Knowledge Management, PAR, Sufficiency Economy Philosophy, and Growing Phak Wan Pah for Self-reliance in Thailand

Chalard Chantarasombat & Pha Agsonsua

Northeastern University

ABSTRACT

This research project was to study the results of applying Knowledge Management (KM), through applying participatory action research, sufficiency economy philosophy, growing phak wan pah vegetable for the development of knowledge managers at self-reliance learning centers in Thailand. The development model comprised 19 sub-courses which focused on practical skill development. Participants were 15 knowledge managers from 2 self-reliant centers in Maha Sarakham, and Khon Kaen province. The skill and knowledge development course lasted 4 days and 3 nights and then the participants applied the gained knowledge at self-reliance centers for the subsequent 4-6 months. Overall, the development course yielded success with the efficiency of knowledge output of 88.94 / 83.22. The effectiveness index was 0.7178 which explained the resource leader's higher knowledge 71.78%. Participants of the project who have a farm area of approximately 1-3 rais had a substantial debt reduction and were able to generate income from harvesting phak wan pah for 6-8 months per year. The farmers are able to get 150-200 Baht per kilogram of phak wan pah and have an earning potential of over 100,000 baht per year.

Keywords: knowledge management, participatory action research, sufficiency economy philosophy, self - reliance, phak wan pah.

Classification: FOR CODE: 149999

Language: English

London Journals Press

LJP Copyright ID: 573333
Print ISSN: 2515-5784
Online ISSN: 2515-5792

London Journal of Research in Humanities and Social Sciences

Volume 22 | Issue 2 | Compilation 1.0

Knowledge Management, PAR, Sufficiency Economy Philosophy, and Growing Phak Wan Pah for Self-reliance in Thailand

Chalard Chantarasombat[α1*] & Pha Agsonsua[σ2]

ABSTRACT

This research was to study the results of applying Knowledge Management (KM), through applying participatory action research, sufficiency economy philosophy, growing phak wan pah vegetable for the development of knowledge managers at self-reliance learning centers in Thailand. The development model comprised 19 sub-courses which focused on practical skill development. Participants were 15 knowledge managers from 2 self-reliant centers in Maha Sarakham, and Khon Kaen province. The skill and knowledge development course lasted 4 days and 3 nights and then the participants applied the gained knowledge at self-reliance centers for the subsequent 4-6 months. Overall, the development course yielded success with the efficiency of knowledge output of 88.94 / 83.22. The effectiveness index was 0.7178 which explained the resource leader's higher knowledge 71.78%. Participants of the project who have a farm area of approximately 1-3 rais had a substantial debt reduction and were able to generate income from harvesting phak wan pah for 6-8 months per year. The farmers are able to get 150-200 Baht per kilogram of phak wan pah and have an earning potential of over 100,000 baht per year. The participants entered the project as volunteers but became knowledge managers in self-reliance through PAR, and have a sustainable development future in accordance with the philosophy of the sufficiency economy.

Keywords: knowledge management, participatory action research, sufficiency economy philosophy, self-reliance, phak wan pah.

Author α1: Associate Professor Dr., Lecturer in the Faculty of Education, Northeastern University, Thailand.

σ2: Dr. lecturer in the Faculty of Education, Northeastern University, Khon Kaen Province, Thailand.

I. INTRODUCTION

Many knowledge intensive organizations utilize knowledge management (KM) to better manage their knowledge assets (Jennex, 2013). Educational organizations, agricultural development, vocational groups apply KM in the development of the groups knowledge education program. KM is an action discipline where knowledge is used and applied for to have an impact (Jennex, 2007). Even emergency response groups in crisis management have proposed and created KM enhanced Emergency Response systems that allow for more efficient use of data and faster response (Jennex & Murali, 2009). Successful KM should lead to the strengthening of organizational and learning cultures (Jennex, Smolnik & David, 2012). KM in projects will benefit and assist projects in utilizing knowledge. But maximum benefit can only be attained if the organization has a KM process (Jennex, Lorne & Theophilus, 2003). KM helps organizations leverage knowledge and helps to improve the application of knowledge sources by users (Jennex, 2007). Knowledge Management or KM is a systematic process for acquiring knowledge, creating knowledge, and storing knowledge (Igbinovia & Ikenwe, 2018). KM is a subject related to human resources with an emphasis on the organizational culture and the formation of team works (Poynder, 1998). The central element of KM is the development of the "knowledge

worker", including leadership, autonomy, performance measurement and rewards, organizational structure and organizational culture (Lee and Kim, 2001). The collaborative actions in an organization can be applied for job development, human development, and organization development (Panich 2007: 6). KM is one of the most quickly developing concepts of management (Lendzion, 2015). Knowledge Management (KM) in agriculture is a core aspect of agricultural productivity and profitability (Cheruiyot, Sang & Ngetich, 2020). The main obstacles of KM application in agricultural context are: limited time and lack of qualified staff (Zecca & Rastorgueva, 2017). After the Thailand 1997 economic crisis, a new theory of agriculture was introduced (Khaokhrueamuang, 2014) and was utilized as a practical guideline and philosophy called "sufficiency economy". Farmers applied sufficiency economy philosophy at different levels with different understandings. This caused anxiety and many farmers searched for true knowledge managers who could teach them on sufficiency economy philosophy, self-reliance, and KM. Manolai (2014: 2-4), a farmer at Ban Phon Had Dong Khrang Noi District, in Roi Et Province detailed his experiences as a rice farmer who formerly relied on chemical fertilizers. The more rice he grew and harvested, the greater his debt would be as he spent more money on chemical fertilizer. Switching to organic fertilizer and sufficiency agriculture provided his family with sustainable profits. Sufficiency economy philosophy can be integrated with the transformation of agricultural products to create added value, increase profits and promote sustainable agriculture (U-tantada, Mujtaba, Yolles & Shoosanuk, 2016). Joint ventures can be strengthened by applying the philosophy of the sufficiency economy to production and to investment that uses the potential of the community. The philosophy supports the use of available raw materials in the community and indigenous knowledge that is applicable to current production technology.

A sufficiency economy (SE) approach offers a better alternative for smallholder agricultural development than uncritical acceptance of global materialism as SE focuses on people's life quality and well-being A sufficiency economy approach offers a better alternative for smallholder agricultural development and focuses on people's life quality and well-being (Chantalakhana & Falvey, 2008). Sufficiency economy philosophy can be applied to area-based levels to help the rural poor and also business operations which supports balance among economy, society and environment and enable the organizations to build a strong foundation for sustainable business (Siriphanupong & Rungkasiri, 2017). The researchers and the faculty of Education, Northeastern University proposed a community development project in collaboration with Mr. Sawang Manolai's Sufficiency Economy Learning Center at the Phonhad Learning Center, Khrang Noi sub-district, Kaset Wisai District, Roi Et Province, and Mr. Suthat Upolthianthien, owner of the sufficiency economy learning center at Kwa Bueng Kui, Lao sub-district, Kosum Phisai District Maha Sarakham Province. The purpose of the joint development project is to develop the potential of farmers, teachers, and parents of students to become knowledge managers in self-reliance and sufficiency economy by growing phak wan pah vegetable (sweet forest vegetable leaf) which is a highly profitable cash crop. Phak waan pah is special and has the potential of becoming a primary cash crop second only to rice cultivation. The phak wan pah vegetable plant can last for 100 years if properly taken care of. The current market price is up to 200 baht per kilogram and is a very lucrative alternative income for agriculture households in northeast Thailand.

II. BACKGROUND

Jennex, Olfman (2005) defines KM as the practice of selectively applying previous experiences of decision making to current and future decisions to current activities with the express purpose of improving the organization's effectiveness. Also, Chantarasombat, Sri sra-ard, Kuofie & Jennex (2010), KM is seen as a way of

changing the traditional knowledge transfer process to something that assists those who remain in the village. The KM approach investigated consisted of five stages: 1) Preparation 2) Create motivation, promote participation 3) Develop the KM plan 4) Implement the KM plan, and 5) Evaluation. Another key definition of KM Jennex (2013) knowledge management success and dimensions and measures the organizations can use to value knowledge management success, an unclear unitarily engineering organization is used to illustrate how these dimensions and measures can be used to demonstrate the success of knowledge management initiative/project. Managing the life cycle of knowledge Global organization Ramazanzade, Aati, Shokohifard & Farshid (2019) pedagogical knowledge management is the management of knowledge and experiences in teaching, assessment, learning theories, classroom management, and other areas of education. An analytical study of the literature can be helpful in understanding the pedagogical knowledge management approach. Thus, this study aims to perform a synthesis research on the efficacy of pedagogical knowledge management and to explain its applications and strategies.

Donn (2006) defines urbanization and sustainability in Asia as the plasticenes of the case studies are classified under broad field's or heading were framework for systematically documenting, comparing and deriving lessons of good practice for sustainable urban development. Each good practice assessed the case studies for 12 Asian countries: good governance in proven urban management, effective and efficient infrastructure and service provision, financing and cost recovery, social and environmental sustainability, innovation change and reverence, and international development assistance. The case studies in Thailand were: 1) Muang Klaeng municipality for sustainable city initiative 2) Phichit municipality for waste recycling and 3) Songkla municipality for waste management and education.

III. RESEARCH QUESTIONS

- *How did the current conditions, problems, and needs of producing and transforming Phak Waan Pah occur or how did the researcher find the cooperation from the supporters?*
- *How did the researcher define names for the innovative product and Pak wan tea in the form of a hermetically sealed container?*
- *What is the effectiveness from analyzing the use of Growing and Producing Phak Wan Pah for self-reliance?*

IV. RESEARCH OBJECTIVES

- *To study the current conditions, problems, and needs of the self-reliant learning centers.*
- *To Create a development model for knowledge managers in self-reliance learning centers based on KM, Participatory Action Research (PAR), Sufficiency Economy Philosophy, and growing phak wan pah vegetable.*
- *To promote Small and Micro Community Enterprises (SMCE) of Lao-Sadu Isan Pak Wan Pha in the form of hermetically sealed container 2.5 g.*
- *To compare learning achievement score of pretest and posttest of leaders to find E1 and E2, the effective index of learning center, and the satisfaction of studying and practicing ways to produce and transform Pak Wan tea*

V. RESEARCH FRAMEWORK

The researcher analyzed research and conclusions of group learning by Marquardt (1999: 4-8, 33) and synthesized that the KM framework for group learning is to use learning by doing. It is a process of collaboration, exchanging knowledge, and a powerful process in which small groups of people can work together to solve real-world problems. The researchers divided the KM process into 6 practical steps: 1) Identifying the problems, 2) Establishing the research group 3) Questioning

and reflecting processes, 4) Participatory action planning, 5) Collaborative agreement on research indicators, and gaining knowledge from the team's action learning. 6) Facilitating.

The learning activities and workgroup sessions were based on Rammasoot's (1997: 43-54) observation of collaborative development which has 30 steps, namely 1) selecting the target community, 2) entering the community, 3) integrating into the community, 4)basic social observations, 5) introducing the principles of Participatory Action Research (PAR), 6) identifying problems, 7) suggest the required research cycles, 8) select the problems to research, 9) seek methods and alternatives, 10) planning, 11) accurate, complete and systematic data collection, 12) data analysis, 13) community presentations, 14) action plans, 15) feasibility analysis, 16) conduct pilot projects, 17) trying other methods, 18) reviewing the action plans, 19) seeking resources and staff allocation, 20) monitoring and evaluation plans, 21) setting up a working group, 22) implementing the plans, 23) monitoring the progress of the project, 24) evaluating the project, 25) transforming the research processes into regular development habit, 26) seeking solutions on how to retain the PAR practices in the community, 27) collaborative communication, 28) analyzing the results of implementing participatory action research in the community, 29) publishing a research report, 30) re-applying the participatory action research in future developments in the community.

VI. RESEARCH METHODOLOGY

The research targeted 2 villages communities namely, Ban Khaw Bueng Kui village, Ban Waeng Yai village. The farmers are from an agricultural household who have full ownership of their lands and gardens. The participating farmers volunteered in the research to increase their knowledge in comprehensive agriculture and sufficiency economy processes. A total of 20 families volunteered, whereas 5 families from each village. The qualification for the volunteers was that each had to have at least 2-5 rai of land for growing phak wan pah. The research team partnered with the private higher education institution in the community that acted as consultants and co-researchers in finding collaborative solutions to solve community problems and promote the self-reliance of family and rural communities. The development course has a duration of 4 days and 3 nights and is divided into 19 sub-courses. The sub-courses focus on practical skill development, KM, understanding of self-reliance, and awareness in self-development and potential grounded in the sufficiency economy approach. Once trained, the participants must apply their training and put it into action as knowledge managers at self-reliance learning centers for the next 4-6 months. During their practice and tenure at the centers, the knowledge managers had also to reflect their gained knowledge and experience with their family and community. A total of 15 knowledge managers participated in the project. 8 knowledge managers from Northeastern University, Phak Wan forest, Kosum Phisai District, Maha Sarakham Province, and 7 knowledge managers from Waeng Yai Group, Waeng Yai sub-district, Waeng Yai District, Khon Kaen Province.

VII. RESEARCH PROCEDURES

- *Prepare and construct the required research mechanisms and processes. Observe the target community and knowledge managers. Undertake field trips to observe and collect research data at aquaculture and phak wan pah cultivation learning centers. Create a training course for the development of knowledge managers to cultivate phak wan pah for self-reliance according to sufficiency economy philosophy*
- *Organize a meeting to clarify and create a common understanding and awareness between all the participants. Collaborate and define the success indicators and create the post and pre-development criteria.*
- *Utilize an action workshop of tree diagrams in creating well-being development plans, an operational manual for the project, construct training activities, review of*

family, community well-being development models, and implementation plans.

- *Use action meetings to analyze the conditions of the target community, define the research group's objectives, participatory planning to develop the self-reliance learning center with the additional capacity for innovation and the development of knowledge managers. Organize action learning activities for a schedule of 4 days and 3 nights, and publish an operational manual for the research group and participants. The multi-day course is to be split into two groups of participants. The 1st group includes 21 people from Ban Khao Wa Bueng Kui village and Ban Wang Yao village.*
- *Provide support and encourage the participants to strictly follow the prototype learning activities.*
- *Organize meetings and seminars to improve the knowledge level of knowledge managers.*
- *Follow up and monitor the development progress. Conduct 2 reflection sessions on the results of the project with the participants. The collaborative reflection sessions include the summary observations, questionnaire results, on-line research database, or website.*
- *Organize meetings of empowerment sessions to upgrade the body of knowledge, transfer the knowledge and skills, prepare a summary of the lessons, and gain experiences. Present the findings to the community and participants. Organize activities to improve and develop the community and district.*
- *Exchange knowledge and learn from others by publishing the results of the development model in national and international academic journals and publications.*

VIII. RESEARCH TOOLS

Development Tools: 1) 4 days and 3-night training program as recommended by the 3 local scholars in the target community, 2) operational manual for the development of knowledge managers to cultivate phak wan pah for self-reliance according to sufficiency economy philosophy. The manual and guidelines were constructed through improvement on the manual for the development of lecturers and from sufficiency economy guidelines of Sukhothai Thammathirat Open University, and 5 academic experts.

Data Collection Tools: 1) achievement tests with difficulty levels between .53-.80, individual classification factors between .24 – 79, and the reliability of the whole test was equal to .86, 2) the behavioral assessment of knowledge managers was an improved assessment criterion from the authors' experience in community development, 3) After-Action Review (AAR), forms were revised and adapted from Chantarasombat (2007: 112-125), 4) the satisfaction questionnaires utilize t-test with the individual factors between 2.30-7.00 and the whole confidence value equal to .91.

IX. DATA ANALYSIS

- *Analyze the current conditions, problems, and needs of the knowledge managers and also observe the self-reliance learning centers by organizing workshops and group discussions. The researchers used tree diagrams of the target community and used frequency and percentage as statistical instruments.*
- *Training seminars were used to improve the knowledge of participants, to support deep learning and wine recommended for courses that require discussion and critical thinking (Al-Adawi, 2017). The level of gained knowledge and understanding were measured by using standard tests. Practical skills were measured by using behavioral assessments. There were a total of 73 sub-indicators that were used as success indicators for the research. Training satisfaction was measured through the questionnaires by using statistical instruments of mean average, standard deviation, t-test (dependent), effectiveness index.*

- *Qualitative data analysis utilized After-action Review (AAR) to reflect individual and group performance.*

X. RESEARCH FINDINGS

10.1 Self-reliance Learning Centers

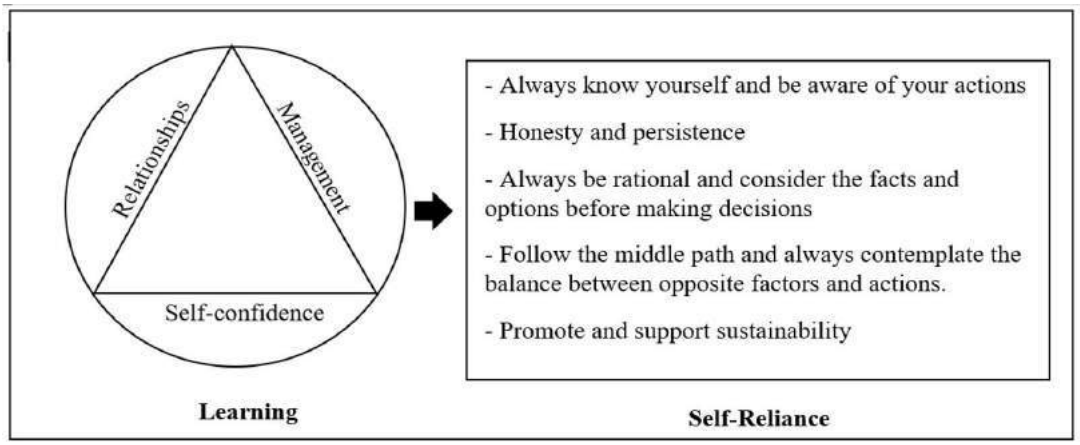

Figure 1: Learning towards Self-reliance

The self-reliance learning centers in Maha Sarakham province, Nakhon Ratchasima province, and Khon Kaen province provide education and training to individuals and community groups to be self-sufficient and self-reliant (figure 1). These centers can be classified into 1) integrated farming, 2) production of rice seedlings, 3) growing herbal plants, 4) rubber plantations, 5) tree farms, 6) animal husbandry, 7) aquaculture, 8) growing phak wan pah vegetable, 9) growing lime, and 10) bio-organic fertilizer. The learning centers are prepared to provide vocational training courses but are lacking systematic management. The disorganized management processes are not worthwhile because it creates insufficient action learning and poor results. All self-reliance learning centers have highly qualified knowledge managers and teachers with tacit knowledge but lack appropriate sufficiency economy philosophy and lack organized KM to transform tacit knowledge into explicit knowledge. The fieldwork, coordination, and collaboration with the knowledge managers of the learning centers, and participants revealed the following strengths, weaknesses, problems, and development obstacles.

Strengths: The positive aspects that the self-reliance learning centers include 1) all the learning centers are not built on rental property or the land is not mortgaged by the owners, 2) the learning centers utilize family and community employees, 3) the agricultural centers utilize a large variety of integrated farming techniques, 4) the knowledge managers are confident, and taking action, 5) they do not use chemical fertilizers and use organics that are produced by the center. The plantation center utilizes minimum chemicals in the production processes.

Weaknesses: The known weaknesses of the knowledge managers and the weaknesses of the learning centers are as follows: 1) learning

center managers lack proper financial planning and debt restructuring knowledge, 2) the learning centers lack continuous revenue and proper accounting practices, 3) lack of facilities such as restrooms, accommodations and seating to service a full capacity of students and visitors, 4) lack of success indicators to measure the efficiency and the quality of the learning center, 5) lack of knowledge, intellectual skills, and awareness in organic fertilizer, 6) lack of KM processes grounded in sufficiency economy philosophy, 7) Besides phak wan pah vegetable, few native plants in the region can also create added value.

XI. TRAINING COURSE DEVELOPMENT

The authors adapted the framework and processes of Participatory Action Research (PAR) and action learning from Nonaka & Takeuchi (1995: 57 - 59) and Chantarasombat (2010: 18) in figure 2.

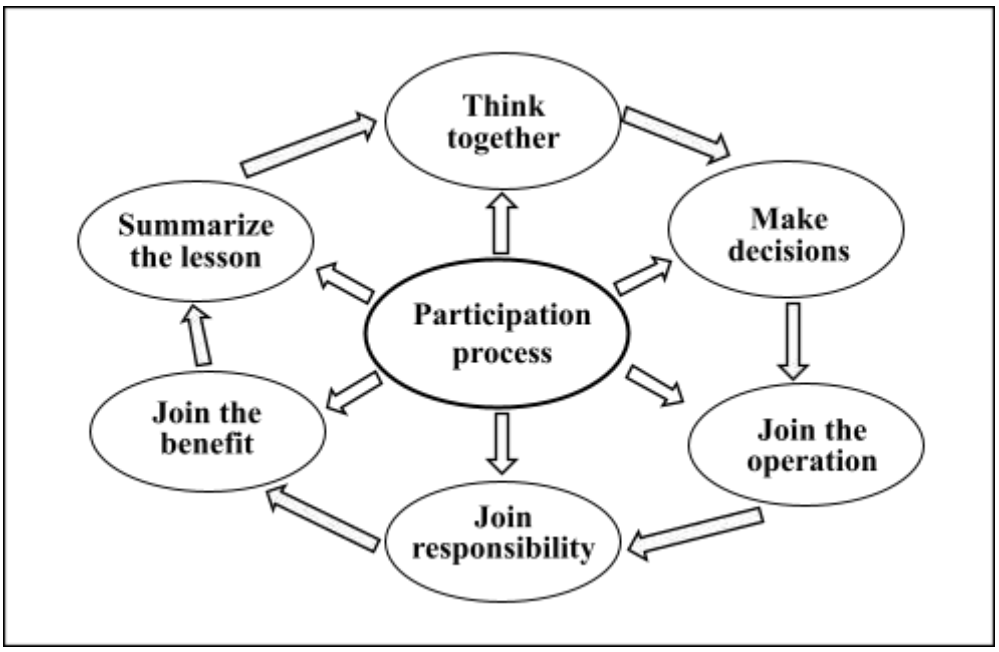

Figure 2: Participatory Action Research Model

Three research participants also suggested additional requirements.

Mr. Chan Thi Prathumpha: The curriculum for self-reliance learning centers must include 1) Training and vocational field tours, 2) Alternate concepts and solutions, 3) Changing crisis into opportunities, 4) Using moral principles, 5) Team building and joint planning, 6) Action, and 7) summarizing and making improvements as a team.

Mr. Sawang Manolai: The development of the learning centers should include the following 5 concepts 1) study and analyze the problems of the community, 2) brainstorming solutions to the common problems in the community, 3) search and construct a good community development model that is practical and tested 4) KM according to sufficiency economy philosophy, 5) establishing a career group in the community to develop through the philosophy of the sufficiency economy.

Mr. Suthat Usaphonthian: The curriculum should include these 9 concepts 1) Joint planning, 2) Practice, 3) Learning from nature, 4) Reduce costs, 5) Debate and exchange knowledge, 6) test the plan, 7) Conclusions, 8) Build networks, and 9) Have morals (Usaphonthian, 2016).

London Journal of Research in Humanities and Social Sciences

XII. DEVELOPMENT MODEL FOR KNOWLEDGE MANAGERS

The integration and application of KM processes into an organization requires the capturing of knowledge, making the attained knowledge available, application and safeguarding the knowledge to be passed on in the future (Jennex, 2005). Action Learning and KM model used to construct a preliminary development model included 6 steps (figure 1) which start from 1) Team preparation, 2) Study of the current situation and conditions, 3) Participatory Planning, 4) Doing through action, improvements and development, 5) Reflection and results, and 6) Knowledge sharing.

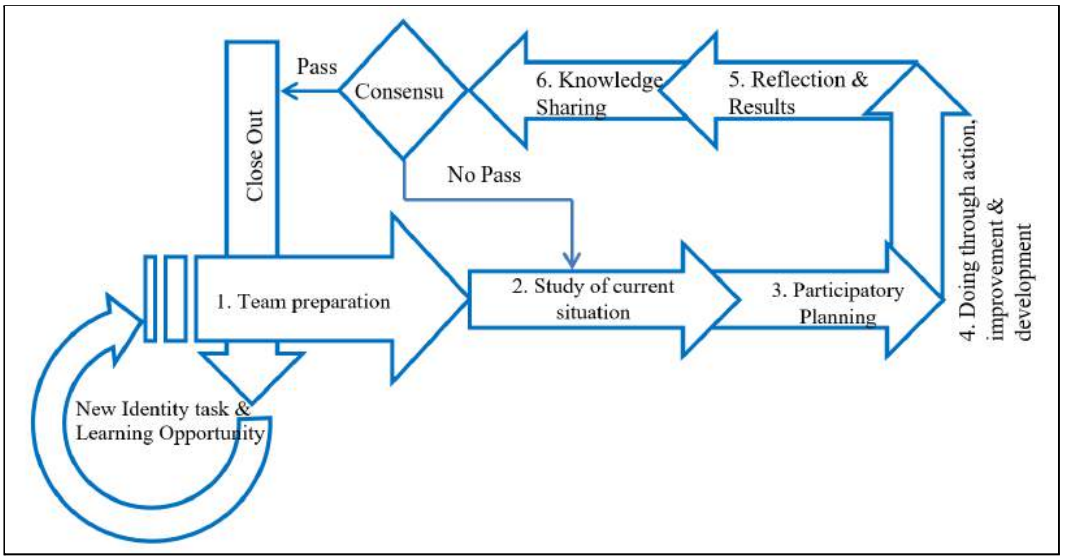

Figure 3: Action Learning and Knowledge Management

The development model for knowledge managers of self-reliance learning centers used Participatory Action Research (PAR). The authors designed the processes of the model as follows Planning (P), Practice (D), Examination (C), Improvement (A), and exchange of knowledge (S). The researchers elaborated and implemented the preliminary development plan which comprised 9 steps shown in Figure2 and finalized development model in Figure 4-5.

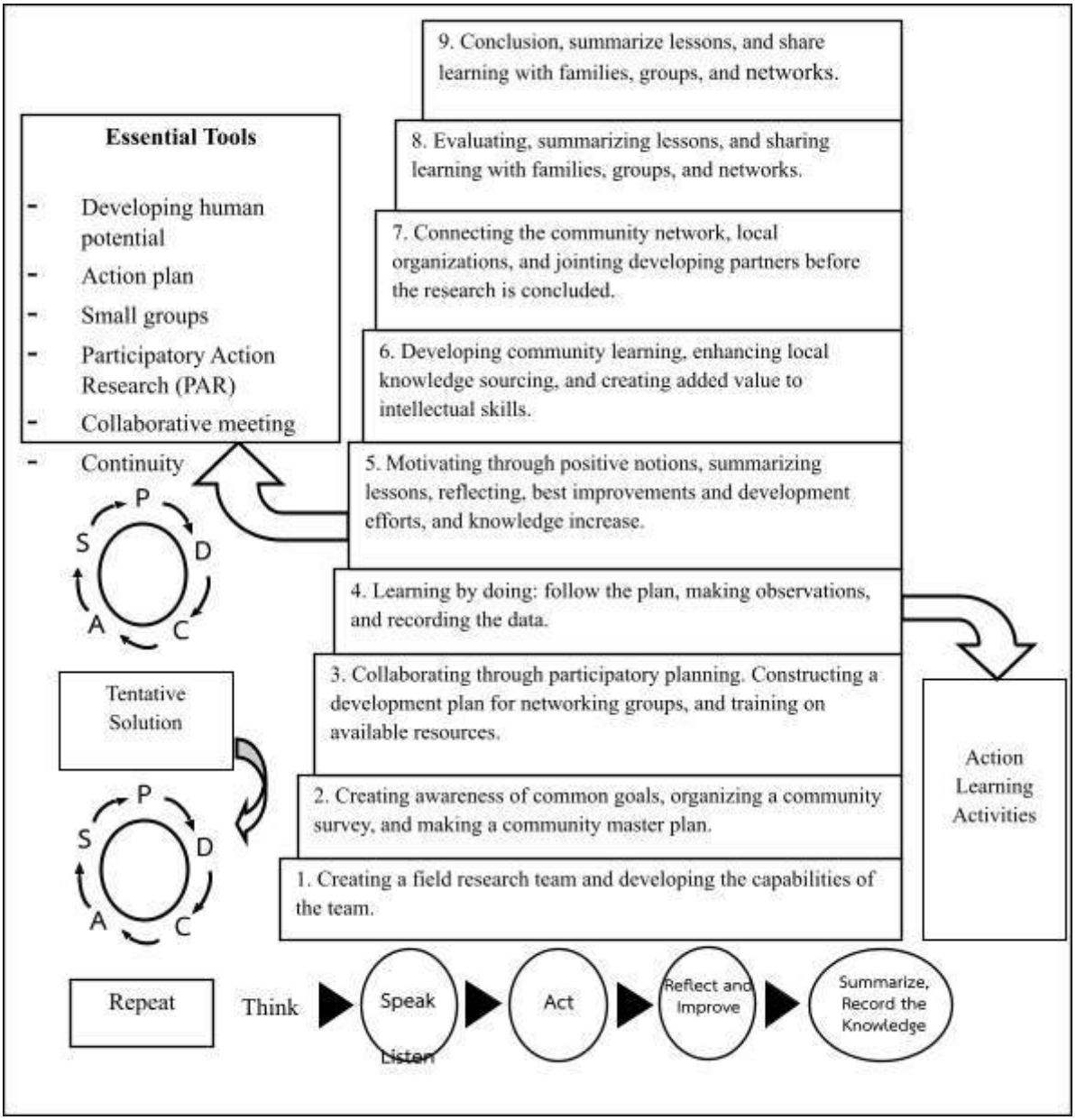

Figure 4: Preliminary Development Model for Knowledge Managers

The development plan included the following 9 steps.

- *Creating a field research team and developing the capabilities of the team through field trips to model villages and self-reliance learning centers.*
- *Feasibility analysis, creating awareness of common goals and organizing a community survey.*
- *Collecting data on the current conditions and requirements of the research target. Collaboration through participatory planning. Construct a development plan for networking groups, and training on available resources.*
- *Data analysis.*
- *Participatory plan making as a team effort. Motivate through positive motions, reflection, best improvements and knowledge increase.*
- *Action plan for developing community learning, enhancing local knowledge sourced, and creating added value to intellectual skills.*
- *Potential development and upgrading the body of knowledge, connection of the community network, local organizations, and joint development partners.*
- *Following up and evaluating*

- *Conclusion, summarizing lessons, and sharing learning with families, groups, and networks.*

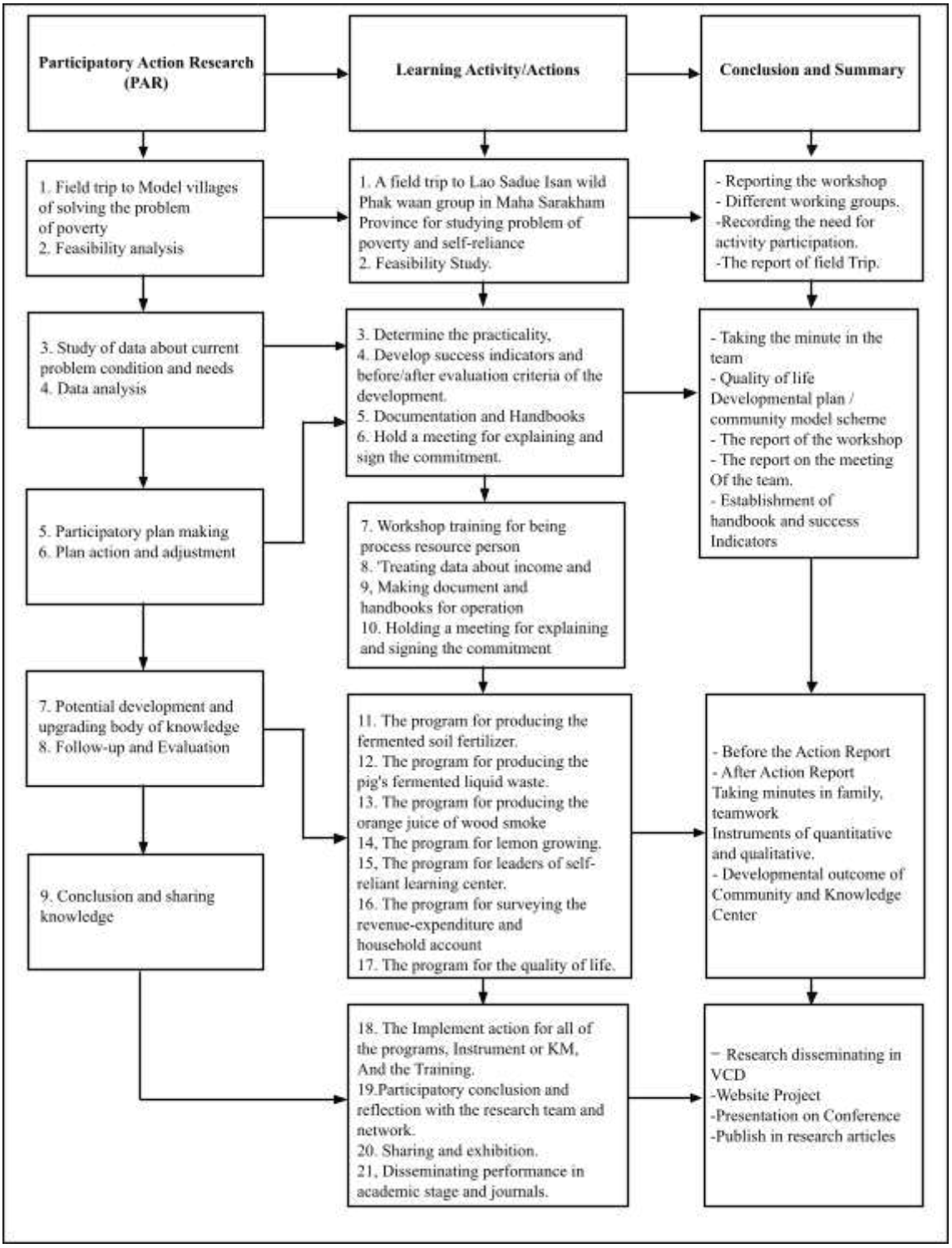

Figure 5: Development Model for Knowledge Managers

The participants of the self-reliance learning centers successfully completed their training in growing phak wan pah. They were satisfied, at the "Highest Level", with the workshops, lecturers, trainers, skill training, and training facilities. The implementation of the development

course lowered expenditures and increased the incomes of the participating families. The results detailed significant progress from pre-development to post-development at .01 level. The follow-up, monitoring and evaluation was organized during the learning process through the action learning activities in the plan with the results detailed in Table 1:

Table 1: The results of the collaborative project for Development of Learning Research Leadership for Learning of Community phak wan pah for Self-Reliance based on KM, PAR, and Sufficiency Economy Philosophy.

Evaluation Item	Comparison of Results of Operation	Household Number	$\bar{X}$	(S.D.)	t	sig
Overview of 2 Villages	Post Operation	14	3.69	0. 39	3.01	.005**
	Pre-Operation	14	3.18	1.00		

Table 2: Household Incomes

Evaluation Item	Comparison of Results of Operation	Household Number	($\bar{X}$)	(S.D.)	t	sig
Overview of the development for solving the problem of household poverty	Post Operation	15	3.62	0.44	3.16	.003**
	Pre-Operation	15	3.04	1.04		
Decreasing the household expenses	Post Operation	15	3.59	0.46	2.85	.007**
	Pre-Operation	15	3.07	1.01		
Increasing Household incomes	Post Operation	15	3.94	0.56	4.78	.000**
	Pre-Operation	15	2.94	1.12		
Providing the opportunity for increasing household incomes and products	Post Operation	15	3.98	0.55	2.82	.008**
	Pre-Operation	15	3.45	1.261		

** Significant difference of .05*
*** Significant difference of .01*

Table 3: Overview of the Development of Household Society

Evaluation Item	Comparison of Results of Operation	Household Number	($\bar{X}$)	(S.D.)	t	sig
Overview of the Development of Household Society	Post Operation	15	3. 71	0.37	2.63	.012**
	Pre-Operation	15	3.29	0.85		
Development of Human Resources of the household member	Post Operation	15	3.36	0.58	2.39	.022**
	Pre-Operation	15	2.76	1.24		

Religion, culture, and custom of the household members	Post Operation	15	3.74	0.47	3. 27	.002**
	Pre-Operation	15	3.11	0.86		
Education of household members	Post Operation	15	3.78	0.71	2.80	.008**
	Pre-Operation	15	3.11	0.47		

* Significant difference of .05
** Significant difference of .01

Table 4: The Development of Well being

Evaluation Item	Comparison of Results of Operation	Household Number	($\bar{X}$)	(S.D.)	t	sig
The Development of Happiness Condition of Household Members	Post Operation	15	3.76	0.46	2.44	.020**
	Pre-Operation	15	3.39	1.016		
Sanitation of Household Members	Post Operation	15	3.74	0.52	2.90	.006**
	Pre-Operation	15	3.11	1.36		
Environmental Sanitation in Household	Post Operation	15	3.78	0.47	4.04	.000**
	Pre-Operation	15	3.11	1.01		

* Significant difference of .05
** Significant difference of .01

The results of the training course were based on concepts and theories focusing on knowledge building. Understanding and learning through practice A practical and effective trial of the Knowledge Management Leaders Center for Self-Reliance Learning in accordance with the developed sufficiency economy approach. The details are as follows.

Table 5: Process Efficiency vs. Effectiveness of Results for Developing Knowledge Managers

Number	Name-Surname	Pre-test (60)	Practical Score for program							Post-test (60)
			Administration (20)	Compost (20)	Master Plan (20)	Business (20)	Red mite (20)	Wild sweet vegetable (20)	Total practical (120)	
1.	Mr. 1	23	18	16	17	17	18	18	102	54
2.	Mr. 2	25	18	19	18	17	18	19	109	52
3.	Mr. 3	26	17	18	15	17	17	18	102	46
4.	Mrs. 4	21	17	18	17	18	18	18	106	48
5.	Mr. 5	21	18	19	18	18	18	17	108	45
6.	Mr. 6	28	18	19	17	17	18	18	107	49
7.	Mr. 7	24	20	19	20	20	17	18	114	48
8	Mrs. 8	24	16	18	16	18	16	18	102	50
9.	Mr. 9	23	18	18	17	17	18	18	106	52
10.	Mr. 10	26	19	17	18	19	17	18	108	51
11.	Mrs. 11	23	19	18	20	20	17	18	112	50
12.	Mr. 12	22	19	17	17	17	17	17	104	51
13.	Miss 13	25	17	19	18	18	18	19	109	50
14.	Mr. 14	28	18	17	18	18	19	17	107	52

15.	Miss 15	26	18	17	17	18	17	18	105	51
Total		365	270	269	263	269	263	269	6,646	749
$\overline{X}$		24.33	18.00	17.93	17.53	17.98	17.53	17.98	106.73	49.93
S.D.		0.79	0.56	0.56	0.56	0.56	0.56	0.56	0.54	0.67
$\overline{X}$ %		40.56	90.00	89.67	87.66	89.67	87.66	89.67	88.94	83.22

From Table 5 it was found that the results of evaluating the efficiency of the process and the efficiency of the results of the development of learning resource leaders in planting wild mustard greens. The overall efficiency of the process on the efficiency of the results was 88.94/83.22 which was higher than the criteria at 80/80.

The effectiveness index for the program was at 0.7178 which explained the resource leader's higher knowledge 71.78%.

XIII. DISCUSSION

The 10 learning centers were successful in providing knowledge on how to reduce expenses, increase incomes, and how to be self-sufficient. The classification of the learning centers on the vocational skills that were taught at these centers are consistent with Luepanya (2012: 195-196) who conducted a study on sufficiency economy philosophy and self-reliance learning centers in 2 villages. There were a total of 7 self-sufficiency learning centers, which are 1) integrated farming, 2) rice seed planting, 3) herb planting, 4) rubber planting, 5) tree planting, 6) animal husbandry, and 7) fish farming. The identical vocational skills taught at the learning centers in different provinces are similar because the research area was conducted in northeast Thailand which shared similar resources and the vocational skills were proven and practical in the region. There are many self-reliance learning centers throughout Thailand that provide vocational skills but lack proper KM, lack basic resources such as proper bathrooms for students, lack lodging, and have poor customer service. The efficiency of the curriculum of the research through PAR is higher than previous learning centers because of the collaboration between academics, experts, and participants. The combined knowledge of the project is an example of the greater benefit that can be achieved through KM, PAR and action learning. Similar results where knowledge and cultural capital exists, but lack KM was observed by Kampang (2014: 200) in which 6 self-reliance learning centers in Ku Ka Sing sub-district, Kaset Wisai District, in Roi Et province lacked proper development. The 6 learning centers include vocational skills in 1) Indigenous silk textiles weaving, 2) New theory agriculture practices, 3) Indigenous museums 4) Indigenous folk literature 5) Khmer archaeological sites, and 6) Don Phu Ta (grandfather mound cultural grounds). These learning centers have the cultural capital in their community but lack systematic management and KM processes.

Evaluation of the development model and curriculum by 5 experts found that the overall curriculum was appropriate, feasible, and useful at the highest level. The authors believe that the curriculum and overall project was successful because the trainees gained practical knowledge from action learning activities. Action learning improves the ability of managers to develop integrative, win/win solutions to conflict situations (Leonard & Marquardt, 2010). The activities were based on the student's interests which encouraged participation. The curriculums were based on sufficiency economy philosophy and are the fundamental principles on which self-sufficient learning centers base their operations. The self-reliance learning center of Mr. Chan Thi Prathumpha is based on the principles of sufficiency economy philosophy namely, 1) Training, 2) Adapting/changing concepts, 3) Turning crisis into opportunities, 4) Leading life by following moral principles, 5) Team building, 6) Taking initiative, and 7) Collaboration in summarizing, improving and development of the gained knowledge. Similar approaches and principles of sufficiency economy philosophy were also applied by Mr.

Suthat Upaphonthiens' learning center, but the principles were expanded to 9 elements which are 1) Participate in the planning, 2) Take action, 3) Learn from nature, 4) Lower expenditures, 5) Debate and exchange ideas, 6) Trials and errors, 7) Summarize the results, 8) Create a network, and 9) Be virtuous. The progress and benefit from collaborative efforts far surpasses any individual efforts. The knowledge gained from participatory effort is the most important and effective KM in the community. Wasi (2002: 21) states that one person's learning is not enough to make any credible accomplishment because other people, organizations, and institutions are not involved in the learning. The benefits of collaboration in community projects establishes a positive atmosphere for modeling and practicing cooperation, and develops learning communities (Panitz, 1999). The experts who evaluated the quality of research tools were generally found appropriate and has the highest level of usefulness because the learning activities were based on self-reliance and sufficiency economy principles of 1) knowing one-self and goal setting, 2) Knowing the resources and community collaboration, and 3) creating added value and filling for patents and intellectual property claims.

The pilot curriculum of the learning center for knowledge managers includes theoretical courses (Chantarsombat, Boobpamala & Songsri, 2018) to knowledge building courses, learning by doing, and action learning practices. The curriculum was overall successful. The effectiveness index is 86.59 / 80.75. This is consistent with Smith (2001: 3947-A) in which preparing an effective lesson plan is a part of good teaching. An effective lesson must include inquiry-based learning tools to achieve important goals. The process involves dividing the lesson into two phases. The first phase is the planning. The second phase is teaching by following the guidelines of the prepared lesson with inquiry learning activities. The high level of success was due to the curriculum's application of learning by doing and the collaboration of teachers and students in the learning activities. And consistent with the development of learning resource leaders in learning to grow wild vegetables for self-reliance of target groups the results learning outcome were: the efficiency index is 88.94/83.22 with was higher than the criteria at 80/80, and effectiveness index was at 0.7178 which explained the resource leaders center gain higher knowledge 71.78 (Chantarasombat & Agsonsua, 2021), and the same consistent with the development of learning resource leaders in learning to grow wild vegetables for self-reliance of target groups the results learning outcome were: the efficiency index is 88.94/83.22 with was higher than the criteria at 80/80, and effectiveness index was at 0.6667 which explained the resource leaders center gain higher knowledge 66.67 (Chantarasombat & Prasertphorn, 2021). So the curriculum of the learning center for knowledge managers includes theoretical courses completed because the goal for achievement are Cognitive domain, Affective domain, Psychomotor domain and Skill thinking for lifelong learning too.

Self-reliance learning center administrator's satisfaction with the overall training was at a high level. This may be because the knowledge managers of the centers gained knowledge and confidence through action learning. Action learning is an effective KM technique (Radu, 2012) that self-reliant learning centers can efficiently apply to enhance the body of knowledge of the participants and expand the potential of the participants who are studying or practicing at the centers. The fastest and most effective way of learning is to take some action which later could be used to draw conclusions (Welskop, 2013), and can KM be used in a low technology environment to assist traditional social structures in changing the way knowledge is transferred? This paper suggests it can, while applied in Thai rural content, the practical implication for this research is that any social process that relies on traditional, family based, knowledge pass down approach. (Chantarsombat, Srisa Ard, Kuofie, Murray, 2010), and Chantarasombat (2019: 59). The 32-hour program was carried out in 3 days and 4 nights. The activities provide managers with hands-on experience and the development of

practical skills, vocational experience through field trips, fieldwork, community lifestyle, analytical thinking process, synthesis, how to become a self-learner, and how to apply knowledge in daily life. This is because the activities in the research were based on student-centered learning technique, the content of the subject was correlated and effective because active learning has resulted in positive learning outcomes. Most experts agree that students learn best when they take an active role in the education process (Smart & Csapo, 2007). Other feedback comments included that the teacher was hospitable, sincerely interested in the student's learning, the real intention of transferring knowledge, the students were stimulated and alert throughout the course, explained various contents with clarity, the constant search for new knowledge to present to students, variety of learning and KM subjects. The students enjoyed learning and were a part of their education and learning activities. Learning by doing creates skills and knowledge, causing the students to be satisfied with the results of the local educational administration course at the highest level when the activity was focused on practical skills and engaging activities. Integration KM processes can support manager to proactively respond to highly turbulent environment and will benefit an organization, and the crisis response center (often led by a crisis response manager) deals with various stake-holders during a crisis situation KM is an action discipline; knowledge needs to be used and applied for KM to have impact. Crisis response relies on the use of knowledge from past situations to generate current and future response procedures. Lessons learned and the understanding of what works in given situations (both examples of knowledge) enables emergency managers to prepare planned responses as a counter to the stress of the emergency and to ensure all relevant issues are considered during emergency response decision making (Jennex & Murali, 2009). The beyond student centered learning towards education pedagogies were student centered approaches is an action discipline; approaches the dominant learning theories of the last century giving rise to what may be called student centered learning and human rights arguments giving rise to what may be called student centered education (William, 2011).

The success indicators of household self-reliance are significantly higher at the statistical level of .01. The operations at this stage are aimed at following up and evaluating the successful implementation of the plan. The most important operations in this stage include developing human potentials, knowledge enhancements, monitoring, evaluations, action learning activities, post- development and pre-development evaluations, 73 sub-indicators, and 23 assessments were performed before the field research. The collaboration and involvement of participants working collectively is the true principle of PAR and action learning that sustains collective leadership through the discipline of reflective practice (Raelin, 2008). The post-development levels were higher in every indicator than the pre-development figures because participants worked as a team. Every participant was involved in the analysis, the observations, participated in all planned activities, involved in decision and policy-making, and collaborated on the evaluations and reviews. And an organization's success in all of the stated measures found that the KM initiative/projects perceived to be the most successful had 3.5 and 17 measures met 2.25 dimensions and 12 measures (Jennex, Smolnik, and Croasdell, 2012). And the studies of risk reduction and occupational safety in agriculture 1 sector in Thailand for disaster risk reduction plans in Thailand disaster risk reduction has been a crucial issue in the agricultural sector as the impacts of disaster have long been experienced by the sector with increase in severity in recent years. Various plans aimed to reduce the impact and introduce improved preparedness initiatives have been developed and adopted following the country's acts and regulations related to disaster risk reduction in the agriculture sector. Some of the plans are highlighted below: 1) National Plan for Disaster Prevention and Mitigation 2010-2014 2) Integrated Plan for Mitigating Impacts of Global

Warming in Agriculture Sector 2008-2011 3) First draft of National Climate Change Master Plan (2010-2019) (FAO, 2010) and 4) Plan for Disaster Response in Agricultural Sector by fiscal year (2010) (Bimal. 2011). The findings in this research reveal one important notion that the degree of CSR (Eua-anant, Ayuwat, Promphakping, 2011). Therefore, consistent but it's a small and medium business with the practices, according to international standards, in Thai SMEs is positively related to positive impacts of CSR on internal issues. In other words, in the utilitarian perspective, Thai SMEs are more interested in positive impacts of CSR on internal issues when they engage in an international style CSR agenda where CSR practices can return foreseeable concrete benefits to the businesses. On the other hand, no evidence is found in this research that confirms the relations between positive impacts of CSR on external issues, as well as external support and knowledge of SME owners/managers about CSR, and the degree of CSR practices in Thai SMEs. The study also reveals the present deficiency of external support for Thai SMEs to engage in CSR practices.

XIV. CONCLUSION

The development course was attended by the research group and the knowledge managers of each of the 4 self-reliant centers for a duration of 4 days and 3 nights. Afterwards, they applied the knowledge at their respective centers for the following 4-6 months. The knowledge managers gained new knowledge, new practical skills, have positive attitudes, attained higher KM quality, self-awareness, and efficient resource management, created added value, and self-reliance. On the whole, the efficiency of knowledge management output was 84.58 / 81.65. The effectiveness index was 0.6986. However, large scale cultivation of phak waan pah which provides an opportunity for farmers and rural communities is currently non-existent. The development model on sufficiency economy philosophy helped create a network of agricultural communities with efficient KM processes that raised the production level and incomes of the participants. There are many examples in Thailand of sufficiency economy principles being employed to help develop communities which are more economically successful. This is being achieved through crop diversification, employing more sustainable agricultural practices and developing community rice mills and cooperatives in order to cut out commodity brokers and improve profits (Suebsman, Kelly & Sleigh, 2013). Participants who participated in the growing of phak wan pah vegetable project, owning a farm area of approximately 1-3 rai have a substantial debt reduction and are able to generate income from harvesting phak wan pah for 6-8 months a year. The farmers are able to earn 150-200 Baht per kilogram and potential earnings of more than 100,000 baht per year. Villagers can be self-reliant and can live life on the basis of sufficiency, stability, and be good role models. The participants initially joined the project as volunteers, then become knowledge managers in self-reliance through the PAR process, and have a sustainable development establishment grounded on the philosophy of sufficiency economy.

And the program could enhance understanding attitude, and skills of learning management a pilot project had indicators, retention in learning after studying 2 weeks in action learning challenge of secondary teachers in the development of self- learning module of entitled "Doctoral Program Learning Module on Developing Leading Secondary School Teacher in Creative Thinking for enhancement of Students' Learning Activities in Thailand. (Chantarasombat & Sombatsakulkit. 2021: 138-149) So the same study is entitled "KM, PAR, Sufficiency Economy Philosophy, and Growing Phak Wan Pah for Self-reliance. An analysis of the nutrient testing results from large and small leafy wild vegetables in the amount of 200 g / bag were examined on August 28, 2020 to September 23, 2020, and found that they were antioxidant vegetables. Nourishing the body in 100 grams contains the macronutrients calcium = 6,185 mg / kg, phosphorus = 1,235 mg / kg and vitamin A = 247.23 mg / kg. And teeth Have a good call and cure allergy for the Great Northeastern University Blackout innovation for tea of

double-high quality (http://www.central lapthai.com/TRKK63/13602/23 SEPTEMBER 2020). Also, many were surprised at the lack of service and at how nice it was not to technology for a while. While not the purpose of this paper, it is worth noting that a short duration blackout was actually considered kind of fun (Jennex. 2012: 62). Most respondents focused on either their cell/smart phone service/experience or on experience. A having the food Patent in the name of "Phak Wan Pah Palang Song Cha-nid Song" or ``Double Energy for Pak-wan tea" no. 44-2-00064-2-0001 on May 13, 2021 which will be in the hermetically sealed container. This could gain more income through a mixed-research method which using participatory approach promoted 11 topics of agriculture network, and online learning on Pak-wan plaiting.

XV. RECOMMENDATIONS

15.2 Recommendations for Implementing the Knowledge Manager Development Model

Development course for knowledge managers in learning to grow phak wan pah for self-reliance grounded on the philosophy of the sufficiency economy had a schedule of 32 hours. There are a total of 19 sub-courses which are linked to workshop and group activities. The operational manual of the course is to be strictly followed by the participants.

15.2 Recommendations for Future Research

There should be ongoing, participatory action research with the target community for at least 1 year. An extended research period will increase the efficiency of the development guidelines and processes. It will also reveal the development at the household level and at the group level of a learning community with follow-ups and ongoing reflections to improve the process. The local administrative organizations of Kosum Phisai District (Maha Sarakham Province), Khu Khad sub-district administrative organization, Khong District, (Nakhon Ratchasima Province), and Waeng Yai sub-district administration organization, Waeng Yai District (Khon Kaen Province) should support ongoing research projects.

ACKNOWLEDGEMENT

The authors, on behalf of the Research and Development Unit for Community Strength, Faculty of Education, Mahasarakham University, would like to show our appreciation to the Research and Sustainable Development Research Unit, Northeastern University, Khon Kaen for providing the 2-years budget in support of the research. The authors also like to thank Northeastern University for funding the publication of the research results.

REFERENCES

1. *Al-Adawi, S. (2017). Exploring the Effectiveness of Implementing Seminars as a Teaching and an Assessment Method in a Children's Literature Course. English Language Teaching. 10.*
2. *Bimal, G, (2011). Study on disaster risk reduction and occupational safety in agriculture[1] section in Thailand. 27.*
3. *Chantarasombat, C. (2007). Development of KM Model in Community Organization. Maha sarakham University.*
4. *Chantarasombat, C. (2010). KM and School Management into Learning Organization. Faculty of Education, Mahasarakham University.*
5. *Chantarasombat, C., Srisa Ard, B., Kuofie, M., Murray, J. (2010). Using Knowledge Management to Create Self-Reliant Communities in Thailand. International Journal Knowledge Management.6 (1), 62-78.*
6. *Chantarsombat, C., Boobpamala, B. & Songsri, C. (2018). The Development of Knowledge Management Program for leaders of Self-Reliant Learning Center based on Sufficiency Philosophy in Thailand. Journal of Administration and Development. Pitchayabundit College, 1(1), 55-79.*
7. *Chantarasombat, C. (2019). A model for Construction and Development of Network of Community Organization Learning*

Process: A Case for Self-reliance in Thailand. Journal of Education. Mahasarakham University, 13(4), 53-67.

8. *Chantarasombat, C. & Sombatsakulkit, E. (2021). Doctoral Program Learning Module on Developing Leading Secondary School Teachers in Creative Thinking for Enhancement of Students' Learning Activities in Thailand. International Journal of Higher Education. 10(3), 138-149.*
9. *Chantarasombat, C. & Agsonsua, P. (2021). KM, PAR. Sufficiency Economy Philosophy, Growing and Producing Phak Wan Pah for self-reliance. Multicultural Education. 7(7), 222-236.*
10. *Chantarasombat, C. & Prasertphorn, V. (2021). Developing a learning Resource Leader on Producing and Transforming Phak Wan Pah for self-reliance. Multicultural Education. 7(7), 518-526.*
11. *Chantalakhana, C. & Falvey, L. (2008). Sufficiency Economy: An Approach for Smallholder Agricultural Development to Enhance Pease and Stability. Invited Plenary Paper, Thirteenth Asian Australasian Animal Production Congress, Hanoi.*
12. *Cheruiyot, Joseph & Sang, Nelly & Ngetich, Festus. (2020). Knowledge Management Practices, Challenges and Coping Strategies Adopted by Public Agricultural Extension: A Case of Nandi-Hills Sub-County, Nandi County, Kenya. Asian Journal of Agricultural Extension, Economics & Sociology. 1-13.*
13. *Donn, B. (2006). Urbanization and Sustainability in Asia. Asian development bank, ADB cites Alliance. 8-11.*
14. *Eua-anant, P,. Ayuwat, A & Promphakping B. (2011). "Relations Between Positive Impacts Of CSR, External Support, CSR Knowledge And The Degree Of CSR Practices In Thai Small And Medium Enterprises". International Business & Economics Research Journal.*
15. *Igbinovia, M. & Ikenwe, Ii. (2018). Knowledge management: processes and systems. 10(11), 17-26.*
16. *Information Impact. Journal of Information and Knowledge Management. 8(2), 26.*
17. *Jennex, M. & Lorne, O. (2005). "Assessing Knowledge Management Success". International Journal of Knowledge Management. 1(2), 33-49.*
18. *Jennex, M, Lorne, O. & Theophilus, A. (2003). The Need for an Organizational Knowledge Management Strategy. Proceedings of the 36th Hawaii International Conferences on System Sciences – 2003.*
19. *Jennex, M. (2005). The Issue of System Use in Knowledge Management Systems. Proceedings of the 38th Hawaii International Conference on System Sciences – 2005.*
20. *Jennex, M. (2007). Modeling Emergency Response Systems. Proceedings of the 40th Hawaii International Conferences on System Sciences – 2007.*
21. *Jennex, M. (2009). Knowledge Management in Support of education. Journal of Administration and Development, Mahasarakham University Volume 1 Number 2 May-August 2009.*
22. *Jennex, M. Murali, R. (2009) Knowledge Management in Support of Crisis Response. Int. J. of Information Systems for Crisis Response and Management, 1(3), 69-83, July-September 2009, 69.*
23. *Jennex, M., Smolnik, S., David, C. (2011). Strategies for Knowledge Management Success. Towards a Consensus Knowledge Management Success Definition. Information Science Reference (an imprint of IGI Global).*
24. *Jennex, M. (2012). Social Media-Viable for Crisis Response? Experience from the Great San Diego/Southwest Blackout. International Journal of Information Systems for Management. 4(2), 53-67.*
25. *Jennex, M. (2013). Knowledge Management Success in an Engineering Firm. Engineering Management Reviews (EMR) Volume 2 Issue 3, September 2013.*
26. *Jennex, M., Smolnik, S., & Croasdell. (2012). Where to look for Knowledge Management Success, 45th Hawaii International*

Conference on System Sciences, HICSS45, IEEE Computer Society, January 2012.

27. *Jennex, M. (2013). Knowledge Management Success in an Engineering Firm. Engineering Management Reviews. 2(3), 65-74.*
28. *Kampang, W. (2014). Model of Learning Source Development by Participation of Basic School Commission: A Case Study of Ku Ka Sing Prachasan School, Kaset Wisai District, Roi-et Province. Master of Education Thesis in Educational Administration, Faculty of Education, Mahasarakham University.*
29. *Khao Khua Muang, A. (2014). Sufficiency Economy Agritourism: Globalizing Thai Food in the Urban Fringe. International Journal of Economic and Social Sustainability. 1. 3-21. Laboratory, Central. Thailand Co. Ltd, http://www.centrallapthai.com/TRKK63/13602/23 September 2020.*
30. *Lee, J.H., Kim, Y.G. (2001). A stage model of organizational knowledge management: A latent content analysis. Expert System with Applications, 20(3), 299-311.*
31. *Lendzion J.P. (2015), Human Resources Management in the System of Organizational Knowledge Management. Procedia Manufacturing, 3, pp. 674-680.*
32. *Leonard, H. & Marquardt, Michael. (2010). The evidence for the effectiveness of action learning. Action Learning: Research and Practice. 7. 121-136.*
33. *Leupanya, C. (2012). Participatory Model between School and Community in Development of Sufficiency Economy Learning Center: A Case Study of Naka Sub-District, Wapi Pathum District, Maha Sarakham Province. Master of Education Thesis in Educational Administration, Faculty of Education, Mahasarakham University.*
34. *Manolai, S. (2014). Learning Center of Sufficiency Economy by Mr. Sawang Manolai, Handbook for Knowledge Manager, the Leader of Self-Reliant Learning Center Based on Sufficiency Economy Philosophy. Unit of Research and Development for Community Strength and KM, Faculty of Education, Mahasarakham University.*
35. *Marquardt, M.J. (1999). Action Learning in Action: Transforming Problems and People for Word Class Organization Learning. Palo Alto: Dares-Black Publishing.*
36. *Nonaka, I. & Takeuchi, H. (1995). The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation. New York: Oxford University Press.*
37. *Panich, V. (2007). KM: Professional Edition. KM Institute (KMI). p. 6.*
38. *Panitz, T. (1999). Benefits of Cooperative Learning in Relation to Student Motivation", in The all, M. (Ed.) Motivation from within: Approaches for encouraging faculty and students to excel, new directions for teaching and learning. San Francisco, CA; USA. Josey-Bass publishing.*
39. *Prathumpha, C, (2014). Lessons in the Development of Sufficiency Economy Learning Center, Ban Non-Rang. Development of knowledge managers, teachers, learning centers, self-reliance According to sufficient economic guidelines. Research and Development Unit-Community Strength and KM. Faculty of Education, Mahasarakham University.*
40. *Poynder, R. (1998). Getting to the nuts and bolts of knowledge management. Information World Review, 135(135), 20.*
41. *Raelin, Joseph. (2008). Does Action Learning Promote Collaborative Leadership? Academy of Management Learning and Education. 5.*
42. *Radu, Catalina. (2012). Action learning and knowledge management. Proceedings of the European Conference on Knowledge Management, ECKM. 2. 975-983.*
43. *Rammasoot, P. (1997). Collaborative operation research. Bangkok: Public Health Institute Mahidol University.*
44. *Ramazanzade, K. Ayati, M. Shokohifadrd, H. & Faarshid, F. (2019). Pedagogical Knowledge Management and Its Application in Medical Education: A Research Synthesis*

Study. Future of Medical Education Journal. 9(1), 51-58.

45. *Siri Phanupong, Thammawich & Rungkasiri, Tippakorn. (2017). A business practice of sufficiency economy philosophy: A contribution to performance of new product.*
46. *International Journal of Productivity and Quality Management. 20. 139.*
47. *Smart, Karl & Csapo, Nancy. (2007). Learning by Doing: Engaging Students Through Learner- Centered Activities. Business Communication Quarterly. 70.*
48. *Smith, W. R. (2001). The levels of Inquiry Matrix in Developing Written Lesson Plans for Laboratory Centered Science Instruction. Dissertation Abstracts International. 63(2): 3947-A; August, 2001.*
49. *Seubsman, S. & Kelly, M. & Sleigh, A. (2013). The Sufficiency Economy and Community Sustainability in Rural Northeastern Thailand. Asian Culture and History. 5.*
50. *Usaphonthian, S., (2016). Lessons Learned from the Phak Waan Pah Development Program of Sadu Isan Group – Development Model of School and Community Participation In Managing Self-sufficiency Learning Center: A Case of Ban Loa District, Kosum Phisai, Maha Sarakham. Research and Development Unit for Strength Community and KM, Mahasarakham University.*
51. *U-tantada, S., Mujtaba, B. G., Yolles, M. & Shoosanuk, A. (2016). Sufficiency economy and sustainability. Thai Interdisciplinary Research. 84-94.*
52. *Wasi, P. (2002). KM. Kanchanaburi: The Conference for Outlining the Pilot Project of KM. 27 July 2002 at Kanchanaburi Province.*
53. *Welskop, Wojciech. (2013). Action Learning in Education. Poland: Academy of Business Administration and Health Sciences.*
54. *William, A. (2011). Beyond student centered learning towards educative pedagogies. Proceedings the 4th International Conference on educational research-2011.*
55. *Zecca, F. & Rastorgueva, N. (2017). Knowledge management and sustainable agriculture: The Italian Case. Quality - Access to Success. 18. 97-104.*

Note 1: Appendix: Photo producing "Phak Wan Pah Palang Song Cha-nid Song" Faculty of Education, Northeastern University and Community Enterprise of Loa-Sadu Isan Phak Wan Pah Group.

APPENDIX

AUTHORS' BIOGRAPHICAL NOTE

Chalard Chantarasombat is an associate professor at Northeastern University and head of the research unit of Strength Community and Knowledge Management RUSCKM). Chantarasombat's specialties are education and nonformal education, research community and development, knowledge management in the community, network organization and group process effectiveness, innovation for learning Module and program creative thinking on educational administration and leadership to students and teachers. Professor Chantara sombat serves as the Knowledge Management Systems Track Conference co-chair at the 1st International Conference Education Reform 2007, Sofitel Raja Orchid Hotel, Thailand and the 2nd International Conference Education Reform 2009, themes "Cultural Diversity and Sustai-

nable Education in a Changing World", Charoensri Grand Royal Hotel, Thailand. He is the author of over 35 journal articles, book chapters, and conference proceedings on knowledge management, community organization, network community, and enterprise. He holds a B.Ed. in Geography from Srinakharinwirot Mahasarakham University and a M.Ed. in adult education from Srinakharinwirot Prasarnmit University, a D.Ed. in educational administration and development from Mahasarakham University. He was the Vice Dean of Faculty of Education, Mahasarakham University from 2006 to 2012 and the Vice President at Pitchayabundit College in 2018. He is named with the prestigious title-Dr.Chalard Chantarasombat for B.Ed.(Hons), Ph.D. Educational Foundation and Administration, Fellow of Royal Council of Social Science(FRCHSS) and Open Association of Research Society(OARS) USA, this honor has been conferred on Saturday 22 nd of January 2022. Now, He is the lecturer of the Doctoral of Philosophy Program in Education Administration and Leadership, Northeastern University. E-mail: chalard.cha@neu.ac.th

Pha Agsonsua

Thai national, ID card 3570101759240, Date of birth-21 July 1938, 185 M.2 Wang Yai District, Khon Kaen Province Thailand, High school: Khon Kaen Wittayayon School, Khon Kaen, 1955, B.Ed. (Hons), Srinakharinwirot University, Bangkok, 1962 (Elem.Ed. with English Major), M.A.: Supervision, Ohio State University Columbus, Ohio, U.S.A.1964. Ph.D. Educational Foundation and Administration, Southern Illinois University, Illinois, U.S.A, .1974. Dr. Pha was an elementary school teacher, college instructor, university president and also an M.P. and senator of Thailand. He is currently a chair of Ph.D. program in educational administration at Northeastern University, Thailand. E-mail: pha@neu.ac.th