

# Learning Achievement and Attitude to Environmental Conservation, Environmental Morality and Critical Thinking of Students who Study with the Circumspective Teaching Format (Yonisomanasikarn)

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## Abstract

Learning and teaching management in the format of circumspection (Yonisomanasikarn) is indoctrination for developing learners' intelligence and systematical thinking as well as practicing learners' thinking to be critical, reasonable, rightful, considerate and deliberative which is highly important for educational management. This research has purposes for (1) Developing the learning plan in the title of life with environment to be effective according to the standard of 80/80 (2) Studying effectiveness index of the learning plan in the title of life with environment which using circumspective learning format (Yonisomanasikarn) (3) Studying students' learning achievement and attitude to environmental conservation, environmental morality and critical thinking before and after studying. The used example group in this research was secondary school, year3 students, Prasartkananukitwittaya School, Koodjub District, Udonrtanee Province, 2<sup>nd</sup> semester, Buddhist era 2552 in the amount number of 24 students who were came from a Simple Random Sampling. The used instruments in this research were composed of learning achievement and attitude to environmental conservation, environmental morality test form and research pattern is an Experimental Research and research results appeared as following (1) Efficiency of learning format has rate of 88.81/86.25 which is higher than the specified standard percentage of 80/80 (2) Effectiveness index of the circumspective learning format (Yonisomanasikarn) has rate of 0.6753 (3) After studying students' learning achievement and attitude to environmental conservation, environmental morality and critical thinking by using circumspective learning format (Yonisomanasikarn) is higher than before studying statistically at the significant rate of .05.

**Keywords:** Circumspective learning format (Yonisomanasikarn), Learning achievement, Attitude to environmental conservation, Environmental morality, Critical thinking

## 1. Introduction

During the past decade, all countries in the world have more developed their own countries in the subjects of industrial economy and also current society. Concept idea of country development depends on economic development mainly even though it achieves in various aspects but at the same time the results of the past economic development has caused environmental and resources devastation, various kind of natural resources have been used in industrial factories fully and continually for countries development causing problems and have an effect on the various environmental aspects which we are noticed by natural changing, acid rain and green house effect happenings that causing a global warming, global ozone devastation problems, some natural resources have been devastated completely, natural resources competition, natural vegetation and forest destruction and including poisonous substance problems. These kinds of problems have an important role in

affecting on human life quality and transforming to be a confronted problem for global societies and have to be solved hastily.

Cause of natural resources and environmental decadences have come from the various factors such as scientific and technological advances, population increase, political disagreements, accidental and natural disasters. But the most important factor has been caused from human actions which is accorded to some part of international statement in the subject of Human Environment, Stockholm, Sweden, 1972 “we have already seen that there is evidences around us which show an increase danger from human actions in many places around the world, the levels of danger are come from water, air, soil and living lives pollutions are increasing continually and impacting to biosphere balance, natural resources devastation and become less and less which cannot be replaced and all these failures are dangerous to human society in the aspects of physical, mental and sanitary especially in a living and working environments” (Greenall. 1980:1).

Natural resources and environmental solving need to be developed right at human quality which is a main cause of problems in order to make a change on human behaviors to be accorded to the aspects of preservative support, natural resources and environmental conservation seriously. One of the related methods is to give out knowledge and understanding to people to be know about the related environment and natural resources problems in order to have them aware of the happened problems and be participated in problems solving, in the other hand, to have human developed efficiently and knowing to solve problems and self-operating in an appropriate way that need to take an action systematically such as educational management because of it is an important method in human and environment developing.

Most countries in the world have started giving an importance in environmental solution by giving a right education which appeared objectively in the Human Environment Conference, 1972, Stockholm, Sweden, participants were having the same idea of environmental study usage in a long-term environmental problems solving and improving. Afterwards, 1975, United Nations Educational Scientific and Cultural Organization (UNESCO) has cooperated with United Nations Environment Programme (UNEP) and established International Environment Education Programme and setting up the international environment operation conference, Belgrade, Yugoslavia, 1975, and announced the international declaration (Belgrade Charter) for specifying a target goal of environmental study (Environmental Goal) “For developing population to be aware of environment and the happened problems, educated, skillful, attitudinal, encouraged and prepared to work personally and publicly in order to find a solution for the happened problems and preventing problems that might appear in the future also” (UNESCO. 1976:2).

Most countries around the world have been studying in the subject of learner development greatly in all aspects such as intellectual, moral and being a good citizen for their countries by emphasizing on thinking practice, thinking system and be an important goal for educational management according to Parliament, Act of Education, 1999, but nowadays learning management for students’ thinking skill management is still hardly to do more. To teach thinking skill is a very interesting issue in educational research area around the world, its movement causes students believe that thinking is a thing that could be taught and learnt (Fisher, R.E. 1993:1).

Parliament, Act of Education, 1999, has specified that schools and the related government sectors have to practice skills of systematic thinking, management, situations confrontation and knowledge application in order to use for problems prevention and solution which learners would learn from true experiences, practicing, to be thinkable, workable, reading lovable and long for knowledge continually (Committee of National Education. 2000:69). Moreover, educational standard for outer quality assessment, basic education level, standard of learner, standard 4 specified that learners have to be able in analytically thinking, synthetically thinking, thoughtfully thinking, creatively thinking, deliberately thinking and have a vision in assessing reliable information, well consideration about differences between good point or bad point, right or wrong, identification on cause or result and be an intellectual in problems solving, making decision peacefully, rightfully and appropriately (Committee of National Education. 2000:69) in order to be intellectual and understandable about the world, nature as well as technology that human has created and using them reasonably, creatively and morally. The importance is the current society, scientific knowledge helps to increase ability in developing international economy in order to be able to live together in this world with other lives happily (IPST. 2002:1) and also able to use in developing country efficiently.

The way to develop learners to understand nature, attitude, morality and being aware of environment, teachers are needed to be cultivated and understand in nature and environment which can be an example for students in both areas of thinking and operation. Student must develop their thinking ability (Renner and Marek. 1990:36) because thinking ability would help learners to solve problems systematically and efficiently, be qualified and

moral person and importantly this is a foundation that helps to live in society happily, in the other way passing technologies to people in society would also help countries go forward and be competitive for other developed countries in the world (Secretarial of The Educational House of Representative. 2006:1).

Circumspective learning management (Yonisomanasikarn) is a method of learning activity management which holding Buddhism way to manage education comprehensively in the subjects of Intellectual and Thinking Development, Critical Thinking, Educational Goal or being an expected action that directly develop on human by assessing allegations and evidences deliberately in order to guide to a possible conclusion surely. Also considering all compositions and use logical method rightfully (Good. 1973:608) which consistent with Clarizzio's research (Clarizio. 1987) who referred to educational specialist who has the same point of view that, to sensibly teach a thinking is highly important for thinking method development which can see that critical thinking skill should be implanted into learners as Ennis (Ennis. 1985:144-146) proposed the idea of critical thinking is a variable that should be implanted into students by giving them a teaching lesson which can be done in various ways and there is many people who propose critical thinking in many characteristics such as teaching intelligence, strong decision making and have solutions ability in a way of life (Hudgins. 1988:262-273) (Dhammapitaka (Por. Or. Prayutto). 2000:25-26) by having a basic theory which is human happiness can be happened by knowing one self's appropriate way of life and others. Knowing an appropriate way of life is knowing how to think, speak and operate, these can be developed and practiced through Education or in the other word is Sikkha, development is called Sammathitee Development and the result is Muck or Doing good which consistent with Phanom Phongpaiboon's idea (1997:111) who proposed that the content of learning and teaching do not mean what learners know but how learners think, believe and operate importantly thinking development as if thinking good then doing good.

So, an appropriate way to give the said education of human development and problems solution is to adjust learners thinking be thinkable, rightful, systematical, reasonable as well as be able to divide a type of problem by themselves and use these skill and knowledge to be a major operation in their way of life which consistent with Buddhism learning way in the form of Circumspection (Yonisomanasikarn) (Committee of National Secondary School (1999:75-92) and Pratepwaytee:Por.Aor. Payutto (2000:31-34) defined the meaning of Yonisomanasikarn is a political inside one's mind operation or can be shortly concluded as a rightful thinking and reasonable thinking, in the other hands, Circumspection (Yonisomanasikarn) is a type of Attention (Manasikarn) that causing an intelligence usage altogether with making intelligence grow higher. This circumspective learning format (Yonisomanasikarn) can be used as a format in scientific teaching as it because of the scientific subjects need scientific method skill as an important part in searching knowledge which abilities of thinking usage and thinking process must be used for searching knowledge, solving problems, being thinkable because it is a brain work. As the said reason, learners must be received a thinking practice in the area of morality, Circumspective Teaching (Yonisomanasikarn) is able to develop learners' morality in the other words, Yonisomanasikarn is a thinking ability or a rightful thinking which works as a guidance and controller for personal actions. It is becoming more important role when human are thinkable or thinking good would be able to make their choices in receiving good things and there would be interpreted through various actions. In this step, there is something decorated comes between such as emotional which have an effect on interpretation of thinking which connected to actions directly for example if learners are thinkable or conscious in knowing something decorated then there would be a help in thinking rightfully and acting appropriately.

## 2. Research Purpose

1. To develop a teaching format in the subject of Life with Environment which is according to the specified standard of efficiency in the percentage of 80/80.
2. To study an efficiency index of learning management plan in the subject of Life with Environment by using circumspective learning format (Yonisomanasikarn).
3. To compare a learning achievement, attitude to environment, environmental morality and students' critical thinking before and after studying.

## 3. Research Method

1. The used population and example group in this research were secondary school, year3 students, Prasartkananukitwittaya School, Koodjub District, Udonrtanee Province, 2<sup>nd</sup> semester, Buddhist era 2552 in the total of 1 class room, which came from the Simple Random Sampling by learning with the circumspective learning format (Yonisomanasikarn).
2. The used instruments in this research were

- Learning Management Plan in the subject of Life with Environment in the form of circumspection (Yonisomanasikarn) that is nature resources and environment, environmental conservation and local ecosystem, 5 specialists have assessed learning management plan by having the accordance index between 0.60-1.0 and suitability index at the level of 4.50.
  - Learning Achievement Test in the selective format of 4 choices, 30 sections, 5 specialists have verified (IOC) which have a mean value between 0.60-1.0, experimented with 24 students and have the values of difficulty and easiness between 0.27-0.80, Item-Total Correlation between 0.27-0.73 and the reliability value for both issues is 0.82.
  - Attitude to Environment Test was in the total number of 30 sections in the format of 5 levels of scale estimation which are strongly agree, agree, unsure, disagree and strongly disagree by specifying scores of 5, 4, 3, 2 and 1, 5 specialists have verified (IOC) which has accordance index in the form of attitude to environment test between rate of 0.60-1.0 and experimented with 24 students and had Item-Total Correlation value between 0.3123-0.7341 and Reliability value at the rate of 0.8427.
  - Environmental Morality Test in 4 aspects that are 1. Construction of being grateful to environment 2. Environmental Un-destruction 3. Comprehension on the impact of environmental destruction and 4. Obligation on environment, 4 choices in the number of 30 sections and brought to 5 specialist to verify (IOC) which had the accordance index in between the rate of 0.60-1.0 and experimented with 24 students which had Item-Total Correlation value between the rate of 0.20-0.74, Reliability value as the whole issue of Environmental Morality Test was at the rate of 0.79.
  - Critical Thinking Test in the format of 3 choices, 30 sections, 5 specialists have verified (IOC) and found that the accordance index was in between the rate of 0.60-1.0 which experimented with 24 students and found the value of difficulty and easiness was in between the rate of 0.21-0.79, Item-Total Correlation value was in between the rate of 0.29-0.71 and Reliability value as a whole issue and each aspects was in between the rate of 0.732-0.858.
3. Steps of Experiment
1. Pretesting with the experimental group of students by using a learning achievement test, attitude to environmental conservation test, environmental morality test and critical thinking test and brought the results to count its scores.
  2. Trying to teach with a teaching schedule by using a circumspective learning format (Yonisomanasikarn) which took 4 weeks, 4 hours/week, total 16 hours, 2<sup>nd</sup> semester, year 2552, started from January till February 2553.
  3. When the teaching finished as it has been specified, researcher has post-tested with the experimental group by using a learning achievement test, attitude to environmental conservation test, environmental morality test and critical thinking test and took the results to count scores.
  4. Bringing the test scores in order to find an efficiency value of learning management plan, bringing the test score of learning achievement before and after in order to find an efficiency value of learning management plan in the form of circumspection (Yonisomanasikarn), bringing the test scores of learning achievement test, attitude to environmental conservation test, environmental morality test and critical thinking test in order to find mean, percentage and standard deviation values and testing differences between average scores of pretest and posttest by using Paired t-test.

#### 4. Research Conclusion

1. Efficiency value of circumspective learning management plan (Yonisomanasikarn) in the subject of life with environment, secondary school year3 students have an average efficiency value (E1/E2) at the rates of 88.81/86.25 as the specified standard of 80/80. (see Table 1)
2. Developed learning management plan in the format of circumspection (Yonisomanasikarn) has an efficiency index averagely at the rate of 0.6753, this shows that students have progressed in learning in the percentage of 67.53. (see Table 2)
3. Students who learned by circumspective learning has the values of learning achievement, attitude to environmental conservation, environmental morality and critical thinking after studying, have increased more than before studying statistically at the significant rate of .05. (see Table 3)



## 5. Discussion

The results of learning achievement, attitude to environmental conservation, environment morality and critical thinking of students who learned with circumspective learning format (Yonisomanasikarn) have a main issue which should be brought to discuss as following:

1. Learning Experiment with Circumspective Learning Format (Yonisomanasikarn) in the subject of life with environment for secondary school year3 students, there was the result that circumspective learning format has an efficiency value the rates of 88.81/86.25 this means students have an average test score from the result of learning achievement test during learning at the percentage of 88.81, and after learning have an average result of learning achievement at the percentage of 86.25, this shows that learning management plan in the format of circumspection (Yonisomanasikarn) has an efficiency as the specified standard of 80/80 because of the following reasons:
  - The developed circumspective learning management plan(Yonisomanasikarn) by researcher, has an appropriate system and method which are programme study, learning objectives, content and programme analysis and the related documentation as well as learning management plan in the subject of life with environment has been brought to develop in the area of thinking system of secondary school year3 students which is according to Prapromkunaporn (Prayut Prayutto) (2006:38-39) ; Dararat UthaiPAYAK (2005;64) in order to apply in development which composes of problems condition, problems analysis, solutions. Development of learning management plan and synthesized results are a composition of the learning management plan in the subject of life with environment according to Buddhism dharmic principle in the area of circumspection (Yonisomanasikarn) in order to be a path way and advantage to an efficiency construction of learning management plan.
  - The developed circumspective learning management plan(Yonisomanasikarn) by researcher has passed an inspective method and adjustment from thesis committee, assessment from specialists in the areas of contents, language usage, learning management method, learning test and assessment which the assessment result showed that the developed circumspective learning management plan (Yonisomanasikarn) by researcher has quality in a high appropriate level and already passed efficiency testing in order to improve the developed circumspective learning management plan (Yonisomanasikarn) to be more appropriation for students and learning contents.
2. Circumspective Learning Management Plan (Yonisomanasikarn) has an efficiency index averagely at the rate of 0.6753 which means students have their learning progress at the percentage of 67.53, this might because the circumspective learning management plan (Yonisomanasikarn) is a part in producing students to have their systematical thinking and critical thinking which is according to the main cause of circumspection (Yonisomanasikarn) by various thinking and inspective fact finding make students to practice themselves a High-Ordered Thinking (FLAVELL. 1979:906-911) which is a teaching that gives an importance in both aspects of knowledge and morality and also is a teaching method that holds learners to be a center which making learners are able to learn and build up knowledge by themselves (Wichai Wongyai 2000:16) students use their thinking rightfully, systematically and know how to analyze and do not see things shallowly or see just see one aspect which lead students are able to help themselves and truly walk to their destinations of learning Prarajchaworamunee (Prayut Prayutto) 1987:670).
3. In the aspect of Learning Achievement: Students who learned with circumspective learning format (Yonisomanasikarn) have a posttest result of learning achievement higher than pretest statistically at the significant rate of .05, it might because learning activity management with circumspective learning format (Yonisomanasikarn) is a learning management method that was applied from Buddhism dharmic principle teaching by emphasizing on learners' thinking to be rightfully, systematically, know how to find reasons as well as are able to divide problems by themselves which are systematical thinking has direct reasons to targets, reasonable thinking which is theoretically to learning and teaching management that gives students as a center which consistent with the learning theory of John Dewei who said that learning would be greatly happened must be a learning from operation and accordingly to educational philosophy that saying about learning which is, learning that provides activities for students to operate by themselves would give an opportunity for students to learn greatly and have skill in activities operating according to the research of Rattana Boura (1997:104) who found that scientific learning achievement result of students who learned with circumspective learning activity format

- (Yonisomanasikarn) by emphasizing on thinking method in the form of composite discrimination after studying, is higher than before studying and Kanitta Vejcharungsee (2007:Abstract) who found that scientific learning achievement result of secondary school year6 students who learned with learning activity format of circumspection (Yonisomanasikarn) after studying was higher than before studying statistically at the significant rate of .01.
4. In the aspect of Attitude to Environmental Conservation: Students who learned with circumspective teaching format (Yonisomanasikarn) has their attitude to environmental conservation after studying was higher increased than before studying statistically at the significant rate of .05, it might because circumspective teaching format (Yonisomanasikarn) is a teaching method that starting from steps of awareness and attitude in order to make students to have their conscious sense to environmental conservation which consistent with the research of Becker (Becker. 1978:6566-A) who educated the results of outer learning class experiences usage that affects to the changes of environmental attitude, there was a found that experimental group has higher changed their attitude statistically and consistent with the research work of Ebom (Ebom. 1999:Online) who studied the results of educational experiences management in the subject of Local Environment that affects on children creation. This is a creative education which found that the experimental school after used Teaching Environment Programme, testing scores have increased higher than before studying and consistent with Nava-Whitehead's research (Nava-Whitehead. 2002: Online) studied the usage results of environmental teaching programme which emphasizing on natural study room that affects to students' ability at medium size primary schools. The research results that used this programme causing students to have a better attitude to environment which was caused from pre-testing and post-testing as well as consistent with Volk and Cheak's research work (Volk and Cheak. 2003:Website) studied the usage result of environmental teaching programme which affects on students, parents and communities, The study was operated by using an assessment on the usage result of the environmental teaching programme that uses with students grade 5 and 6 in the total time period of 5 years, emphasizing on students to be loving and aware of communities' environment voluntarily and this is a qualitative and quantitative researches which found that the used experiment of environmental teaching programme was able to develop creativity, communities' environment awareness and preservation, and reading writing and speaking skills development.
  5. In the aspect of Environmental Morality: Students who learned with circumspective teaching format (Yonisomanasikarn) has more environmental morality than before studying statistically at the significant rate of .05 due to the circumspective learning format (Yonisomanasikarn) helps improving environmental morality by interpolating morality in the aspects of building up a gratefulness to environment, apprehension to environmental destruction, environmental Un-destruction and environmental obligation which consistent with the research work of Praparut. Chainarong Rattanadiman (Rattanadiman, C. and Others. 2008) who studied the Promotion of the Environmental, Ethical Thinking System Using the Buddha Chinnaraj Teaching Approach and found that after studying with Praputtachinnaraj's teaching method, secondary students, year5 have higher environmental morality than students who learned with the normal teaching format statistically at the significant rate of .01 which consistent with Williams' research work (Williams. 2003:4852-A) studied environmental teaching programme that affects on schools' learning and teaching which is a study of the built up programme for environment teaching which used with school students in the aspect of environmental conservation. The study has been operated at government school in the numbers of 10 class rooms, 5 class rooms for experimental group and another 5 class rooms for control group, there was a found that female students consistently have responsibility in aspect of environment.
  6. In the aspect of Critical Thinking: Students who learned with circumspective teaching format (Yonisomanasikarn) have higher critical thinking than before studying statistically at the significant rate of .05 dues to circumspective learning management method gives an importance in both areas of knowledge and systematic thinking method which is a teaching method that holds students to be central by emphasizing on students to be think able, speak able and made able which this kind of teaching is an efficiency pulling method from learners and use most usefully or in the other words is to opening opportunities for students to fully use their intellectual efficiency which helps students to have knowledge and skill development greatly. The said learning method is a part in supporting students to be a role in producing knowledge in the aspects of Higher Ordered Thinking, Critical Thinking and able to solve problems (Hartmen. 1998:25; Paitoon Sookseeyarm. 2007 Kor: 9) as well as able to develop

students' critical thinking appropriately and higher than before learning which consistent with the research work of Athman (Athman. 2004:3237-4) who studied the results of environmental management in education in order to produce students a critical thinking and achievement encouraging. The study result found that environmental management in education can support education reforming to be succeeded especially for supporting critical thinking and achievement encouraging to be happened for students.

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Table 1. Efficiency of circumspective learning management plan (Yonisomanasikarn) for secondary school year3 students according to the standard of 80/80

Score	Full Score	$\bar{X}$	S.D.	Percentage of Average Score
Efficiency of Method (E <sub>1</sub> )	260	230.92	7.23	88.81
Efficiency of Result (E <sub>2</sub> )	30	25.88	2.19	86.25

Efficiency of Learning Activity Management Plan (E<sub>1</sub>/E<sub>2</sub>) has rates of 88.81/86.25

Table 2. Results of efficiency index analysis of circumspective learning management plan (Yonisomanasikarn)

Plan Number	Full Score	Pretest Average Score	Posttest Average Score	E.I
1	10	3.20	7.29	0.6012
2	10	3.58	7.79	0.6558
3	10	3.66	7.62	0.6250
4	10	3.83	7.70	0.6283
Total	40	14.27	30.40	0.6753

Table 3. Average scores comparison of pretest and posttest learning achievement, attitude to environmental conservation, environmental morality and critical thinking generally of secondary school year3 students who learned with circumspective learning format (Yonisomanasikarn)

Testing	n	Full Score	Pretest		Posttest		t	p
			$\bar{X}$	S.D.	$\bar{X}$	S.D.		
Learning Achievement	24	30	13.71 (45.70)	2.09	24.21 (80.70)	1.77	-17.804	<.000 *
Attitude to Environmental Conservation	24	5	4.14 (82.80)	0.33	4.52 (90.40)	0.56	-6.722	<.000 *
Environmental Morality	24	4	2.56 (64.00)	0.55	2.90 (72.50)	0.17	-8.85	<.000 *
Critical Thinking	24	30	13.12 (43.73)	2.65	24.16 (80.53)	1.73	-16.311	<.000 *