

Integrating the King's Working Styles and Participatory in Forest Restoration Manual Development for Border Patrol Police School, Kanchanaburi Province

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Abstract—The research on integrating the King's working styles and participatory in forest restoration manual development for border patrol police school, Kanchanaburi province, 6 steps provided by application active learning approach.

Step 1 Creating awareness, using questionnaires and focus groups. The needs were about forest restoration and application the King's working styles and focus group results were about focusing on large trees, trees were available locally, easy and short time to plant, fruit-eaten and could be sell, balanced with trees in school, local participatory, equal opportunity to learn and all involved understand in same directions.

Stage 2 Forest restoration planning. Main content was learning plans development. Integrated contents were the King's working styles and Sufficiency Economy Philosophy.

Step 3 Implement learning plan for forest restoration in schools. Part 1 was results of participation in each learning plan, part 2 was achievement test result.

Step 4 Evaluate forest recovery consist of earthworm surveyed and observed animals coming into the forest.

Step 5 Knowledge management was forest restoration manual development, the suggestions were provided example, best practice, more illustrations, adjust language, technology integration, content adoption to related activities in school.

Step 6 Cultural and security evaluations were at the highest level.

Index Terms—Application active learning into area-based approach, the forest restoration manual development, participatory, the King's working styles.

I. INTRODUCTION

Development people through the education process was an important strategy that all parties must continue to operate. For develop Thai society that holds "people" as the center of development [1] leading to quality of life and good health, conserve and utilize natural resources appropriately.

At practice level must studied management in accordance with interests, learned from real experiences to make learning could happen all time [2]. The school must cooperate with relevant agencies in school [3]. So participatory was important guideline that all parties need to take into account.

In Kanchanaburi province there was border patrol police

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schools, located in countryside so continuous academic service from Faculty of Education, Kanchanaburi Rajabhat University was required. Because of be the institute that has to carryout about new personnel manufacturing and regular staff development [3]. The Faculty of Education must continue to work together with agencies in the area.

The King's working styles, the way to work together, was corresponds to Thai context. Application to many areas made people happiness and elapse from suffering. Although it was good principle, in practice there were many problems such as 39.41% of teachers in Kanchanaburi understand about applying in moderate level, 7.11% confident in the high level, 71.43% needed to apply but could not did themselves and 51.25% wanted to work together with Kanchanaburi Rajabhat University or agencies that had experience of applying.

Forest was an important natural resource of Kanchanaburi with approximately 60% of the area [4]. The forest destruction has been decreasing every year due to deforestation [5]. Such forest damaged cause main natural rivers directly affected which may be more severe in future. One way to address problem was using clear study manual [6] that could be more confidence that would help local to develop. Come currently, forest restoration manual in Kanchanaburi was not tangible.

From the needed above researchers were interested in integrating the King's working styles and participatory in forest restoration manual development for border patrol police school, active learning in area-based form, including to study cultural and security. The findings could be using as a guideline to develop other student's aspects subsequently.

II. RESEARCH OBJECTIVES

- 1) To forming awareness of forest restoration to students, teachers, administrators and communities about forest problems that occur in the area.
- 2) To plan for forest restoration using participatory processes. There were selection of tree, learning more and follow young plans.
- 3) To application forest restoration planning into practice. The location chosen, data collection design and data analysis.
- 4) To evaluation the forest restoration. It evaluates the return of the animals and tracks the recovery of the forest.
- 5) To knowledge management. Be the forest restoration manual development for the border patrol police schools.
- 6) To evaluation the culture and security of the border

patrol police school in Kanchanaburi province.

III. RESEARCHER HYPOTHESIS

- 1) After the experiment border patrol police schools had more knowledge, awareness and practice in forest restoration and were able to development the forest restoration manual for border patrol police schools, Kanchanaburi province.
- 2) After the experiment border patrol police schools had more culture and security than before experiment.

IV. SCOPE OF THE RESEARCH PROJECT

A. Variables Used in the Study

Dependent variable: The forest restoration manual for the border patrol police schools, Kanchanaburi province.

Independent variables: The integration of the King's working styles and participatory process.

B. The King's Working Styles

Consist of 23 principles: Study information systematically, explosion from within, solve problems at small point, follow the sequence, social landscape, integrity, no textbook, save and get most benefit, make it easy, participation, common benefits, services at a single point, use natural help natural, use unjust condemnation unjust, forming forest in human heart, loss is gain, self-reliance, enough to eat and to live, Sufficient Economy Philosophy, honesty and sincerity, work happily, perseverance and knowledge of care and harmony.

V. POPULATION AND SAMPLE

The population were 12 border patrol police schools in Kanchanaburi province, Tilaipa, Sahathanakrankrungtep, Sunthonchaach, Vigitvittayakan, Baan Maenunnoi, Baan Radar, Baan Tonmamuang, Baan Bungtilang, Hangkelthai, Baan Pratudan, Mitmuanchon 2 and Suthasinee border patrol police school.

The samples, from population list, selected by simple random sampling, were 3 schools: Suthasinee, Baan Radar and Sunthonchaach border patrol police school.

VI. RESEARCH MYTHOLOGY

In order to meet the objectives of the research 6 steps had to be taken: step 1 forming awareness on forest restoration, step 2 forest restoration planning, step 3 application forest restoration planning into practice, step 4 evaluation the forest recovery and stage 5 knowledge management. Focusing on the process involved with the school and related agencies and steps 6 culture and security evaluation, as Fig. 1.

VII. RESEARCH INSTRUMENTS

Types of research instruments were as follow:

- 1) Questionnaire. The questionnaire was used for need assessment about the King's working styles, importance

of forest restoration, application of the King's working styles and Sufficiency Economy Philosophy to forest restoration.

The questionnaire was 5 rating scales. IOC from content validity ranged from 0.80 to 1.00, conclude from means score were very high, high, moderately, low and very low level.

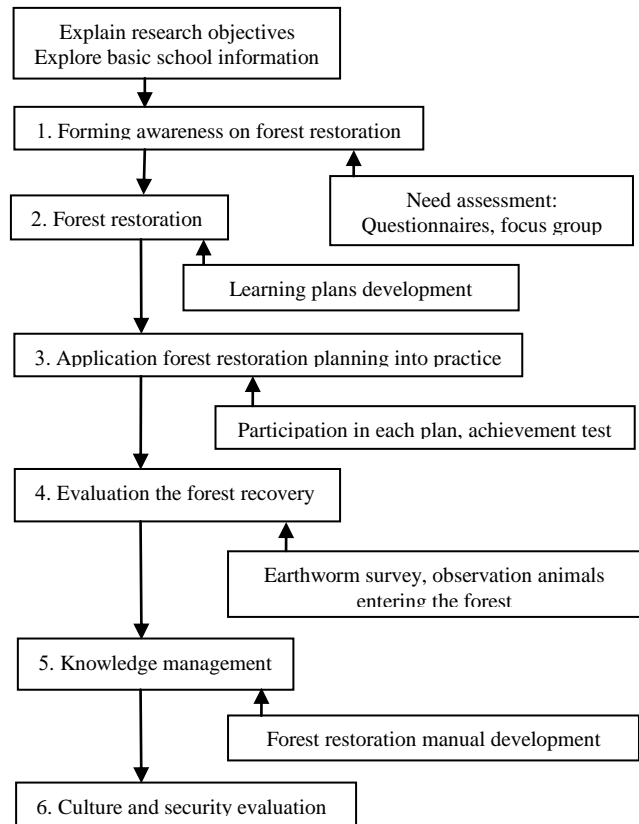


Fig. 1. Research proceed on 6 steps.

- 2) Focus group. The same issue used in questionnaire. The content validity of each issue ranged from 0.80 to 1.00.
- 3) Forest restoration in school learning plans. The forest restoration consist of 8 learning plans. Finding content validity and setting criteria for concluding that the IOC must be equal to or greater than 0.50.

Conclusions, if IOC less than 0.50, the learning plan did not congruence the objectives and if IOC equal to or greater than 0.50 the learning plan was congruence with purpose.

- 4) The appropriate for learning. It was assessment for determine the relevance in using with target group. 5 rating scales was designed. The appropriateness define as very high, high, moderately, low, and very low levels, respectively, and the standard deviation must less than 1.00.
- 5) The achievement test for each learning plan
The test was 4 multiple-choice, 15 test items for each learning plan and based on objective-based approach.
Determine the content validity and set the criteria as the learning plan. The test has an IOC value between 0.60–1.00.
- 6) The achievement test before and after experiment.
The test was a 4 multiple-choice, 50 test items.
Determine content validity and define the assessment criteria for each item in the way as the learning plan. The test has IOC between 0.80–1.00, the difficulties ranged from 0.46–0.78, the discriminative was greater then 0.36 and the

reliability by KR–20 formula was 0.79.

7) The culture and security questionnaire

The culture was provided in 5 aspects [7]: the livelihood, food, clothes, health and aspects of living.

The security based on 12 dimensions [8], defined as housing, health, food, education, employment and income, family, community and social support, religion and culture, safety in life and property justice politics and environment energy resources.

Drafting the culture and security questionnaire was in the 5 rating scales form and the content validity was defined in the same way as the learning plan.

VIII. DATA ANALYSIS

Quantitative data were analyzed by means (\bar{x}), standard deviation (s.d.), t–test and F–test.

Qualitative data from focus group between researcher, teachers, principals and parents who were key performance persons were analyzed by content analysis.

IX. SUMMARIZED

Step 1: Forming awareness in forest restoration.

The populations were 12 border patrol police schools, Kanchanaburi province. The samples used were 3 schools, selected by simple random sampling, Suthasinee, Baan Radar and Sunthornchach border patrol police school.

The instruments were questionnaires and focus groups.

The questionnaires were using with 120 person from 3 schools. The focus group was took place between 3 key informants of each school. The total were 12 people.

The results show that the needed were importance of forest restoration with the high level. Follow by application of the King's working styles for forest restoration. For focus group compiled of 10 recommendations to comply with application active learning into area–based approach:

- 1) Forest restoration in school should focus on large trees. The tree was longevity. The large shade of trees make shade spacious and could making relax place as learning place.
- 2) The wood should be in local or people were generally familiar. Because there was no problem in adjusting to the conditions of the climate, soil or other trees in the vicinity.
- 3) Can be easily providing, not expensive, so school have no problem about budgeting to supply the trees to plant.
- 4) Short time to plant. Should start with seedlings at large enough, should not use seeds for taking much to take care of.
- 5) A tree that could be fruits–eaten. The fruits could take part of lunch program or other school projects.
- 6) The fruits–eaten also could be sold. To promote basic vocational skills or promote the income of school or of students during learning in school.
- 7) The trees that be planted and premises within school must be balanced, enough space to grow, place of school be good looking, could use for other benefits, not just forest.
- 8) Local should be involved in implementation, any

activities that can participate should encouraged to share.

9) Within the school, students should have opportunity to learn about the forest equally.

10) All parties involved must have the knowledge or understanding of forest planting activities in the same way.

Stage 2: Forest restoration planning.

Setting primary coordinators of 3 schools for assigned as liaisons with researcher and involved in drafting, finding quality of learning plan and application the learning plan with students. There were 8 learning plans: tree selection, follow young plants, the ferment fertilizer conducted, preparing trees planting hole, planting trees, planning to plants maintenance, plants maintenance and the new forest maintenance.

Each of learning plan consist of 8 components: expected learning outcomes, learning content, concept, integrating the King's working styles, integrating the Sufficiency Economy Philosophy, learning activities, learning media and measurement and evaluation.

Trying out 8 learning plans includes consistency and appropriateness evaluation. Finding that IOC ranged from 0.80 to 1.00. The appropriate of learning plan were at the high and very high level.

Part 1: Results of participation in each learning plan.

Selection trees in accordance with the context of school. In practice section was tree selected. Suthasinee, Baan Radar and Sunthornchach border police patrol school selected mango, rambutan and plum mango trees, respectively. Knowledge section 3 schools learned to plant all of 3 trees.

The learning plan consists of 3 aspects: knowledge, process skills and desirable features. For the work piece, the students and the teachers jointly set boundaries for planting, watering, fertilizing, maintenance, growth and yield, integration with the King's working styles. The study focuses on studying the geography of forest in schools. The active learning activity consists of 4 steps.

- 1) Explains, distribute knowledge sheet for further study.
- 2) Divide students into groups to perform tasks assigned.
- 3) Each group summarizes and presents the findings.
- 4) Jointly to summarize works of each group.

Consequences to learner from 4 steps above were:

- 1) Science process skills. Students practice to observation, record and summarize when learning in schools.
- 2) Know and more understand the nature of forest.

Part 2: Achievement test result.

The achievement test of Suthasinee border patrol police school found that pre–test mean scores and s.d. were 26.97 and 4.84, post–test were 38.67 and 2.87. Baan Radar border patrol police school pre–test mean scores and s.d. were 25.31 and 4.45, post–test were 39.78 and 2.54. Sunthornchach border patrol police school pre–test mean scores and s.d. were 26.31 and 4.26, post–test were 39.83 and 2.35. Compare mean scores before experiment was as follow Table I.

Compare mean scores before experiment from 3 schools found that $F=1.05$ and $\text{sig}=0.35$ higher than the criterion, 0.05. So the mean scores (29.97, 25.31 and 26.31) was not statistically significant at the 0.05 level. That means the mean difference was not significantly.

Compare mean scores after experiment from 3 schools was as Table II.

TABLE I: COMPARE OF MEAN SCORES BEFORE EXPERIMENT

SV	SS	df	MS	F	Sig.
1. between group	43.14	2	21.57	1.05	0.35
2. within group	1,802.05	88	20.48		
3. total	1,845.19	90			

TABLE II: COMPARE MEAN SCORES AFTER EXPERIMENT

SV	SS	df	MS	F	Sig.
1. between group	26.01	2	13.00	1.93	0.15
2. within group	592.27	88	6.73		
3. total	618.29	90			

Compare mean scores after the experiment from 3 schools found that $F=1.93$ and $sig=0.15$ higher than the criterion, 0.05. So the mean scores for the tests (38.67, 39.78 and 39.83) was not statistically significant at 0.05 level. Compare mean scores before and after experiment was as Table III.

TABLE III: COMPARE MEAN SCORES BEFORE AND AFTER EXPERIMENT

School/test	n	mean	s.d.	t	df	Sig
1. Suthasinee border patrol police school						
before experiment	30	26.97	4.84	30.53	29	0.00
after experiment	30	38.67	2.87	73.82	29	0.00
2. Baan Radar border patrol police school						
before experiment	32	25.31	4.45	32.15	31	0.00
after experiment	32	39.78	2.54	88.72	31	0.00
3. Sunthornchach border patrol police school						
before experiment	29	26.31	4.26	33.26	28	0.00
after experiment	29	39.83	2.35	91.41	28	0.00

Comparison of mean scores before and after experiment of Suthasinee border patrol police school found that $t=30.53$, 73.82 and $sig=0.00$ less than criterion, 0.05. So mean scores was statistically significant at 0.05 level. Baan Radar border patrol police school found that $t=32.15$, 88.72 and $sig=0.00$ less than criterion, 0.05. So mean scores was statistically significant at 0.05 level. Sunthornchach Border Patrol Police School found that $t=33.26$, 91.41 and $sig=0.00$ less than criterion, 0.05. So mean scores was statistically significant at 0.05 level, so after experiment score was higher than before.

Step 4: Evaluation of forest recovery.

Part 1: Earthworm survey. Random area for 3 replication survey, measure the width and length of the plots grown in meters, the width and length were selected by randomly, getting 3 square meters as areas and survey the earthworm in each square meter, 15–20 cm. deep, and then examine the earthworm in random area. The results showed that 3 schools found earthworms in all three surveyed areas as Fig. 2.



Fig. 2. Students survey the earthworm.

Part 2: Observation of animals entering into the forest. By assigning students to observe animals entering into the forest,

they found dragonflies and birds in the forest.

Step 5: Knowledge management.

The purpose of knowledge management was to develop forest restoration manual with consist of 10 chapters: planting awareness, plants selection, follow young plants, ferment fertilizer conducted, preparing trees planting hole, planting trees, planning to plants maintenance, plants maintenance, new forest maintenance and evaluation of forest recovery.

The congruence evaluation of forest restoration manual with the most consistent assessment were follow young plants and plants maintenance. The appropriate evaluation found that the most appropriate were plants maintenance and evaluation of forest recovery.

Additional comments of the experts.

- 1) Each chapter should be clear and really examples in community. May be best practices or local wisdom.
- 2) There should be more illustrations about students or person involved during forest restoration activities.
- 3) If content was appropriate or possible, language should be adjusted to suit learners in the basic level.
- 4) Related to awareness make this manual interesting. However, should integrated with technology as appropriate.
- 5) It should offer more content according to lunch or other activities, or propose ways to further career in community.
- 6) Should organize activities in multidisciplinary form and each content study focus on group working techniques.
- 7) Focusing on specific trees because trees were unique.
- 8) Integrated–agricultural content should be integrated. To prevent damaged from mono–agricultural.

Step 6: Cultural and security evaluation.

The cultural evaluation for overall was at a high level. For each item the most which at the highest level was knowledge promotion and practical in cultivation. The security evaluation for overall was at the high level. For each item the most which at the highest level was the education and learning, respectively.

X. DISCUSSIONS

- 1) From schools choose edible fruit tree. Because school was located in rural area. The management needs to increase nutrition, help students earning money to family security. This was so important because one factor for development student was food that help students to have healthy body.

Reforestation was suitable for current conditions. The need for space was so great cause forest was destroyed, but little interest in afforestation [9]. shows that the forest was decline, so the current of conservative to maintain a forest was risen [10]. School should be more forest although there was obstacles but necessary to carry out and should develop 4 strategies [11] about product development, personnel development, public relations and encourage more trees.

Reforestation in schools may come from seeing the benefits of trees in preventing global warming. Our world usually has automatic mechanism to balance [12], [13]. Reducing greenhouse gas emissions through reforestation was good and sustainable way to proceed [14] because the forest was low

cost compared to other methods and easy care because trees can take care of themselves.

- 2) Based on the findings, parents and local participated in forest reforestation in school. This may due to seeing the importance of reforestation. If school alone, may not work, so local would participation from beginning to finish [15]. Many studies found that participation in school was at a high level [16]-[18]. The benefit of participation was many parties could comments what should be done with tree because each tree was different by 2 factors [19]: the tree types and environment. With participation from many parties the afforestation in school was successful as required.

Participation if applied to reforestation would be planned setting. The process of afforestation could defined in several ways, depending on context of school [20]. Such as 12 stages of forest reforestation [21], needs assessment, work schedule, prepare seedlings, prepare clay, straddle planting, planting, fertilizing, weeding, surveying, evaluation and fire protection.

- 3) The results showed that overall security was at a high level. This was because the integration of the King's working styles suitable in context of the Thai people [22], to be used in the lifestyle and the value of humanity [23].

Activities of this research were systematically designed. In line with 3 fold of the Sufficiency Economy Philosophy [24]. made culture and security work as desired. The Sufficiency Economy Philosophy was guiding of living at all levels [25]. By creating reasonable tolerance and good immunity.

In practice, the creation of morality according to the Sufficiency Economy Philosophy was five steps [26], applied in teaching practice. There were 5 levels of knowledge in agricultural management [27]. Moral in management of agricultural education, rationality of agricultural learning management, good immunization in agricultural management and moderation in agricultural learning management [28].

- 4) The results showed that overall culture was at a high level. As matter of fact, school was part of community that must be oriented, that was, the tendency of schools [29], It was easy to face the outside world if the community has strong social, cultural and production base.

Cultural issues related to success of the reforestation activities in school were local wisdom [30], the behavioral ability to solve, collection through customary processes.

The use of local wisdom of school make more operation in school. After studying at the 0.01 level, found that students' knowledge of development of local wisdom conservation was more than 80%. all rights reserved [31]. Over 80% of students have high level of knowledge and satisfaction of the visitors, the performance of the students at very high level [32].

XI. SUGGESTION

- 1) The application of the King's working styles for forest restoration in school. Students, teachers and administrators must work together consistently and be consistent with strengths of school and opportunities of community.
- 2) The school must set clear policy to restore forest with external cooperation, focus on building learning resources for development of students, including

concrete follow up.

- 3) In this study, 3 types of trees species, mango, rambutan and plum mango, May be surveyed by needs assessment to select other trees for restoration activities and then research the methods of planting to suit the active learning and context of each school.
- 4) It should be studied for the expansion of forest areas in school. Focus on propagation of plants in a variety of ways, reduce the time of seedlings. That would faster in forest restoration in school.
- 5) Study the ways to strengthen students to take some income during studying or make forest restoration was the way for extra income. In order to make research could create basis career or occupation in the community.
- 6) Trees planting in research was mono-agricultural. Therefore, it was advisable to find ways adapting to the cultivation of integrated more plants according to the Sufficiency Economy Philosophy. Adding value to product without increasing plantation area.

XII. CONCLUSION

Development forest restoration manual for border patrol police schools should strengthening more knowledge, awareness and practice in forest restoration and also culture and security. This could be guideline for other development in school and community as appropriate or possibility.

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