



## **Integration of Local Knowledge into Teaching-Learning Activities of Agricultural Subjects in Primary Education**

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**Abstract** It is stated in the National Education Act of Thailand that there shall be the application of local knowledge in teaching-learning process of academic subjects in various educational levels. In order to assess a suitable procedure on how to integrate local knowledge into teaching-learning activities of agricultural subjects in primary education, this research was conducted by collecting data from teachers, students, administrators and community leaders in Khon Kaen Province, Thailand, through survey, case studies, training and seminars. It was summarized that there should be four stages in integrating local knowledge into the educational process of agricultural subjects. These included: 1) raising awareness on the importance of local knowledge and building cooperation among relevant persons, such as educational administrators, community leaders, local intellectuals, students and parents; 2) preparing a lesson plan with suitable contents, materials and resources; 3) conducting teaching-learning and evaluation activities; and 4) disseminating the outputs from teaching-learning activities to the public. Agriculture teachers had a prominent role in all four stages and their duties on studying, selecting, integrating and disseminating local knowledge were defined.

**Keywords** local knowledge, agricultural subject, primary education

## **INTRODUCTION**

There are a number of definitions for local knowledge or indigenous knowledge. Department of Education (1997) defined local knowledge as the accumulated knowledge of local people and has been handed down to new generations. It is the core knowledge that people use for making a living, solving problems and adapting to sustain their community existence. Buasonth (1990) noted that local knowledge is the paradigm of the self to the world and the environment. This paradigm derived from the foundation of religious teaching and customary principles which had been inherited and practiced with continuous improvement to the changing social context of each period of time. Somkanae (1992) described that local knowledge is the mass of knowledge and experiences of the people who had been using them to make a happy living. The accumulation of knowledge was inherited through the development process and consistent with the passage of time.

The importance of local knowledge has been recognized by international development agencies. The World Bank (2005) stated that indigenous knowledge (IK) or local knowledge can be a

powerful tool in a learning environment to teach students. However, educational curricula in many countries do not support students' learning based on local knowledge existing in their community. It is needed to adapt learning environments to help students learn and appreciate various aspects of their local knowledge. Educators should identify appropriate pedagogical techniques to combine local knowledge into academic programs. When IK is integrated into the learning environments, students can better connect to the material taught, and it can become a major knowledge source for sustainable development of local communities. International Institute of Rural Reconstruction (1996) described that local knowledge is embedded in a dynamic system in which livelihood activities, spirituality, kinship, traditions and other aspects in a particular community are tied together and influence one another. Local technologies and know-how have an advantage over introduced ones in that they rely on locally available skills and materials and are thus often more cost-effective than the technologies from outside.

Wasie (1987) stated that the community should be the center of learning process to students. Local schools and communities should have cooperation in providing education for young people. Local intellectual persons should be invited to take part in curricular development and teaching different courses in the school. Students should be assigned to study local knowledge in the community and the teachers should do the survey of existing local bodies of knowledge and apply them into the teaching-learning activities of relevant subjects.

According to the Primary Education Curriculum, issued in 2001, local schools are required to teach agricultural subjects to students in every class level. In the National Education Act, issued in 1999, there is a list of articles that set up guidelines stating that there shall be the application of local knowledge in teaching-learning process of academic subjects in various educational levels, including agricultural subjects in primary education.

However, it was reported that a high number of teachers who were responsible for this subject area did not finish their education in agriculture and lacked of appropriate approaches and methods for integrating local knowledge and technology into the teaching-learning process (Wongsamun et al., 1987, Imwiriawat et al., 1989, and Thalangsri, 1994). Therefore, the research was conducted in Khon Kaen province during 2004-2006 to assess a suitable procedure on how to integrate local knowledge into teaching-learning activities of agricultural subjects in primary schools.

## **METHODOLOGY**

The activities of this research were divided into four sub-projects, including 1) Study of the process, problems and needs in conducting teaching-learning activities in agricultural subjects at the primary education level (grade 4-6) of teachers in Khon Kaen province; 2) Study on the opinions of related parties towards the integration of local knowledge into teaching-learning process of agricultural subjects in primary education; 3) Development of a model and methods for integrating local knowledge in the teaching-learning process of agricultural subjects in primary education; and 4) Summary of lessons learned and dissemination of a suitable model and methods for integrating local knowledge in the teaching-learning process of agricultural subjects applied in primary education. In the first sub-project, research data were collected from 216 teachers, who were selected with multi-stage random sampling, by mailed questionnaires. The collected data were statistically analyzed for frequency, percentage, arithmetic mean, standard deviation, maximum, minimum, t-test and F-test.

In the second sub-project, 10 primary schools were selected and a case study for each school was conducted to assess the opinions of the school administrators, teachers and students towards the integration of local knowledge into the teaching-learning process of agricultural subjects. A one-day workshop was also conducted for 65 participants, including teachers, school administrators, educational supervisors and local agricultural extension workers, to share, exchange and discuss their ideas and experiences on applying local knowledge into primary education.

In the third sub-project, 25 teachers from five districts of Khon Kaen province were selected to participate in a two-day training program on the preparation of a lesson plan of agricultural subjects with the integration of local knowledge into educational process. After the participating teachers

had used those lesson plans at their schools in the following term, they were invited to participate in the second training program for sharing their experiences and improving their lesson plans. At the same time, a model on how to integrate local knowledge into educational process was discussed and drafted taking into account the findings, comments and suggestions from previous activities of the project.

In the fourth sub-project, three local workshops were conducted in three districts for teachers, school administrators, parents, community leaders and students to summarize lessons learned and express their opinions and give suggestions towards the drafted model on integrating local knowledge into the educational process of agricultural subjects. About 40 participants were involved in each of the workshop.

## **RESULTS AND DISCUSSION**

Results and discussion can be divided into four main parts in accordance with the sub-projects of the research. The details of each part are the following.

### **Teaching-learning process and problems, and training needs of teachers**

**Backgrounds of agriculture teachers:** Results revealed that the average age of the teachers was 45 years old, 69.4 % of them were male, only 23.6% finished academic major in agriculture and 96.3% taught other subjects beside agriculture.

**Agricultural teaching-learning activities at the school:** The first three most popular agricultural activities at schools were vegetable growing (79.6%), fish culture (61.1%) and ornamental plant growing (59.7%). Most of the teachers, 89.4%, integrated agricultural subject into other subjects of school curriculum with an average of 2.5 periods of instruction per week. Subject matters in agriculture that were commonly taught by the teachers included vegetable growing (87.5%), agricultural tools and usage (86.1%), work safety (83.3%), ornamental plant growing (66.2%), conservation of energy and environment (64.4 %) and integrated farming (61.6%). Learning processes used at the “high” level were learning by actual practice and learning from experiences. Teaching techniques highly used by the teachers were integrated approach, group work and demonstration. For evaluation, the methods used were individual and group performances, work outputs and reports, and assessment of practical work. Important problems faced by the teachers included lack of instructional media (61.6%) and lack of parents’ cooperation (46.3%).

**Training needs of agriculture teachers:** Training topics in agriculture highly needed by the teachers were crop production, conservation of energy and environment, plant protection, fish culture and animal raising. For teaching preparation, the training topics highly needed by the teachers included preparation of course syllabus, preparation of lesson plans, preparation of budget, place, materials and equipment for instruction, learners’ preparation and getting cooperation from local intellectuals and related organizations. For instructional media, the training topics highly needed by the teachers were preparation of instructional manual, photography for instructional media preparation, preparation of specimen, model and video media, classroom research and preparation of agricultural tools. For conducting students’ activities, the teachers highly needed training in the following topics: learning from actual practice, learning from documentary inquiry, learning from experienced persons and learning from students’ group work. For evaluation aspects, the following training topics were highly needed by teachers: evaluation from individual and group performances, evaluation from work outputs and reports, assessing and evaluating practical work, assessing and evaluating students’ skills, and evaluating students’ portfolio. For supporting aspects, the teachers expressed highly needs for training on the following topics: getting support from school principal, requesting for technical publications and materials from related organizations and getting cooperation from students’ parents and community leaders.

**Comparisons of training needs of teachers:** Comparisons of training needs of teachers found that those with different sexes, age groups, numbers of years in teaching agricultural subjects, majors of

graduation, areas for agricultural activities at school and locations of school in rain-fed or irrigated areas had statistically different levels of needs on certain training topics.

### **Strengths and weaknesses of instruction in agricultural subjects**

It was found in the case studies which were carried out at 10 schools in five districts of Khon Kaen province that most primary schools allocated two periods per week of instructional time for agricultural subjects for students in grades 4-5 was (1 period = 50 minutes) and three periods for students in grade 6. The teaching-learning activities included classroom instruction and field practices. From the opinions of respondents, the strengths of the instruction in agricultural subjects in primary schools included: (1) good coordination with relevant agencies, (2) having areas in the school for agricultural practices of students, (3) good cooperation from local intellectuals to help in teaching agriculture in school, and (4) provision of out-of-school activities to learn agriculture in real-life situations. On the other hand, they expressed that the weaknesses of the instruction in agricultural subjects included (1) lack of instructional media and agricultural tools for field practices, (2) lack of water resources for agricultural activities during the dry season, (3) teachers lack of experiences in agricultural work and did not finish their education in agriculture, (4) parents lack of understanding on the importance of teaching agriculture in school, (5) limited school areas for agricultural practices, and (6) teachers have limited knowledge on local situation, culture and wisdom. To be able to integrate local knowledge into educational process of agricultural subjects, it was suggested that there should be a cooperative effort among school administrators, teachers, students, local community leaders and related organizations. The suggested procedures for the integration included (1) setting clear policies and guidelines by the high-level education offices, (2) studying and collecting local knowledge in the community, (3) preparing lesson plans with contents and activities related to relevant local knowledge, (4) conducting teaching-learning activities, (5) supervising teaching activities, and (6) evaluating students' achievement and teaching performance.

### **Training, lesson plan preparation and development of teaching model**

During the two-day training, all 25 participating teachers exchanged their teaching experiences and received additional information on local knowledge, how to study this type of knowledge and how to include it in teaching-learning process. Each teacher was asked to prepare a lesson plan to be taught at his or her school in the following academic term. The plan contained the standard components of lesson plan, consisting of teaching topic, important concept, learning objectives, subject matter, teaching-learning process, media and learning resources, evaluation of learning achievement, suggestions for additional learning activities, and assignment worksheets. At the same time, the teachers had to identify and include local knowledge to be included into their lessons plans. As a result, by the end of the training, all teachers had their own lesson plans for teaching at their schools. Then, they came back for the second training to share their experiences and improve their lesson plans for future use. At the same time, they were involved in a discussion on suitable models and methods for integrating local knowledge in the teaching-learning process of agricultural subjects in primary education which consisted of various procedures and activities of related persons as described in the conclusion below.

### **Summary of lessons learned by related parties**

As a result, three local workshops were conducted after all main stake holders, including teachers, school administrators, parents, community leaders and students had gone through relevant activities on integrating local knowledge into educational process in agricultural subjects at their local schools. It was agreed that the integration could be done, and was useful for students. Each party should have certain responsibilities to do in order to have a successful model of instruction. Under a good cooperation of related persons and organizations, existing problems or limitations could be

solved and students' learning accomplishment and appreciation on local knowledge could be strengthened.

## **CONCLUSION**

From the research findings, it was concluded that a suitable model for integrating local knowledge into the educational process of agricultural subjects consisted of four stages, and the teachers had prominent tasks in implementing this model. The details and teachers' tasks of those stages are the following:

Stage 1: Raising awareness on the importance of local knowledge and building cooperation among relevant persons including educational administrators, community leaders, local intellectuals, students and parents. Teachers' tasks include organizing meetings for related persons, disseminating information on successful cases in using local knowledge, publicizing students' work outputs, and organizing field trips for related individuals.

Stage 2: Preparing lesson plan with suitable contents, materials and resources. The teachers' tasks include studying structure of curriculum, education policies of administrators and local environment, studying and collecting local agricultural knowledge, preparing integrated lesson plans, and preparing teaching media, learning resources and assignment worksheets

Stage 3: Conducting teaching-learning and evaluation activities. The teachers' tasks include studying and reviewing the lesson plans, preparing instructional media, classroom and places for field practices, delivering the contents of subject matters and conducting learning activities with students' centered approach, coordinating with local intellectuals as needed, following up the progress of students' work, preparing evaluation tools and measures, and implementing them as planned, and recording successes and problems of teaching-learning activities with suggestions for future improvement.

Stage 4: Disseminating outputs from teaching-learning activities to the public. The teachers' tasks include identifying means and opportunities to present to students' outputs in the school and community, providing suggestions in media preparation and delivery for students, evaluating students' accomplishments, collecting and reviewing data on the successes and problems of the course, and writing reminding statements for the future improvement of contents and teaching delivery.

## **REFERENCES**

- Buasonth, R. 1990. The role of primary schools and the transfer of local knowledge. *Journal National Education*, 24(4), 68-74.
- Department of Education. 1997. Summary of research findings entitled local knowledge and curriculum development. Ministry of Education. Bangkok: Kurusapa Ladprao.
- Imwiriawat, S., Taechaprasertwitaya, P. and Wongsamun, C. 1989. Training needs of agriculture teachers in primary schools in Northeastern Region, Thailand. Research Report. Faculty of Agriculture, Khon Kaen University, Thailand.
- International Institute of Rural Reconstruction. 1996. Recording and using indigenous knowledge: A manual. IIRR: Silang, Cavite, The Philippines.
- Somkanae, A. 1992. Conditions and problems on integrating local wisdom in curricular development for primary schools in Ubon Ratchathani province, Master's degree thesis in Education. Graduate School. Chulalongkorn University, Thailand.
- Thalangsri, S. 1994. Management of agricultural education in grades 5-6 of teachers in primary schools under the Office of Education, Kalasin province. Master Degree of Education in Primary Education. Graduate School. Khon Kaen University, Thailand.
- Wasie, P. 1987. Thai local wisdom for development. *Community Development*. 1, 5.
- Wongsamun, C., Bunthamcharoen, C., Imwiriawat, S. and Taechaprasertwitaya, P. 1987. Training needs of agriculture teachers in primary schools in Khon Kaen province. Research Report. Faculty of Agriculture, Khon Kaen University, Thailand.
- World Bank. 2005. Education: Building on indigenous knowledge. IK Notes No. 87, December 2005. <http://www.worldbank.org/afr/ik/iknt87.htm>.