
Model for Development of Agricultural Skills under Occupation and Technology Subject (Agriculture) of Third Year Lower Secondary School Students using the School Agricultural Learning Center, Praibueng Wittayakom School, Srisaket Province, Thailand

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The objective of this study were to: 1) explore skill development on agricultural work process of third year lower secondary school students and 2) compare learning achievement of the students before and after learning in accordance with skill development on agricultural work. Locale of the study was at Phraibueng Wittayakom School Agricultural Learning Center. The sample group in this study consisted of 40 third year lower secondary school students at Phraibueng Wittayakom School and they were obtained by simple random sampling. The research instruments in this study are assessment form of skills on agricultural work process. It comprised 10 items as follow: 1) a meeting for planning; 2) preparation of equipment and materials; 3) working based on assigned task; 4) provision of work assistance; 5) working step by step; 6) selection of equipment and materials; 7) equipment and material using; 8) cleaning equipment/materials and operational areas; 9) work performance; and 10) improvement and development of work performance. The score was determined as 3 scores per item. The learning achievement test form was multiple choices (40 items). Statistics used for data analysis included frequency, percentage, mean, and standard deviation. Besides, t-test (Dependent) was used for comparing learning achievement before and after learning. Results of the study were as follows: 1) The students passing learning through a model for development of agricultural skills had a high level of skills on agricultural work process ($\bar{x} = 24.48$) which was in accordance with the hypothesis, and 2) Learning achievement on occupation and technology (agricultural work) of the students posttest was higher than that of pretest with statistical significance level at 0.05 which was in accordance with the hypothesis.

Keywords: skills on agricultural work process school agricultural learning center, Occupation and Technology subject (agricultural work) lower secondary school students.

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Introduction

Thailand is an agricultural country exporting agricultural products throughout the world. Most people in the country do agricultural occupations. Thus, agriculture is important to daily livelihoods of people there. Development of the country and environment initially began with animal domestication and plant cultivation for a better and convenient livelihood. Although technology is progressive at present but man still relies on agricultural yields. Hence, the facilitation of agricultural teaching/learning activities is a guideline for practice to make learners have knowledge and capability in agriculture. This is on the principle that education in agriculture must place the importance on learning by doing; education on agriculture school is an agricultural academic source of the community; and local people participate in continuing education (Rotisawong, 1991). In facts, economics, social, political, and environmental factors will lead to a lot of cages in the future. Its Impacts include food shortage crisis, high price of food, beverages, and resources for agriculture, importantly, agricultural products and food will become to be important strategic products in the world. To prepare readiness of the country in order to reduce impacts of changes which will happen, it needs to rely on the facilitation of education in agriculture (Siriwan, 2014). Therefore, it can be seen that the learning facilitation for developing learners to have knowledge and understanding as well as capability in agricultural work, the teacher must facilitate learning activities focusing on learner-centered. Besides, the teacher must invent or find teaching media or leaning sources to make learners learn in an actual situation and environment. Phraibueng Wittayakom School, Praibueng district, Srisaket province is a school offering agricultural learning by building a school's agricultural learning center. This aims to make students have knowledge, understanding, and skills in agricultural work process and apply it to their daily life activities.

Objectives

Specifically, this study aimed to:

1. Investigate skill development of agricultural work process after learning through a model for development of agricultural skills by using the school agricultural learning center and
2. Compare learning achievement for third year lower secondary school before and after learning through a model for development of agricultural leaning skills.

Hypotheses of the Study

1. Skills in agricultural work process of third year lower secondary school students at Phraibueng Wittayakom School after learning through a model for development of agricultural work process is better than before.

2. Learning achievement on occupation and technology (agricultural work) in accordance with a model for development of skills in agricultural work process of third year lower secondary school students at Phraibueng Wittayakom School is higher than before learning.

Methodology

1. Population and sample group

1.1 The populations in this study were 180 third year lower secondary school student at Phraibueng Wittayakom School, Praibueng district, Srisaket province. They tool Occupation and Technology subject (Agricultural Work) in academic year 2016.

1.2 The sample group in this study consisted of 40 third year lower secondary school students (Class 3/1) obtained by simple random sampling from 5 classes.

2. Research instrument and data collection

2.1 An assessment from of skills in agricultural work process. The researchers constructed the assessment form having behaviors which operate the assessment as follows:

1. Meeting for planning
2. Preparing instruments, equipment, and material
3. Working based on assigned tasks
4. Operational coordination
5. Working step by step
6. Selecting tools, equipment, and materials
7. Using equipment and materials
8. Cleaning tools, equipment, materials, and operational place
9. Obtaining work performance
10. Improvement and development

Score setting of the assessment of skills in agriculture work process included 3 scores per item with a number of activities of 9 learning stations (27 scores). The score were set through the criteria of the assessment of skills in agricultural work system process (70%) or gaining 18.90 scores and above. The criteria for the assessment of skills in agricultural work process were classified into 3 levels as shown below.

Mean	Percentage	Level of skills in agricultural work process
21.60 - 27.00	80.00 - 100.00	Good
18.90 - 21.59	70.00 - 79.99	Fair
0 - 18.89	0 - 69.99	Need for improvement

The assessment form was checked by specialists based on correctness and consistency of the items to be assessed regarding the Index of Item Objective Congruence (IOC).

2.2 Learning achievement test paper. It contained 40 multiple choice items (4 options). The scoring criteria were: 1) wrong answer or did not answer = 0 and 2) correct answer = 1 score. The test paper was checked by specialists for finding the IOC value and 0.80 was obtained. Then, the test paper was tried out and the discrimination value (r) was found at 0.21-0.93; the difficulty value (p) was found at 0.06-0.74; and the reliability value was found at 0.99. After that it was improved based on suggestions of the specialists.

3. Data analysis, the Statistical package Program was employed for finding percentage, mean, and standard deviation. Besides, t-test (dependent) was used for comparing learning achievement before and after learning.

Results

Development of skills in agricultural work process

Table 1. A study on skills in agricultural work process under Occupation and Technology subject (agricultural work) of third year lower secondary school students at Phraibueang Wittayakom School.

Item	Total Score	(\bar{x})	(S.D.)	Description
1. Meeting for planning	982	24.55	1.66	Good
2. Preparing instruments, equipment, and materials	1001	25.03	1.97	Good
3. Working based on assigned Tasks	954	23.85	2.98	Good
4. Operational coordination	997	24.93	2.06	Good
5. Working step by step	1008	25.20	1.14	Good
6. Selecting tools, equipment, and materials	992	24.80	1.18	Good
7. Using equipment and materials	974	24.35	2.19	Good
8. Cleaning tools, equipment, materials, and operational place	999	24.98	1.07	Good
9. Obtaining work performance	1007	25.18	0.96	Good
10. Improvement and development	876	21.90	1.45	Good
Total	9790	24.48	0.51	Good

According to Table 1, student passing learning through a model for development of skills in agricultural work process had good skills in agricultural work process (Mean=24.48). Based on its details of each item, it was found that working step by step obtained a highest t average mean score (25.20), followed by obtaining work performance (25.18). Improvement and development was found to have a lowest average mean score (21.90).

Learning achievement before and after learning.

Table 2. A comparison of learning achievement before and after learning through a model for the development of skills in agricultural work process.

Learning achievement test	N	Mean	S.D.	t	Sig.
Before learning	40	21.87	1.89		
After learning	40	33.85	1.35	-32.524	0.00*

* Statistically significant difference at 0.05

According to Table 2, it was found that learning achievement after learning Occupation and Technology subject of the students was higher that before with a statistical significance level at 0.05

Conclusion and Discussion

According to a study on model for development of agricultural skills under Occupation and Technology subject of third year lowery secondary school students using the school agricultural learning center, Phraibung Wittayakom School, Srisaket province, the following were discussed:

1. Regarding results of the study on skills in agricultural work process, it was found that the students passing through the model for development of agricultural skills had a high level of skills in agricultural work process (an average mean score=24.48). This might be because the school agricultural learning center is a source of agricultural learning center providing appropriate teaching/learning activities focusing on self-learning and diverse learning activities. Beside, the center is ready in terms of place and structures, tools, and equipment. Hence, this makes the students be energetic and able to achieve the goal of the learning facilitation. This conforms to a study of Phupakdi (2010) on a model of learning facilitation for skill development: process of students, learning content group on Occupation and Technology subject first year lower secondary school. It was found that sing actual learning practice together with local wisdoms to development skills in work process of students make them be

curious and able to sort task types. Not only this, they know how to make an operational plan, determine objectives of the operation, analyze problems encountered prior to practice. There is outcome assessment during and after practice (Paksa, 2014: Abstract). There was a study on learning activity development focusing on work process skills. Regarding a study on oyster mushroom culture of sixth year elementary school students, it was found to be at a highest level (94.2%) as well as operational planning (93.00%), practice (93.78%), and work performance assessment (93.67%).

2. The comparison of learning achievement before and after learning through a model for development of agricultural skills. It was found that students learning achievement of Occupation and Technology subject (Agricultural work) after learning was higher than before with a statistical significance level at 0.05. This might be because the model for developing skills in agricultural process can facilitate learning experience for the students to have knowledge, understanding, and be able to work effectively. In addition, there were learning documents prepared by the researchers for the students to study more while practicing or having available time. Interestingly, there were diverse learning activities and knowledge transfer was in the form of from abstract to concrete. This conforms to a study of Meesit (2012) on outcomes of project activities towards learning achievement and skills in work process under Occupation and Technology subject students at Anusornsupamas school, Samut Sakhon province. Results of this study revealed that learning achievement on Occupation and Technology subject of the fifth year elementary school students learning through the project activities was higher than before with a statistical significance level at 0.05. Paksa (2014) had conducted a study on development of learning activities focusing on work process skills of Oyster mushroom culture of sixth year elementary school students, it was found that learning achievement before learning through work process skills was higher than before with a statistical significance level at 0.05.

Suggestions

The model for development of skills in agricultural work process, Occupation and Technology subject (Agricultural work) of third year lower secondary school students at Phraibueang Wittayakom School was concluded and there were suggestions as follows:

1. Suggestions to be able to effectively apply obtained data from the model. The researchers had the following suggestions:

1.1 The teacher must give suggestions to his students and closely take care of them as well as to find tools and equipment for agricultural activities.

1.2 The facilitation of teaching/learning activities should be diverse and it must cover learning content

1.3 A learning center or learning source should be constructed for teaching/learning activities having appropriate environment for teaching/learning activities.

1.4 Each time of teaching/learning facilitation, students should be given an opportunity to express opinions or guideline for practicing with the teacher. Also, the teacher must show the potential while joining activities and it should have reinforcement while working

1.5 Administrators should promote and support the teacher to prepare or construct a learning source used for the facilitation of teaching/learning facility to be appropriate with the learning subject.

1.6 It should have budget support for the preparation or construction of an appropriate learning source.

2. Suggestions for next studies

2.1 It should have a study on outcomes arised from the development of occupational development by using the school agricultural learning center based on desired characteristics such as disciplines and responsibility.

2.2 It should have a study on integrated learning by using the school agricultural learning center with other subjects of the Occupation and Technology Learning Content Group.

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