

*A Developmental of Environmental Ethic and Learning Achievement in Environment  
Impact Assessment Course by Action Learning Style*

Nisa Pakvilai

ValayaAlongkornRajabhat University under the Royal Patronage, Thailand

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Abstract

The research aimed to find the relationship between environmental ethic development and learning achievement in the environmental impact assessment course. It used five patterns of learning process in the classroom of third year students of the Environmental Science Program in the Faculty of Science and Technology at Valaya Alongkorn Rajabhat University under the Royal Patronage. This method consists with Participatory Learning, Learning by Doing, Experiential Learning, Thinking Skill, and Creative Thinking. Finally the results were as follows: 1) for environmental ethic development in the environmental impact assessment course, student was improved in five moral contents are including honesty, responsibility, perseverance, discipline, and focus on the achievement. 2) for learning achievement in the environmental impact assessment course, it was found that students in general after learning was significantly higher than before at the statistic level of 0.5

**Keywords:** Environmental ethic, Learning achievement, Environment Impact Assessment, Action learning style

## Introduction

Nowadays, an environment situation filled with the problem was shown in Figure 1. Environmental problems are mainly caused by human activities. Environmental problems may come from nature, for example, volcanic eruptions, forest fires, and earthquakes. Cause of the problem comes from human activities more than the natural. Environmental problems that cause effect on biological component consist of humans, animals and plants. Environmental impact caused to humans, resulting in both human use values and quality of life. The impact of the environmental problems caused to plants and animals may cause impact on the type, quantity, proportion and distribution of organisms in nature.

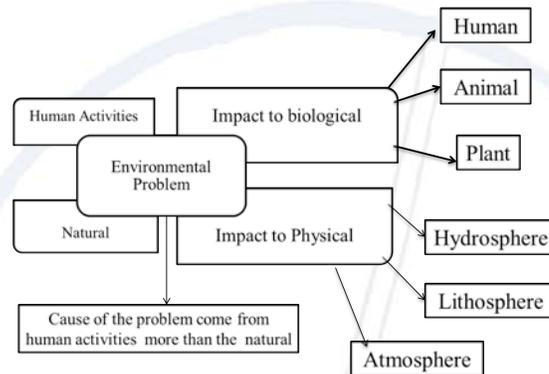


Figure 1 Causes and effects of environmental problems.

The International Association for Impact Assessment (IAIA) defines an environmental impact assessment as "the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made (Daniel et al., 2004). EIA is used as a decision aiding tool rather than decision making tool. There is growing dissent about them as their influence on decisions is limited. Improved training for practitioners, guidance on best practice and continuing research have all been proposed (Jay et al., 2006). EIAs has been criticized for excessively limiting their scope in space and time. No accepted procedure exists for determining such boundaries. The boundary refers to 'the spatial and temporal boundary of the proposal's effects'. This boundary is determined by the applicant and the lead assessor, but in practice, almost all EIAs address only direct and immediate on-site effects (Lenzen et al., 2003) Development causes both direct and indirect effects. Consumption of goods and services, production, use and disposal of building materials and machinery, additional land use for activities of manufacturing and services, mining and refining, etc., all have environmental impacts. The indirect effects of development can be much higher than the direct effects examined by an EIA. Proposals such as airports or shipyards cause wide-ranging national and international effects, which should be covered in EIAs (Shepherd et al., 1996) Broadening the scope of EIA can benefit the conservation of threatened species. Instead of concentrating on the project site, some EIAs employed a habitat-based approach that focused on much broader relationships among humans and the environment. As a result, alternatives that reduce the negative effects to the population of whole species, rather than local subpopulations, can be assessed (Fernandes., 2000)

To study of environmental ethic development in EIA course by Action Learning style.  
To study of learning achievement development in EIA course by Action Learning style

### **Methodology**

Populations in this study are undergraduate students in Environmental Science Program, Faculty of Science and Technology. The sampling random was using purposive sampling. 18 undergraduate students was study in the third years of Environmental Science Program, Faculty of Science and Technology.

In this study was using the study plan of 15 weeks in semester 2/2013. The environmental ethics of students was evaluation using by questionnaires. An environmental ethics comprised 45 items. There were four level (from 1-4) on each score rubrics. In an achievement test was test the knowledge in the topic of Environmental Impact Assessment. Consisted of 20 multiple choice items (four choices each). The effectiveness was determined form the consistency index of content, language and accuracy. As determined by 3 experts, the consistency index was between 0.60-1.00.

In the study plan using active learning style in learning process are consist of participatory learning, learning by doing, thinking skill, experiential learning, and creative thinking. Evaluation of the environmental ethic, the topic of environmental ethics are consists of honesty, responsibility, diligence, discipline, and achievement motivation. Environmental impact assessment knowledge was using by achievement test of for student. Level of the cognitive using 6 domain (Bloom, 1976) are consist of knowledge, comprehension, application, analysis, synthesis and evaluation. Duration time for evaluated, Students test their knowledge of the environmental impact assessment and to evaluate their environmental ethics in the first week. The students evaluate their own environmental ethic in the second time in week 8. After 15 weeks, students were testing their knowledge about the environmental impacts assessment and to evaluate their environmental ethics in time 3.

### **Results and Conclusions**

The Activities was developed by three projects. First, related on the promoting environmental ethic in university by the student. To volunteer activities that develops the clean around in university. Second, the temple development of students volunteering projects at Panya Nantharam temple, Pathumthani. The project activities include the developing of the 5 moral. The unselfishness and selfless related to student by activities in the field of volunteerism for development in the monastery. Third, related on the big cleaning day project, to volunteer activities that develop the clean around Faculty of Science and Technology after flood fighting in university.

#### **Environmental ethic development of students in EIA course**

An assessment of student's in environmental ethic in EIA course. An assessment was test three times in 3 weeks, included week 1, 8 and 15. Teaching Ethics content insertion environment, which is divided into five topics include honesty, responsibility, diligence, discipline, and achievement motivation shown in table 1.

Table 1 Environmental ethic assessment of students in EIA course

Environmental Ethic	Mean±SD			
	Time 1	Time 2	Time 3	Average
Honesty	2.91±0.20	2.96±0.21	2.99±0.23	2.95±0.17
Responsibility	3.19±0.23	3.25±0.27	3.31±0.38	3.25±0.12
Deligence	2.98±0.22	3.08±0.29	3.21±0.31	3.09±0.10
Discipline	3.05±0.31	3.12±0.36	3.25±0.38	3.14±0.17
Achievement motivation	3.00±0.49	3.06±0.40	3.46±0.39	3.17±0.25

The average environmental ethics are comparison using by self-assessment shown in figure 2. The environmental ethics evaluation of students has increased of all. Moreover, it is found that the achievement motivation is a topic that has increased the most.

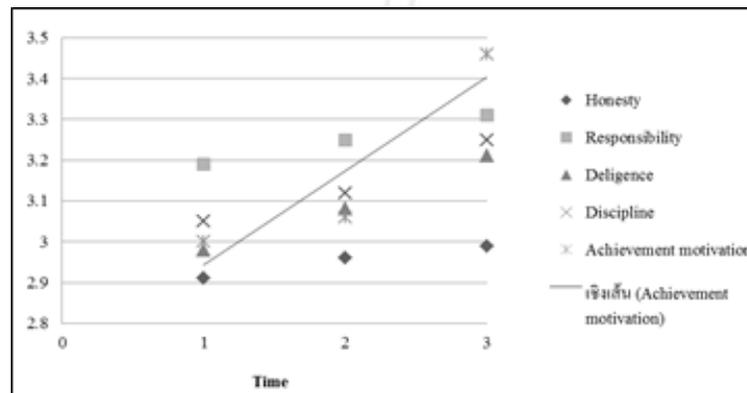


Figure 2 Comparison of average moral self-assessment

The processed of participatory learning. The learning plans are prepared by students. Course content consider by the course description. The rules and follow the rules of the course by student. Participate in the vote share, and plan activities in the evaluation and measurement. To management their own learning and was to engage students in the midterm exam and final exam.

The processed of learning by doing. Learning process for students to act with the activities assigned to student groups in the evaluation of environmental impact in the campus. The campus is divided into 3 parts including First, front from the main road to the road before the cafeteria, Second, from the street in front of the cafeteria, the cafeteria, the Faculty of Humanities and Social Sciences, Third, from the road front of the Faculty of Humanities and Social Sciences until the middle of the campus stadium. Assess in 4 tiers consist of physical resources, biological resources, Values for human use, and the quality of life.

The student experience was using by Students have taken an interest in a joint meeting to public hearing from the public and stakeholders. To review the draft environmental impact report on the project electricity Nava Nakorn Electricity Generating Company Limited, at Ptumtip room, Manhattan Hotel, Klong Luang district. Pathumthani.

The students presented the results of the EIA. Four tiers are physical resource, biological resources, human use values, and quality of life. To assess the progress each week, present for the individual and within the group will rotate to offer requires a unique original.

In creative Thinking, In addition, a student approaches and measures to prevent environmental problems occurring in the present and may occur in the future. Problem situations are from class discussion. In finally, prepared a summarizing report of the study and presented to the University for using as information management.

In table 2, was showing the student's knowledge in Environmental Impact Assessment. Comparison of knowledge before and after learning was found the knowledge higher after the learning increased statistical significantly at 0.5.

Table 2 The student's knowledge in Environmental Impact Assessment.

Sex	Mean±SD		t	p-value
	Before	After		
Male	14.7±0.9	17.5±0.6	-5.745	.001*
Female	14.0±2.9	16.6±1.7	-2.822	.010*
Total	14.2±2.5	16.8±1.5	-4.006	.001*

\*Statistically significant at the level of .05

### Conclusion

In this paper, we have shown that there are environmental ethic developments. Environmental ethic of the students found average self-assessment of students' environmental ethic both of group male and female is increased. Environmental ethic developments are most of the achievement motivation. For learning achievement development in the EIA course, It was found the student in general after learning was significantly higher than before at the statistic level of 0.5 In addition, it was found that the test results after learning of the male and female were increased, male more than female .

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