ภูมิปัญญาท้องถิ่นเพื่อการยังชีพกลุ่มชาติพันธุ์ปกาเกอะญอ บ้านแม่ส้าน อำเภอแม่เมาะ จังหวัดลำปาง

Local Wisdom for Livelihood Sustenance of Paka-Kyaw Ethnic Groups at Ban Mae San, Mae Moh District, Lampang Province

กนิษฐ์กานต์ ปันแก้ว[1] เกษทิพย์ ศิริชัยศิลป์[2] เศรษฐวิชญ์ ชโนวรรณ[3] และ กิตติกา ลิมปริวัฒนา[4]*

Kanitkan Pankaew[1], Kedthip Sirichaisin[2], Setthawit Chanowan[3] and Kittika Limpariwatthana[4]*

[1]สาขาวิชาคอมพิวเตอร์ คณะครุศาสตร์ มหาวิทยาลัยราชภัฏลำปาง จ.ลำปาง 52100
Computer Program, Faculty of Education, Lampang Rajabhat University, Lampang 52100, Thailand
[2]สาขาวิชาหลักสูตรและการสอน คณะครุศาสตร์ มหาวิทยาลัยราชภัฏลำปาง จ.ลำปาง
Curriculum and Instruction, Faculty of Education, Lampang Rajabhat University, Lampang 52100, Thailand
[3]สาขาวิชาการวิจัยและประเมินผลการศึกษา คณะครุศาสตร์ มหาวิทยาลัยราชภัฏลำปาง จ.ลำปาง 52100
Educational Research and Evaluation, Faculty of Education, Lampang Rajabhat University, Lampang 52100, Thailand
[4]สาขาวิชาภาษาอังกฤษ คณะครุศาสตร์ มหาวิทยาลัยราชภัฏลำปาง จ.ลำปาง 52100
English Program, Faculty of Education, Lampang Rajabhat University, Lampang 52100, Thailand

*Corresponding author: E-mail: kanitkan777@hotmail.com

(Received: January 27, 2018; Accepted: August 23, 2018)

Abstract: The objectives of this research were to 1) study the local wisdom for livelihood sustenance of ethnic Paka-kyaw people at Ban Mae San, Mae Moh district, Lampang province by using participatory action research (PAR), 2) study community context and local wisdom, 3) develop web-based database management systems, 4) create and discover instruction efficiency, and 5) compare the academic achievements of students who were educated through local instruction in the approved 80% local instruction conditions. The target group consisted of 30 students and 30 villagers. The research materials were a community context survey, in-depth interviews and local instruction (programmed instruction). The main findings were as follows: 1) the community was 85% Buddhist, 2) the website consisted of history and local wisdom, 3) local instruction was high quality and effective at 84.79/83.35 (students) and 90.68/88.35 (villagers) and 4) students and villagers educated by programmed instruction achieved scores of 83.6 and 89.58 respectively. When their scores were compared with standard scores, it was found that 83.33% of students (25 individuals) and 100% of villagers (30 individuals) passed the standard academic achievement testing score of 80%.

Keywords: Local wisdom for sustenance, Paka-Kyaw ethnic group, local instruction

บทคัดย่อ: การวิจัยนี้เป็นการศึกษาภูมิปัญญาท้องถิ่นเพื่อการยังชีพกลุ่มชาติพันธุ์ปกาเกอะญอ บ้านแม่ส้าน อำเภอแม่เมาะ จังหวัดลำปาง ใช้กระบวนการวิจัยเชิงปฏิบัติการแบบมีส่วนร่วม (PAR) มีวัตถุประสงค์เพื่อ 1) ศึกษาบริบทชุมชนและภูมิปัญญาท้องถิ่นเพื่อการยังชีพ 2) พัฒนาฐานข้อมูล 3) สร้างและหาประสิทธิภาพบทเรียนท้องถิ่น และ 4)

เปรียบเทียบผลสัมฤทธิ์ทางการเรียนของผู้เรียนที่ได้รับการศึกษาด้วยการเรียนการสอนในท้องถิ่นอันเป็นผลมาจากการสอนที่ได้รับการอนุมัติมาเป็นเกณฑ์ร้อยละ 80 ได้แก่ นักเรียนโรงเรียนบ้านแม่ส้าน จำนวน 30 คน และชุมชน จำนวน 30 คน เครื่องมือ ประกอบด้วย แบบสำรวจบริบทชุมชน แบบสัมภาษณ์แบบเจาะลึก และบทเรียนท้องถิ่น (บทเรียนสำเร็จรูป) พบว่า 1. ชุมชนบ้านแม่ส้านทั้งหมดเป็นกลุ่มชาติพันธุ์ปกาเกอะญอ นับถือศาสนาพุทธ 2. ฐานข้อมูลภูมิปัญญาท้องถิ่นเพื่อการยังชีพจัดทำในรูปแบบเว็บไซต์ 3. บทเรียนท้องถิ่นมีคุณภาพในระดับมาก และมีประสิทธิภาพเท่ากับ 84.79/83.35 และ 90.68/88.35 ของนักเรียนและชุมชนตามลำดับ และ 4. นักเรียนและชุมชนที่เรียนด้วยบทเรียนท้องถิ่น มีคะแนนผลสัมฤทธิ์ทางการเรียน ร้อยละ 83.65 และ 89.85 ตามลำดับ เมื่อนำมาเปรียบเทียบกับเกณฑ์ พบว่า นักเรียนร้อยละ 83.33 (25 คน) และชุมชนร้อยละ 100 (30 คน) มีคะแนนสอบผ่านเกณฑ์ร้อยละ 80
คำสำคัญ: ภูมิปัญญาท้องถิ่นเพื่อการยังชีพ กลุ่มชาติพันธุ์ปกาเกอะญอ บทเรียนท้องถิ่น

Introduction

Local wisdom is one form of cultural capital that is important for mankind, which is an accumulation of knowledge and experience, as well as deep intelligence that adds value in an appropriate way in different local contexts (Petchkaew, 2004). Local wisdom can be divided into three types – 1) local knowledge regarding agricultural production or sustenance, in the form of Buddhist agriculture or in other words agriculture that is in balance with nature, 2) local wisdom regarding local beliefs, values and traditions, which consists of relationships between people such as the beliefs, values and traditions that have been held by the community over time, and 3) local knowledge for livelihoods, which consists of villagers' wisdom for survival and search to maintain their livelihood base (Pankaew *et al*., 2015).

Ban Mae San is a rural community located in Mae Moh district, Lampang province. There are 134 households, consisting of 433 people. The entire population is ethnic Paka-Kyaw (Karen). Most people are Buddhists and are engaged in agricultural livelihoods. The local wisdom of the community is outstanding, particularly regarding their livelihoods. The villagers are skilled in making traps, while some elderly villagers weave bamboo panels to use for the walls of their houses, called *khlo*. They make bamboo roofing to protect from the sun and the rain, called *khwo*, as well as sewing clothes and decorating their traditional clothes with job's tears. The villagers use medicinal plants near the village to treat minor injuries and illness. These aspects of local knowledge are valuable assets to be passed down to the next generation through learning, transmission and preservation.

However, these forms of local wisdom are disappearing among the Paka-kyaw. This is because of three main factors: 1) the number of elders and local specialists is declining with time, 2) there is a lack of transmission methods that are appropriate for the current generation and 3) the youth lack opportunities to learn and acquire local wisdom in appropriate ways through written materials, because local wisdom is traditional passed down orally from the elders, which means that at times there is a lack of clarity.

The research project Local Wisdom for Livelihood Sustenance of Ethnic Paka-kyaw at Ban Mae San, Mae Moh district, Lampang

province was conducted as participatory action research (PAR), with the objectives of 1) studying the community context and local wisdom in the community, 2) developing a database, 3) creating and finding effective local learning and 4) comparing achievement of students who were educated through local learning with those in the 80% approved conditions.

Materials and Methods

Population

The population used in this study was administrators and instructors in the Ban Mae San school, representatives from the Ban Dong local administration organization, the village headman, local knowledge experts and representatives from the community. The total number of 80 people were selected through purposive sampling from the base of people holding local wisdom and those involved in local programmed instruction in years 3-6 at Ban Mae San school (30 individuals) and local community representatives (30 individuals), selected through purposive sampling.

Tools Used in the Research

There were two tools used in this research.

1. Community Context Survey : The survey contained 8 areas of general information about the context of the community, and in-depth interview forms concerning local wisdom for livelihood sustenance. The collectors of information organized and summarized the data according to each question in the survey forms.
2. Local instruction : This are in the form of prepared lesson, which were created by the researchers for students in primary school. The lessons were organized from easy to difficult.

The research tools were assessed by experts and found to be appropriate and of sufficient quality to be used in the research.

Data Collection

Phase 1 studied the social context and the local wisdom of the ethnic Paka-kyaw people for livelihood sustenance in the research site. The research was divided into five steps. First, the research team held a meeting to plan implementation and create a shared understanding of roles and responsibilities within the project. In the second step, the team studied existing information related to the social context of the community, using documents, texts, books and research reports. In addition, the team visited the field site to collect information from the community in Ban Mae San. This information was used to define the framework for the research. The third step consisted of creating the tools to be used for the research, including the survey forms for the community background and in-depth interview forms regarding local wisdom for livelihood sustenance. Step four was a meeting to build understanding among stakeholders in the research and use of research tools. The fifth step was to go to the field to survey the social context and local wisdom of the Paka-kyaw people in the site. Data was collected from 80 people, who were selected using purposive sampling from elders and experienced individuals in the community.

Phase 2 developed the database for the project. Implementation of this phase was done in three steps. The first step held a forum for discussion of the data obtained in the field activities, in order to exchange experiences regarding local wisdom and approaches to preserving it. There were 80 participants in the forum. In the second step, the data and results were analyzed and synthesized according to the objectives of the research. The third step involved creating a web-based database in order to disseminate information to the community and other researchers.

Phase 3 searched for and created efficient local instruction. Once data from the discussion forum was obtained, it was used to create instructional materials. These were presented to five experts. The instructional materials were revised according to the recommendations of the experts. The revised materials were then tested with three individuals from the school. The materials were subjected to small group testing, after they were further revised in accordance with the one-to-one testing. This testing was done with six people and followed by another one-to-one testing exercise with three people. After another round of revision, the materials were tested with villagers for efficiency. The result was sets of efficiency instruction materials according to group.

Phase 4 was a comparison of the achievements of students that learned through the local instruction materials at the 80% approved conditions. The researchers used the materials in actual instruction with a sample of 30 students from the primary school and 30 villagers. The results were divided by group and compared with the 80% approved condition students.

The total period of research was between October 2016 and October 2017.

Data Analysis

Quantitative data analysis consisted of the results of the material creation and comparison of the learning achievement of the students using the local instruction materials with the 80% approved condition students. This analysis was done with basic statistics. The efficiency of the instruction materials was analyzed using E_1/E_2 formula of Promwong (2013). Qualitative data analysis was applied to the interview data using content analysis and logical approach as the main methods. Investigator triangulation was used to verify reliability, where the data was fed back to the informants to read, or the questions re-asked in order to determine proximity to the truth. A discussion forum was held in order to feed-back the information to the community, providing another opportunity to check the accuracy of the data. In this way the researchers learned together with the community, before the data was incorporated into the instruction materials and the database.

Research Findings

Phase 1 Study on Social Context and Local Wisdom of Ethnic Paka-kyaw People for Livelihood Sustenance in Research Site

1. Study of the social context and local wisdom of the ethnic Paka-kyaw people found that the community of Ban Mae San is

composed of 134 households and has a population of 433 people. The community is ethnic Paka-kyaw, most of whom are Buddhists. The main livelihoods are upland agriculture, lowland agriculture, and cultivation of medicinal plants. Szechuan pepper is the commercial crop that generates the most income for the community. The main language of communication in the community is Karen.

2. The results of the in-depth interviews is shown in Table 1.

Table 1. Local wisdom for sustenance of Paka-Kyaw ethnic groups at Ban Mae San

Local wisdom for sustenance of Paka-Kyaw ethnic groups at Ban Mae San	
Wisdom for food	Szetchwan pepper, coffee beans, milled rice, Nang-lao soup, Mun-kao soup
Wisdom for clothing	Waving, decoration with Job's tears
Wisdom for lodging	Bamboo panel making, bamboo roof making
Wisdom for medicine	Smilax corbularia kunth, Tongkat ali, Laurel clockvine
Wisdom for living methods	Crossbow, trap, fish trap making

Table 1 shows indicates that the local wisdom of the local Karen community contains five elements that support livelihood sustenance:

1) *wisdom for food* such as lang-lao soup and mun-khao soup; the community also plants economic crops to generate income, including Szechuan pepper and coffee. Arabic is the most commonly planted coffee.

2) *wisdom for clothing* such as weaving, which is a handicraft passed down from the ancestors and decorations using natural materials to make designs that resemble wild animals or vegetation – wild boars or langurs, or liana designs.

3) *wisdom for lodging* such as bamboo panel and roof.

4) *wisdom for medicine* such as *Similax corbularia* kunth and *Tongkat ali* for extracting poison and throat pain, and Laurel clockvine for extracting the poison of biting insects.

5) *wisdom for living methods* such as crossbows and traps to provide food to go with rice during the paddy rice planting season and fish traps to supplement family food sources.

Phase 2 Development of Database

The researchers held a discussion forum to check the completeness of the data, as well as presenting the data to the community. After that, the data was used to create a web-based database of Paka-kyaw Local Wisdom for Livelihood Sustenance. The database contains five types of important information on history and local wisdom of the Paka-kyaw people. Data was also presented to the experts to check data accuracy on the website. Information on the website was also revised according to recommendations, because the website is a channel for many types of information to the community rapidly and easily, to be accessed at the convenience of the user.

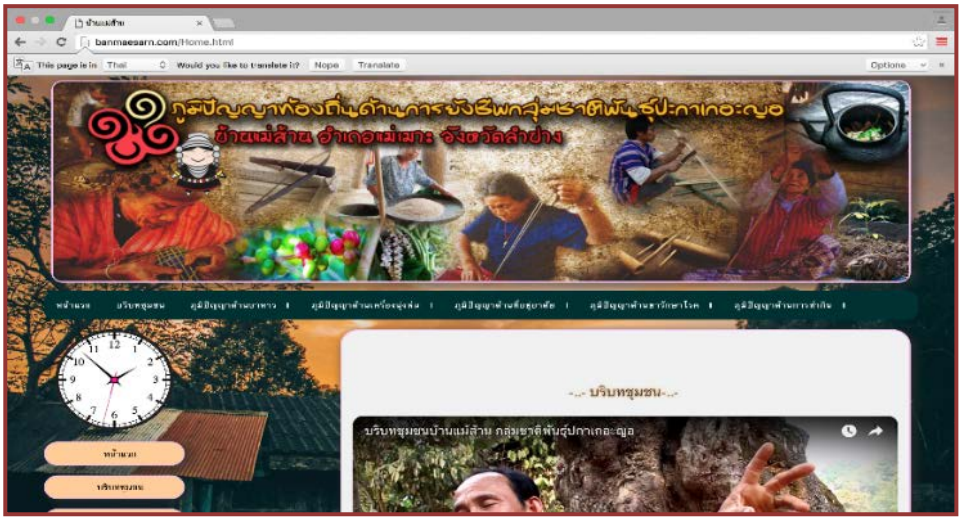

Figure 1. Home page Ban Mae San

Phase 3 Results of Efficient Instruction Material Creation

Local instructional materials were created in the form of programmed instructional lessons for the community and students in primary education. The material was ordered from easy to difficult, and the student studies according to the content levels. The important contents of the programmed instruction consist of wisdom for food, wisdom for clothing, wisdom for lodging, wisdom for medicine and wisdom for living methods, as well as questions after the lesson for averaging. The intent is for the community and students to study important areas of their local wisdom, as well as apply that wisdom so that it is increasingly secure in local society. The researchers presented the lessons they created to five specialists in order to assess the quality of the instruction materials and it was found that they were complete, with high level of quality at an average level of 4.24.

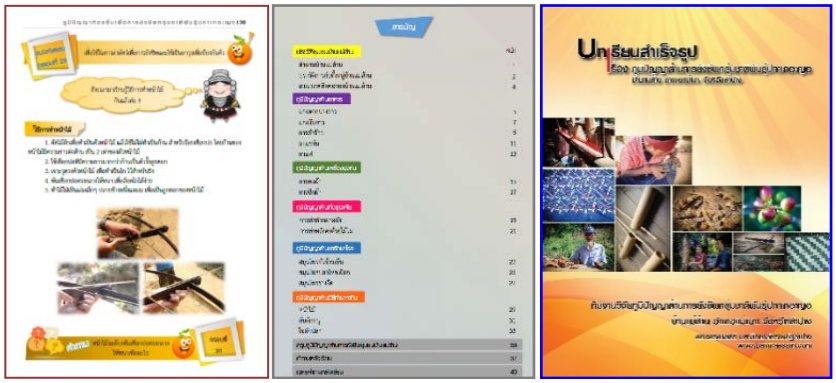

Figure 2. Programmed instruction

The researchers tested the materials with nine students at the Ban Mae San school. The testing was conducted two times, first in a one-to-one situation and then second in groups of three students (selected randomly), in order to determine the efficiency and appropriateness of the activities, clarity of language, instructions, time allocation and understanding. The one-on-one testing found that 1) the students that are of week and medium capacity did not understand the methods employed in the programmed instruction materials, and 2) some parts of the contents caused the students to work slowly. These problems were addressed by the researchers by adding explanatory text to make the materials more user-friendly and reducing contents in the lessons while maintaining the clarity of each issue. The materials were then tested in small groups with six students. The results are presented in Table 2.

Table 2. Efficiency of programmed instruction following the standard 80/80 with students at Ban Mae San School, the first semester in year 2016 amount 6 students and 6 villages (small group testing).

Sources	N	During-programmed learning			Post-programmed learning			Efficiency
		A	$\sum X$	E1	B	$\sum X$	E2	E1 /E2
Student	6	34	173	84.79	20	100	83.35	84.79/83.35
Villages	6	34	185	90.68	20	106	88.35	90.68/88.35

As shown in Table 2, students answered during-programmed learning questions correctly at a rate of 84.79%, while their correct answer rate post-programmed learning was 83.35%. This indicates that the small-group testing efficiency was 84.79/83.35, which is in line with the established standard.

Regarding the assessment of efficiency with community members, the researchers tested with nine members of the Ban Mae San community. Testing was done twice, first in a one-to-one situation and then second in groups of three students (selected randomly), in order to determine the efficiency and appropriateness of the activities, clarity of language, instructions, time allocation and understanding. The testing revealed that some parts of the materials had excess detail or were incorrect. The researchers revised and reduced the text accordingly, while maintaining clarity of the issues. Then the materials were tested for efficiency in small-groups with six villagers. The data in Table 2 indicates that villagers answered during-programmed learning questions correctly at a rate of 90.68%, while post-programmed learning correct answers were achieved at a rate of 88.35%. This indicates that the materials have small-group efficiency at a level of 90.68/88.35, which is in line with the established standard.

Phase 4 Results of Comparison of Achievement of Students at Ban Mae San and Villagers Learning with Programmed Instruction using Standard Academic Achievement Score as 89%

The learning materials were administered with 30 primary-level students at the Ban Mae San

school, in order to study the achievements in comparison with the 80% standard. Results are shown in Table 3.

Table 3. Comparison of the academic achievement of students at Ban Mae San School and villagers who have learned with programmed instruction by using the standard academic achievement score as 80%

Testing	N	Total score	Standard score as 80%	$\bar{x}$	S.D.	Percentage
Post-test score of students as 80%	30	20	16	16.73	1.55	83.65
Amount of Students who has passed the standard score as 80% was 25 students						**83.33**
Post-test score of students as 80%	30	20	16	17.97	1.24	89.85
Amount of Villagers who has passed the standard score as 80% was 30 villagers						**100**

As shown in Table 3, students and villagers studying with the programmed instruction materials had a learning achievement rate of 83.65% and 89.85%, respectively. When compared to the standard score, it was found that 83.33% of students (25 people) and 100% of villagers (30 people) had passing scores at the established 80% standard.

This research had an impact on the local community, as students and villagers studied and reinforced their knowledge of their own local wisdom. This raised awareness of the usefulness and importance of local wisdom. It also allowed for filtering of the information that is passed on by community elders to improve on the accuracy of the wisdom transmission, which contributed to increasing the clarity of the various aspects of local wisdom. This local learning process increases the sustainability of knowledge transmission to the following generations, and the instruction materials and on-line resources provide a solid and systematic foundation. Accessibility for the new generation and other interested individuals is easy. The following points underscore the findings of this study.

1) Local wisdom for food reinforces villagers' understanding of the natural environment as the source of important resources for their food. Resources such as nang-law flowers and Szechuan pepper are important for their food culture.

2) Local wisdom for clothing helps the new generation learn about weaving and protection of artistic tradition through the wearing of traditional clothing items.

3) Local wisdom for lodging raises awareness of the importance of preserving and managing the resources that are used in making parts of their houses, such as the various forest vegetation and bamboos. Additionally, this wisdom also reinforces cooperative activities and village unity, because construction of houses relies on people coming together to help each other within the community.

4) Local wisdom for medicine increases villager awareness of self-reliance in treatment of injuries and illness, as well as understanding of the valuable uses of natural materials near the village, which also can lead to increased efforts to cultivate and manage species of vegetation that were in danger of disappearing from the natural environment.

5) Local wisdom for living methods helps villager learn self-reliance according to the principles of the sufficiency economy philosophy recognition of the value of local resources and their effective management.

Discussion

In Phase 1, the researchers studied the community context and local wisdom for livelihood sustenance according to the thinking of Pongphaibun (1997) and Nimmanhaemin (2011), which produced five types of local wisdom for livelihoods: food, clothing, lodging, medicine and livelihood methods. From there, the researchers created the research tools, consisting of community context survey tool and in-depth interview forms. These were presented to experts to assess the quality of the tools, finding that both sets of materials were of highest quality. This was a result of the previous step of studying relevant documentation, texts and research reports. Analysis and synthesis of these materials led to the creation of appropriate research tools that would produce reliable data in a user-friendly way.

In Phase 2, developed a database based on the discussion forum where information from the fieldwork was feedback to stakeholders in order to confirm the reliability and accuracy of the data. After this, data was used to construct the web-based database and disseminated to the community and other users. The web-based format is most accessible way to conveniently and quickly transmit information. Users can access a diverse range of information according to their needs. This is in line with the research of Limphaibun (2013) which found that villages record and manage only very little of their local information. If the government needs information from the village, they must conduct their own collection activities in separate activities, which means that time is required for collecting that data, while the data may lack clarity. This is another reason for the village to develop this type of database.

In Phase 3, the researchers created and assessed efficiency of programmed instruction materials based on local wisdom. These materials were created by the researchers for learners at the primary school level and in the community. Programmed instruction materials implies a method for presenting new information to learners in a graded structure organized from easy to difficult. Learners can learn on their own according to their own knowledge levels and can know the outcomes of their learning immediately (Edu Tech Wiki, 2008). From there, the researchers presented the materials to experts and found that the programmed instruction materials were of highest quality. The next step was to test the materials in the school and the community in order to ascertain efficiency in implementation. This testing found that the materials have an efficiency of 84.79/83.35 and 90.68/88.35 respectively and is acceptable according to the standards defined for the research. This is because the programmed instruction materials were created along the lines of the thinking of Sengwong (2008) and Pengsawat (2008), which introduce linear programming instructional materials that order the content easy to difficult. The revised materials were then

presented to experts again for further revisions. In the end, reliable and accurate programmed materials were produced for use with the direct stakeholders, as discussed in the research of Wanna (2016).

In Phase 4, the materials were considered in a comparative context, to assess the learning achievement according to the 80% standard. In this phase, the researchers found that the students and villagers achieved learning scores of 83.65% and 89.95% respectively. When these are compared to the standard score it was found that the students had achieved a score of 83.33% and the villagers a score of 100%. Accordingly, both groups passed the 80% standard that was defined in the research. These results can be attributed to the multi-step process that has been outlined in this article. This process ensured high quality and efficiency, while at the same time raising awareness among students through engaging materials that drew their attention. Learners learn by themselves according to their level of understanding and capacity. This is in line with Supanrat (2016) which discusses proactive learning to compare learning achievement in solar energy among a scientific group of fourth grade primary school students before and after the programmed learning experience. Additionally, the literature, such as work by Otto (2004) supports the present findings that programmed instruction is effective in stimulating interest among learners.

Conclusions

A database of local wisdom for livelihood sustenance of the ethnic Paka-kyaw people for Ban Mae San. The community is ethnic Paka-kyaw and practices Buddhism. The main livelihood activities are upland and lowland farming, and cultivation of medicinal plants. The common language of communication within the community is Karen. Outstanding and high-quality local wisdom exists in the community, having been passed down traditionally through the generations.

Acknowledgments

The research team would like to express its sincere thanks to HERP: Higher Education Research Promotion for 2016. Thanks also to the experts that provided valuable input and advice to the research

Reference

Edu Tech Wiki. 2008. Programmed Instruction. Online resource available at: http://edutechwiki.unige.ch/en/Programmed_instruction (accessed 16 December 2015).

Limphaibun, J. 2013. Building a database for community development in Thung Bor Paen village, Hang Chat District, Lampang Province. In Proceedings of National and International Meeting 2013 Wisdom for Social Development, Uttaradit Rajabhat University pp. 117-126. (in Thai)

Nimmanhaemin, P. 2011. Unlocking Precious Things: Inspecting Thai Literature. Chulalongkorn University, Bangkok. 415 p. (in Thai)

Otto, Jason T. 2004. The use of computer-based programmed instruction as a

supplemental tool to train behavior analysis concepts. Ph.D. Dissertation. Western Michigan University, Kalamazoo, MI.

Pankaew, K., B. Phutthima, P. Rangsan and J. Wongponkanan. 2015. Research on Biological Diversity from the Culture of Ethnic Groups in the Myanmar Area, Muang District, Lampang Province. Journal of Community Development Research 8(2): 98-109. (in Thai)

Pengsawat, W. 2008. *Writing Technical Research Reports: Innovation in education*. Somsak Printing, Sakol Nakorn. (in Thai)

Petchkaew, C. 2004. Improvement and use of local wisdom under current conditions. Journal of Thai Language and Thai Culture 2(3): 14-23. (in Thai)

Pongphaibun, S. 1997. Local wisdom of villagers in South Thailand. Thaksin Kadee Journal 4(3): 21-41. (in Thai)

Promwong, C. 2013. Testing efficiency of communication or instruction. Silapakorn Educational Research Journal 5(1): 7-20. (in Thai)

Sengwong, P. 2008. *Development of learning through research*. 2nd edition. E.K. Books, Bangkok. 288p. (in Thai)

Supanrat, S. 2016. Developing programmed instruction materials, Scientific Research Group, Solar Energy Unit, Fourth Year Primary using proactive learning. Journal of Educational Research Faculty of Education, Srinakharinwirot University 10(2): 162-173. (in Thai)

Wanna, P. 2016. Creating programmed instruction materials in Thai proverbs for vocational school students at Petchabun Technical University. Journal of Humanities Naresuan University 13(2): 107-116. (in Thai)