
Management of promoting agriculture subjects through KLUAYTOD Model in an elementary school in Namnao, Phetchabun, Thailand

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Abstract KLUAYTOD model was designed to develop and promote school agricultural learning and agricultural careers in the community. The participation in school development through the said activities which were consistent and in accordance with the community demand which was found at the highest level ($\bar{x} = 4.68$). The school agricultural activities included organic vegetables gardening, herbal plants growing, rearing of animals such as egg-laying chicken, native chicken, frog, deer, and catfish (in a circular cement pond). Meanwhile, the agricultural careers in the community are promoted by the school for students, school personnel, and interested people which planted vegetable gardening, growing of maize, sweet tamarind, organic vegetable, highland temperate vegetable, para rubber, cut flower, and animal domestication, respectively. All these activities were practised in Namnao, Phetchabun, Thailand. The integration of agricultural learning facilitations under the guidelines of KLUAYTOD model comprised of 7 main components: "courage", "taking action", "discipline and culture", "sustainability", "technology", "quality organization", and "good outcomes". The model was tried out for the academic year of 2017-2018. There was a statistically significant difference at 0.05 of learning achievement before and after using the model. The 7 activities could develop students' learning achievement effectively. Overall, the informants were satisfied at a high level in terms of agricultural learning activities and promoted agricultural careers in the community ($\bar{x} = 4.00$ and 3.88). The sample groups were highly preferred organic vegetable gardening/egg-laying chicken rearing ($\bar{x} = 4.38$ and 4.25) and herbal plant/maize growing ($\bar{x} = 4.46$ and 4.32d). The said model was similarly appropriated and possibly adaptable for sustainable school development ($\bar{x} = 4.32$). Moreover, the sample groups were satisfied with the experiment by the stakeholders at a high level ($\bar{x} = 3.99$). The components such as "courage" ($\bar{x} = 4.48$), "taking action" ($\bar{x} = 4.25$), and "good outcomes" ($\bar{x} = 4.25$) were recorded at a highest level.

Keywords: Agriculture subject, Agricultural learning development, KLUAYTOD Model, School managerial administration, School-based management

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Introduction

Education is an important foundation of the present and future progress. In fact, it is a key factor in developing knowledge, ideas, desired behaviors, and code of conduct of people in the country. In addition, education is an effective tool for solving various societal problems since it is a process of helping people to develop their potential. Thus, it is essential that educational development of people makes them be fully developed in terms of analytical thinking, logic problem solving, self-reliance code of conduct, etc. Importantly, human development is on the basis of the provision of education (Phoonpat, 2010). Hence, country development needs to be done together with the development of people regarding the provision of education as a priority, Education must be developed to cope with rapid change in the advanced information technology age at present.

Generally, the facilitation of basic education can be found widely in villages up to urban communities. Basic education schools may be in a small, medium, or big I size depending on population density of a particular community. It aims to develop the quality of life with equity in an educational opportunity and lifelong learning for self and social development (Office of the National Education Committee, 2020; Wongrakthai, 2005). According to a research report, it is found schools in remote areas are often assessed to be in a moderate level and lower on the basis of quality education. This may be because schools in remote or rural areas usually have the inequality in terms of school personnel, managerial administration, and educational achievement. That is, the number of school personnel and teachers in rural areas is usually far less than there in urban areas (Chiangkoon, 2016).

Namnao is the latest and small-sized district located in Phetchabun province which has many ethnic groups migrating from other provinces such as Loei, Chaiyaphum, Khonkaen, Phetchabun, Phitsanulok, etc. (Office of Namnao District, 2016). They reclaimed agricultural land there for earning a living for a long time by growing sweet tamarind, maize, para rubber, organic vegetables and rearing animals. Based on local reports in 2014, it was found that 50% of the population in Namnao district, with working age of 40 years old and above, were illiterate; there were 15 basic education schools that needed to be improved on the basis of quality education (Rasee *et al.*, 2015). Moreover, they claimed that people living in Namnao district do not have local common culture since they migrated from various places. This might be an important reason for having an effect on the development of education in Namnao district.

Furthermore, the Ministry of Education Thailand (2002), Office of the National Education Committee (2011), Matliam (2001), Office of the Basic Education Commission (2020), Boonprasert (2004)¹, and Chaisiha *et al.* (2013) unanimously agreed that education is not only the burden or responsibility of the school administrators but also the responsibility of all concerned parties. That is, all concerned must participate in brainstorming, decision-making, planning, problem-solving, evaluating, etc. leading to correct and appropriate educational practice. The researchers are, therefore, interested to study on basic education school development model in Namnao district, Phetchabun province. This can be responsive to the needs of the community and ethnic groups with the participation of concerned government agencies and local people. Moreover, this aimed to develop the basic education schools to be self-reliant on the basis of the belief that experience gained from fact-finding at a particular time may not be applied to other places (Boonmaphi, 2018).

The Thai Ministry of Education currently attempts to promote the philosophy of sufficiency economy in schools throughout the country. Bann Huayhinlab School also adopts principles of the philosophy through integration in the form of “Kluaytod” model. This model is employed for the school managerial administration until it was announced to be a sufficiency education institution by the Office of Basic Education Committee in 2012. One project under the philosophy of sufficiency economy run by Bann Huayhinlab School is the school’s agricultural activities compatible with the agricultural careers in the community for integrated community development. This was study anchors on the managerial administration of basic education schools focusing on the promotion of agricultural learning leading to sustainable development of rural areas.

This study aimed to develop the elementary schools as a basis for school agricultural activities learning and agricultural career promotion in the community to develop educational quality based on the school responsibility through “Kluaytod” model of BannHuayhinlab School, Namnao district, in Phetchabun province.

Materials and methods

Scope and delimitation of the study were targeted to the sample groups consisted of 10 school personnel, 125 students at BaanHuayhinlab School and 50 farmer guardians of the students. All of them were obtained by purposive sampling. Learning content included agriculture for elementary students (1st-6th grade levels) which there were done crop and animal husbandry which consistent with local resources. These school agricultural activities comprised

of 6 activities as vegetable gardening, herbal plant gardening, deer rearing, catfish rearing, egg-laying chicken rearing, and native chicken rearing. For the community agriculture, it was emphasized to be consistent with agricultural careers of guardians in the community for convenience in student learning facilitation. School administrators were experienced at least 5 years in school administration, and school personnel was experienced at least 15 years in the development of educational facilitation (15 persons altogether). The study duration was one academic year (2017-2018). A model for school management was developed as a basis for agricultural learning promotion under *Kluaytod* model of Bann Huayhinlab School Namnao district Phetchabun province.

Mixed methodological research was employed for collecting qualitative and quantitative data (Chalakbang, 2017). This study consisted of 4 steps as *Step 1* was exploration of needs and guidelines for developing a school as the basis for the promotion of agricultural activities and learning as well as the community agricultural careers which concerned review related documents and researches on school administration and agricultural subject and activities in the community and content analysis, and exploration of conditions and needs for developing a school as a basis for agricultural activities and learning as well as promotion of agricultural careers in the community. Baan Huayhinlab school was selected to be the representative in this study. Questionnaires and interview were used for data collection as *Step 2* was prepared a model for the school management to be the basis for the promotion of agricultural activities and learning as well as agricultural careers in the community which were the referred researchers resulted from the first step to make a draft which focused in appropriateness and consistency with holding of activities related to the school managerial administration and in coordination with the community. It aimed to concern the reoccurrence of combination learning related to agricultural activities and careers in the community and the model was inspected by 5 scholars from school managerial administration, agricultural teaching and learning facilitation, and those having knowledge and experience in school development. *Step 3* was feasibility study of a model for the school managerial administration as a basis of agricultural promotion activities and learning as well as agricultural career in the community. It was covered under sustainability and guidelines of the "*Kluaytod*" model. The informants in this study consisted of 15 scholars which externally sourced from school administrations, agricultural teaching and learning facilitation and school development. Focus group discussion and assessment forms were employed. Improvement was followed. *Step 4* was *Kluaytod* model which planned for one academic year (2017-2018). A set of questionnaires and interview schedule were used for data collection which conducted with the sample group of 32

peoples (7 educational personnel at Baan Huayhinlab School), 15 student representatives, and 10 community representatives.

Research instruments

The research instruments in this study included questionnaires, interview schedule, focus group discussion, and assessment forms. Item-Objective Congruence (IOC 0.56-0.98) was used for checking correctness and consistency. The research instruments were based on the suggestions of the specialists. The appropriateness assessment form (5-rating scale) was used with the following computation and criteria (Leekitwattana, 2012; Punpinij, 2011; Ivanov *et al.*, 2018).

Score	Scale Limits	Description
5	4.21 - 5.00	Highest
4	3.41 - 4.20	High
3	2.61 - 3.40	Moderate
2	1.80 - 2.60	Low
1	1.00 - 1.80	Lowest

Results

The school managerial administration following the guidelines for using the school as a basis for development that must realize their connection with the community for participatory development. Furthermore, it was found that the study location was an agricultural area where people engaged in farming and other related fields. Thus, guidelines for school managerial administration as a basis for development using agricultural career activities was a main component for sustainable school and community development. In fact, almost all of the farmers in BaanHuayhinlab were guardians of the sample student group. Data from the questionnaires and interview were found that informants wanted to participate in the school development through the school agricultural career activities which were consistent with the community context too be the most ($\bar{x} = 4.68$). Based on its details, almost all of the students (96%) wanted to develop the school through the school agricultural career activities. They suggested that the school agricultural career activities should be based on the needs of the students and possible activities as vegetable gardening ($\bar{x} = 4.40$, S.D.=0.728); egg-laying chicken rearing ($\bar{x} = 3.94$, S.D.=0.934); frog rearing ($\bar{x} = 3.92$, S.D.=0.922); deer rearing ($\bar{x} = 3.74$, S.D.=0.921); herbal growing ($\bar{x} = 3.66$, S.D.=1.224); native chicken rearing ($\bar{x} = 3.64$, S.D.=1.224) and catfish rearing in a circular cement pond ($\bar{x} = 3.54$ S.D.=1.248), respectively. The

informants agreed that agricultural career activities in the community which could be offered to the students, guardians, and the community included vegetable gardening (90%) maize growing (82%) sweet tamarind growing (78%) organic vegetable growing (76%), highland temperate vegetable growing (68%), para rubber growing (68%), cut flower growing (64%), and animal domestication (64%), respectively. In addition, the findings showed that the informants wanted for agricultural activities holding by the school which diversified and appropriated with the learning facilitation for students. It was due to the teacher managed it effectively under existing local resource utilization.

Regarding guidelines for developing the school by using the basis of agricultural promotion career activities in the community. There were 7 main components found together with sub-components of each one which can be promoted successfully which called “Kluaytod” model. The following ones concerned the details of each component. *Component 1* was “courage” which referred to the confidence in managerial administration comprised of being optimistic, not be afraid, uphold the virtues, courageous, choosing a better way to do things, made an effort for improvement, and thinking outside the box. *Component 2* was “taking action” which referred to the decision making and practicing without hesitation which comprised of initiative in creating new jobs, implementation of the newly created jobs and continual participation in the job implemented. *Component 3* was “discipline and culture” which referred to continual learning and practicing which comprised of convention (order), consensus, common practice, accountability, and good organization culture. *Component 4* was “sustainability” which referred to continual development, body of knowledge extension, and practiced for good outcomes which comprised of job security and continuity, improved at all times, further development or extension and dependent on each other. *Component 5* was “technology” which referred to the goals of school quality in various aspects for appropriate development which comprised of information technology for managerial administration, promotion of technology for learning among students, teachers, and other educational personne, and promotion of technology for learning and using among students guardians for participatory educational facilitation *Component 6* was “quality organization” which referred to goals of school quality in various aspects which comprised of system quality of school managerial administration, quality of communication within an organization, and acceptance of the community. *Component 7* was “good outcomes” which referred to positive outcomes from the adaptation of the model to school managerial administration and community development which comprised of good to students for knowledge and experience, good to educational facilitation of the school, good to the school educational personnel,

good to the community in terms of the development of agricultural careers and the community itself, and transferred knowledge and real-life work experience to their children. The results of study in steps 1 and 2 concluded that the narrated from various components in connection with the school and the community is shown in Figure 1.

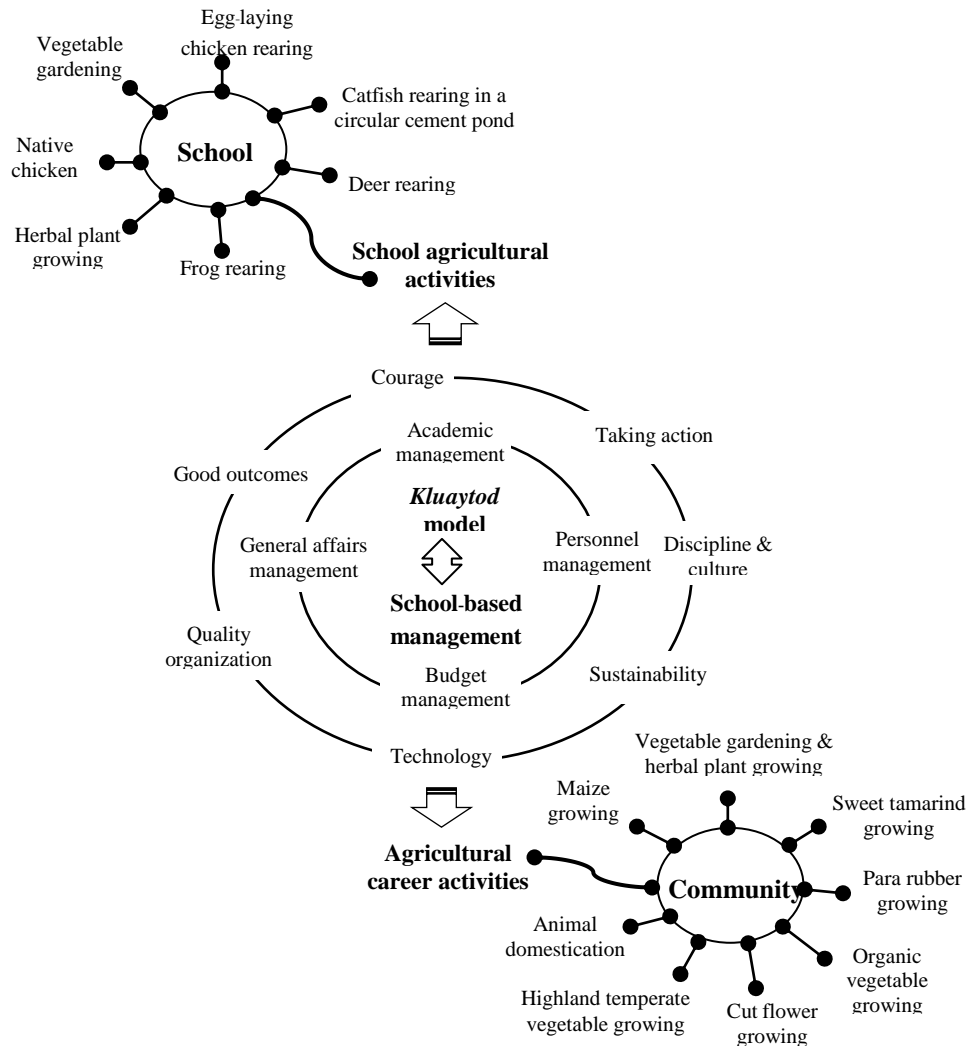


Figure 1. Connection of the school development as a basis for the promotion of agricultural learning and agricultural careers in the community

The connection of school development as a basis for the promotion of agricultural career learning and agricultural careers in the community are explained by the adoption of *Kluaytod* model to the school managerial administration (Figure 1). It was in terms of academic affairs management, general affairs management, budget and finance, and human resource. Regarding obtained qualitative and quantitative data based on the needs and agricultural activities facilitation by the school, stakeholders of the school educational facilitation which agreed that the agricultural activities were appropriated to be good for the promotion of student knowledge, skills and experience. The activities on vegetable gardening, egg-laying chicken rearing, frog rearing, deer rearing, herbal plant growing, native chicken rearing and catfish rearing in a circular cement pond that could rely on existing resources in the school and support of the community. In addition, the agriculture teachers and other educational personnel of the school could integrate the school agricultural activities for effective teaching / learning facilitation.

Similarly, the promotion for agricultural career activities in the community included vegetable gardening, maize growing, sweet tamarind growing, organic vegetable growing, highland temperate vegetable growing, para rubber growing, cut flower growing, and animal domestication which were practised together by students and their guardians outside the school. It was in the form of blended learning using online communication technology, educational trips, and actual practice. In addition, the students' guardians could form a group for knowledge/experience exchange in the teaching, learning facilitation of students at school, or children based at home. There were agricultural teachers and school education personnel to manage the activities together with teachers in other subject groups who were able to integrate agricultural activities to manage the learning for students. When the learning activities were completed, it was found that students who participated in 7 activities in agricultural subjects had better academic achievements as shown in Table 1.

Table 1. Number of students, average mean score, standard deviation, pretest/posttest scores, t-test and statistical significance level

Items	No. of students	\bar{x} (140 Marks)	S.D.	t	Sig.
Pre-learning	52	65.02	13.441	-26.761	.000*
Post-learning	52	102.58	7.601		

*Statistical significance level at 0.5

The sample student group could gain more scores after participating in the agricultural learning activities (Table1). Before the participation, the lowest score was 41 and the highest was 100 out of 140 ($\bar{x} = 65.02$, S.D. = 13.441). After participation, the lowest score was 89 and the highest was 122 ($\bar{x} = 102.58$, S.D. = 7.601) which statistically significant difference level at $P=0.05$. Thus, it could be concluded that the 7 agricultural activities are effectively developed the student learning achievement.

Regarding the agricultural careers campaign in the community which included vegetable gardening, maize growing, sweet tamarind growing, organic vegetable growing, highland temperate vegetable growing, para rubber growing cut flower growing, and animal domestication. The sample student group could join and learn about it with their parents. In fact, it was done through learning outside the school and blended learning using online communication technology, educational trips, and actual practice. Generally, the sample student group was satisfied with the agricultural learning activities and the activities of agricultural careers campaign in the community as shown in Tables 2 and 3.

Table 2. Mean, standard deviation, and levels of satisfaction with the school agricultural learning activities of the sample student group

Agricultural activities	\bar{x} (n=52)	S.D.	Description
1. Vegetable gardening	4.38	0.866	Highest
2. Egg-laying chicken rearing	4.25	0.837	Highest
3. Frog rearing	4.12	0.783	High
4. Deer rearing	4.00	0.714	Moderate
5. Herbal plant growing	3.84	0.801	Moderate
6. Native chicken rearing	3.73	0.972	Moderate
7. Catfish rearing in a circular cement pond	3.69	0.805	Moderate
Total	4.00	0.766	Moderate

Table 3. Mean, standard deviation, and levels of satisfaction with the agricultural career learning activities of the sample student group

Agricultural activities	\bar{x}	S.D.	Description
1. Vegetable gardening/herbal plant growing	4.46	0.873	Highest
2. Maize growing	4.32	0.856	Highest
3. Sweet tamarind growing	4.05	0.826	High
4. Organic vegetable growing	3.92	0.763	Moderate
5. Highland temperate vegetable growing	3.71	0.914	Moderate
6. Para rubber growing	3.57	1.072	Moderate
7. Cut flower growing	3.46	1.018	Moderate
8. Animal domestication	3.51	1.075	Moderate
Total	3.88	0.815	High

The sample student group had overall a high level of satisfaction with the agricultural learning activities ($\bar{x} = 4.00$) (Table 2). Two agricultural activities were found at highest levels of vegetable gardening ($\bar{x} = 4.38$) and egg-laying chicken rearing ($\bar{x} = 4.25$); while frog rearing was found at a high level, and the rest was found at a moderate level.

The sample student group had a high level of satisfaction with the agricultural career activities ($\bar{x} = 3.88$) (Table3). Activities showed the highest levels of vegetable gardening/ herbal plant growing ($\bar{x} = 4.46$) and maize growing ($\bar{x} = 4.32$). Meanwhile, growing of sweet tamarind was found at a high level ($\bar{x} = 4.05$), and the rest was found at a moderate level. The possibility of *Kluaytod* model found to be mostly appropriated and adapted for school sustainable development ($\bar{x} = 4.32$). Based on its details, there were 2 aspects which found at a high level of academic affairs ($\bar{x} = 4.30$), and general management ($\bar{x} = 4.30$). Meanwhile, budget and financial management were found to be appropriated at a moderate level ($\bar{x} = 4.10$). Results of *Kluaytod* model proved in one academic year (2017-2018) showed 32 assessors and informants which considered as stakeholders in the school development and gained impacts of the model adaptation components of the *Kluaytod* model as shown in Table 4.

Table 4. Mean, standard deviation, and levels of satisfaction with the *Kluaytod* model tryout

Components	\bar{x} (n = 32)	S.D.	Description	Ranking
1. Courage	4.48	0.715	Highest	1
2. Taking action	4.25	0.718	Highest	2
3. Discipline and culture	3.75	0.879	High	5
4. Sustainability	3.59	1.073	High	6
5. Technology	3.84	1.019	High	3
6. Quality organization	3.81	1.060	High	4
7. Good outcomes	4.25	0.842	Highest	2
Total	3.99	0.401	High	

The sample group had a high level of satisfaction with the *Kluaytod* model for the school managerial administration as the basis of agricultural promotion learning activities and agricultural careers in the community ($\bar{x} = 3.99$). Based on its details, 3 components were found at a highest level of courage ($\bar{x} = 4.48$), taking action ($\bar{x} = 4.25$), and good outcomes ($\bar{x} = 4.25$). The rest was found at a high level of technology ($\bar{x} = 3.84$), quality organization ($\bar{x} = 3.81$), discipline and culture ($\bar{x} = 3.75$), and sustainability ($\bar{x} = 3.59$). In addition, the assessors showed the reasons in their model assessment to increase

in the number of students from 125 to 178 in the academic year of 2017-2018 with guardians to confident with the school educational facilitation. Learning achievement of the students increased as based on Ordinary National Educational Test (O-NET). There was coordinated in the school and the community development which created in understanding and resource mobilization for the educational facilitation to be consistent with the community. There was empirical work performance in terms of school management form which included the development project for the school agricultural learning center, playground for brain-based learning (BBL), earthen house project, the development project for the school environment, a model for continual and true action-taking of the school administrator, cleaning canteen development project, integration project on career and local wisdom with learning facilitation by local scholars, accountability from the school management, initiation and creation of other means to school development, confidence in the creation of coordination with agencies inside and outside the community, and the project implementation which were directly proved to be useful to the school development, student learning and community service.

Discussion

Based on the *Kluaytod* model for school managerial administration for the promotion of sustainable agricultural learning and agricultural careers in the community, there were 7 main components important to the school development as courage, taking action, discipline and culture, sustainability, technology, quality organizations, and good outcome. It implied that the stakeholder group recognized the importance of the said components to school development especially those located in remote areas. As a whole, the stakeholders were satisfied with the model at a high level. In this respect, they were satisfied at a highest level with components such as courage, action-taking, and good outcomes. It denoted that outcome of the model adaptation were consistent with agricultural career activities of guardians in the community. In other words, it was a body of knowledge and experience sharing by the guardians with their children. It was the conservation of knowledge body for agricultural culture. Also, it was shown an alternative for new generation to develop agricultural careers which could build up the food and life security in the future. Indeed, good attitude towards agricultural careers of students might be concerned the inspiration to be smart farmers in the future. This conformed to the study of Rasee *et al.* (2015) who found that body of knowledge and agricultural skills arised from agricultural career activities of guardians together with agricultural learning in the school that resulted in preference and

agricultural skill learning. However, students were bored with agricultural activities at home, it might affect on poor agricultural learning performance. Pongsuk *et al.* (2015) agreed that a problem of the school agricultural teaching/learning activities be the same trends. In the case of integrated teaching/learning activities in various forms, agriculture teacher should be encouraged to do so (Petsangsri, 2012). In addition, Pongsuk (2018) stated that the development of agricultural learning facilitation must be consistent with change of online media technology.

The 7 activities of agricultural learning of vegetable gardening, egg-laying chicken rearing, frog rearing, deer rearing, herbal plant growing, native chicken rearing, and catfish rearing in a circular cement pond, it was found that the sample student group satisfied. They had increased the learning achievement after using the model. It implied that the 7 agricultural learning activities could develop agricultural learning, skills and experience as well as good attitude towards agriculture-related subjects. This conformed to Saduak *et al.* (2019) who found that students passing agricultural subject can develop their life skills and experience very well. Also, agricultural activities can create diligence, tolerance and responsibility of the learner (Puangsuk, 2020).

It might affect on the interest of students in agricultural learning and careers in the future (Siriwan, 2014; Puangsuk, 2017; and Saduak *et al.*, 2017). In addition, agricultural activities are the foundation of livelihood skill practice. According to the feasibility study of the *Kluaytod* model adaptation, it was found that the model was appropriated and possible for school development at a high level. Results of the model in academic year 2017-2018 found that the assessors were stakeholders which satisfied with the model at a high level. It was due to confident of the school educational facilitation which increased score of students in the Ordinary National Educational Test (O-NET). In addition, the outcomes arised from the model adaptation was coordinated all concerned parties in the school development under the *Kluaytod* model. Specifically, courage or confidence in decision making, true action-taking and application of concerned technology to various agricultural activities in combination with the school of agricultural learning activities, which were consistent with the community context. There were many successful projects with the adaptation of the *Kluaytod* model such as development of school for agricultural learning center, playground for brain-based learning, earthen house, school environmental development, and integration of careers and local wisdom together with learning facilitation by local scholars. Furthermore, these results may help to be sustainable development for school in term of continual and true action-taking of school administrator, fair and accountable school management, initiation and creation for school development, courage or confidence, in

coordination with agencies inside and outside the community. Indeed, It is reported as a part of educational development for better livelihood in rural or remote areas.

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