

WISDOM MANAGEMENT OF POLYCULTURE IN HOUSEHOLDS AT BAN NA NGAE, NA RENG SUB-DISTRICT, NOPPHITAM DISTRICT, NAKHON SI THAMMARAT PROVINCE

¹Punya Lertgrai, ²Lunjakon Nillakan, ³Nilrat Navakijpaitoon, ⁴Kittaporn Sae-Ngae Sai-Jun

ABSTRACT

The objective of the study is to explore the learning process and develop wisdom management of polyculture in the household at Ban Na Ngae, Na Reng Sub-district, Nopphitam District, Nakhon Si Thammarat Province. It is a research and development model using qualitative research for gathering and analyzing data then bring to synthesize; lesson learned and develop. The study found that the learning and development process using wisdom management of polyculture in household caused by a learning person at Ban Na Ngae community about rice farm and vegetable garden. By experimenting with mixed farm based on natural circumstances and developed to polyculture in an area around the house and planted in pots that are suitable for the economic and social surrounding in the community.

Keywords: Learning process, wisdom, polyculture management

Introduction

Wisdom management of rural farmers plays a very important role in the head of a family who is a breadwinner and family members and to the quality of life of people in the communities. The relatives and intimate neighbours are the primary members of the community of Ban Na Ngae community, Na Reng Sub-district, Nopphitam District, Nakhon Si Thammarat, which is a community whose main lifestyle-related to farming and orchards. The unstable product caused household economy problems; therefore, Ban Na Ngae try to learn from the wisdom of previous generations to be a guideline for managing lifestyle. Besides, relying only on the seasonal product also use wisdom management of cropping in households from the past, to learn and develop as an alternative to make extra money and become the primary food source for households throughout the year. They are learned by observing product from the forests and gardens based on natural systems of an area in each month and each season. Moreover, we learned by talking with the previous experienced person who was emphasizing to use nature as an essential capital for farming. Bring wisdom to develop into a model of innovation that conform with the local surrounding (Ellen Berscheid and Pamela Regan, 2005) combined with learning and developing the guidelines to use capital from nature as much as possible.

¹Faculty of Education, Nakhon Si Thammarat Rajabhat University.

²College of Art and Culture, Nakhon Si Thammarat Rajabhat University.

³Faculty of Education, Nakhon Si Thammarat Rajabhat University

⁴Department of General Education, Faculty of Science and Technology, Rajamangala University of Technology Srivijaya Nakhon Si Thammarat, Saiyai Campus.

Cropping and farming are seasonal activities chosen by a group of Ban Na Ngae as the main hope of growing rice and vegetable for consumption, and then the rest will be sold to increase income for the household. Reducing food costs and have extra income from seasonal fruit helps the overall quality of life of the household to be more stable and happier. Therefore, family members learn to adapt to their state of society and preparedness. They learn from experience combined with one's wisdom and those of neighbours by relying on past experiences, exchanging knowledge and opinions with multiple intellectual who are intimate. They are using judgments, feelings and common sense to learn past mistakes resulting in a careful decision to change the way of farming gradually. A small experiment was performed to check until confident and then expand the results by focusing on the wisdom model and surrounding that are mainly based on nature.

Self-learning of farmers at Ban Na Ngae resulting pressure from economic and social problems that require more money to live life. Seeking a way for productivity and increase income from seasonal orchards due to insufficient income. Thus, the head of family and community leaders try to find a solution by meeting, chatting and trying to find answers to these problems. This group of people leads to the group of learning person that talks and learn wisdom between each other often which lead to the concept of mixed farm management with nature-based thoughts, to reduce food expenses and increase the income of the household with rubber plantations and orchards that must be maintained throughout the year including garden management processes during the harvest season of each kind product that has almost all year round. One Tambon One Product (OTOP) deemed the second occupation from the cultivation of rice and vegetables to be used as food which considered as the main occupation, therefore, must have time and life management that is systematic and sensitive which will make every mission go well while solving the economic problems and increasing the quality of life in society. The research found that Ban Na Ngae does a mixed farm by using wisdom relying on nature is very interesting.

Objectives

To study the learning and development process of wisdom management of polyculture in households at Ban Na Ngae, Na Reng Sub-district, Nopphitam District, Nakhon Si Thammarat Province.

Research Questions

What are the context and factors affecting the learning process that leads to thinking methods and developing wisdom management of polyculture at Ban Na Ngae?

What is wisdom management model of polyculture at Ban Na Ngae?

Research Methodology

This research was a practice for research and development by using qualitative research to collect data and analysis then synthesize, lesson learned, using wisdom in development, study the changing and developing process of farm model for farmers in the target areas which has research procedures as follows:

Research procedures; study relevant documents for the research. The researcher studied from the thesis, research and related textbooks then synthesized to find study guideline as questionnaire, observation and informal and semi-formal discussion guideline to

understand the thinking, learning process of the target group (Gillian Symon and Catherine Cassell, 2012), the process of transferring concepts and knowledge occurred, the process of using one's own direct experience and wisdom of previous generations to learn and develop oneself, tried to learn for thinking, applying and developing a small experiment to create a model suitable for the natural circumstances in that area.

Fieldwork and data collection; conducted by studying and surveying the state of the area, study the social contexts related to habitation, livelihoods of households and communities in the midst of nature, natural resources in the area, physical and social characteristics of communities with non-participant observation and participant observation in all directions periodically then record the phenomenon, milestone, focus group interviews and focus group discussions, in order to obtain complete data in various dimensions (Ann R. J. Briggs 2012) of learning wisdom management of polyculture in households and applying academic ideas and theories to conduct research as a guideline for research design, research instrument, research process in determining research process which is divided into 2 phases as follows:

Phase 1: Study the context and learning process

Define data sources, namely, the area of Ban Na Ngae, Na Reng Sub-district, Nopphitam District, Nakhon Si Thammarat Province. The data collection method is a collection of data about the geographical surrounding and village's history by studying documents, interviewing seniors and relevant people in-depth, surveying and observing in all directions, single and group interviews, ex-post-facto approach. The conversations for interview sometimes would use photos from the past events or traces of existing phenomena (Paul D. Leed and Jeanne Ellis Ormrod, 2015) regarding farming in the past and present, including guideline for farm management in the future.

Phase 2:

The wisdom management development of polyculture in households of Ban Na Ngae which was conducted with an informal and semi-official meeting, individual in-depth interview to collect data and evaluate by analyzing based on CIPP Model to be a research practice guideline, then brought operating results processed and developed with the spiral model then synthesized results to create a system and academic summary. Data analysis; the researcher brought data that had been examined from the group discussion to organize categories and analyzed using concepts and theories to connect factors from existing data to various phenomena that occurred and then re-analyzed by holding a focus group analysis then concluding theoretical synthesis.

Research Instrument

The instrument that use to collect main data namely, observing 360-degree omnidirectional phenomena, individual and group interviews, focus group discussion and focus group analysis in order to obtain data from multiple sources and have complete and true data (Gordon Rugg & Marian Petre, 2007; Patwary & Rashid, 2016). Triangulation of 4 characteristics is data sources, data searching process, data searching theory and data searching methods (Ann R. J. Briggs 2012) to get the most truthful and most reliable data. The key informants had studied the target population who are outstanding learning

person, have a good quality of life, being a person who brings wisdom and experience to further developing, create new models suitable for area condition using theoretical sampling method and the experienced person about mixed farm management based on natural circumstances, community ecosystems and economic and social situation suitable for communities.

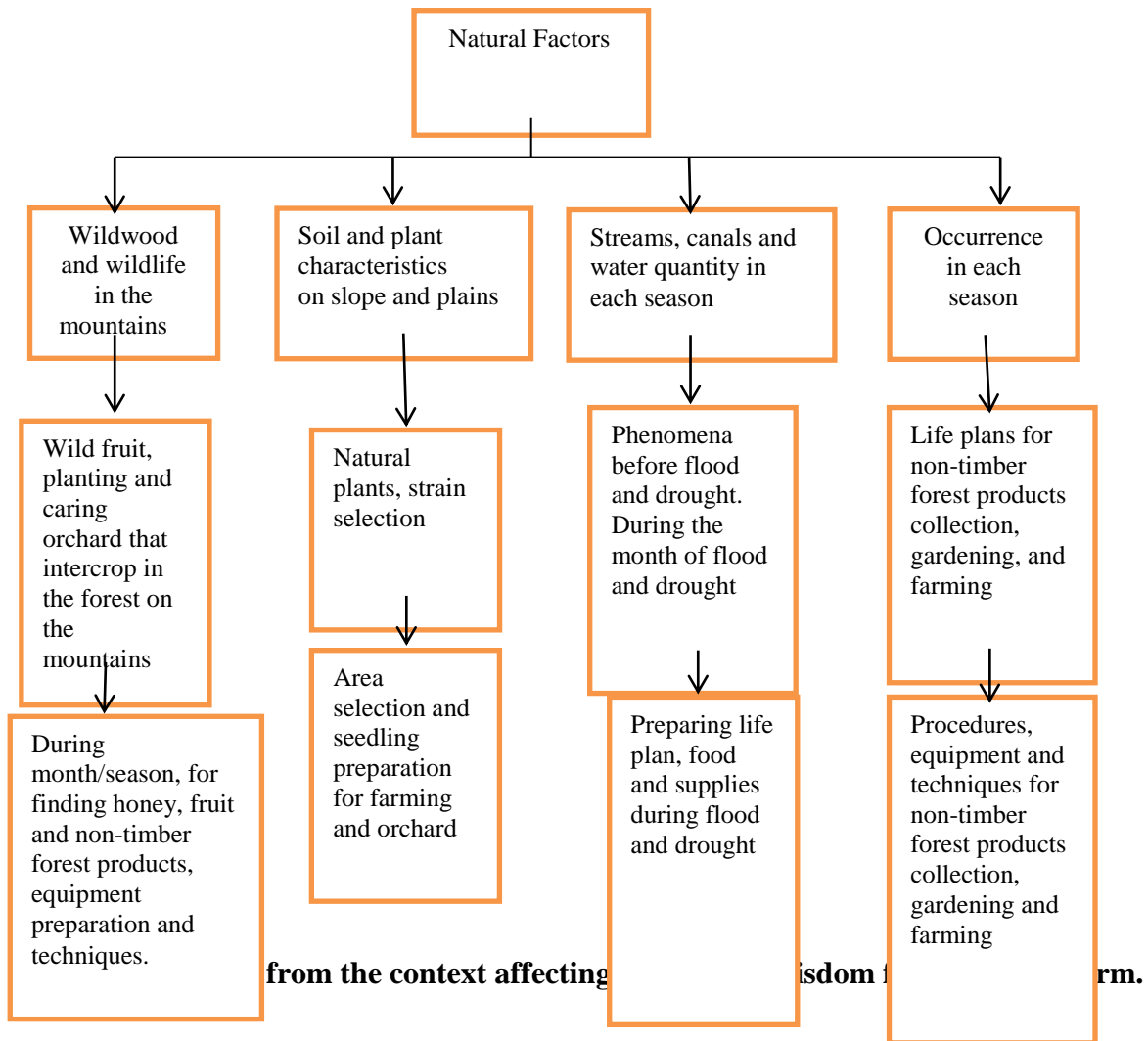
Data analysis

By using Peddler Model, the researchers brought results from the lessons learned in basic knowledge, from wisdom management of past farming and the development of mixed farm management model in households at Ban Na Ngae. It was using natural costs to organize the system based on the CIPP Model and grouping lessons learned from learning and participated in a small experiment which is a repeating process to make lesson learned by using the learning steps from Spiral Model that help to learn and develop ideas systematically. Action learning model, the researcher, uses the concept of self-directed learning to examine lesson learned from the format analysis meeting, learned from community and agriculture development specialist, problem analysis, thinking and examining for action planning & implementation, decisions on next step and reflection and evaluation. The researcher selected people who were key informants with experience in polyculture to be a group for the lesson learned.

Content

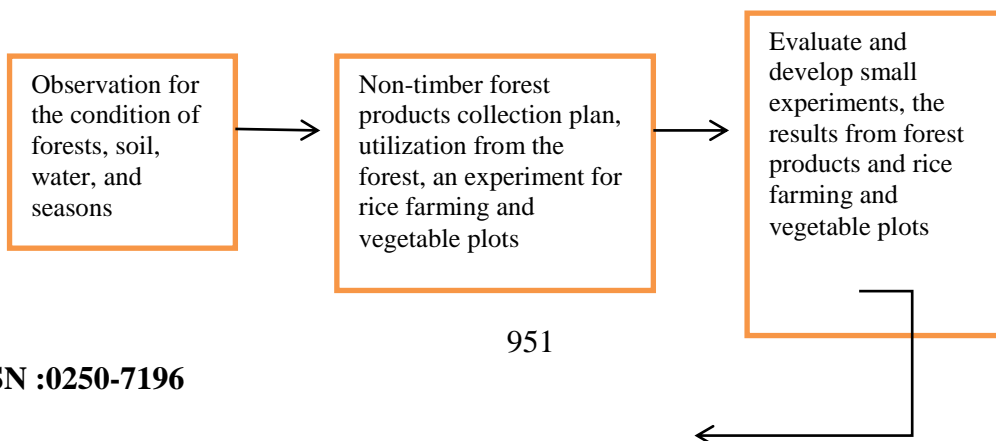
Found that the context and factors affecting the learning process that leads to thinking methods and developing wisdom management of farming at Ban Na Ngae were the establishments of community, by houses were distributed in the forest and mountains which far from the community. The community lifestyle is agriculture, non-timber forest products collection, work on the orchard, rubber plantation, farming and raising animals in the house. Therefore, the community has become a major economic unit that people in the community can self-reliant and their relatives, is an area with mountains, a forested watershed that is entirely natural forest, having a canal flowing through the village, having many wild animals and fruits. In the early days of the establishment of community, people have rich food, products from the forest that are conducive to develop as necessary equipment throughout the year.

Learning of people in the early days would use observation, checking the natural characteristics of forests, type of tree, leaves, wildlife, condition of the soil, water and weather in each month and each season, which is a relation to the natural circumstances lead to specify the period in each month of the year for non-timber forest products collection and utilization of forests during the heavy rainy months until flood and the light rainy months until drought, to plan time management and people in the household to suit activities of each season, including aptitude, the interest of each person. There are not many people who are trying to learn or being a learning person. Therefore, a learning person shall think, analysis and summarize as wisdom then transfer to other people who the most of them are relatives and being a senior caused the process of transferring knowledge and wisdom is convenient and intense to a group of intimate person.



Natural factors affected the lifestyle of people at Ban Na Ngae a lot. Therefore, they had to learn and adapt to the environment. The struggling and adjusting cause a group of learning person try to think and conduct a small experiment for learning, which the results from an experiment and product were generous to intimate persons, relatives and neighbours then transferred knowledge to other people and households within Ban Na Ngae. Thus, knowledge from wisdom is transferred to those around them, from generation to generation continuously.

The learning process at Ban Na Ngae is the effort of people or a group of learning person which has a conceptual model in education based on CIPP Model for searching alternatives for life that corresponds to the context surrounding.



Knowledge (wisdom) for
farming and mixed farm

Display the learning process to wisdom management of the mixed farm.

Four-step learning process based on Steffenbeam's concept (CIPP Model), even though it is a concept for project evaluation, but it conforms with the learning concept of a learning person at Ban Na Ngae which has the following steps:

1. Context evaluation (C) is an observation from learning that intensive and continuous to consider factors connected to happening, issues, and demands with the phenomenon that occurs under natural circumstances.
2. Creating plan or guidelines used to adapt or conduct activities for non-timber forest products collection or adjust to the right condition that is the input evaluation (I) which is critical thinking and considering that suitable for the adequacy of the resources and action plans to manage the area and organize activities to increase productivity.
3. The evaluation of small experiment and model development to extend results and process evaluation (P) that is an evaluation to find operation deficiencies which will be used as data for development, modifying, improvement to proceed in the next phase more efficiently.
4. Result summarizing: causing knowledge, understanding that can be applied and transferred learning from wisdom to intimate persons and neighbours further.

Learning from wisdom is hearsay and transferred learning method by observing the condition of trees, leaves, humidity, and natural water sources. It is learning from creating knowledge on oneself directly or learning from the wisdom of previous generations and experienced people causing knowledge and understanding of the main content (Panya Lertkrai, Maitri Chanthra & Wichian Thaichareon: 2018; Patwary, Roy, Hoque, & Khandakar, 2019; Nasrudin et al. 2018). Knowledge creation is a process of managing knowledge about forests and natural resources that bring to create a career and earn income to households from the fact that is a phenomenon which can keep those factual data as empirical data (Patcharee Thongrueang, 2018; Risso, 2008) that can access data as the same, but the meaning of those things will come from ideas of those people who have learned or acknowledged from that thing, which each person will give meaning or interpret based on their experience, own knowledge base. Learning from natural phenomena will create wisdom and data which is a part of ideas from their learning that means the learner will act or collect data by oneself and will not take data from hearsay or be a secondhand data from other sources.

If you need to learn by creating knowledge on oneself, you must be a person who is curious, energetic, enthusiastic to study and understand data, having knowledge systematically to the problems, obstacles and solutions for managing orchards in order to use natural resources for creating careers and earning income to household members bringing direct experience gained from learning about farming to develop to get more results than get from nature by bringing wisdom to learn and develop that will lead to the

development process of natural resource model management that provides both economic and environmental results that are consistent with the context of social and cultural in communities—developing the model monoculture to become a systematic mixed farm based on the theory of self-knowledge creation than can apply and transfer knowledge in the community.

The process of creating knowledge by transferring wisdom to learners with practical, learning from operations, experiencing real events that will occur while operating and take the actual phenomena into data then analyze until understand and access the knowledge from step by step with using the system management process for people to learn and practice by themselves. Conducting small experiments to think, analyze, and interpret various meanings by oneself and developing the person's potential to be a learner who can create knowledge for oneself. Small experiments are considered techniques that enable learners to understand the processes that occur, causing phenomena in many dimensions and perspectives (Kolb, 1984). Participating in the experimental process will stimulate to create concept and access to content that is explicit knowledge by oneself. Learning evaluation is an objective evaluation in a creative and flexible manner because this kind of learning evaluation is learning that the recipients have used their own imagination and ideas quite a lot (Panya Lertkrai, 2019; Huinink, 2012). The interests and expectations of learners combined with open expectations of the informant will be used as a guideline in the learning process by creating knowledge.

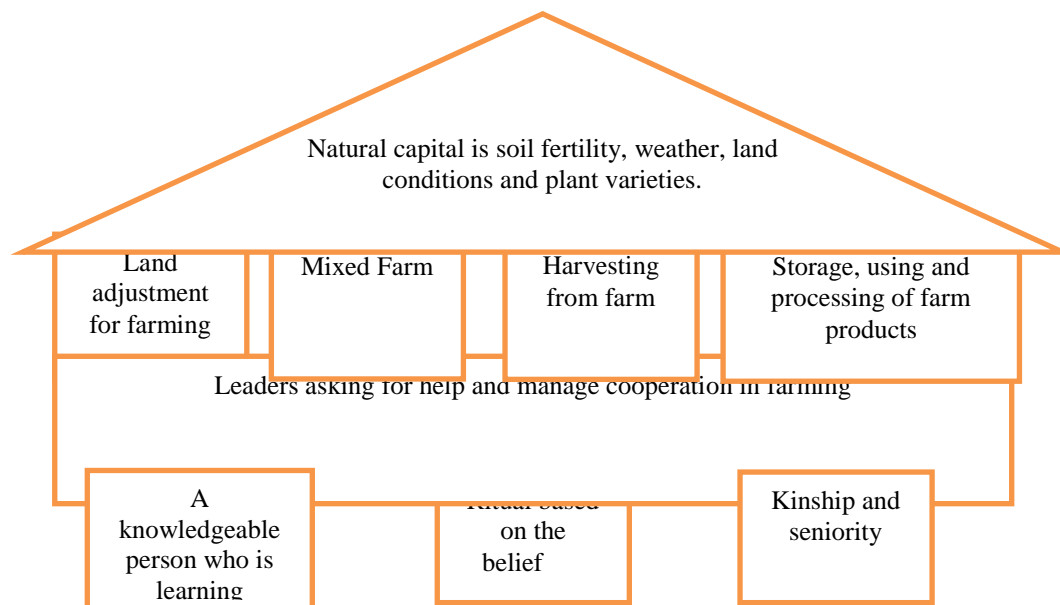
What is wisdom management model of polyculture at Ban Na Ngae?

Ban Na Ngae in 1957 located in the forest area on a mountain and has slopes which are rich in plants and animals. People can non-timber forest products collection and hunt animals. It is an area that provides sufficient lifestyle factors, but when there are more people, therefore, crop-farming and paddy-farming became the main activities. Wisdom management based on methods of crop-farming, paddy-farming and gardening are considered a daily routine. The forest was cleared for farming and developed into rice field or garden. An area at watershed or plains are used for rice field, and the slope is used for farming. Prepared land by lifting the groove into two lines and cropping many plants (3-5 kinds in the same hole) in the first line and crop banana between the grooves in the second line. As for the 2nd or 3rd year, will crop rubber or perennials, the first line is still cropping many plants as before along with non-timber forest products collection, hunting and handicraft.

The model of mobilizing labour is based on generosity in society by asking for help (help work all day without wages just feed lunch). It is mobilizing people to help with farming, along with learning and transferring wisdom among relatives and neighbours and grading the area to be bald for farming. Use long round wood to press the soil to be holes and drops 3-5 types of seeds into that hole then drown out the hole (one hole comprises rice paddy and other plants such as bird chilli, millet, eggplant and cucumber), this activity will be activated during March before entering the rainy season. The advantage of farming at the beginning of the rainy season is nature will help produce the product as expected to cause to have food throughout the year. Because lack of equipment and tools

caused to requires a lot of labour, therefore, it is difficult for adjusting forest areas to agricultural areas. So, villagers at Ban Na Ngae have to mobilize labour from people in their community for help, managing time and areas for maximum benefit. The wisdom management of polyculture caused by trying to think and act which leading to the wisdom of planting once but get many products.

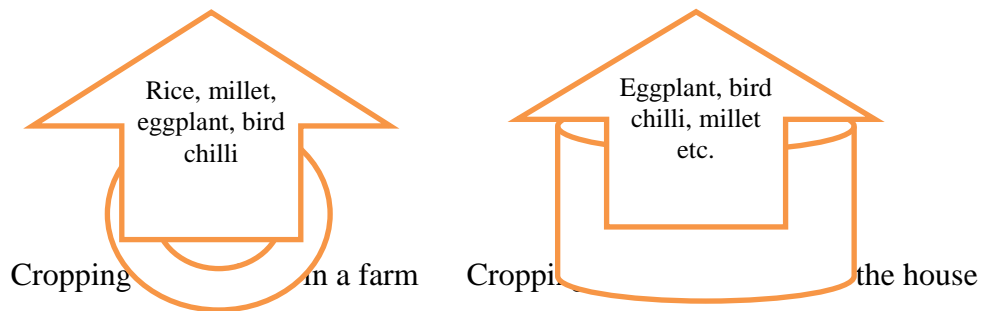
Three leaders of Ban Na Ngae are considered as a key for cooperation in farming because they are a centre of people who trust them as a knowledgeable person, experienced person and a learning person who have knowledge and understanding of activities to do together. People of Ban Na Ngae have belief and faith in Buddhism and respect holy things at Khao Tapan Cave in Ban Na Ngae area. Grouping to make merit at Wat Tham Khao Tapan where is considered as a centre for the soul, lifestyle and culture of community which create personalities for leaders that community members can trust and respect them based on folklore which is a practice by people at Ban Na Ngae who believe in seniority and the kinship system for each villager (Lunjakon Nillakan, 2018), causing a group of supporter had learned, received knowledge to become a guideline for managing household and participation in social activities of villagers as steadily.



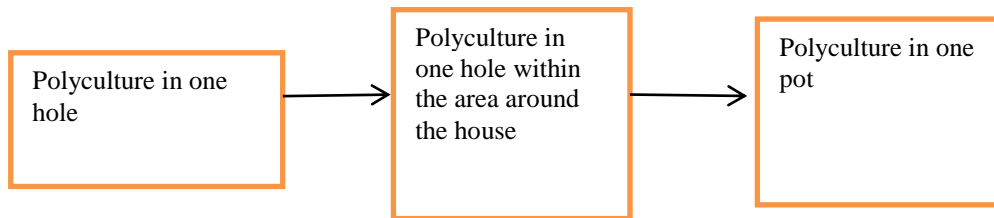
The chart displays wisdom management model of the mixed farm in households.

Participation in activities that are asking for help to cooperation in farming several times a year can be conducted until complete to the amount of all member households, resulting in learning and understanding in explicit knowledge about seedling, understanding in work planning, equipment preparation, farming factors which all activity participants will receive knowledge and understanding in farming, getting desired product, create the connection with people who are participating in activities continuously until each household has knowledge and experience (Alom, Patwary, & Khan, 2019).

There are more social changes, which can be seen from roads, electricity in the villages, more convenience resulting in the size of farming of the household being reduced to small size. By mainly focusing on rubber plantations, orchards, and group activities to increase income. But some households had changed to small-scale farming instead to reduce food expenses, change rice farming to mixed farm in the area around the house according to the philosophy of sufficiency economy. People of Ban Na Ngae found that monoculture will face problems with insects and plant diseases while also spend time to continuously provide water and fertilizer, in which polyculture in one hole found very few insects and pests and providing water and fertilizer are not difficult due to different plants need different fertilizer.

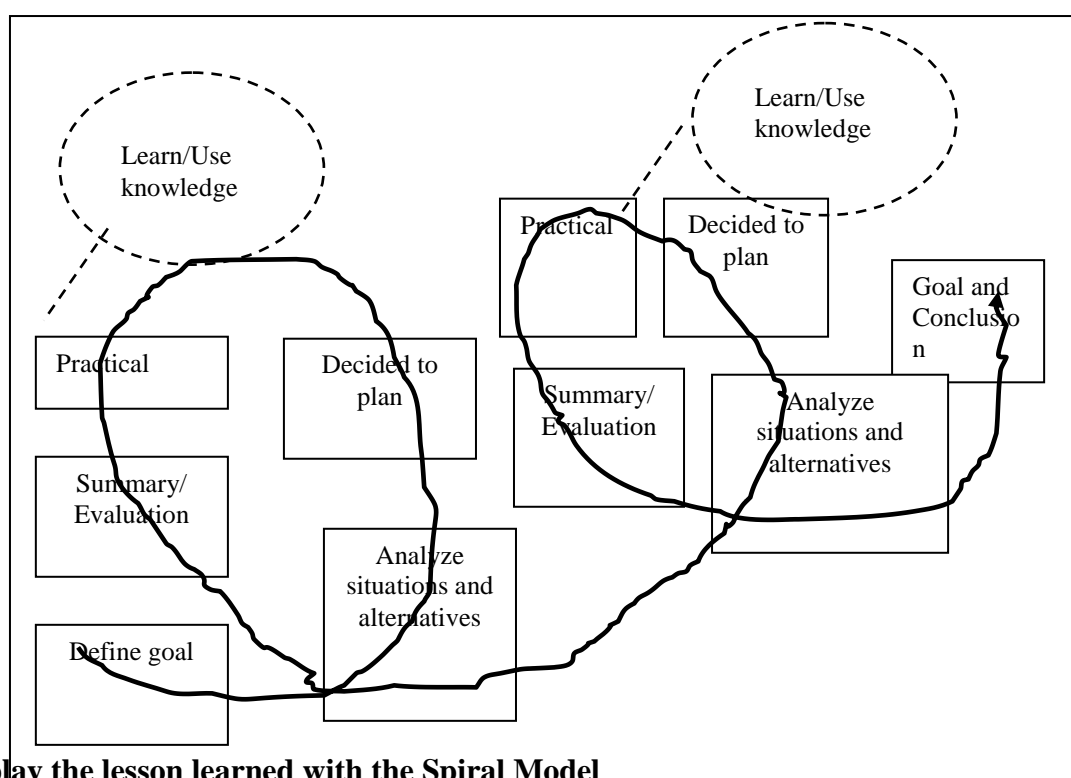


From the wisdom of farming adapted to polyculture in one hole within the area around the house to reduce household food costs and for sale, also developed polyculture in one hole into planting in pots that easy to take care of and can be used as souvenirs for relatives or guests as needs.



Display development model from polyculture to be polyculture in one pot.

Learning from wisdom and direct experience of a learning person leads to polyculture model in one hole or in a pot that is a development model along with Spiral Model, which is the process of the lesson learned that start with defining goal of farming activities which begin with monoculture which takes time, high cost and has many pests to become polyculture in the same hole due to it spend less in time and cost but gained many products which can be harvested continuously. When the context had changed causing thinking and analyzing the situation (Department of Community Development, 2006) to determine alternatives and make a plan to change from large-scale farming to polyculture model in the same hole within the area around the house, plants that crop together will grow and produce at different times and must be annual crops, ages of 2-6 months. After implementing the plan, shall follow up with observation because it is cropping in the area around the house. Therefore, it is convenient to care of and learn. Finally, summarize and evaluate the results or summarize the lessons that occurred that has achieved the goal yet or not yet. If it has not achieved yet, shall go back to analyze the situation, make a plan, take action and draw conclusions by continuing to achieve the desired goal (conform with the social and economic conditions of the community).



Display the lesson learned with the Spiral Model

Lesson learned from Spiral Model is another model that suitable for learning and developed into a model that can be used in action research and development, allowing researcher participants and a learning person have opportunities to learn and develop, create new knowledges which have academic value and useful for further development.

Conclusion and Discussions

Wisdom management of polyculture in household caused by the learning process of a learning person at Ban Na Ngae community about rice farm and monoculture, learn farm management from pest problems and lack of labour to be a mixed farm, learn natural circumstances by accumulate wisdom, then developed into polyculture that suitable for the economic and social environment in the community. Gathering and mobilizing labours by three leaders that is faith in community leaders who are a learning person, respect to the Buddhist belief and Khao Tapan Cave, respect and obey the seniors causing grouping for transferring knowledge to become convenient and powerful.

Community leaders are a learning person who considered a significant factor because they can gather people, being a mainstay in coordinating beliefs, relative system, and place importance to senior that people in the community respect, trying to adjust lifestyle to comply with natural circumstances. Develop and adopt a model suitable for the situation, learning new things in society and community economic trends, applying sufficiency economy that conforms with social conditions, analytical thinking and planning for evaluation, bringing knowledge from existing community wisdom to further develop, then synthesize until it is model that is consistently appropriate to the context

(Maitri Intreaya: 2018; Patwary, Omar, Tahir, 2020). Having leaders who are a learning person will cause social movement processes that can be developed into a management process to benefit groups of people to create a stable and sustainable community (Azim, Tarannum, & Patwary, 2017).

Recommendations for Practitioners

1. Organizations and agencies should support community leaders as a learning person and encouraging to develop wisdom management that suitable for the environment both economic and social of that a community.
2. Government agencies at District level should encourage a learning person in various fields to have opportunities for learning and observational study to stimulate methods of thinking, analyzing and developing small experiments from the context of community wisdom.

REFERENCES

- Alom, S., Patwary, A. K., Khan, M. M. H. (2019). [Factors Affecting the Turnover Intention of Bangladeshi Migrants in the United Arab Emirates: An Empirical Study on the Hotel Industry](#). *International Journal of Innovation, Creativity and Change*. 8 (3), 344-360.
- Ann R. J. Briggs, Marianne Coleman and Marlene Morrison. (2012) *Research Methods*.
- Azim, M. S., Tarannum, L., & Patwary, A. K. (2017). The Effects of Leadership Style into Fisheries Business Sector in Bangladesh. *International Journal of Business and Technopreneurship*, 7(1), 13-22.
- David G. Myers (2005) *Social Psychology*. New York: Mc Graw Hill.
- Ellen Berscheid and Pamela Regan (2005) *The Psychology of Interpersonal Relationships*. New York: Pearson
- Gillian Symon and Catherine Cassell (2012) *Qualitative Organizational Research Core Methods and Current Challenges*. California: Sage Publications Inc.
- Gordon Rugg and Marian Petre (2007) *A Gentle Guide to Research Methods*, New York Mc Graw Hill. in *Educational, Leadership and Management*. California: SAGE publication Inc.
- Huinink, K. (2012). *What Children Can Do: A Polycultural Garden Theory of Development For Education* (Doctoral dissertation, Institute for Christian Studies).
- Kolb, D.K. (1984). *Experiential Learning: Experience as the Source of Learning and Development*. New Jersey: Prentice-Hall Inc.
- Nasrudin, D., Suhada, I., Rochman, C., Helsy, I., & Hermawan, A. H. (2018). Polyculture strategy: Integration of islamic values, national character, and local wisdom in science learning. In *Proceedings of the International Conference on Islamic Education (ICIE 2018)* (Vol. 261, No. ASSEHR, pp. 236-239). Atlantis Press.
- Patwary, A. K., & Rashid, B. (2016). The impacts of hospitality services on visit experience and future visit intention of student travelers. *International Journal of Business and Technopreneurship*, 6(8), 107-125.

- Patwary, A. K., Omar, H., Tahir, S. (2020). A Conceptual Model of What Influences Consumers When Visiting Green Hotels in Malaysia. *International Journal of Innovation, Creativity and Change*, 11 (11), 11-25.
- Patwary, A. K., Roy, B., Hoque, R., & Khandakar, M. S. A. (2019). Process of Developing a Community Based Tourism and Identifying its Economic and Social Impacts: An Empirical Study on Cox's Bazar, Bangladesh. *Pakistan Journal of Humanities and Social Sciences*, 7(1), 1-13.
- Paul D. Leedy and Jeanne Ellis Ormrod (2015) *Practical Research Planning and Design*. New York: Pearson.
- Risso, V. D. P. (2008). *Diversity, productivity, and stability in perennial polycultures used for grain, forage, and biomass production*. Iowa State University.

Interviews

Mr. Prapas Bunsanong	Community Leader of Ban Na Ngae
Mrs. Kanchana Chitphong	Community Committee
Mr. Nongrat Chaowalit	Community Committee
Mr. Sunthorn Phon-in	Community Committee
Mr. Udomsak Kanchanahiran Nopphitam District	Community Development Specialist of
Asst. Prof. Porn Puangkim	Former professor of Program in Agriculture at Nakhon Si Thammarat Rajabhat University