth interviews. Non-participant observations were used with the in-depth interviews to crosscheck the data.

Additionally, the researcher reviewed relevant documents related to health promotion budgets, health promotion activities, sickness records, health promotion job results and community activities.

The collected data were analyzed using frequency distribution, percentage, mean and standard deviation, including grouping descriptive data responsive to the research objectives.

## RESULTS

### The Sample

The study sample was mostly female (75.0%), over 60 years old (29%) and living in the communities (72.5 %). Only 18 of the samples were local administrators, the aged, housewives and youths. Most finished primary school (76.5%) and were farmers (22.3%). The rest were employed as labor. Most (76.0%) earned 5,000 baht a month. Only 19.8 percent earned 5,000-10,000 a month. Most of them had unstable income (51.0%), but no debt. A large majority (82.2%) could acquire government health gold insurance cards, while 9.2% could access the social welfare insurance system. The majority (65.3%) had their properties secured from the disaster.

The vast majority of the sample (92%) received health promotion advice from health officers, with 81 percent receiving particular physical exercise advice and 67.5 percent learning how to prevent disease. Most of the sample (76.5%) learned health information from the village news towers; 49.8 percent learned from physicians, nurses and public health staff; and 48.5 percent attained information from seminars and other activities.

### **The factors affecting sufficiency health promotion**

Six factors affected sufficiency health promotion: personal, information system, health service system, health promotion policy, health promotion network and community leader network.

The personal factors relating to health promotion included: daily behaviors such as hand washing before eating (62.5%), staying healthy and controlling stress (55.5%), being open to new health ideas (52.3%) and interested in maintaining good health (50.8%). However, many indicated that they still needed better health information than currently received (48.8%), a larger variety of health promotion activities (48.3%), more financial support (46.8%) and more attention to building good health (45.3%).

The information system factor included sources of news and information for earning a living (49.3%), accessibility to data (48.5%) and healthcare and promotion available from mass media continuously.

For the health service system, less than half of the sample expected free services in sufficiency health promotion (45.5%) and disease prevention and health counseling for the elderly (41.3%).

The sample showed only moderate interest in health promotion policy. For example, 46.3 percent needed clear health policy, some opportunity to participate in healthcare policymaking (42.3%) and policy implementation (41.8%).

The sample also showed only moderate interest in the health promotion network. About half of the sample (50.3 percent) believed that health promotion could be exchanged through networks, while 48.8 percent needed to participate in building a health promotion network.

Approximately 50 percent of the sample believed that the community leaders were approachable and provided the opportunity for residents to establish a health promotion service in their communities. About 49 percent of the sample wanted their communities to be drug and disease free.

Of the six factors, the personal factor showed the strongest effect for building sufficiency health promotion ( $x = 4.49$ ). The community leader network was the second ( $x = 4.40$ ) followed by the health service system, health promotion policy and health promotion network, respectively.

### **Appropriate guidelines for health promotion management for sufficiency health**

In general, this study found that the study sample and all key informants agreed with the researcher that the community needed the continual provision of health. They needed urgent physical and psychological care along with rebuilding houses and occupational improvement. Sufficiency health promotion techniques were suggested for the villagers and community leaders

to help strengthen them for self-sufficiency in healthcare with proper health and medical care techniques. The suggested techniques included people and stakeholder participation, healthcare skill improvement, network development, and knowledge.

**People Participation:** The discussions and workshops among the key informants concluded that the management of sufficiency health promotion needs more precise participation from the community leaders, including senior sub-district headmen, village headmen, village committee members, public health volunteers, and stakeholders. This also included hospital staff personnel, sub-district health promotion officers, district health personnel, community development workers, as well as the people suffering from the flash flood and mudslide disaster.

**Healthcare Skill Improvement:** The sample respondents and key informants indicated that some activities focused on healthcare skill improvement should be given high priority for local residents. The following should be provided as a series of short courses, with the local or district health officers supervising:

- Using local herbs to treat disease; growing local herbs,
- Flood prevention,
- Growing plants in coconut shell as decoration,
- Building emergency rest rooms and mitigating pollution/waste,
- Preparing for evacuation at the critical time,
- Panic relief;
- Teaching basic first aid procedures and how to help the emergency patients;
- Network development on health promotion for sufficiency health promotion and care.

**Development of Community Networks:** The participants of focus group discussions indicated that a community network should be carefully selected for sufficiency health promotion activities, as there have been so many committees existing within each village. Existing committees have been established by various governmental and private organizations. With so many, the community could be confused about the roles of the various committees.

## DISCUSSION

A health promotion network should be newly established or rely on existing health groups or committees within each community, but link with each other as a sufficiency health promotion network. At a minimum, network members should include a community leader of each village (senior village headman and/or village headman), village committee members, public health volunteers, and disaster victim stakeholders such as health promotion hospital staff personnel of the village, hospital staff personnel, district public health staff, community development worker and local people representatives.

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## **Developing Herbal Production to Serve as a Community Attraction: Case Study of Nathong Village, Lao PDR**

Dr. Bounxom Sriharath

### **ABSTRACT**

The objectives of this research were to study: 1) the community context for herbal production and 2) the development of herbal product processing to serve as a community attraction in Nathong village, Vangvieng District, Vientiane Province, Lao People's Democratic Republic (Lao PDR). This research and development integrated both qualitative and action research methodologies, including in-depth interviews, brainstorming, focus group discussions, workshops and practical experience in processing the herbal products with community participation.

Through the action research, the community identified herbal products with potential and practiced producing the products.

### **INTRODUCTION**

Lao PDR is a predominantly rural country, with agriculture accounting for more than 50% of GDP and 80% of the rural labor force. Rural poverty is a significant problem, with rural development and poverty reduction an important long-term strategy of the Lao government.

Accordingly, this study focuses on one rural village, Nathong, in Vangvieng District, Vientiane Province, Lao PDR in an effort to study and develop herbal production to serve as a community attraction through: 1) studying the existing community context, including herbal production and 2) developing herbal production as a community attraction.

### **METHODOLOGY**

This study employs action research, with interviews, group discussion, workshops and community fieldwork. A workshop for creating herbal products was held on April 3, 2011. Participants included officials from Vangvieng District, the village headman, representatives of the Committee for Village Development, and 15 villagers. The researcher presented: 1) herbs for productive transformation, including herbal tea, dried herbs, powdered herbs, fresh vegetables and fruits for herbal drinks by boiling or pickling; 2) some products, including soap, conditioner, dish soap, shampoo, and pharmaceuticals for topical application (herbal balm, herbal water borneol, herbal shampoo, etc). Three experts from the National University, Faculty of Social Science provided practical demonstrations of making herbal products. These demonstrations included "recipes" and practice in producing a variety of products.

The field study data was interpreted qualitatively.

## RESULTS

### The Community

Nathong is a rural village, six kilometers west of the Vangvieng District municipality. Until recently, the village was accessed by raft on the Namsong River. Today, the village can be reached by bridge.

The village has a population of 648, of which 323 are women. They represent 123 families, living in 110 houses. Most (539 people) are Buddhist. Eighty percent of the residents are Lao Tai and the remaining 20% Monkamaire. Less than half (269) work, of which 116 are women.

The majority of working villagers are rice farmers, with orchards and cattle farming as secondary careers. The village also included employees, general officers, and entrepreneurs. Rice farming covers 125,647 ha, with average production of 3.8 ton/ha.

Pukam Cave is the most popular tourist attraction in the village, for both domestic and foreign tourists.

### Local Herbs

In the village, herbs are used to treat a variety of symptoms and ailments associated with the various systems in the body, including respiratory, digestive, urinary, neurotic, muscular, skeletal, and skin along with treating venomous bites. The community works with herbs in four key processes: acquiring herbs, washing herbs, attending workshops for relevant knowledge, and herbal product processing practices. Their community herbal products include: mixed herbal balls, liquid balms, herbal balms, multipurpose herbal liquids, herbal shampoo, fabric softener, dishwashing liquid and mosquito repellent.

### Process for Developing Herbal Production in Nathong

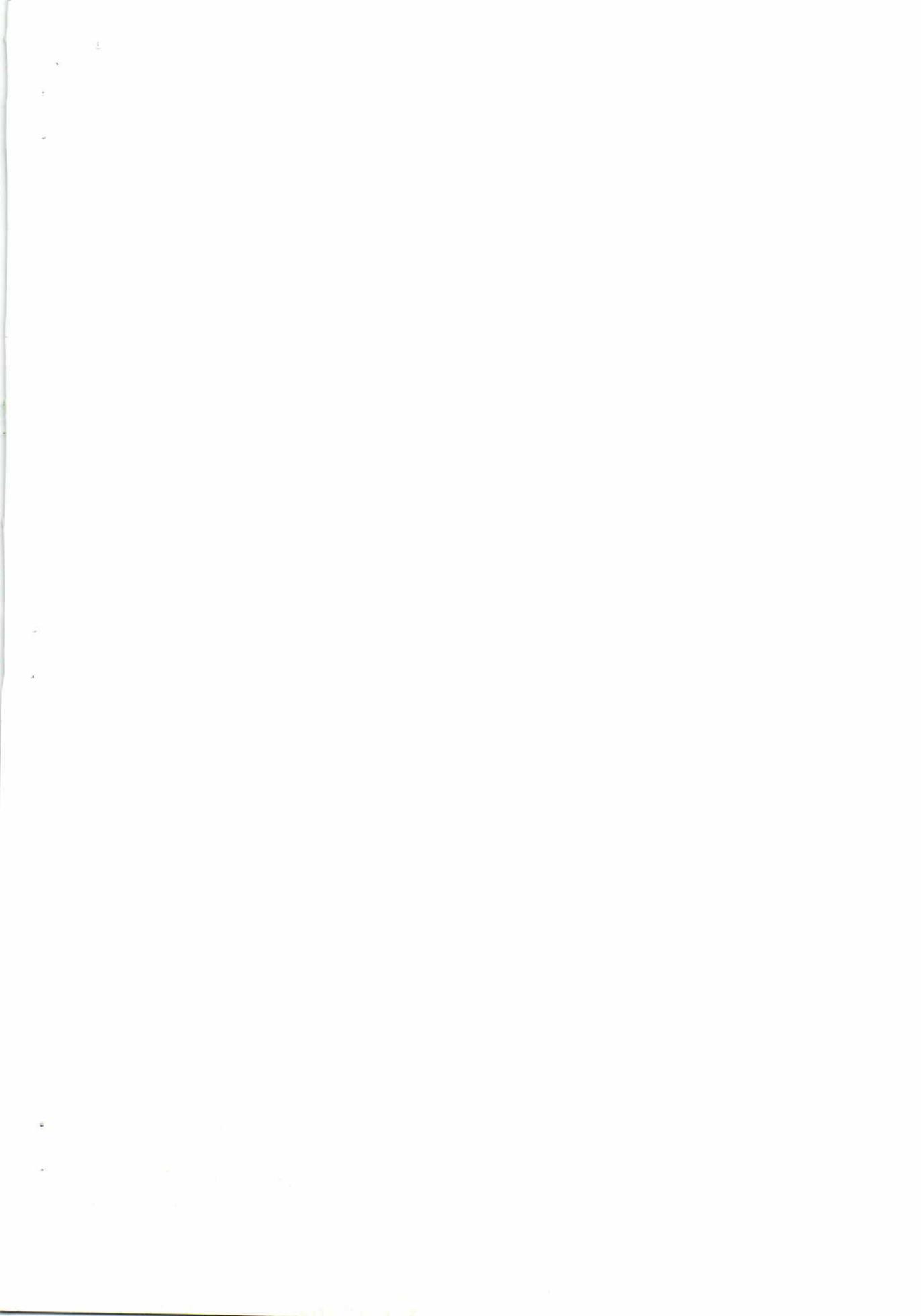
In the group discussion, the Nathong production group agreed to produce seven herbal products: compress, water balm, balm, shower cream, shampoo, dish soap and fabric softener.

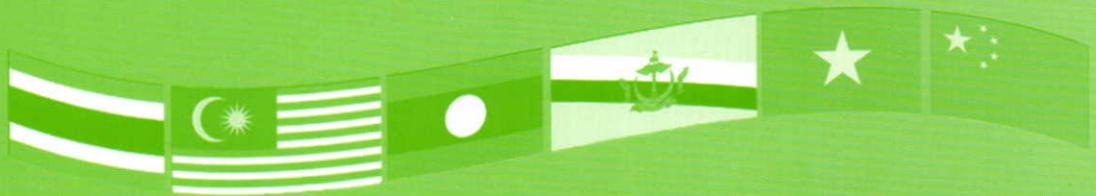
The community practiced herbal transformation by doing and learning by themselves. After the workshop, they practiced community herbal production of herbal water balm, *yanang* leaf herbal shampoo and herbal dish soap.

## DISCUSSION

The research helped develop herbal production in a local Lao village through group discussions, workshops and practical experience. The action research helped identify local herbs for use in developing local herbal products for potential sale, and practiced producing the products. The products identified were herbal water balm, *yanang* leaf herbal shampoo and herbal dish soap. Nathong's herbal products do not consistently achieve the quality standards of the neighboring countries. However, there is potential for higher quality given that agriculture products in Laos are less exposed to chemicals than in neighboring countries.







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