The Development Model to Improve ICT Skills for Child Development Center Staff by Implementing Self-Directed Strategies

Kajohnsak Sa-nguansat[*1]

[1]Faculty of Education, Surindra Rajabhat University
E-mail: kajohnss@srru.ac.th

Abstract

This research is the development model to improve ICT skills for child development center staff by self-directed strategies. Objectives of the research are as follows: 1. To develop a model for improving ICT skills by implementing self-directed strategies for staff at child development center 2. To study ICT skills improvement by implementing self-directed strategies for staff at child development center comparing pre-test and post-test scores of the samples. The samples are 60 staff in child development center selected by simple sampling methods, the samples are evaluated basic ICT skills with the scores 30 points and be randomly assigned to experimental and control groups. A random match (Match Pair) grouping samples into two groups of 30 people each experimental group first formed to improve ICT skills with self-directed strategies. The second group was formed to improve the ICT skills without self-directed strategies. The tools used in this research are the learning plan and ICT skill evaluation forms to improve ICT skills with self-directed strategies and without self-directed ICT skills assessment. The statistics used in this research is the mean and standard deviation. Comparative analysis of the differences between the ICT skills after learning of the two groups are independent (t-test independent samples).

The research found that the mean and standard deviation of pre-test scores of basic ICT knowledge for an experimental group to improve ICT skills by using usual education (not self-directed strategies) is $\bar{x}$ = 13.35 S.D. = 2.153. The variation of pre-test scores of basic ICT knowledge for an experimental group to improve ICT skills by using usual education (not self-directed strategies) is difference in statistically significant at .05. For the mean and standard deviation of pre-test scores of basic ICT knowledge for a control group to improve ICT skills by implementing self-directed strategies is $\bar{x}$ = 14.18 S.D. = 1.54. The variation of pre-test scores of basic ICT knowledge for a control group to improve ICT skills by implementing self-directed strategies is difference in statistically significant at .05. For the variation of basic ICT knowledge pre-test scores for an experimental group by using usual education (not self-directed strategies) comparing with a control group by implementing self-directed strategies is no difference in statistically significant at .05. The mean and standard deviation of post-test scores of basic ICT knowledge for an experimental group to improve ICT skills by using usual education (not self-directed strategies) is $\bar{x}$ = 22.47 S.D. = 1.98. The variation of post-test scores of basic ICT knowledge for an experimental group to improve ICT skills by using usual education (not self-directed strategies) is difference in statistically significant at .05. For the mean and standard deviation of post-test scores of basic ICT knowledge for a control group to improve ICT skills by implementing self-directed strategies is $\bar{x}$ = 22.47 S.D. = 1.98. The variation of post-test scores of basic ICT knowledge for a control group to improve ICT skills by implementing self-directed strategies is difference in statistically significant at .05. For the variation of basic ICT knowledge post-test scores for an experimental group by using usual education (not self-directed strategies) comparing with a control group by

implementing self-directed strategies is difference in statistically significant at .05.

Keyword: Improve ICT Skills, Self-directed Strategies, Child Development Center Staff

Introduction

In 2012 Thai government has policy to encourage learning system via tablet, and the government delivers tablets to all primary school student Grade 1. It is such new innovation at that period of time to specifically strengthen learning skills by searching and getting new knowledge outside school and beyond textbook in classroom. In the future, this will be new trend of educational system in Thailand. Also, the research result from National Electronics Computer and Technology Center (NECTEC) and Sasin Graduate Institute of Business Administration of Chulalongkorn University found that Thai government official has sub-standard on ICT skills. Regarding tablet PC, it is delivered to all primary school to be educational materials in almost all subject areas for grade 1 students. However, before passing to grade 1, student has to graduate from the child development center. The researcher has experienced teaching in Education for Employed Staff Program which most of staff at the Child Development Center has sub-standard on using tablet PC. This weakness disadvantages the students from getting new knowledge from learning via tablet PC.

Therefore, the potential of staff at Child Development Center is very important to enhance and develop skills of small children before graduating to primary school grade 1. If staff at Child Development Center lacks of ICT skills as mentioned above, tablet PC delivered from the government will not be benefit enough to students in primary education. Therefore, having pre-primary education student and staff at the Child Development Center strong ability in ICT skills will make learning via tablet PC be more effectiveness.

The self-directed strategies is the process of planning controlling and supervising their own behaviors. This includes self-observation, self-determination and self-reflection by having objective to change their own behaviors to the target behaviors. The sub-process is self-observation. First of all, people need to know what is happening with themselves, then people will use the resulted information from self-observation process to target, monitor, examine and evaluate their behaviors. People need to observe and record their own behaviors honestly, correctly, regularly, and systematically. Also, the observation and recording of their own behaviors immediately when target behaviors happen is needed. This will make people correctly and efficiently getting tools for self-diagnostic. Therefore, the research is interested in the research of the Development Model to improve ICT skills of staff in Child Development Center by implementing self-directed strategies.

Research Objective

1. To develop model to improve ICT skills of staff in Child Development Center by implementing self-directed strategies.

2. To analyze research result by comparing the improvement of ICT skills of staff in Child Development Center by implementing self-directed strategies. Pre-test and post-test comparing is implemented.

Hypothesis

The staff in Child Development Center who improves their ICT skills by implementing self-directed strategies gains more ICT skills

comparing with usual learning (not self-directed strategies), the difference is statistically
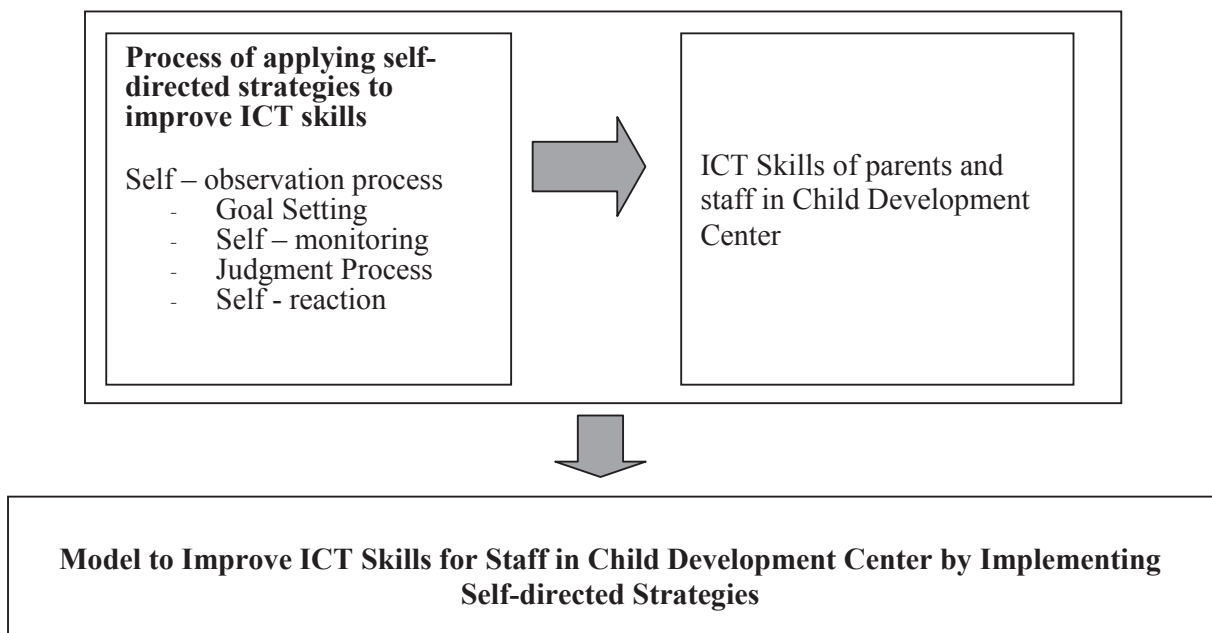
significant at .05.

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│  │ Process of applying self-    │              │                          │  │
│  │ directed strategies to       │     ──▶      │ ICT Skills of parents and│  │
│  │ improve ICT skills           │              │ staff in Child Development│ │
│  │                              │              │ Center                   │  │
│  │ Self – observation process   │              │                          │  │
│  │   -  Goal Setting            │              │                          │  │
│  │   -  Self – monitoring       │              │                          │  │
│  │   -  Judgment Process        │              │                          │  │
│  │   -  Self - reaction         │              │                          │  │
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┌─────────────────────────────────────────────────────────────────────────────┐
│  Model to Improve ICT Skills for Staff in Child Development Center by          │
│  Implementing Self-directed Strategies                                         │
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Figure 1 Conceptual Framework

Research Method

1. Population and Sample

1.1 Populations in the research is staff in Child Development Centers

1.2 Samples in the research is 60 staff Child Development Center in Surin Province. The staff is selected by method of simple random sample. The staff also has been preliminary evaluated basic ICT skills with score 30 points and be randomly assigned to experimental and control groups by using random match (Match Pair).

2. Research Variables

2.1 Independent variable is Model to improve ICT skills by implementing self-directed strategies.

2.2 Dependent variable is ICT skills

2.3 Developing of model to improve ICT skills by self-directed strategies

The process for developing of model to improve ICT skills by self-directed strategies are as follows: Researcher has studied, analyzed study papers and consulted with five experts by in-depth interviewing. Also, the researcher has analyzed the model to improve ICT skills by self-directed strategies from thesis of Associate professor Direk Teeraputon, Ph.D., Title: The implementation of self-regulated learning strategies on computer network for undergraduate students, Department of Educational Technology and Communications, Faculty of Education, Chulalongkorn University. The results of this research are as follows: 1. Self-regulated strategic learning model for courses on computer network consists of 17 significant procedural steps applied nine self-regulated learning strategies and eight computer network learning strategies. The 17 steps are (1) unit orientation (2) self-assessment for computer network learning readiness (3) pre-testing (4) receiving pretest score feedback (5) goal-setting and record keeping (6) subject content planning and record keeping (7) defining rewards and punishment and record keeping (8) learning environmental structuring and record

keeping (9) subject content studying from World Wide Web (10) conducting activities on computer network (11) assignment recording (12) working on unit assignment (13) report organizing and transforming (14) asking questions via network (15) test reviewing and record keeping (16) post-testing (17) performing self-rewarded or self-punishment (Direk Teeraputon, 2003). Then, the researcher has designed model to improve ICT skills by self-directed strategies to implement for this research as follows:

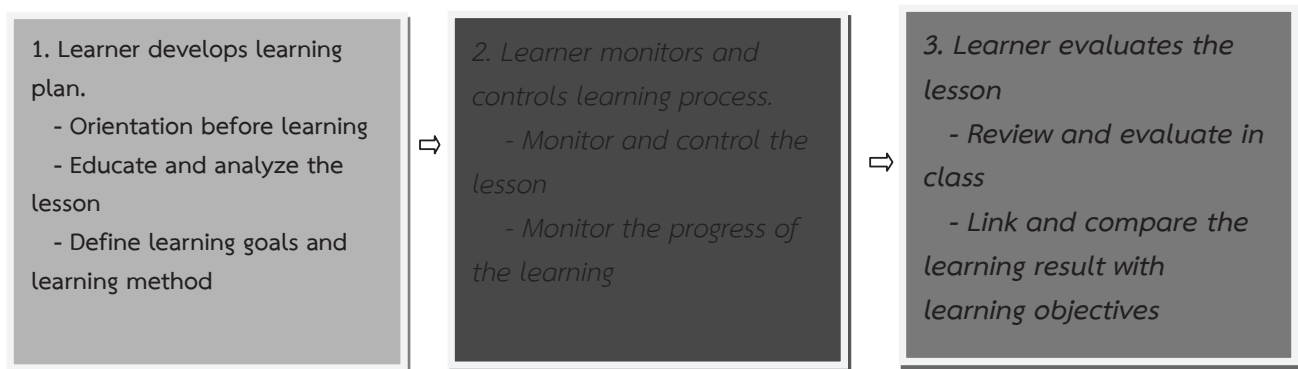## Model to improve ICT skills by implementing self-directed strategies

| 1. Learner develops learning plan.
 - Orientation before learning
 - Educate and analyze the lesson
 - Define learning goals and learning method | ⇨ | 2. Learner monitors and controls learning process.
 - Monitor and control the lesson
 - Monitor the progress of the learning | ⇨ | 3. Learner evaluates the lesson
 - Review and evaluate in class
 - Link and compare the learning result with learning objectives |

Figure 2 Model to Improve ICT Skills by Implementing Self-Directed Strategies

Tools for Data Collections

1. Learning plans for improving ICT skills by implementing self-directed strategies and usual education (not self-directed strategies)

2. ICT Skills Evaluation Form

Plan No.	Activities Plans/ Name of Learning Plans	Learning Targets	No. of hours (Hrs.)
1	1. Basic knowledge and functions of tablet PC 2. Account registration and application installations 3. General functions and menu for users 4. Techniques on how to save energy, connect to other accessories and maintain tablet PC 5. Use tablet PC for education 6. Present on how to use tablet PC	1. Learners gains basic knowledge on functions of tablet PC. 2. Learners can register the account and install the applications. 3. Learners can use menus of tablet PC in user level. 4. Learners can search, use functions to decorate tablet PC and save energy when connecting to other accessories. 5. Learners can use tablet PC for education in class. 6. Learners can present on how to use tablet PC.	12

Table 1 Learning Plan for improving ICT skills by implementing self-directed strategies

Research Result

1. Achievement Testing (Pre-test)

The research found that mean and standard deviation of basic ICT knowledge pre-test scores for experimental group by usual education (not self-directed strategies) is $\bar{x}$ = 13.35 S.D. = 2.153. For the mean and standard deviation of ICT basic knowledge pre-test scores for a control group by implementing self-directed strategies is $\bar{x}$ = 14.188 S.D. = 1.549.

Group	Statistic Value				
	$\bar{x}$	SD	t	df	p-value
Not using self-directed strategies	13.35	2.043	-1.747	29	.091
Implementing self-directed strategies	14.18	2.045			

Table 2 Analysis of Variance of basic ICT knowledge pre-test scores for experimental group by usual education (not self-directed strategies) and a control group by implementing self-directed strategies

From table 2, the research found that the variation of basic ICT knowledge pre-test scores for experimental group by using usual education (not self-directed strategies) and a control group by using self-directed strategies is no difference in statistically significant at .05.

2. Achievement Testing (Post-test)

The research found that mean and standard deviation of basic ICT knowledge post-test scores for experimental group by using usual education (not self-directed strategies) $\bar{x}$ = 22.47 S.D. = 1.988. For the mean and standard deviation of basic ICT knowledge post-test scores for a control group by implementing self-directed strategies $\bar{x}$ = 22.47 S.D. = 1.988.

Group	Statistic Value				
	$\bar{x}$	SD	t	df	p-value
Not using self-directed strategies	22.46	1.987	-5.545	29	.000
Implementing self-directed strategies	25.37	2.044			

Table 3 Analysis of Variance of ICT basic knowledge post-test scores for experimental group by using usual education (not self-directed strategies) and a control group by implementing self-directed strategies

From table 3, the research found that the variation of basic ICT knowledge post-test scores for experimental group by using usual education (not self-directed strategies) and a control group by using self-directed strategies is difference in statistically significant at .05.

Conclusion

The research found that mean and standard deviation of basic ICT knowledge pre-test scores for experimental group by using usual education (not self-directed strategies) is $\bar{x}$ = 13.35 S.D. = 2.153. The variation of basic ICT knowledge pre-test scores for experimental group by using usual education (not self-directed strategies) is difference in statistically significant at .05.

For the mean and standard deviation of basic ICT knowledge pre-test scores for a control group by implementing self-directed strategies is $\bar{x}$ = 14.188 S.D. = 1.549. The variation of basic ICT knowledge pre-test scores for a control group by implementing self-directed strategies is difference in statistically significant at .05.

For the variation of basic ICT knowledge pre-test scores for an experimental group by using usual education (not self-directed strategies) comparing with a control group by implementing self-directed strategies is no difference in statistically significant at .05.

The mean and standard deviation of basic ICT knowledge post-test scores for an experimental group by using usual education (not self-directed strategies) is $\bar{x}$ = 22.47 S.D. = 1.988. The variation of ICT basic knowledge post-test scores for an experimental group by using usual education, not self-directed strategies is difference in statistically significant .05.

The mean and standard deviation of basic ICT knowledge post-test scores for a control group by using self-directed strategies is $\bar{x}$ = 22.47 S.D. = 1.988. The variation of basic ICT knowledge post-test scores for a control group by implementing self-directed strategies is difference in statistically significant at .05. Also, the variation of basic ICT knowledge post-test scores for an experimental group by using usual education (not self-directed strategies) comparing with a control group by implementing self-directed strategies is difference in statistically significant at .05.

Result and Discussion

The conclusion from the research of The Development Model to Improve ICT Skills for Child Development Center Staff by Implementing Self-Directed Strategies are as follows: Staff at Child Development Centers that improves their ICT skills by implementing self-directed strategies gains more ICT skills with statistically significant at .05. The research result is as the designed hypothesis. The researcher has issues to discuss as follows:

After reviewing the scores of ICT skills from three experts including the researchers, the research result found that the

Model to improve ICT skills by implementing self-directed strategies has been higher than usual education. This shows that self-directed strategies has effected to ICT learning skills. This is due to the self-directed strategies makes the learners to develop learning plan via orientation process before the lesson. Learning, reviewing and analyzing content of the lesson, as well as defining learning objectives and learning procedures are also the reason. Also, the learner monitors and controls learning process and monitors the progress of the learning by themselves. The learners also evaluates, considers and reviews their learning during learning period, as well as linkage the learning result with learning objectives. All of these learning procedures make the learner to direct and to regularly supervise

themselves. Consequently, the improving of ICT skills by implementing self-directed strategies is higher than usual education which is consistent with the thesis of Direk Teeraputon (2003). He has implemented the research title: The implementation of self-regulated learning strategies on computer network and compare the pretest and posttest scores of self-regulated learning and learning achievement of students learned on computer network for undergraduate students. In this study, the self-regulated learning strategies, the computer network learning model and instructional design and development model were analyzed, synthesized and used to construct a self-regulated learning model on computer network for undergraduate students. Thirty-four undergraduate students at Naresuan University during the first academic year of 2003 were participated in the study. The results of this research were as follows:

1. Self-regulated strategic learning model for courses on computer network for undergraduate students consists of 17 significant procedural steps applied nine self-regulated learning strategies and eight computer network learning strategies. The 17 steps are (1) unit orientation (2) self-assessment for computer network learning readiness (3) pre-testing (4) receiving pretest score feedback (5) goal-setting and record keeping (6) subject content planning and record keeping (7) defining rewards and punishment and record keeping (8) learning environmental structuring and record keeping (9) subject content studying from World Wide Web (10) conducting activities on computer network (11) assignment recording (12) working on unit assignment (13) report organizing and transforming (14) asking questions via network (15) test reviewing and record keeping (16) post-testing (17) performing self-rewarded or self-punishment.

2. The analysis of pretest and posttest scores of samples showed a statistically significant at the .05 level improvements of self-regulated learning and learning achievement. The findings of this study support the developed model as a strategies for improving student's self-regulated learning and learning achievement

1. The research result found that the model to improve ICT skills by self-directed strategies is appropriate to motivate the learning system of students in all education levels.

2. Most of staff at Child Development Center are less ICT skills, they need to improve the ICT and varied technology skills.

3. The staff at child development center needs to extend learning period to more than 12 hours, they need to learn more other ICT skills.

Recommendations for Future study

1. Besides self-directed strategies , other social psychology theories should be applied to the lesson.

2. For this research, the staff at the Child Development Center has learnt basic ICT skills via tablet PC. The future research should include other type of ICT Media in order for staff at Child Development Center can gain more ICT knowledge and apply the knowledge to the lessons efficiently.

Reference

Direk Teeraputon, **The implementation of self-regulated learning strategies On computer network for undergraduate Students,** Department of Educational Technology and Communications, Chulalongkorn University, 2003.