THE USAGE OF P.I.L. ACTIVE LEARNING MODEL ON BODY ORGAN SYSTEM OF GRADE 6 SCIENCE CLASS OF DEMONSTRATION SCHOOL, SUAN SUNANDHA RAJABHAT UNIVERSITY, BANGKOK, THAILAND.

Natapon Youpensuk[1] & Narumon Laiprasertporn[2]
Demonstration School, Suan Sunandha Rajabhat University
1 U-thong Nok Road, Dusit, Bangkok, Thailand.
Email: natapon.yo@ssru.ac.th[1], narumon.la@ssru.ac.th[2]

ABSTRACT

The objectives of this research were to develop, analyze learning achievement and study Grade 6 students' satisfaction on P.I.L. Active Learning Model on body organ system. The sample group was 87 Grade 6 students at Demonstration School, Suan Sunandha Rajabhat University, semester 2, academic year 2018 by using purposive sampling. The instruments used in this research were 24 period-P.I.L. Active Learning Model on body organ system, 30 subjective and objective learning achievement test worksheets, satisfaction questionnaires of the students who were taught by P.I.L. Active Learning Model. The data was analyzed by using mean, standard deviation, ability growth scores of learning achievement and T-test dependent samples.

The result shown that post-science subject learning achievement on body organ system of Grade 6 students who were taught by P.I.L. Active Learning Model was higher than pre-learning achievement. The average of ability growth scores was 10. The satisfaction level of the students who were taught by P.I.L. Active Learning Model was in the highest level.

Keywords: P.I.L. active learning model, student's achievement, satisfaction

INTRODUCTION

Science is important to humans and society in every age because we apply scientific knowledge to different occupations. Science helps to create knowledge and understanding of natural phenomena, allowing people to develop logical thinking processes, analytical thinking, creative thinking, have important skills in finding knowledge, to be able to solve problems systematically, to make decisions by using a variety of information, and to use testimonies that can be examined the Knowledge-based society, everyone needs to develop learning, especially science. One goal of science education is to provide Scientific literacy for all students, which can apply knowledge in their careers and science jobs.

From the learning management in science subjects of Grade 6 students, it was found that the behavior of the learners that the researcher noticed was that the students were bored, and talking to friends about matters that were not related to the learning content. The researcher experimented with the grouping of students by an assortment of grades, to compete with each other, to answer problems, to collect points during the course. The lecture content showed that students were interested, were more involved in teaching and learning activities, and from analyzing the test to collect the points of students found that students can answer questions in the part that is related to the experiment. However, when it is the question that the researcher uses the lecture method only in the classroom, most students will answer the question incorrectly, which is consistent with the learning definition of Skinner, that learning is Behavior change, which is a result of response to stimuli, is a learning theory

that describes learning from the condition of stimuli, in which the learner must act or act, to find a solution, so will get satisfactory results.

The Active learning emphasizes on being an Active learner rather than a Passive learner. According to [3], found that the Active learning, which is appropriate With the purpose of learning in learning for understanding, and applying knowledge that is applied in everyday life, encourage learners to be more alert to learning, more active in thinking, than by teachers, by teaching by lecture only to memorize, the Active learning is a teaching that helps learners achieve high efficiency, learners will be satisfied in the teaching and learning style, which students have Participating in the activities, the students learn to act more as a knowledge alone. Organizing learning activities that can enable learners to understand, understand concepts that are taught correctly, and deep, persistence, learners can link knowledge very well, learners have fun from Activities that are held in teaching and learning, learners can integrate the knowledge gained from teaching to benefit, It is a consequence of learning, in which the learners act as self-study activities. The Active learning is an approach to learning, which has a variety of techniques aimed at Active learners, in which the instructor will act as a facilitator for the learner rather than as a lecturer or teach by himself all. Teachers must give students the opportunity to seek knowledge, exchange knowledge, and build knowledge by oneself, which is important for students must have an achievement in learning through the Active learning, and a variety of activities that can help motivate students to think, act independently, are a large part of learning in different ways [4], which responds to 21st century learning skills, helping students to integrate, develop a learning vision by combining knowledge, specific skills, expertise, and knowledge in various fields Together, in order to succeed.

Therefore, the researcher is interested to study the learning management by the Active Learning Model on the body organs, in order to develop the learning achievement of grade 6 students, Suan Sunandha Rajabhat University Demonstration School. The researcher, therefore, planned the learning management of science subject in Body organs, which is an active learning model based on the P.I.L Model, which is the goal hierarchy of the learning management process, beginning with **Step 1**, which is **P (Plan):** the goal of learning management in the first phase, in order for students to be able to plan, the researcher chose Storyline Method and Team Game Tournament, to train the student through the study process the Digestive system and circulatory system. The goal of the next learning, **Step 2** is **I (Integration):** for learners to carry on from P (Plan), plan and implement the planning process, to Integrate interdisciplinary knowledge in STEM Education. From the learning process in the respiratory and digestive systems. The ultimate goal of P.I.L. Model, **Step 3** is **L (Life skills):** Once students are able to plan, integrate interdisciplinary action, students must be able to put their knowledge to practical use in daily life, to educate and help people in the community, that is Learners must have life skills. The researcher has chosen 5 STEPs and Problem Base Learning, to support the learners about the nervous system and the reproductive system, and have real-life skills. The goal of the P.I.L. Model, the researcher considers the content, the lesson is important, to be consistent and to achieve that goal, is the P.I.L. Model, which the researcher has expectations as this will greatly help students gain knowledge, understanding, and fun learning, learn together as a group, exchange knowledge, help each other within the group, and increase retention in science, bringing knowledge to be applied to daily life, **Plan, Integration** into **Life skills** which will result in students being aware of the importance of science, and helping students to be fully qualified in the 21st century.

RESEARCH OBJECTIVES

1. To develop and analyze the learning achievement on the organ system of grade 6 students, Suan Sunandha Rajabhat University Demonstration School, by using the P.I.L. Active learning Model.

2. To study the satisfaction of grade 6 students, Suan Sunandha Rajabhat University Demonstration School, from the learning management by using the P.I.L. Active learning Model on the body organ system.

RESEARCH HYPOTHESIS

1. Academic achievement in science subject on the organ system of grade 6 students, Suan Sunandha Rajabhat University Demonstration School, after receiving the P.I.L. Active Learning Model higher than before learning.

2. The Satisfaction of grade 6 students in learning science subjects by using the P.I.L. Active Learning Model, the transformed results are at the highest level of satisfaction.

RESEARCH METHODOLOGY

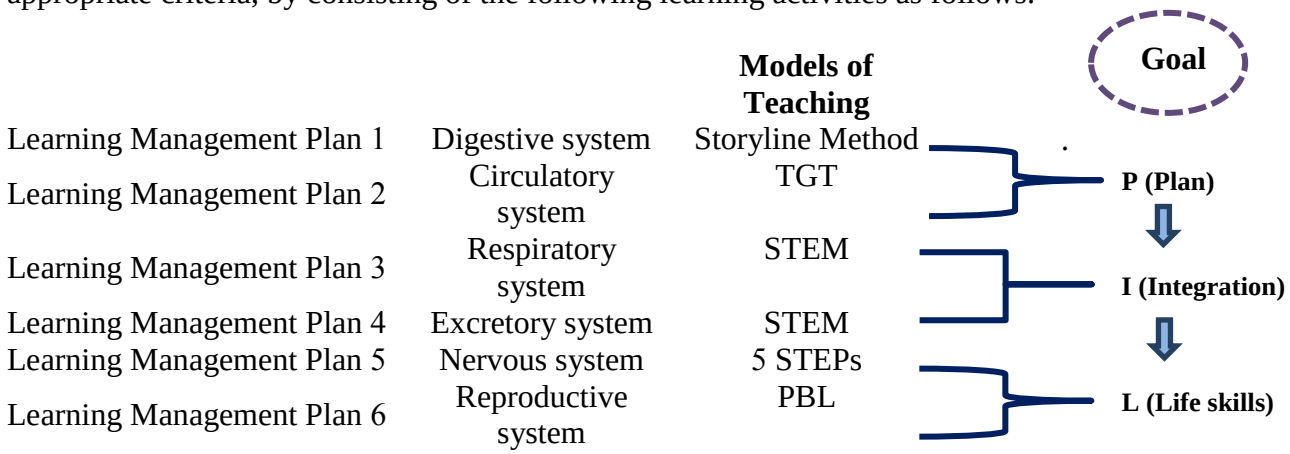
The development of learning achievement on the body organ system by the P.I.L. Active Learning Model, Suan Sunandha Rajabhat University Demonstration School with Research procedures are as follows:

1. Target group

The target group used in this research was grade 6 students, Suan Sunandha Rajabhat University Demonstration School which is studying in the first semester of academic year 2018, 87 people, by using the Purposive sampling method.

2. Tools for data collection

1.) Operate by using learning management plan by using the P.I.L. Active Learning Model with grade 6 students on the body organ systems for 24 hours, 4 hours per Learning management plans, which have been considered appropriately by 3 experts, found that the *Index of Item- Objective Congruence* (IOC) is between 0.67 - 1, that is Pass the appropriate criteria, by consisting of the following learning activities as follows:



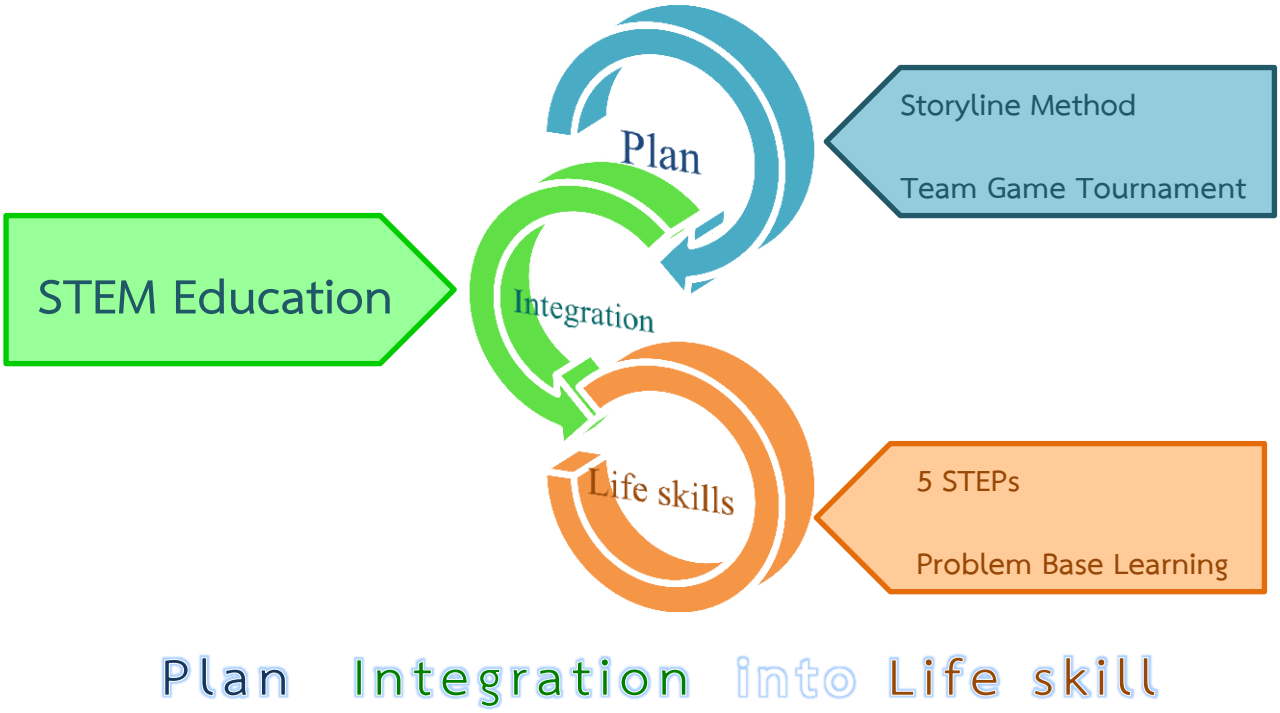


Figure 1: The process of using P.I.L. Model Active Learning management

2.) Test of achievement on the organ system in the body organ systems of grade 6 students, Suan Sunandha Rajabhat University Demonstration School, which the researcher created according to the learning objectives, 30 items, as 4 multiple-choices and 3 subjective tests, which have been considered appropriately by 3 experts. The *Index of Item- Objective Congruence* (IOC) is equal to 1, which can be interpreted as Pass the criteria, and are suitable.

3.) The evaluation form for the satisfaction of students who received learning management about the body organ systems of grade 6 students, Suan Sunandha Rajabhat University Demonstration School by using the P.I.L. Model Active learning, which the researcher created to measure the feelings, emotions or attitudes of the target students, evaluated in 3 areas and with Assessment list, total 18 items.

3. Data analysis and statistics used in this research, analyze data in the following order:

1) Analyze academic achievement and analytical ability on the body organ systems by calculating the Mean.

2) Analyze the academic achievement and analytical ability on the body organ systems by calculating the Standard Deviation.

3) Analyze development scores for the academic achievement.

4) Comparing the difference in the average scores of the two groups are connected (T-test Dependent Samples).

RESEARCH RESULT

The result of data analysis of learning management by using the P.I.L. Model Active Learning on different organs in the body, on the development of science achievement of grade 6 students, Suan Sunandha Rajabhat University Demonstration School, are as follows:

1) Table showing the comparison of scores before and after learning, comparing criteria to percentages 70, with the science achievement test on the body organ systems for grade 6 students, 87 people.

Variable	Pre-test (20) (X_1)	Post-test (20) (X_2)	Student development score ($X_2 - X_1$)
N	**87**	**87**	**87**
$\bar{x}$	6.26	16.26	10
S.D.	1.85	1.72	1.39

From the table of research, it was found that science achievement scores, before and after learning about body organ systems, were different on average, the post-learning scores were higher than before, with an average pre-learning score equal to 6.26, the standard deviation of 1.85, the coefficient of variation is 29.50%, and the average score after learning is 16.26, while the standard deviation is equal to 1.72, the coefficient of variation is 10.60%, with an average development score of 10, and standard deviation of 1.39

Table showing T-test statistics for comparing test scores before and after learning science on body organ systems of grade 6 students, 87 people.

	Number of students	average	$\sum D$ value	$\sum D^2$ value	t value	P
Pre-test	87	6.26	350	3,566	42.46*	.01
Post-test	87	16.26				

* Statistical significance at the level of .05

From the average score table from before and after the test, there are statistically significant differences at .05, with post-learning science achievement higher than before, which means that learning management by using the Active learning about the body organ systems towards the development of scientific achievement in practical applications.

2) The Assessment of students' satisfaction with the P.I.L. Model Active, which evaluates satisfaction in 3 areas, with the highest satisfaction score is in terms of educational activities, the average satisfaction score was at 4.80, followed by the study atmosphere, with an average satisfaction score of 4.74, and in terms of benefits, with an average of 4.64. The average satisfaction scores of all 3 parts can be interpreted. The satisfaction levels are at the highest level of satisfaction, in which learning activities, there are 5 assessment items, with the evaluation items receiving satisfaction scores. The most satisfied are Assessment list 1.5, the learning atmosphere that gives students a wide range of ideas, with a satisfaction score of 5, followed by the evaluation at 1.1. The atmosphere of learning that allows students to participate in Activities, with a satisfaction score of 4.86 points, and the third place is an assessment item at 1.4. The learning atmosphere gives students the opportunity to do activities independently, which received a satisfaction score of 4.8 points. In terms of educational activities, there are 7 assessment items, in which the highest satisfaction rating is assessed at 2.4, learning activities enable students dare to think, answer, satisfaction score is 5 points, followed by evaluation items at 2.3, learning activities to promote thinking and decision making, satisfaction scores are received the 4.94 ratings, and the rating is tied for third with two items together, are estimated at 2.1, learning activities are appropriate to the

content, and assessment. 2.7, learning activities promote mutual learning by obtaining satisfaction scores at 4.86 points; And as for the benefits, the highest rating list is the evaluation list 3.6, teaching and learning activities that enable working with others. The satisfaction score is 4.86 points, followed by the assessment at 3.5, learning management to understand and make friends more, satisfaction score is 4.80 points, the third is the assessment item 3.3, learning management helping students build knowledge, self-understanding, satisfaction scores are 4.69

CONCLUSION

The Research on the development of learning achievement of grade 6 students, Suan Sunandha Rajabhat University Demonstration School on the body organ systems, by using the P.I.L. Model Active Learning, summarized as follows:

After investigating the problem, it was found that the behavior of the learners that the researcher noticed was that the students were bored, and talked to friends about subjects that were not related to the learning content, which resulted in the achievement of students lower than the criterion of science from the study of learning management by using the P.I.L. Model Active Learning, there are a variety of learning management styles, which attract attention, and emphasizes all students to participate in teaching activities, makes science teaching excited and exciting, resulting in a change in student behavior in a good way, after receiving the learning management by using the P.I.L. Model Active Learning, 24 hours in science, found that the Science learning achievement on the body organ systems of grade 6 students, who provided learning by the P.I.L. Model Active Learning Model, had a mean before learning equal to 6.26 points, a mean score after learning was 16.26, and with the average score of student development equal to 10 points, the result of the student satisfaction assessment, which is the P.I.L. Model Active Learning Model. In the atmosphere of the classes with an average assessment result of 4.74, while for learning activities with an average of 4.80, and the benefits with an average of 4.64, from the average satisfaction of all 3 sides, interpreting the satisfaction level to the highest level of satisfaction, showing that the learning management results from the P.I.L. Model Active Learning Model on the body organ systems, resulting in science learning achievement of grade 6 students, Suan Sunandha Rajabhat University Demonstration School, with a statistical significance of .05, and students who received learning management by using the P.I.L. Model Active Learning Model, the satisfaction is at the highest level of satisfaction.

DISCUSSIONS

The results of the analysis of learning management by the P.I.L. Model Active Learning Model on the body organ systems in the students of grade 6, 24 hours; it was found that the students had science achievement in the body organ systems. The higher the average score of the post-test is higher than before, with a statistic significance of .05 and the atmosphere in the classroom is exciting and fun, all students participate in activities, resulting in students to have satisfied at the highest satisfaction level.

The Active learning emphasizes on being an Active learner rather than a Passive learner. According to [3], it found that the Active learning is appropriate for Learning objectives, in terms of learning for understanding and applying knowledge, applied in daily life, encouraging learners to be alert to learning, in line with [1] studied the results of the online Active learning activities, in order to develop Computer learning achievement 3 of grade 8 students, found that post-learning achievement of experimental group studied by using the online Active learning activities was higher than the control group that provided

normal teaching. Statistical significance at the level of .05, and the achievement of the experimental group after receiving the online Active learning activities was higher than before receiving the learning management with statistical significance at the level of .05, consistent with the research of [2] studied the achievement of integrated teaching and learning by using the Active learning, found that the quality of the integrated teaching and learning management by using Active learning is of a very good quality, the results of comparing the achievement of learners by the integrated teaching and learning methods by using Active learning after learning management have higher achievement before teaching applied statistical significance .05, including learners' satisfaction with integrated teaching and learning by using the Active learning with a high level of satisfaction.

SUGGESTIONS

From this research, the researchers have the following suggestions:

1. General suggestions

Learning management by using the P.I.L. Model Active Learning Model, it is necessary to manage the time planning for teaching and learning carefully, in order for all learners to participate in activities, take action, practice with excitement, challenge, and teaching by using the P.I.L. Model Active Learning Model is not suitable for passive students, instructors need to strengthen, stimulate and advise students to be curious and want to study, want to participate in classroom activities.

2. Suggestions for further research

Learning management by using the P.I.L. Model Active Learning Model can be used to study and develop other process skills, in addition to developing achievement such as analytical thinking skills, creative skills, etc. or can be used to study and develop all 5 competencies.

Learning management by using the P.I.L. Model Active Learning Model, the researcher can switch, or choose the teaching and learning model to be in accordance with the lesson content as appropriate, to obtain which the aim of teaching and learning according to the P.I.L. Model, planning to integrate knowledge to life skills.

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to Suan Sunandha Rajabhat University for invaluable help throughout this research.

REFERENCE

[1] Fatihah Utsaratshakan 2015. **Active learning and teaching model for developing scientific concepts on seismic waves.** Chonburi: Burapha University

[2] Jirapa Atthaphon 2014. **Development of the online Active teaching model to promote learning behavior**. Thesis: Chulalongkorn University

[3] Kannika Panyadee. 2015. **Results of the online Active learning activities in order to develop academic achievement on Computer 3 of Mathayomsuksa 2**Students. Thesis: Rajamangala University of Technology Thanyaburi

[4] Mes Song Art. 2015**. Instruction style, Psychology course for teachers (200 2004) by using participatory teaching of bachelor degree students. Mahachulalongkornrajavidyalaya University Khon Kaen Campus.** Khon Kaen: Mahachulalongkornrajavidyalaya University

[5] Ministry of Education. 2008. **Basic education core curriculum 2008**. Bangkok: Office of Academic Affairs and Educational Standards

[6] Office of Educational Quality Development Chiang Mai University. 2011. **Classroom Strategies for Learning [Online].** Retrieved 25 October 2017, from http://www.eqd.cmu.ac.th

[7] Office of the Basic Education Commission, Ministry of Education. 2008. **Indicators and core learning content Science Learning, Basic Education Core Curriculum, 2008**. Bangkok: Printing House, Agricultural Cooperative Assembly of Thailand.

[8] Pimpan Dechakup. 2001. **Teaching and learning management that is student-centered**: **concepts, methods, and Teaching techniques** (2nd edition). Bangkok: The Master Group

[9] Rasita Raksakul. 2014**. The Achievement of Integrated Learning Management by using the Active Learning.** Bangkok: King Mongkut's University of Technology Thonburi.

[10] Sawitree Rojana-Smit Arnold. 2012**. The Active Learning Management to develop learning behaviors and concepts about Learning management of students at Phranakhon Rajabhat University**. Bangkok: Phra Nakhon Rajabhat University

[11] Sirichai Kanchanawati. 2007. **Theory of Assessment** (5th edition). Bangkok: Chulalongkorn University Printing House.

[12] Siriporn Manopichetwattana 2004. **Development of an Integrated Science Teaching Model that Emphasizes Students Participating in Energetic Learning about the Human Body**. Doctorate Thesis, Srinakharinwirot University

[13] Sweller, J. 2006. **The worked example effect and human cognition**: Learning and Instruction. New Jersey: Educational Technilogies.

[14] Tissana Khammanee. 2011. T**eaching Science: Knowledge for effective learning process management**, 16th edition, Bangkok: Chulalongkorn University Press.

[15] Yananda Siraphatthada 2010. **Development of learning behavior and student achievement in learning marketing principles by Active Learning**. Faculty of Management Science: Suan Sunandha Rajabhat University