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INDOOR AND OUTDOOR TEACHING: IMPLICATION TO PERFORMANCE AND ATTITUDE IN ENVIRONMENTAL LITERACY

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Abstract:
This research work was conducted to determine the students' performance in, and attitude towards, environmental literacy through the use of indoor and outdoor teaching. The respondents of the study were the grade 10 students of Dolores National High School in Magalang, Pampanga during the second and third quarters of the school year 2017-2018. Quasi-experimental method was used in this study. The instruments used were a multiple-choice type examination for the pretest and the items were rearranged in number for the posttest, and a survey questionnaire adopted from the Environmental Attitudes and Knowledge Scale was used to prove the effect of indoor and outdoor teaching to the attitude of the respondents in environmental literacy. Findings of the study revealed there was an equal number of male and female respondents belonging to low income but not poor family class and have parents who reached college level. Majority of their parents were presently employed. The two groups of respondents had a low level of performance in their pretest. Based on their pretest and posttest results, both groups were able to acquire the needed information to improve their performance scores. However, the respondents exposed to outdoor teaching performed better than those exposed to the indoor lecture method. Moreover, both groups started with a neutral attitude on the three domains of attitude. Scores form both groups eventually improved to positive attitudes. This implies that outdoor teaching may be used to augment and enhance the students' performance and attitude in environmental literacy.

Keywords: High School Outdoor Education, Environmental Literacy, Inquiry Based Learning, Science Education, Outdoor Education Programs, Outdoor Environmental Education

1.INTRODUCTION

The need for public awareness on the environment is linked to the declaration of Tbilisi, organized by the United Nations Educational, Scientific and Cultural Organization (UNESCO). The declaration constitutes the framework, and guidelines for environmental education at all levels in national, and international for all age groups both inside and outside the formal school system (Snaza & Weaver, 2015). The UN declarations in Environmental Education (EE) led to the passing of legislations on environment such as the Republic Act No. 9003 or the Ecological Solid Waste Management Act of 2000, which declares the policy of the state in adopting a systematic, comprehensive and ecological solid waste management program. The Republic Act No. 9512, or the Environmental Awareness Education Act of 2008 mandates the Department of Education (DepEd) to integrate and teach EE in all grade levels. In realizing this objective, the Philippine Department of Education issued the DO 72, s. 2003 - Establishment of the Youth for Environment in Schools Organization (YES-O). This provides guidelines and supports various outdoor learning activities such as tree planting, schoolyard gardening through the youth organization camps (DepEd, 2016). Learning can and does, happen anywhere and everywhere (Thomas, 2013). Researchers have been interested in the role of outdoor education and how it affects students learning and as a valuable complement to traditional classroom teaching (Fägerstam, 2012). In the 21st the learner wants to learn not only in the four corners of the classroom but also outside in which they will experience the knowledge at first hand (Cofino, 2012).The Environmental Performance Index (Yale University, 2014), developed by Yale University and Colombia University, in collaboration with the World Economic Forum and the European Union, a biennial ranking of how well countries perform on high-priority environmental issues ranks the Philippines 114th among 178 countries. Despite national efforts to spread awareness on EE the Philippines ranked poorly with an overall score of only 42.02% out of a perfect score of 100%. This is enough to say that there is a still a lack of environmental literacy among

the people. Thus, this research looked into how indoor and outdoor teaching can be used in promoting, educating and fostering environmental appreciation and awareness to students.

Legal Bases on Environment Education

The Republic Act No. 9512 or the "National Environmental Awareness and Education Act of 2008" stipulates the scope of Environmental Education in the Philippines. Agencies like such as the Department of Education, shall integrate environmental education in its school curricula at all levels, whether public or private. It shall cover both theoretical and practicum modules comprising activities, projects, programs including, but not limited to, tree planting; waste minimization, segregation, recycling and composting; freshwater and marine conservation; forest management and conservation; relevant livelihood opportunities and economic benefits and other such programs and undertakings to aid the implementation of the different environmental protection law (Republic Act No. 9512). The Philippine have passed some laws and measures to address environmental preservation. Some of these are the following, R.A. 9003 (Solid Waste Management Act of 2000) that aimed at providing a comprehensive solution to the country's garbage problem. The R.A. 8749 (Clean Air Act of 1999) seeks to promote effective air quality management program and seeks to mitigate the worsening problem of air pollution in the country and the R.A. 9275 (Philippine Clean Water Act of 2004) that encompasses water quality management programs and will ensure that we will continue to have enough supply of clean water. The Department of Education addresses the pressing global concerns and issues on the environment, though the Department Order 52, s. 2011 - Strengthening Environmental Education in Public and Private Schools. The Department order urges all public and private schools to lead the role on environmental awareness by enhancing environmental education and by pursuing effective school-based activities that seek to preserve and protect the environment. Public and private schools shall undertake the following activities: Establishing the Youth for Environment in School Organizations which mandates various Outdoor activities as stipulated in the Department Order No.93, s. 2011, programs such as clean up drives, waste management programs, watershed protection and conservation, promotion of local and eco tourisms sites, and environmental camps (Department of Education, 2011). Despite these laws, measures and government efforts to improve the environment condition of the country, the situation is not getting any better. In order to improve environment protection and conservation, there should be interventions from institutions and communities from the grass root level. The school is an example of an institution that can influence the people in a community.

Indoor Teaching

Student learning is every school's primary priority, how students are taught is where it all starts to differ. Students taught in the traditional approach or indoors and confined in the four corners of the room are expected to learn as soon as the information is given to them. In a traditional school, students are not seen as active participants in the learning process. Learning is more passive. The teacher is the central figure of the traditional learning experience. Traditional schools focus on the teacher and what they teach (Reedley International School, 2016).

Outdoor Teaching

Study visits and field trips which are conducted outdoors in different learning resources either in the school grounds or in the community, are teaching strategies that promote connection between the school and the community. These activities provide first hand learning opportunities and real instructional materials. These learning activities that require students to be out of the classroom results in first experience and supports authentic learning (Salandanan, outdoor field trip in Bataan. In 2014, eight college students were also drowned after a flash flood hit an area where the students were having their field trip (Sevidal and Morales, dzMM ABS-CBN, 2014). These events have led the Department of Education from discouraging outdoor activities in school (ABS-CBNnews.com 2012). The purpose of this study is to look into indoor and outdoor education and their possible impacts and implication in strengthening and linking environmental education to high school students. There has been an increase of youths engaging in adventure activities in the Philippines. It has been observed that schools started to bring their students and leaders on field trips and expeditions, sometimes overseas, as part of their development. The Philippines' Everest Expedition has generated interest for the outdoors among the youths. Outdoor leadership skills like risk management, wilderness first aid, environmental skills and expedition planning are crucial in ensuring that these activities are undertaken safely and ethically (Ramon Aboitiz Foundation Inc.,2014).

An article reports that research suggests students exposed to nature and the outdoors could yields extraordinary results. Natural environments were the first classrooms of Homo sapiens, the places where human beings learned to forage, hunt, and survive. Traditional schools often with closed windows, blank walls, artificial lighting, and humming air from ventilations seem to promote sense deprivation. Schools are built with a particular model in mind, four-cornered quarters to be exact. The main driver of engagement in a class is the feeling of relevancy, in a way that what is learned has the relationship with the real world (Smith, 2014). Burek and Zeidler (2014) explored the importance of socio-scientific issues like environmental topics in science classroom and outdoor environments. They argued that students should be exposed to the real world so they can develop critical thinking and internalize the principles of conservation and have an informed decision about the environment (Burek & Zeidler, 2014). The British Broadcasting Corporation (BBC) reports that the benefits of outdoor learning are oftentimes overlooked by teachers. There is a negative long-term

consequence to the loss of exposure to the natural world. Outdoor learning can have a positive impact on children's development however, it needs to be formally adopted. Establishing an "outdoor learning hub" would help teachers, shape policies and strategies to achieve 21st-century student's outcomes (Kinver & BBC News, 2016).

In 2006 a manifesto was launched in the United Kingdom on Learning outside the classroom. The Manifesto is a shared vision to raise achievement through an organized and powerful approach to learning in which direct experience is given high importance. Proponents of the manifesto advocates for every young person to experience the world beyond the classroom as an essential part of learning and personal development, whatever their age, ability or circumstances (Council for Learning outside the Classroom, 2016).In teaching Science, outdoors allow students to investigate physical phenomena in the natural settings of their daily life. Students can be trained to see the problems in all reality around them and not restrict themselves to technical applications as they most often do. Students can learn the logic of the laws of nature while being in nature (Del Carmen, Diano, & Ole, 2015).In the Philippines, outdoor education is commonly used mostly only in subjects related to Physical Education. Students are allowed to play ball games in the playgrounds to experience actual game situation for PE classes. The same principle can also be applied to environmental education, Science, and other subjects. There is little research about outdoor education in the Philippines that discusses even the perception and view of students and teacher towards outdoor education. Understanding of these ideas and the relationship of outdoor education with students and learners in the local setting can help us design meaningful activities to foster environmental literacy to our students.

Indoor Teaching

Learning inside a classroom is a tried and tested method of organizing schooling. However, teachers and learners have always valued the further opportunities for learning that can take place outside the classroom. The first-hand experiences of learning outside the classroom can help to make subjects more vivid and interesting for pupils and enhance their understanding (Ofsted, 2008). In an online class conducted by the Arizona State University, lecturer Dr. Shane Dixon (2016) noted that the traditional-style lecture classroom does not encourage critical thinking and participation from students (Dixon, 2016).

Positivists focus on the knowledge that forms the basis of traditional indoor Science education fails to embrace the future oriented and socially transformative goals of education. In other words, educational practices must change in order to facilitate establishment of more human environment relationships. The challenge for educators is to identify how existing philosophies of education might be modified to better support current and future educational needs (Edwards, 2015). This study investigated the indoor and outdoor teaching of environmental literacy and their implication to student's performance and attitude. Issues on Environment are taught through traditional lessons or indoor class. The Department of Education has worked with other agencies like the Department of Science and Technology (DOST) Science Education Institute and developed computer-aided instructional materials which features simulations, animated graphics, and images on topics on about the issues on the environment. Through this lesson, the learners experience something close to real life in an indoor setting (Guzman, 2014).

Legal Bases on Environment Education

The Institute for Global Environmental Strategies (2014), emphasized that the Department of Education (DepEd) as an implementing agency is responsible for integrating environmental concepts in the basic education curriculum. There are various outdoor programs such as Clean and Green, Waste Management, and *Bantay Kalikasan* (Nature Watch) that are in place to achieve the goals of environmental protection (Lee, 2015). As cited by N. Spalie, Abdullah and Che Ani they used the definition for outdoor learning as -"an experiential method of learning by doing, which takes place primarily through exposure to the out-of-doors. In outdoor education, the emphasis on the subject of learning is placed on relationships: relationships concerning human and natural resources." (Spalie, et al., 2011). There are two definitions to express the meaning of outdoor learning. Psychological definitions and Environmental Definition. This study used outdoor learning under the context of environmental definitions. Children need to have the environment where they are challenged. The opportunity to be in the outdoor environment is important for the development of children's motor and cognitive skills, interpersonal attitudes and emotions. The environment provides a rich stimulus for the student to learn more about his community and start caring for it by taking ownership of the environment related issues (Aziz & Said, 2012). Aminrad et al., (2013), studied the relationship between awareness knowledge and attitude towards environmental education among students. The study provided information about public environmental perception of environmental subjects in Malaysia. The respondents were secondary school students. The study concluded that the high level of knowledge and positive attitude of students comes from family situation and school curriculum regarding the environment (Aminrad, Zakariya, Hadi, and Sakari, 2013).

A summary of research on the contribution of outdoor learning environment cites that the federal and state levels show a missed opportunity to use the outdoor play and learning environment to advance Environmental Education. It was suggested and called on policymaker to adopt policies to make a natural outdoor play and learning environments available to all children by formally designating outdoor spaces an outdoor play and learning environment in state licensing regulations (Cooper, 2015). Outdoor spaces are the best play environments for children. These outdoor spaces will be more meaningful and useful when they contribute to children's learning. Acar (2014) showed the

importance of outdoor environments for children in education and pointed out the issues of learning with play and learning environments (Acar, 2014). The effectiveness of learning within the four corners of the classroom in an indoor lecture method in teaching Environmental literacy has been challenged by researchers. Educators argue that indoor teaching is not enough and no longer capture the interest of the learners. Some even claim that the traditional indoor teaching neglected to keep up with the learning style and trends of future oriented and socially transformative goals of education. However, teachers and educators have remained open to opportunities that can improve the current learning situation. Researchers have looked into the philosophy and idea of "man learning from his natural environment". A growing number of studies investigated the effect of outdoor teaching in environmental literacy Researchers have studied how learning outdoor affect students' cognitive domain of learning through their performance, knowledge, and understanding of the environment. Previous studies have looked into the socio-demographic influences and attitude and of students, when exposed to outdoor learning and found to have positive effects. This present study also ventures to explore on the performance and attitude of students on environmental literacy who are exposed to indoor and outdoor school learning activities.

2. RESEARCH QUESTIONS

1. How may the demographic profile of the respondents be described in terms of:
sex, household monthly income, parents' educational attainment, and parents' employment status?

2. Is there a significant difference in the performance of the indoor and outdoor groups in terms of:
2.1 Pretest scores of the indoor and outdoor group,
2.2 Pretest and posttest scores of the indoor group,
2.3 Pretest and posttest scores of the outdoor group,
2.4 Posttest scores of the indoor and outdoor group?

3. How may the students' attitude towards environmental literacy through the use of indoor and outdoor teaching be described?

3.1 Indoor
3.1.1 Intention Attitude
3.1.2 Behavior Attitude
3.1.3 Affective Attitude

3.2 Outdoor
3.2.1 Intention Attitude
3.2.2 Behavior Attitude
3.2.3 Affective Attitude

3. MATERIALS AND METHODS

The research method used in this study is the quasi- experimental method where the subjects were matched based on a particular variable and then put into groups. This method was used in comparing a group that gets a particular instruction with another group that was similar in characteristics but did not receive the specific instruction (Mendoza, G. R., 2015). The study was conducted at Dolores National High School in Barangay Dolores, Magalang, Pampanga which is one of the schools from the Cluster 1 of the Division of Pampanga. The school was appropriate for the study related to indoor and outdoor teaching because it is situated in close proximity both in rural and urban areas. The school is near agricultural land and also near the industrial areas of the Mabalacat City. The respondents of the study were Grade 10 junior high school students of Dolores National High School in Magalang, Pampanga taking up Science 10 for the school year 2017-2018. The students were the appropriate group for this study because they have the most exposure and experience under the K-12 curriculum. To attain the desired objectives of this study, the researcher used a two-part questionnaire. The first questionnaire is a 40-item multiple choice teacher-made examination with profile. This was used to determine the performance of the respondents for the pretest and was based on the K12 curriculum guide for Science from the Department of Education. The construction of the examination was done using a table of specifications to ensure the fair distribution of the content of the test. The same set of test items was given for the posttest to the respondents.

The second questionnaire measured the respondent's attitude on environmental literacy. The survey was an adoption of an attitudinal survey questionnaire from the Environmental Attitudes and Knowledge Scale (EAKS). Originally developed by Maloney, Ward, and Braucht (1975). Various researchers in the field of environmental education improved and modified the scale. The modified version of EAKS in this study is a 36-item survey question adopted from the study of Bin Md Taff (2010). Only the attitudinal part of the survey was adopted. The survey was used to gather data from pretest and posttest for the attitude part of this study. To interpret the results of the level of attitude of the respondents, the researcher used the following ranges with the following verbal interpretations; (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) – Agree, (5) - Strongly Agree. As a basis to measure the baseline, prior to collecting data

and implementing the intervention for this research, both groups answered the pretest for the performance and attitude survey on the same day. The respondents were not informed they will be answering a similar questionnaire in the form of a posttest. The intention was not to deceive the respondents but to minimize the halo effect. The halo is a cognitive bias which effect occurs when participants know that they are part of the experimental group and their belief that they are part of a special group pushes them to improve performance (Kocakaya, 2011). Four basic lessons on environmental literacy were prepared for the implementation of this research. The topics that were included in the lessons were biodiversity, global warming, waste management and water conservation. The lessons were administered as intervention to the respondents for four days, with a duration of 50 minutes for each session. These lessons served as a review and extension of the previous Science lessons of the respondents. The indoor group had their classes inside the classroom, just like any other regular class. On the other hand, the outdoor group was exposed to outdoor learning activities. After all, four lessons or sessions on environmental literacy were administered, both groups took the posttest survey on performance and attitude on environmental literacy. The results of the pretest and posttest on their performance and attitude on environmental literacy were later analyzed and compared for the results. Descriptive analysis using mean and percentage were used to determine the demographic background and profile of the respondents. Mean scores were also used to represent the performance and attitude of the respondents in the pretest and posttest. The t-test was used to analyze and test if there was significant difference in the performance and attitude of both groups in the pretest and posttest.

4. RESULTS AND DISCUSSIONS

Table 1 shows the demographic profile of the respondents. The demographic profiles for both groups were described in terms of sex, family monthly income, parents' educational attainment, and parents' employment status. There was an equal number of male and female respondents whose families belonged to low income but not poor family class. The highest educational attainment of the parents is college and majority of the parents are currently employed.

Table 1. Demographic profile of the respondents

Profile	Indoor		Outdoor	
	f	%	f	%
Sex				
Male	18	52.94	16	47.06
Female	16	47.06	18	52.94
Parents monthly income				
₱5000-10,000	23	67.65	20	58.82
₱11,000-20,000	8	23.53	13	38.24
₱21,000-30,000	2	5.88	1	2.94
₱31,000-40,000	1	2.94	0	0
Parents highest educational attainment				
Elementary	2	5.88	2	5.88
High School	19	55.88	26	76.47
College	13	38.24	6	17.65
Parents employment status				
Employed	30	88.24	32	94.12
Unemployed	4	11.76	2	5.88
PHEA				
	N=34		N=34	

Posttest Results of the Indoor and Outdoor Groups

Table 2.1 shows the significant difference between the pretest of the indoor group and the outdoor group and the posttest of the indoor and outdoor group. Comparing the difference between the pretest scores of the indoor and outdoor group shows the p-value of *0.428 and can be interpreted as significant. Thus, the third null hypothesis for this study is rejected. When examining the pretest mean scores of both groups the following were determined: The average mean score for the pretest of the indoor group is 14.68 and the average mean score for the outdoor group is 13.65. The mean scores from both groups can be interpreted as low level of environmental knowledge. We can conclude that both groups started with a low level of environmental knowledge during the pretest. The students who experienced outdoor lesson in learning environmental literacy had higher performance level compared to their indoor counterpart who received their lessons in the four corners of the classroom. Therefore, results implies that the use of outdoor strategy in teaching environmental literacy enhanced the performance level of the students.

Table 2.1 T-test results for the pretest scores of the indoor and outdoor groups on environmental literacy

Variable	t-value	p-value Sig.(2-tailed)	Interpretation
Pretest (indoor) vs Pretest (outdoor)	0.803	*0.428	Significant

Pretest and Posttest Results of the Indoor Group

Table 2.2 shows the comparison between the performance scores for the posttest and pretest of the indoor group. The data revealed that the pretest and posttest scores on environmental literacy of the indoor group resulted to be highly significant with a p-value of 0.00 at 0.01 level of significance. Thus, the first null hypothesis in this study is rejected. The pretest mean score of the indoor group was 14.68 and for the posttest results is 29.50. The data reveals that there was an increase in the performance of the indoor group. Descriptively the performance of the indoor group improved form a low-level environmental knowledge to a high environmental knowledge. This implies that the indoor group improved their performance score on environmental literacy through the indoor teaching or traditional learning. However, Science activities applied in the indoors still needs to be enhanced as these affects the current situations of classroom engagement and development in Science (Dhanapal, S. 2013). This shows that indoor teaching as a traditional and time-tested method of teaching environmental literacy still has its purpose and use to the current learners of today.

Table 2.2. T-test results between the pretest and posttest scores of the indoor group on environmental literacy

Variable	t-value	p-value Sig.(2-tailed)	Interpretation
pretest vs posttest (indoor)	-18.917	**0.000	highly significant

Pretest and Posttest Results of the Outdoor Group

In Table 2.3 shows comparison between the performance scores for the pretest and posttest of the outdoor group. The data reveals that the pretest and posttest scores on environmental literacy of the outdoor group also resulted to be highly significant with a p-value of 0.00 at 0.01 level of significance. Thus, the second null hypothesis in this study is rejected. The mean score for the pretest of the outdoor group is 13.65, and the mean score for the posttest is 32.76. From these results we can conclude that there is an increase in the performance of the outdoor group that experience outdoor learning. Descriptively the performance of the outdoor group improved form a low level of environmental knowledge to very high environmental knowledge. The data shows similar result from the study of Prokop et al., (2007), who looked into the effects of outdoor program on students' knowledge in the environment. The study also yielded to have as a significant difference on the pretest and posttest results of the experimental group. Evidently there was a significant increase in the scores of the respondents from the outdoor group which means increase in the performance of the students on environmental literacy. This proves that outdoor teaching can improve the performance of students in environmental literacy.

Table 2.3. T-test results between the pretest and posttest scores of the indoor group on environmental literacy

Variable	t-value	p-value Sig.(2-tailed)	Interpretation
pretest vs posttest (outdoor)	-25.853	**0.000	highly significant

Posttest Results of the Indoor and Outdoor Groups

Furthermore, the result of the t-value for the indoor group is just at -18.917 compared to the outdoor group which is at -25.853. The data revealed that the posttest scores on environmental literacy of the indoor and outdoor group resulted to be highly significant with a p-value of 0.00 at 0.01 level of significance. This shows there is strong evidence that outdoor teaching further improves the performance of students on environmental literacy compared to indoor teaching. This means that there were more students that performed better from the outdoor group than the indoor group in terms of performance in environmental literacy. Therefore, we can conclude that the posttest result was better for the outdoor group compared to their indoor counterpart.

Table 2.4. T-test results between the pretest and posttest scores of the indoor group on environmental literacy

Variable	t-value	p-value Sig.(2-tailed)	Interpretation
posttest (indoor) vs posttest (outdoor)	-4.274	**0.000	highly significant

Students' Attitude towards Environmental Literacy for the Indoor Group

Intention Attitude

Table 3.1 shows the mean response of the indoor group in each statement of the intention attitude part of the Environmental Attitudes and Knowledge Scale (EAKS) survey. The lowest mean score of 2.41 in the pretest for the

intention part is statement 2 "I would be willing to ride the bus to more places in order to reduce air pollution." The highest mean score of 2.94 in the pretest is statement 9 "I would be willing to ask my friend to recycle." Results shows that the students already have initial intention to recycle even before the study was conducted. The lowest mean score of 2.18 for the posttest is statement 1 "I would not give my own money to help the environment." It is easy for people to perform environmental behaviors that do not require self-devotion or spending money from their own pocket (Sadik and Sadik, 2013). The indoor group were not keen in spending money on the environment as an intention. The highest mean score of 4.12 in the posttest was also statement 9 "I would be willing to ask my friend to recycle." The intention to recycle of the indoor group increased even more after the indoor lessons. The overall mean score for the pretest was 2.71 reflects a neutral behavior of the indoor group on environmental literacy. The mean score rating improved to 3.54 after the posttest. Similar results can be observed from the study of Aminrad (2013) wherein majority of the students agreed on the environmental questions. The posttest results of the indoor group can be described as a positive attitude on environmental issues. This implies that there was a positive change in intention attitude of the indoor group on environmental literacy after the lessons were conducted. Thus, indoor teaching on environmental literacy improves the intention attitude of the students.

Table 3.1 Mean Responses on Intention Attitude towards Environmental Literacy of the Indoor Group

Statement	Pretest		Posttest	
	Mean	DR	Mean	DR
1. I would not give my own money to help the environment.	2.59	DA	2.18	DA
2. I would be willing to ride the bus to more places in order to reduce air pollution.	2.41	DA	3.06	N
3. I would not be willing to separate my family's trash for recycling.	2.62	N	3.65	A
4. I would be willing to stop buying some products to save animals' lives.	2.68	N	3.59	A
5. I would not be willing to save energy by using power saving bulb.	2.56	DA	2.21	DA
6. To save water, I would be willing to use less water when I bathe.	2.74	N	3.91	A
7. I would go from house to house to pass out environmental information.	2.76	N	3.94	A
8. I would be willing to write letters asking people to help reduce pollution.	2.85	N	4.09	A
9. I would be willing to ask my friend to recycle.	2.94	N	4.12	A
10. I would give my own money to protect wild animals.	2.85	N	3.85	A
11. To save energy, I would be willing to use dimmer light bulbs.	2.76	N	4.00	A
12. To save water, I would be willing to turn off the water while I wash my hands.	2.79	N	3.85	A
Over-all Mean	2.71	N	3.54	A

Legend:

Numerical Rating	Descriptive Rating
4.21-5.00	Strongly Agree (SA)
3.41-4.20	Agree (A)
2.61-3.40	Neutral (N)
1.81-2.60	Disagree (DA)
1.00-1.80	Strongly Disagree (SDA)

Behavior Attitude

Table 3.2 shows the mean response of the indoor group in each statement of the behavior attitude part of the EAKS survey. The lowest mean score of 2.47 is statement 9 "I do not separate things for recycling." This means that the indoor group were not practicing waste management. While the item with the highest mean score of 3.09 was obtained by the statement 12 "I always conserve water." Which implies that the indoor group had a more positive behavior on water conservation during the pretest. The lowest mean score of 2.32 for the posttest is statement 1 "I will never discuss pollution issues with my friends." Having environmental knowledge and having positive thoughts are not enough for people to show responsible behavior for their environment (Sadik and Sadik, 2013). Even after the lessons on environment the indoor group were hesitant to discuss environmental issues with their peers. The highest mean score of

4.38 was obtained by statement 5 "To save energy, I turn off the lights when they are not in use." After the lessons the indoor group were more willing to turn off the lights when not in use. The overall mean score for the pretest was 2.79, this reflects neutral behavior of the respondents on environmental literacy. The mean score rating improved to 3.44 on the posttest. This implies that there was a positive change in behavior attitude of the students from the indoor group on environmental literacy after indoor the lessons were conducted.

Table 3.2 Mean Responses on Behavior Attitude towards Environmental Literacy of the Indoor Group

Statement	Pretest		Posttest	
	Mean	DR	Mean	DR
1. I will never discuss pollution issues with my friends.	2.50	DA	2.32	DA
2. I strictly opposed illegal loggings since they pollute the environment.	2.82	N	3.47	A
3. I will ask my friends to recycle.	2.94	N	4.03	A
4. I will ask my friends to support wild animal protection program.	2.79	N	3.79	A
5. To save energy, I turn off the lights when they are not in use.	2.68	N	4.38	SA
6. I reduce the amount of water when I bathe	2.82	N	3.88	A
7. I often read stories that are mostly about the environment.	2.85	N	3.32	N
8. I have talked with my friends about how to help with environmental problems.	2.91	N	3.85	A
9. I do not separate things for recycling.	2.47	DA	2.32	DA
10. I do not harm any animals.	2.88	N	3.53	A
11. I let the lights on until morning.	2.76	N	2.32	DA
12. I always conserve water.	3.09	N	4.09	A
Over-all Mean	2.79	N	3.44	A

Legend:

Numerical Rating	Descriptive Rating
4.21-5.00	Strongly Agree (SA)
3.41-4.20	Agree (A)
2.61-3.40	Neutral (N)
1.81-2.60	Disagree (DA)
1.00-1.80	Strongly Disagree (SDA)

Affective Attitude

Table 3.3 shows the mean response of the indoor group in each statement of the affective attitude part of the EAKS survey. There were two statements that obtained the lowest mean scores of 2.62 in the pretest for the affective part of the survey. These were statements 7 "I do not worry about environmental problems in the Philippines" and 8 "I am not frightened about the effects of pollution on my family." The data contradicts the findings of Su (2007) in her study about Environmental worldview of Filipino students, the respondents emphasized that they greatly worry about the environmental problems faced by the country. This shows that the indoor group are passive in general about the environment. The highest mean score of 3.12 is obtained by statement 5 "It makes me happy to see people trying to save energy." The response is consistent with the results of the posttest for behavior and confirms that the indoor group cared about saving energy. The lowest mean score of 2.71 for the posttest is statement 6 "I am not worried about running out of water." The indoor group are not aware of water crisis because there is no water shortage locally. While there were four statements that got the highest mean score of 3.82. These were the following statements: statement 1, "I am frightened to think people don't care about the environment", statement 2 "I feel frustrated with the damage pollution does to the environment" and statement 3 "It makes me happy when people practice recycling", and statement 7, "I do not worry about environmental problems in the Philippines." When asked about specific emotions the indoor group reflects concern on the environment as individuals. The overall mean score for the pretest was 2.82 reflects a neutral behavior of the indoor group on environmental literacy. The mean score rating improved to 3.30 after the posttest was conducted. This signifies that there was only a slight positive change in affective attitude of the students from the indoor group which can be descriptively described as a neutral on environmental literacy after indoor the lessons were conducted.

Table 3.3 Mean Responses on Affective Attitude towards Environmental Literacy of the Indoor Group

Statement	Pretest		Posttest	
	Mean	DR	Mean	DR
1. I am frightened to think people don't care about the environment.	2.91	N	3.82	A
2. I feel frustrated with the damage pollution does to the environment.	3.03	N	3.82	A
3. It makes me happy when people practice recycling.	2.97	N	3.82	A
4. I get angry when I think about companies testing products on animals.	2.68	N	3.53	A
5. It makes me happy to see people trying to save energy.	3.12	N	3.38	A
6. I am not worried about running out of water.	2.82	N	2.71	N
7. I do not worry about environmental problems in the Philippines.	2.62	N	2.82	N
8. I am not frightened about the effects of pollution on my family.	2.62	N	2.88	N
9. I get upset when I think of the things people throw away that could be recycled.	2.71	N	3.09	N
10. I get upset when I think of the things people throw away that could be recycled.	2.82	N	3.21	N
11. It frightens me to think how much energy is wasted recently.	2.65	N	3.26	N
12. It frightens me to think how much energy is wasted recently.	2.88	N	3.24	N
Over-all Mean	2.82	N	3.30	N

Legend:

Numerical Rating	Descriptive Rating
4.21-5.00	Strongly Agree (SA)
3.41-4.20	Agree (A)
2.61-3.40	Neutral (N)
1.81-2.60	Disagree (DA)
1.00-1.80	Strongly Disagree (SDA)

Attitude Summary of the Indoor Group

Table 3.4 shows the indoor group generally started with a negative environmental attitude during the pretest. After the indoor group received traditional indoor teaching on environmental literacy, the attitude scores of the indoor group greatly improved to positive environmental attitude after the posttest. This implies that the use of indoor teaching improves student's attitude on environmental literacy.

Table 3.4. Attitude Summary of the Indoor Group

Scores	Pretest		Posttest		Interpretation
	f	%	f	%	
145 - 180	1	2.94	2	5.88	VPEA
109 - 144	9	26.47	32	94.12	PEA
73 - 108	19	55.88	0	0.00	NNA
37 - 72	5	14.71	0	0.00	NEA
N = 34					

Legend:

Numerical Rating	Descriptive Rating	
145 -180	Very positive environmental attitudes	(VPEA)
109- 144	Positive environmental attitudes	(PEA)
73-108	Neutral or non-committal attitudes	(NNA
37-72	Negative environmental attitudes	(NEA)
0-36	Very negative environmental attitudes	(VNEA)

Students' Attitude towards Environmental Literacy for the Outdoor Group

Intention Attitude

Table 3.5 shows the mean response of the outdoor group in each statement of the intention attitude part of the EAKS survey. The lowest mean score of 2.50 in the pretest for the intention part is statement 2 "I would be willing to ride the bus to more places in order to reduce air pollution." Students relates to this intention as most of the students are commuting to school. There were two statement that had the highest mean score of 2.91 in the pretest. These were statement following statements: statement 4 "I would be willing to stop buying some products to save animals' lives" and statement 12 "To save water, I would be willing to turn off the water while I wash my hands." Even before the environmental lesson was conducted student already showed positive intention on animal conservation efforts. The outdoor group also understands the importance of saving water. The lowest score of 1.53 for the posttest is statement 5 "I would not be willing to save energy by using power saving bulb." This statement was negatively worded and has a descriptive rating of strongly disagree. This means that the student realized the significance of saving energy. The highest mean score of 4.82 in the posttest was statement 8 "I would be willing to write letters asking people to help reduce pollution." These results contradict the findings of Hebel, Montpied and Fontanieu (2013) where in French students showed to have low degree of support for personal involvement and an intent of support indicating a general feeling that they cannot influence environmental protection and that somebody else should solve the problems. This suggests that students are willing to make personal contribution in saving the environment. The outdoor group have the intention to persuade others in helping the environment but they are willing to do this only through correspondence. The overall mean score for the pretest was 2.76 shows that the outdoor group started with a neutral intention on environmental literacy. The mean score rating improved to 3.69 after the posttest. This implies that there was a positive change in intention attitude of the students from the outdoor group on environmental literacy after they experienced outdoor lessons on the environment.

Table 3.5 Mean Responses on Intention Attitude towards Environmental Literacy of the Outdoor Group

Statement	Pretest		Posttest	
	Mean	DR	Mean	DR
1. I would not give my own money to help the environment.	2.59	DA	2.24	DA
2. I would be willing to ride the bus to more places in order to reduce air pollution.	2.50	DA	4.44	SA
3. I would not be willing to separate my family's trash for recycling.	2.79	N	1.59	SDA
4. I would be willing to stop buying some products to save animals' lives.	2.91	N	4.09	A
5. I would not be willing to save energy by using power saving bulb.	2.68	N	1.53	SDA
6. To save water, I would be willing to use less water when I bathe.	2.71	N	4.26	SA
7. I would go from house to house to pass out environmental information.	2.88	N	3.85	A
8. I would be willing to write letters asking people to help reduce pollution.	2.65	N	4.82	SA
9. I would be willing to ask my friend to recycle.	2.79	N	4.65	SA
10. I would give my own money to protect wild animals.	2.82	N	4.12	A
11. To save energy, I would be willing to use dimmer light bulbs.	2.85	N	4.32	SA
12. To save water, I would be willing to turn off the water while I wash my hands.	2.91	N	4.32	SA
Over-all Mean	2.76	N	3.69	A

Legend:

Numerical Rating	Descriptive Rating
4.21-5.00	Strongly Agree (SA)
3.41-4.20	Agree (A)
2.61-3.40	Neutral (N)
1.81-2.60	Disagree(DA)
1.00-1.80	Strongly Disagree (SDA)

Behavior Attitude

Table 3.6 shows the mean response of the outdoor group in each statement of the behavior attitude part of the EAKS survey. The lowest mean score for the pretest of 2.38 is statement 10 "I do not harm any animals" This statement was also negatively worded and can be described as disagree response of the outdoor group. This response is consistent on the pretest response on the intention of the students to stop buying products to save animals. The highest mean score of 3.41 is statement 5 "To save energy, I turn off the lights when they are not in use." The outdoor group were consistent with intention and behavior attitude responses with regard to saving energy. The lowest mean score for the posttest of 1.79 is statement 1 "I will never discuss pollution issues with my friends." Similarly with the results of the indoor group the outdoor group also were also reluctant to talk about environmental issues with their peers. The highest mean score of 4.56 was obtained by statement 3 "I will ask my friends to recycle." Americans have been influenced to make lifestyle changes over the past 20 years 58% of Americans say they do recycle on a regular basis in 2011. Pressure from family and friends plays an important but lesser role (Johnson, 2011). The outdoor group were more open to suggesting recycling to their friends rather than discussing environmental issues. The overall mean score for the pretest was 2.82 this shows that the outdoor group started with a neutral behavior on environmental literacy. The mean score rating improved to 3.61 after the posttest. This implies that there was a positive change in the behavior attitude of the students from the outdoor group on environmental literacy after outdoor the lessons were conducted.

Table 3.6 Mean Responses on Behavior Attitude towards Environmental Literacy of the Outdoor Group

Statement	pretest		Posttest	
	Mean	DR	Mean	DR
1. I will never discuss pollution issues with my friends.	2.65	DA	1.79	SDA
2. I strictly opposed illegal loggings since they pollute the environment.	2.74	N	4.32	SA
3. I will ask my friends to recycle.	3.12	N	4.56	SA
4. I will ask my friends to support wild animal protection program.	3.03	N	4.12	A
5. To save energy, I turn off the lights when they are not in use.	3.41	A	4.41	SA
6. I reduce the amount of water when I bathe	2.62	N	4.18	A
7. I often read stories that are mostly about the environment.	2.68	N	4.09	A
8. I have talked with my friends about how to help with environmental problems.	3.18	N	3.82	A
9. I do not separate things for recycling.	2.79	N	2.32	DA
10. I do not harm any animals.	2.38	DA	3.68	A
11. I let the lights on until morning.	2.59	DA	2.18	DA
12. I always conserve water.	2.62	N	3.88	A
Over-all Mean	2.82	N	3.61	A

Legend:

Numerical Rating	Descriptive Rating
4.21-5.00	Strongly Agree (SA)
3.41-4.20	Agree (A)
2.61-3.40	Neutral (N)
1.81-2.60	Disagree (DA)
1.00-1.80	Strongly Disagree (SDA)

Affective Attitude

Table 3.7 shows the mean response of the outdoor group in each statement of the affective attitude part of the EAKS survey. There were two statements that obtained the lowest mean scores of 2.50 in the pretest for the affective part of the survey. These were statements 1 "I am frightened to think people don't care about the environment" and statement 4 "I get angry when I think about companies testing products on animals". The highest mean score of 2.91 is obtained by statement 9 "I get upset when I think of the things people throw away that could be recycled". Similar to the findings in the study of Johnson (2011) confirms that family, friends and peers have possible positive influencing behavior change on the environment. The outdoor group gives importance to recycling they were keen on asking their peers to recycle and gets upsets when people disregard opportunities of recycling with certain materials. The lowest

mean score of 1.82 for the posttest is statement 7 "I do not worry about environmental problems in the Philippines." This statement is in the negative and has a descriptive rating of disagree. This means the outdoor group have become concern about the current environmental problems of the country after the outdoor lessons. While the highest mean score of 4.06 was obtained by statement 3 "It makes me happy when people practice recycling". Recycling items were consistent items with the highest mean scores. The practical applications of waste management such as recycling had an impact on the behavior and affective attitude of outdoor group. The overall mean score for the pretest was 2.72, this reflects a neutral affective attitude of the outdoor group on environmental literacy. The mean score rating improved to 3.34 for the posttest. This signifies that there was also only a slight positive change in affective attitude of the students from the outdoor group which can be descriptively described as a neutral on environmental literacy after the outdoor lessons were conducted. Even though the students' responses can be classified as having a positive attitude, there was no item that was observed as an extreme "strongly agree" level of positive views on the statement for affective attitude. We can infer that the respondents when exposed to environmental literacy through outdoor teaching improves the attitude of the students with their appreciation of the environment to some extent.

Table 3.7 Mean Responses on Affective Attitude towards Environmental Literacy of the Outdoor Group

Statement	pretest		Posttest	
	Mean	DR	Mean	DR
1. I am frightened to think people don't care about the environment.	2.50	DA	3.91	A
2. I feel frustrated with the damage pollution does to the environment.	2.88	N	4.00	A
3. It makes me happy when people practice recycling.	2.76	N	4.06	A
4. I get angry when I think about companies testing products on animals.	2.50	DA	4.00	A
5. It makes me happy to see people trying to save energy.	2.76	N	3.85	A
6. I am not worried about running out of water.	2.68	N	2.15	DA
7. I do not worry about environmental problems in the Philippines.	2.76	N	1.82	DA
8. I am not frightened about the effects of pollution on my family.	2.85	N	2.38	DA
9. I get upset when I think of the things people throw away that could be recycled.	2.91	N	3.82	A
10. I get upset when I think of the things people throw away that could be recycled.	2.59	DA	3.53	N
11. It frightens me to think how much energy is wasted recently.	2.74	N	3.09	N
12. It frightens me to think how much energy is wasted recently.	2.71	N	3.50	A
Over-all Mean	2.72	N	3.34	N

Legend:

Numerical Rating	**Descriptive Rating**
4.21-5.00	Strongly Agree (SA)
3.41-4.20	Agree (A)
2.61-3.40	Neutral (N)
1.81-2.60	Disagree (DA)
1.00-1.80	Strongly Disagree (SDA)

Attitude Summary of the Outdoor Group

Table 3.8 shows that the outdoor group generally started with a negative environmental attitude during the pretest. The attitude scores of the outdoor group respondents improved to very positive environmental attitude after the post test. Similar results can be observed from the study of Patrick (2010) that concluded field trip as outdoor experiences improved students' attitude and achievement in biology. Thus, this implies that outdoor teaching improves student's attitude on environmental literacy.

Table 3.8 Attitude Summary of the Outdoor Group

Scores	Pretest		Posttest		Interpretation
	f	%	f	%	
145 - 180	3	8.82	1	2.94	VPEA
109 - 144	8	23.53	32	94.12	PEA
73 - 108	18	52.94	0	0.00	NNA
37 - 72	5	14.71	1	2.94	NEA
			N = 34		

Legend:

Numerical Rating	Descriptive Rating
145 -180	Very positive environmental attitudes (VPEA)
109- 144	Positive environmental attitudes (PEA)
73-108	Neutral or non-committal attitudes (NNA
37-72	Negative environmental attitudes (NEA)
0-36	Very negative environmental attitudes (VNEA)

5. CONCLUSIONS

This study was conducted to determine the students' performance and attitude on environmental literacy through indoor and outdoor teaching. The respondents of the study were two Grade 10 students taking up Science class of in Dolores National High School during the third quarter of the school year 2017-2018. The classes were divided into indoor and outdoor groups. The research method employed in this study was Quasi- Experimental Method. This research method was used to measure and compare the performance and attitude of the respondents on the two teaching methods namely indoor (traditional) and outdoor (experimental). The performance of the students on environmental literacy was measured using a teacher made examination of 40 items on topics about environment. The EAKS survey was used to measure the attitude of student towards the environment. The data were tabulated and analyzed and the following major findings were established:

1. There were 50% males and 50% female respondents, 63.24% of them have a family monthly income of 5,000-10,000; 27.94% of their parents have reached college and 91.18% of their parents are employed.
2. The posttest performance scores of the indoor group when compared to their pretest is significantly higher. The posttest performance scores of the outdoor group when compared statistically with their pretest is significantly higher. The pretest performance mean scores between the indoor and outdoor group shows that there is significant difference in their scores with a t-value of 0.803. However, the posttest performance mean scores show to have a highly significant difference between the two groups with a t-value of 4.2745.
3. Mean comparison of the posttest attitude scores of the respondents indicated that by the end of the lessons on environment, the indoor and outdoor group have almost the same results. There was one outlier found from the outdoor group with a negative environmental attitude. This can be attributed to the fact that not every student might find outdoor exciting because of individual learning style. On the other hand, no negative environmental attitude was recorded from the indoor group since they were already used to the same setting and have nothing to compare with a new experience.

Based on the findings, the following can be inferred and concluded from this research:

1. There were equal number of male and female respondents, 34 males and 34 females, which their families belonged to low income but not poor family class. The highest educational attainment of the parents is college and majority of the parents are currently employed.
2. The indoor group performed better with their performance posttest scores compared to their pretest. While, the outdoor group also improved their posttest scores when compared to their pretest. Comparing the pretest of the indoor and outdoor group the indoor group had initially better performance scores. Comparing the posttest of both groups the outdoor group turned out to have better scores compared to the indoor group.
3. Both groups started to have neutral behavior on the three domains of attitude and eventually improved to a positive attitude. Thus, indoor and outdoor teaching improves student's attitude towards environmental literacy.

6. RECOMMENDATIONS

Based on the findings and conclusions, the following recommendations are offered:

1. Teachers should consider outdoor learning activities particularly in Science subjects and in teaching environment related topics and in other subject areas, since it was found that students that have been exposed to outdoor learning environment performed better on environmental literacy.
2. Indoor teaching or traditional lecture method as a time-tested method is not discouraged as a teaching method because not all the students prefer the outdoor. It is recommended that indoor teaching should be used alongside and

compliment outdoor teaching to fully engage and improve students' performance and attitude of the learners in learning about the environment.

3. Outdoor teaching may be used to augment with the various teaching styles. It can be another avenue to improve students' performance because of its experiential learning. The attitude scores of the respondents revealed that the outdoor learning improve the attitude of the students significantly.

4. Future researchers may consider other variables such as studying the relationship between the demographic profile of the respondents and the attitude of the students towards environmental literacy.

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