

Development of Teacher’s Self Learning Package Titled “Students’ Thinking Skill Assessment,”

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Abstract

The objectives of this research were: 1) to develop self-learning package for teachers titled “Students’ Thinking Skill Assessment,” with efficiency 80/80, 2) to find the effectiveness index, 3) to compare the pretest and posttest scores between before after studying self-learning package for teachers titled “Students’ Thinking Skill Assessment.” The samples using in this study were 60 teachers under jurisdiction of the Office of Mahasarakham Primary Educational Service Area 1, 2011 school year. They were selected by Cluster Sampling. The instruments using in this study were: 1) the Self-Learning Package, 2) the Learning Achievement Test, and 3) the Satisfaction Evaluation Form. Data were analyzed by using the Mean, Standard Deviation, and Percent. For different testing, was performed by using the Dependent Samples t-test. The research findings found that: 1) the self-learning package for teachers titled “Students’ Thinking Skill Assessment,” its efficiency was 83.07/82.33, which was higher than the specified criterion, 2) the effectiveness index was 0.58, or the learning progress was 58.43%, the teachers learned through self-learning package for teachers titled “Students’ Thinking Skill Assessment,” had posttest score higher than pretest at 0.01 significant level. The teachers learned through self-learning package for teachers titled “Students’ Thinking Skill Assessment,” had overall satisfaction on the program in “High” level every aspect. The aspect with highest average score was the content aspect. The second order included the accomplishment in learning objective, and the learning process respectively.

Keywords: Self-learning Package for Teachers, Students’ Thinking Skill Assessment

1. Introduction

The Education was an important instrument for national development as well as a process for development of national people to obtain knowledge, competency, virtue, morality, and social and national desirable characteristics. According to the growth and advancement of information technology as well as rapid and complex changes of global society in the present, it was necessary for each country to learn how to adapt oneself with potential changes throughout the time, and be ready to face with challenges from global trend. The major factors causing the country to be able to cope with those changes and challenges were: to create strength for oneself by developing people in the country to be ready to adjust oneself with changes and competition. Therefore, the Educational Management for developing the quality people was very indispensable so that they would obtain development with full potential until they could think how to solve their problems, learn, adjust themselves to keep pace with rapid changes, be ethical and able to live in society happily. The important goal of Education was to

develop students to serve social need. In addition, in present period, the society needed to develop one's thinking ability for the first priority. Since thinking ability was a major factor leading to national growth. So, the determination of important practice guidelines to enhance the Education for being efficient and effective, were determined, for instance, the National Education Act 1999, Section 24, the skill training of thinking process, management, situation facing, and knowledge application of knowledge for preventing and solving the problems, were specified. (The Office of Educational Reform. 2002: 1) Those determination issues were the changes of leading structure of model, learning and teaching process, administration and management, and support system in the budget, equipment, instrument, or technology. The major goal was the Educational Reform leading to the development to be good, ethical, and intelligent people with working competencies as well as quality as Thai people who were able to adjust themselves appropriate with situations. Those kinds of quality for Thai People would be an important resources for surviving. Furthermore, development of Thailand in social trend of new age needed to use knowledge as an important instrument for both of one's occupation, and livelihood.

The core curriculum of Basic Education 2008, determined an important goal of curriculum as: to develop the students as good, intelligent, and happy person who had potential to further their studying and earn their living. The important goal of curriculum was determined to accomplish major 5 competencies including: 1) communication competency, 2) thinking competency, 3) problem solving competency, 4) life skill competency, and 5) technology use competency. (Ministry of Education. 2010: 3-5) According to all of 5 competencies, would be seen that the thinking competency was an important factor in accomplishing the other competencies. Moreover, the thinking competency would be an integral instrument leading to be good, intelligent, and happy people. As Sternberg (Saksri Panakul, 2006: 132: cited in Sternberg. 1997: 18-20) concluded that the successful intelligence was a combination of 3 aspects in thinking competency: the analytical thinking, creative thinking, and practice which would help students to be successful in their life based on their social and cultural context. So, it was necessary for learning and teaching management to be focused on the inculcation of students' thinking skill continuously.

The development of students' thinking competency, was a role of teachers needed to play in organizing activities for practicing the students' thinking competency. The teachers should be supporters and facilitators. They should not be directors or judges as in former time. To teach thinking process or thoughtful persons for students, wasn't an easy task. Since the thinking process was not a visible process. Only the product of thinking which could be seen. (The Office of National Education Commission. 1998: 48) Thinking process had to be implemented in sequence in order to help the that kind of thinking to be accomplished according to its objective, for instance, problem solving process, in each step was based on many parts of sub-skills of thinking so that that thinking process would be efficient. (Tidsana Kammanee. 2003: 5) In process of developing the students' thinking skill, it was very necessary for teachers to evaluate students' skill as well as development continuously. The important goal of students' Assessment, was the usage of Assessment findings to develop the students for achieving the learning standard of various learning substances as well as competencies as specified in curriculum by using the findings of Assessment as information for improving, correcting, and enhancing the students' learning and development directly. The findings were improved and corrected the learning management process to be more efficient as well as considered the students' educational success as well. The Assessment needed to be performed in aligned with learning and teaching throughout the time. As a result, we obtained information the students' information regarding to their strength and weak point. Moreover, it was useful for schools for analyzing and concluding data for improving the learning and teaching development as well as Educational Management further. For most of former measurement and assessment in school, teachers often separate learning and teaching from learning measurement. They provided knowledge and information, and evaluated their teaching or testing. Consequently, the students were anxious and unhappy in their studying. Whereas the real intention of Assessment was to help the students' learning, and teachers' teaching by searching for

students' strength for enhancing them to develop their potential fully. In addition, the teachers had many problems in Assessment, for example, 1) focusing on measuring the students' characteristics separating their knowledge, thought, feeling, and practice skill apart, 2) the instruments were used as paper and pencil test mostly, 3) it was evaluation for concluding learning performance or judging the learning performance, 4) score system was used for decision making, 5) measurement and evaluation were secret between teacher and students, 6) measurement and evaluation situations were focused on the classroom, 7) it caused the teaching for examination or coaching, 8) process of measurement and evaluation was separated from learning and teaching process. (Chairit Sakdadech. 2001: 56) According to the above information, it was reflected that the teachers did not change their approach in Assessment since they still emphasized on the examination mostly. The Assessment by examination was a difficult method for evaluating the students' thinking skill.

In current situation, teachers lacked of knowledge and competency in measurement and Assessment in students based on guidelines of National Education Act 1999, and curriculum of Basic Education 2001 according to many causes including: the related work units didn't support teacher development thoroughly and continuously. Furthermore, the teachers didn't obtain self development for receiving knowledge and competency. To solve problems, the lack of knowledge and competency of staffs could be managed by various techniques of staff management. The self-learning package was another alternative of learning method which could be used as an innovation for developing the teachers' knowledge and competency. Since the learning package help students to be successful by themselves based on their ability appropriately without time limitation or place limitation in learning. Moreover, the learners could practice different learning skills by themselves. So, the self-learning package was an Educational Innovation being accepted widely and used for staff development in various work units as well as general people. The Self-Learning Package was a learning set presenting the content as multi-media classifying content into parts and presenting in sequence. As a result, the students could be informed their learning progress themselves. It was convenient for students since they could learn everywhere, and review content as they needed. (Herrick, Jenkins, and Carlson. 1998: 73-80) Besides, the researcher viewed that the self-learning package was appropriate learning media to be used since it didn't waste a lot of budget in providing the training. Teachers didn't waste time in learning and teaching management. In addition, they were able to study self-learning package during their free time. The teacher would have correct knowledge and competency in evaluating their students' thinking skill, and be able to evaluate the students' thinking skill continuously. Consequently, it was necessary to provide teacher development in evaluating their students' thinking skill. Therefore, adequate teacher development techniques should be searched for. The teachers learned through the self-learning package was another method which was appropriate with teacher development. So, the researcher was interested in developing the self-learning package for teachers titled "Students' Thinking Skill Assessment," in order to be learning sources to be studied and practiced by teachers which would lead to the teachers' competency in evaluating their students' thinking skill appropriately further.

2. Research Objective

1. To develop the Self Learning Package titled "Students' Thinking Skill Assessment," with efficiency 80/80.
2. To study the effectiveness index of the Self Learning Package titled "Students' Thinking Skill Assessment."
3. To compare the testing scores titled "Students' Thinking Skill Assessment."

3. Research Method

3.1. Scope

1. The population of this study were 2,685 teachers under jurisdiction of the Office of Mahasarakham Primary Educational Service Area 1, 2010 school year.
2. The samples using in this study were 60 teachers under jurisdiction of the Office of Mahasarakham Primary Educational Service Area 1, 2010 school year. They were selected by Cluster Sampling.
3. Content Framework

The development of self leaning package for teachers titled “The Students’ Thinking Skill Assessment,” the framework of content regarding to the thinking skill assessment based on competency in students’ thinking ability in core curriculum 2008, was determined, (Ministry of Education. 2010: 4) including the ability in analytical thinking, synthetic thinking, creative thinking, critical thinking, and systematic thinking. It was an essential material the teachers had to assess the students. Therefore, the content framework was determined for using as learning package classifying into 6 units as follows:

Unit 1: Analysis of basic characteristic in students’ thinking.

Unit 2: Assessment of students; analytical thinking skill.

Unit 3: Assessment of students; synthetic thinking skill.

Unit 4: Assessment of students; creative thinking skill

Unit 5: Assessment of students; critical thinking skill.

Unit 6: Assessment of students’ systematic thinking skill.

4. Duration of Research Implementation

Duration of 10 months was spent on implementing research from 1st March 2001 to 31st December 2011.

2.2. Procedure

1. Instruments using in this study

In this study, the handbook for self-learning titled “Students’ Thinking Skill Assessment,” was developed by the researcher. The instruments were used as follows:

1.1 The Teachers’ Self-learning Package titled “Students’ Thinking Skill Assessment,” was developed by the researcher. In each unit, it was consisted of introduction, pretest evaluation form, content framework, major material, learning objective, content and illustration, end unit activities, posttest evaluation form, and examples with established material.

1.2 The Test titled “Students’ Thinking Skill Assessment,” was multiple choice test.

1.3 The Teachers’ Satisfaction Evaluation on Self-learning Package for Teachers titled “Students’ Thinking Skill Assessment.”

2. Data Collection

The researcher established the Teachers’ Self-learning Package of Teachers under jurisdiction of the Office of Mahasarakham Primary Educational Service Area 1, who were samples, by considering the teachers’ convenience and readiness so that they would be able to study the content, material, and participation in end cycle activities finishing all of 5 units within 10 weeks. The scheduled duration for learning the content in each unit, could be flexibly adjusted based on appropriateness by teachers. In average, they should have time for self-learning for 1-2 hours, in the first semester from July 2011 to September 2011 with details in collecting data as follows:

2.1 The researcher contacted and make appointment with the samples to schedule duration and explain the teachers’ self-learning technique as well as administer the pretest by Learning Achievement Test titled “Students’ Thinking Skill Assessment.”

2.2 The teachers implemented self-learning titled “Students’ Thinking Skill Assessment,” in each phase as follows:

2.2.1 The self-preparation for self-learning before starting the self-learning, the teachers studied handbook for understanding the steps of practice.

2.2.2 The study of knowledge and material from each unit of handbook, the teachers had to study principles of study, unit framework, and learning objective to understand.

2.2.3 The responding of Self-evaluation before learning, the teachers responded the Self-evaluation before learning based on schedule to investigate basic knowledge before learning as well as record it.

2.2.4 The study of content and material in each topic of each unit.

2.2.5 When the teachers finished studying the details of each topic, and comprehended well. They practiced the end cycle activities as schedule, and recorded the score during learning, based on schedule.

2.2.6 After the teachers studied details from each topic, participated in activities during learning completely, and investigating themselves after studying to check their progress after studying, and examined the answers according to criterion 80%. The teachers studied next unit by former steps. In case the teachers couldn't have score as criterion, they returned to study based on former process until they had score as specified criterion.

2.3 The posttest of learning titled "Students' Thinking Skill Assessment," and asking their satisfaction on usage of self-learning handbook, were performed with teachers under jurisdiction of the Office of Mahasarakham Primary Educational Service Area 1, as the samples.

2.4 The obtained scores were analyzed by statistical technique.

3. Data Analysis

3.1 The test scores, and the scores from Questionnaire of teachers' satisfaction on the usage of self-learning handbook were calculated for the Mean. The average values were compared with specified criterion.

3.2 The test scores, and the scores from the findings in asking the teachers' Satisfaction on the usage of self-learning handbook, were calculated for Standard Deviation (S.D.).

3.3 The efficiency of self-learning package for teachers titled "Students' Thinking Skill Assessment," was calculated by using formula E1/E2. The efficiency criterion was specified as 80/80.

3.4 The effectiveness index of self-learning package for teachers titled "Students' Thinking Skill Assessment," was calculated by analyzing the teachers' pretest and posttest average scores. The criterion for accepting that the self-learning package was effective which could help the teachers to learn, the value had to be from .50 up.

3.5 The Mean Difference Testing of teachers' pretest and posttest average scores, the t-test Dependent Samples was administered.

3. Results

1. The self-learning package for teachers titled "Students' Thinking Skill Assessment," the efficiency of process on the efficiency of product, was = 83.07/82.33 which was higher than the specified criterion.
2. The self-learning package for teachers titled "Students' Thinking Skill Assessment," the effectiveness index was = 0.58, or the learning progress = 58.43.
3. The teachers learned by self-learning package for teachers titled "Students' Thinking Skill Assessment," the posttest score was significantly higher than the pretest at .01 level.
4. The teachers learned by self-learning package for teachers titled "Students' Thinking Skill Assessment," had satisfaction in overall, in "High" level. ($\bar{x} = 4.15$) Considering each aspect, found that the satisfaction on curriculum was in "High" level in every aspect. The content aspect included the highest value of average value. ($\bar{x} = 4.29$) The second order included the accomplishment in objective of self-learning package, ($\bar{x} = 4.18$), and the learning process respectively.

4. Discussion

According to the research findings, found that the self-learning package for teachers titled “Students’ Thinking Skill Assessment,” had efficiency of process on the efficiency of product = 83.07/82.33 which was higher than the specified criterion. The effectiveness index was = 0.58, or the learning progress = 58.43. The teachers learned by self-learning package for teachers titled “Students’ Thinking Skill Assessment,” the posttest score was significantly higher than the pretest at .01 level. The overall satisfaction was in “High” level. It was because the developed self-learning package, designed based on Theory of Action Learning. Consequently, the teachers who learned from the self-learning package by themselves, could understand context of work as well as bring the students’ learning objective as a part of construction for criterion in evaluating the students’ thinking skill appropriately based on real situation. As a result, the teachers could learn and understand the lessons in self-learning package based on objectives. It was supported by Amnaj Wadjinda’s (2008: 1-6) statement that the Action Learning was under the approach of : the action and learning had to be occurred as the alignment, it was the learning based on real experience in working since the learning by bring the problem or situation in working situation as learning problem. Moreover, it was needed to include how to think in searching for problem solving or work development technique which would be useful for both of students, and organization as well. The students brought context from their work to think, analyze, and solve the problem. The direct usefulness was the would have knowledge and comprehension in that content or approach more intensive than textbook or instructor only one aspect. As a result, the learning occurred with higher achievement. The self-learning package for teachers titled “Students’ Thinking Skill Assessment,” it was designed by adapting from Action Learning Approach into learning package. The teachers had to learn through process which could be classified into 5 phases, as: Phase 1: the survey of students’ activities and performances, Phase 2: the organization and grouping of students’ performance, Phase 3: the determination of performance Assessment technique, Phase 4: the determination of criterion and construction of instruments, and Phase 5: the practice of students’ Assessment. Consequently, the students understood content, and applied the approach of Assessment in students’ thinking skill, in context of students’ thinking truly more. So, the Action Learning process could help one’s learning through self-learning package for teachers, was efficient. It was supported by the findings of Chalard Chantarasombat’s (2010 : 89-121) study in development of Action Learning Model focusing on Student-Centered, found that the appropriateness of Action Learning Model focusing on Student-Centered, in overall, was in “the Highest” level. The probability of practice in Action Learning Model focusing on Student- Centered, in overall, was 84.86/78.03 as specified criterion. The effectiveness index of the activity implementation plan was .5392 or the learning progress was 53.92%. The students had posttest learning achievement in significantly higher than the pretest at .05 level, and there was learning retention. It was supported by the findings of Worawan Wanich-jaroenchai’s (2010: 37) study in the Action Learning: Application in Learning and Teaching, concluded that the action learning was a learning which each person had shared learning in analyzing the problem through learning process as well as reflection based on one’s own experience, propose guidelines for problem solving, and putting the problem solving guidelines which were considered into practice. The application of problem solving guidelines in learning and teaching, was an efficient learning and teaching model since it could transfer knowledge from theories to practice. The students had experience as well as critical thinking by themselves, and self-reflection. As a result, the they received both of knowledge and skill in learning which was practical in working.

The application of Action Learning in designing the learning package in this study, the researcher adapted some parts of Action Learning by focusing on the teachers to search for information from their own context as a part of design for instruments evaluating the students’ thinking skill. It was supported by the approach in constructing the learning package by using Skinner’s reinforcement principles. (Sansuda Jiemjit & Tanapon Worachat. 2008: 23) including major rationale as : the learning package was self-learning which the students acted by themselves as well as made decision in learning by themselves. The students studied through learning package would be able to know their learning

achievement immediately as a reinforcement. Moreover, the problem of the number of students was more than the teachers,' would be solved which could alleviate the teachers' responsibility in evaluating the students' work. Furthermore, it could also provided feedback for students' performance immediately. Therefore, the self-learning package was appropriate for designing the learners to practice by themselves. The major component of self-learning package developed by the researcher, consisted of the worksheets needed to be searched by teachers step by step, and analyzed for guidelines in constructing the instrument for students' Assessment as well as studied in theoretical approach documents regarding to students' thinking skill prepared by the researcher. It was supported by the findings of Worapoj Sangsawad's (2004: 108-118) study in developing the self-learning package titled "Authentic Assessment of for Primary School Teachers," the findings found that the teachers and related persons wanted to develop the self-learning package including content of basic knowledge in learning Assessment, major approach of authentic assessment, authentic assessment technique, and design of work task for Assessment. The model was convenient for being used including illustrations and unit testing. The self-learning package titled "Authentic Assessment for Primary School Teachers," consisted of 4 units. In each unit included: the foreword, introduction, introduction for usage, major material, learning objective, and content framework in learning unit, content material and activities/practice exercise, guidelines for answering the activities, pretest and posttest. It had efficiency as specified criterion 84.83/82.83. In trying out, found that the teachers were enthusiastic in using the self-learning package, participating in activities with attention and responsibility. Besides, it was also found that they had different competencies in learning from self-learning package. There were significant differences in pretest and posttest knowledge and competency of authentic assessment at .01 level. From the posttest, they had higher average score than the pretest. They had ability in authentic assessment in construction of instrument for evaluating the work tasks most, the lowest was the work task Assessment. In addition, they viewed that the self-learning package was appropriate for being used.

5. Conclusion

The findings of this study showed that the self-learning package for teachers titled "Students' Thinking Skill Assessment," was both of efficient and effective learning media which could significantly develop the teachers' knowledge and competency of teachers who were interested in as well as wanted to learn by themselves. In addition, the teachers studied by self-learning package showed their satisfaction in "High" level. Since the researcher designed the learning package based on the Action Learning Theory. The teachers had to learn through the process classifying into 5 steps : Step 1; the survey of students' activities and performances, Step 2; the organizing and grouping the students' performances , Step 3; the determination of performance assessment, Step 4; the determination of criterion and construction of instruments, and Step 5; the practice in evaluating the students' performances. So, the students could learn and understand content as well as apply it in context of students' Assessment truly. It was a learning package which could be used truly and appropriately for using as a media for teachers who wanted to develop themselves while they were using during their work practice.

6. Recommendations

1. Recommendations for applying the research findings

1.1 According to the findings, found that the self-learning package was efficient than specified criterion. Therefore, the Education Institutions in Basic Educational Level should administer it as a part of instruments for staff development by using with the teachers in other sample groups extensively further.

1.2 According to the evaluation of knowledge and comprehension, found that after using the self-learning package, the teachers obtained higher level of knowledge and comprehension in the approaches and principles in evaluating the students' thinking skill. So, those who wanted to use this package of self-learning, should explain content as well as give supplementary examples appropriately before using with the other sample groups further.

1.3 According to research findings, found that to try out the self-learning package by some teachers. They skipped the step of introduction for using the self-learning package by oneself. Besides, they didn't intend to observe the students' behaviors in order to obtain information to be used as guidelines for constructing the instruments. Therefore, those who would use this self-learning package with the teachers, should inform and emphasize the teachers to follow introduction of self-learning package, and the study guidelines in each unit to comprehend clearly first. Then, the teachers should follow steps for using self-learning correctly. Furthermore, according to the try out of self-learning package by some teachers, there was slower progress than specified schedule. So, the persons who would try out this self-learning package, should follow and take care of progress in the users regularly in order to know their progress as well as provide suggestions and support for them adequately.

2. Policy Recommendation

2.1 According to research findings which found that the teachers were able to construct the instruments, and evaluate the students' thinking skill. Therefore, the Educational Institutions should encourage and support the teachers to be developed their knowledge as well as competency in evaluating their students' thinking skill continuously by supervising, following up, and advising appropriately, or providing the workshop.

2.2 According to the to research findings which found that the findings of investigation in competency for evaluating the students' thinking skill by the teachers, in overall, it was higher. So, the Educational Institution should enhance the teacher development so that teachers would use instruments for evaluating students' thinking skill regularly, and applying the assessment findings to improve learning and teaching in order to help students to obtain higher level of thinking skill.

3. Recommendations for research

3.1 The research studies for following up the students' thinking skill after the teachers obtained development through self-learning package for teachers titled "Students' Thinking Skill Assessment," that in what extent the teachers could develop the learning and teaching which would lead to the encouragement for students' thinking skill in order to cover the capacity in thinking competency, should be conducted.

3.2 The research studies of teacher development model in evaluating, and enhancing the students' thinking skill based on Action Learning, should be conducted by finding the model for cultural development of assessment which would lead to work development continuously and sustainably further.

7. Acknowledgement

This research received research support grant from the revenue budget 2011 of the Faculty of Education, Mahasarakham University in which the researcher spent the budget costly until the research was complete smoothly according to its objective. So, very much appreciation was expressed in this opportunity.

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