International Electronic Journal of Environmental Education
Vol.9, Issue 2, 2019, 106-119
RESEARCH ARTICLE

Environmental Awareness and Practices of Science Students: Input for Ecological Management Plan

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Abstract

The role of the schools is very critical in order to develop environmentally-aware and ecologically-conscious students. This descriptive-correlational study sought to measure the level of awareness and practices of 100 Science students in a public secondary school in Zambales, Philippines. Findings revealed that the Science students are very aware on environmental concepts and state of environment; and very aware in environmental issues and problems. They often practice taking actions to solve environmental problems and sometimes practice the need to possess a high degree of commitment. The study found out that there is a moderate correlation between students' awareness on environmental concepts and issues and their practices to solve the environmental problems and possess a high degree of commitment. The study recommends that information dissemination programs regarding environmental concepts, state of the environment, ecological issues and problems could be sustained by the school to keep the ecological awareness of the students high. Environmental advocacies and eco-movement may likewise be institutionalized in the school through student organizations like YES-O and Science clubs. The crafted ecological management plan is recommended for implementation to increase the degree of commitment of students towards ecological conservation.

Keywords: environmental education, environmental awareness, environmental practices, ecological management plan, descriptive-correlational research, Zambales, Philippines

1. Introduction

In today's era of globalization, we are faced with a lot of societal upheavals including dilemmas pertaining to the environment. Rogayan (2019) reiterated that the earth is now suffering from innumerable afflictions at present caused by egregious human activities that relentlessly denuding the environment. The challenge for everybody is to take the wheel of action and move towards a common cause in preserving life on earth.

The growing concern with environmental issues and their impact on general awareness is one of the most noticeable phenomena of the last two decades (Sivamoorthy, Nalini & Satheesh Kumar, 2013). The rapid depletion of the earth's natural resources and the fast degrading environment are the realities which can no longer be denied. These are the grave scenarios that threaten the existence of both man and the earth (Marpa & Juele, 2016).

The Education for Sustainable Development of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) reiterates that education is an indispensable tool towards sustainable development. Environmental education is a process aimed at developing a world population that is aware of and concerned about the total environment and its associated problems and which has the knowledge, attitudes, commitments and skills to work individually and collectively towards the

ISSN: 2146-0329
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solution of current problems and prevention of new ones (Jain & Raghunathan as cited in Puri & Joshi, 2017).

Different countries in the world continue to develop active environmentalism among the students and among the people in general. India, for one, has become one of the fastest progressing countries in the world, in addressing its environmental issues and improving its environmental quality (Sivamoorthy, Nalini & Satheesh Kumar, 2013). The environmental problems have become issues of great concern to many parties. However, many people in Ethiopia seem to have low level of knowledge about environmental problems (Hailu, 2016). In Turkey, the level of high school students' environmental awareness is high as revealed by one study (Anilan, 2014). The level of environmental awareness and practices on recycling of solid wastes in one university campus in Malaysia was likewise gauged (Omran, Bah & Baharuddin, 2017).

In the Philippines, the Department of Education (DepEd), the Commission on Higher Education (CHED), and the Technical Education and Skills Development Authority (TESDA), in coordination with the Department of Environment and Natural Resources (DENR), the Department of Science and Technology (DOST) and other relevant agencies, in consultation with experts on the environment and the academe, lead the implementation of public education and awareness programs on environmental protection and conservation through collaborative interagency and multi-sectoral effort at all levels (RA 9512, 2008).

Furthermore, one of the objectives of the Science education in the Philippines is to develop students who are environmentally-conscious and ecological-friendly. The month of June of each year is declared as the Philippine Environment Month by virtue of Presidential Proclamation No. 237 signed in 1998 by then President Corazon C. Aquino. During the celebration, various important events are being celebrated such as the World Environment Day on June 5, Philippine Eagle Week on June 4-10 and Philippine Arbor Day on June 25 (Department of Environment and Natural Resources, 2016).

People's awareness has been recognized as a powerful tool in environmental sphere. Information through education has an important impact to alter behaviour (as cited in Gonzaga, 2017).

Several studies have been conducted to gauge the environmental awareness and practices of students in various levels. Foreign studies have focused mainly on the environmental awareness and practices of college students (Sivamoorthy, Nalini & Satheesh Kumar, 2013; Sharma, 2016), tertiary students' environmental awareness in relation to their stream of study and their area of residence (Singh, 2015), college students' level of awareness, attitude and participation in environmental activities (Bhat et al., 2016), intrinsic and extrinsic motivation of tertiary students and their ecological awareness and practice (Milos & Cicek, 2014), the level of environmental awareness and practices on recycling of solid waste of college students (Omran, Bah & Baharuddin, 2017) and the high school students' environmental risk perceptions and environmental awareness levels (Anilan, 2014).

In the Philippines, studies focused on the environmental awareness and practices of high school students as basis for disaster preparedness program (Marpa & Juele, 2016), level of awareness and extent of practices in green technology of college students (Gonzaga, 2016), and the environmental awareness of the graduating college students (Garcia & Luansing, 2016).

While almost all the previous studies conducted are focused only in describing the extent of environmental awareness and practices of the students, the present study

looked into the environmental awareness and practices of Grade 9 Science students as an input in crafting a proposed ecological management plan.

1.1 Framework of the Study

The study is anchored on the National Environmental Awareness and Education Act of 2008 otherwise known as Republic Act 9512. According to RA 9512, Section 2, "consistent with the policy of the State to protect and advance the right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature, and in recognition of the vital role of the youth in nation building and the role of education to foster patriotism and nationalism, accelerate social progress, and promote total human liberation and development, the state shall promote national awareness on the role of natural resources in economic growth and the importance of environmental conservation and ecological balance towards sustained national development." Hence, agencies like the Department of Education (DepEd), the Commission on Higher Education (CHED), the Technical Education and Skills Development Authority (TESDA), the Department of Social Welfare and Development (DSWD), in coordination with the Department of Environment and Natural Resources (DENR), the Department of Science and Technology (DOST) and other relevant agencies, shall integrate environmental education in its school curricula at all levels (RA 9512, 2008).

Furthermore, environmental education shall encompass "environmental concepts and principles, environmental laws, the state of international and local environment, local environmental best practices, the threats of environmental degradation and its impact on human well-being, the responsibility of the citizenry to the environment and the value of conservation, protection and rehabilitation of natural resources and the environment in the context of sustainable development" (RA 9512, 2008).

1.2 Objectives of the Study

This study aimed to find out the relationship between environmental awareness and practices of Science students in a public secondary school in Zambales, Philippines for the School Year 2016-2017 as input for ecological management plan.

2. METHODOLOGY

2.1 Research Design

The study utilized a descriptive-correlational research which sought to find the relationship of the respondents' environmental awareness and environmental practices through the survey-questionnaire.

2.2 Respondents

The study involved 100 Grade 9 Science students divided into 56 girls and 44 boys of Subic National High School in Subic, Zambales, Philippines. The study used simple random sampling technique. Grade 9 students were chosen as they are already immersed with the school setting and can still have one school year to participate in the activities included in the proposed ecological management plan.

2.3 Instrument

In order to gather the data on the environmental awareness and practices among the Grade 9 students, the researchers used a researcher-made survey questionnaire with an overall Cronbach alpha value of 0.92. The instrument measured the students' Awareness of Environmental Concepts and the State of Environment (Part I), Awareness of Environmental Issues and Problems (Part III), Practices on the Need to Take Actions to Solve Environmental Problems (Part III) and Practices on a High Degree of Commitment (Part IV). The instrument was content and construct validated and undergone a reliability test. A focus group discussion (FGD) guide which contains semi-structured questions was likewise used.

2.4 Data Gathering Procedure

The researchers secured approval from the school principal to conduct the study. For ethical considerations, parental consent were secured to ensure the protection of the respondents since they are minors. Upon approval, survey-questionnaires were distributed to the respondents. The respondents were given 10 to 15 minutes to respond and then the researchers collected all the accomplished survey-questionnaires on the same day. Select respondents were asked for a focus group discussion (FGD) to validate the findings obtained from the survey questionnaires. The researchers also conducted participant observation and documentary analysis on the environmental practices of the students.

3. RESULTS AND DISCUSSION

3.1 Level of Environmental Awareness of Science Students

Awareness of Environmental Concepts and the State of Environment. The respondents are "Very Aware" in environmental concepts and state of the environment as revealed by the overall mean of 3.67 and standard deviation of 0.17 (Table 1).

The top items include the following: the ozone layer of the atmosphere protects life on Earth by absorbing harmful ultraviolet radiation from the Sun (M=4.01); global warming is brought about by rising levels of heat-trapping gases, known as greenhouse gases, in the atmosphere (M=3.86); and rainforests are the world's most biologically diverse ecosystems (M=3.80). This implies that the respondents are very aware in the role of ozone layer in the protection of life, the causes of global warming, and the iportance of rainforests in the balance of life.

Meanwhile, the respondents are "Moderately Aware" in the provision of the Philippine Constitution that the state's primary duty to protect and advance the right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature (M=3.52); and there is only one percent of all the water in the world that is available for drinking (M=3.39).

Table 1.

Respondents' awareness of environmental concepts and state of environment

Statement	Mean	SD	VD	Rank
1. Agenda 21 is a plan of the United Nations in which large developing countries promised to develop their industries with an eye toward protecting the environment.	3.55	1.02	VA	8
2. Rainforests are the world's most biologically diverse ecosystems.	3.80	0.98	VA	3
3. Global warming is brought about by rising levels of heat-trapping gases, known as greenhouse gases, in the atmosphere.	3.86	1.02	VA	2
4. The ozone layer of the atmosphere protects life on Earth by absorbing harmful ultraviolet radiation from the Sun.	4.01	1.18	VA	1
5. Sustainable development means increasing standards of living without destroying the environment.	3.62	1.08	VA	7
6. Desertification is the decline in the biological or economic productivity of the soil in dry and semi-dry areas resulting from various factors including human activities.	3.63	0.93	VA	6
7. Acid rain is a form of air pollution in which airborne acids produced by electric utility plants and other sources fall to Earth in distant regions.	3.69	1.06	VA	4
8. Indigenous peoples are those who have inhabited and made their living directly off the same environment for hundreds or thousands of years.	3.62	1.06	VA	5
9. There is only one percent of all the water in the world that is available for drinking.	3.39	1.29	MA	10
10. According to the Philippine Constitution, it is the state's primary duty to protect and advance the right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature.	3.52	1.06	VA	9
Total	**3.67**	**0.17**	**VA**	

Legend: *Highly Aware (HA) 4.50 – 5.00; Very Aware (VA) 3.50 – 4.49; Moderately Aware (MA) 2.50 – 3.49; Slightly Aware (SA) 1.50 – 2.49; Totally Unaware 1.00 – 1.49.*

The findings is consistent with the study of Singh (2015) which concluded that the undergraduate students possessed a good average level of environmental awareness.

Awareness of Environmental Issues and Problems. The respondents are "Very Aware" in environmental issues and problems with an overall mean of 3.59 and standard deviation of 0.28 (Table 2).

In particular, the indicators with highest means include the following: Bohol is greatly affected by a strong earthquake which caused colossal destructions in the province's old-age churches and other structures (M=4.26); the Central Visayas is severely battered by Typhoon Yolanda which is considered as one of the world's strongest typhoon in history (M=3.91).

Table 2.

Respondents' Awareness of Environmental Issues and Problems

Statement	Mean	SD	VD	Rank
1. The environment is confronted with a myriad of environmental issues and problems at present.	3.52	1.10	VA	5
2. There is an attempt to establish a coal-fired power plant in Subic Bay which can affect can pose threats to the environment and the health of the people.	3.32	1.06	MA	10
3. The Central Visayas is severely battered by Typhoon Yolanda which is considered as one of the world's strongest typhoon in history.	3.91	1.07	VA	2
4.Bohol is greatly affected by a strong earthquake which caused colossal destructions in the province's old-age churches and other structures.	4.26	3.23	VA	1
5. Ormoc City experienced one of the severest landslides in history which killed thousands of people.	3.53	0.96	VA	4
6. A total of 700 people were killed and hundreds were injured in Aurora landslide in 2004.	3.34	1.05	MA	9
7. Major mine spill took place in 2005 which contaminated several bodies of water and caused fish kill in Albay Gulf.	3.52	1.02	VA	6
8. Rice crisis happened in 2008 and continued landlessness and backward agriculture occurred.	3.36	1.02	MA	8
9. Palawan clamored to the people in a signature campaign to never allow mining in the province which is considered as the country's last ecological frontier.	3.60	1.08	VA	3
10. Climate change is very evident in every part of the globe like the extreme heat experienced by Australia and excessive coldness in Canada.	3.51	1.18	VA	7
Total	**3.59**	**0.28**	**VA**	

Legend: *Highly Aware (HA) 4.50 - 5.00; Very Aware (VA) 3.50 - 4.49; Moderately Aware (MA) 2.50 - 3.49; Slightly Aware (SA) 1.50 - 2.49; Totally Unaware 1.00 - 1.49.*

The findings of the study is consistent with the results of the previous studies that the environmental awareness of the students is high (Anilan, 2014; Milos & Cicek, 2014; Singh, 2015; Garcia & Luansing, 2016; Sharma, 2016; Puri & Joshi, 2017).

The results of the study, however oppose the findings of Sahu, Roy, Monika & Rajkiran (2015) which found out that the overall level of awareness was found to be average. Number of students with high level of awareness is found to be extremely low whereas number of students with low level of awareness is found to be fairly high.

Meanwhile, the respondents show "Moderately Aware" in the following: a total of 700 people were killed and hundreds were injured in Aurora landslide in 2004 (M=3.34) and there is an attempt to establish a coal-fired power plant in Subic Bay which can affect can pose threats to the environment and the health of the people (M=3.32).

The study refutes the findings of Bhat et al. (2016) which indicated that the students due to problems of population explosion, exhaustion of natural resources and pollution of environment are not having enough awareness and skills for identifying and solving environmental problems.

3.2 Level of Environmental Practices of Science Students

Practices of the Need to Take Actions to Solve Environmental Problems. The respondents "Often" practice the need to take actions to solve environmental problems as revealed by the overall mean of 3.68 and standard deviation of 0.18 (Table 3).

Top items include: turn off the lights and unplug appliances when not in use to save electricity (M=4.06); avoid throwing garbage anywhere and learn the science of segregation of solid wastes (M=3.67); recycle and reuse non-biodegradable materials to lessen solid wastes (M=3.76).

Table 3.

Respondents' Practices of the Need to Take Actions to Solve Environmental Problems

Statement	Mean	sd	VD	Rank
1. Turn off the lights and unplug appliances when not in use to save electricity.	4.06	1.00	OF	1
2. Harness solar energy, a radiation produced by nuclear fusion reactions deep in the Sun's core.	3.76	0.93	OF	3.5
3. Plant endemic trees in the vacant areas in the community to prevent soil erosion and get more oxygen to breathe.	3.65	0.95	OF	7
4. Avoid the use of plastic and styrofoam which cause harm not only to the environment but also to human health.	3.57	1.06	OF	8
5. Avoid throwing garbage anywhere and learn the science of segregation of solid wastes.	3.78	1.07	OF	2
6. Keep a good food ethics and avoid eating with left-overs and wasting drinking water.	3.67	1.21	OF	5.5
7. Lessen the use of detergents for they tend to create foam in gutters and in sewage-disposal plants and even appeared in naturally occurring ground and surface waters.	3.45	1.05	SO	9
8. Practice the science of composting which produces partially decomposed organic material used in gardening to improve soil and enhance plant growth.	3.37	1.00	SO	10
9. Recycle and reuse non-biodegradable materials to lessen solid wastes.	3.76	1.01	OF	3.5
10. Use reusable water bottles or tumblers instead of buying bottled water in the canteen or stores.	3.69	1.02	OF	6
Total	**3.68**	**0.18**	**OF**	

Legend: *Always (AL) 4.50 - 5.00; Often (OF) 3.50 - 4.49; Sometime (SO) 2.50 - 3.49; Seldom (SE) 1.50 - 2.49; Never (NE) 1.00 - 1.49.*

Meanwhile, the respondents "Sometimes" practice the following: lessen the use of detergents for they tend to create foam in gutters and in sewage-disposal plants and even appeared in naturally occurring ground and surface waters (M=3.45) and practice the science of composting which produces partially decomposed organic material used in gardening to improve soil and enhance plant growth (M=3.37).

The study corroborates the findings of Sivamoorthy, Nalini & Kumar (2013) that the level of awareness is high but the practice level is moderate among college students.

Practices of the Need to Possess a High Degree of Commitment. The respondents "Sometimes" practice the need to take possess a high degree of commitment as revealed by the overall mean of 3.31 and standard deviation of 0.11.

Table 4.

Respondents' Practices on the Need to Possess a High Degree of Commitment

Statement	Mean	sd	VD	Rank
1. Discuss with friends and relatives about environmental issues and concerns that confront the community and the country as a whole.	3.45	1.05	SO	1.5
2. Lobby for relevant laws on environmental conservation with the support of your political leaders especially the congressmen.	3.27	0.96	SO	6
3. Write articles in the newspaper which encourage people to take part in responding to the different environmental problems.	3.10	1.05	SO	9
4. Organize an environmental forum or symposium with your fellow youth and the community people.	3.30	1.03	SO	10
5. Write an appeal to your political leaders regarding environmental concerns of your community.	3.33	1.09	SO	4
6. Ask the support of the media in exposing anomalies and irregularities which led to the destruction of the environment.	3.18	1.07	SO	8
7. Deliver a talk or discourse about environmental literacy to heighten the awareness of the people.	3.30	1.11	SO	5
8. Volunteer to organizational groups which help for the preservation and conservation of the environment.	3.45	1.05	SO	1.5
9. Encourage everyone to be ambassadors of the environment in their respective communities specifically your fellow youth.	3.26	0.99	SO	7
10. Support initiatives and programs on environmental conservation like the National Greening Program of the present administration.	3.44	0.91	SO	3
Total	**3.31**	**0.11**	**SO**	

Legend: *Always (AL) 4.50 - 5.00; Often (OF) 3.50 - 4.49; Sometimes (SO) 2.50 - 3.49; Seldom (SE) 1.50 - 2.49; Never (NE) 1.00 - 1.49.*

The respondents "Sometimes" practice the following: discuss within friends and relatives about environmental issues and concerns that confront the community and the country as a whole (M=3.45); volunteer to organizational groups which help for the preservation and conservation of the environment (M=3.45) and Support initiatives and programs on environmental conservation like the National Greening Program of the present administration (M=3.44) meanwhile the least "Often do the task" of the respondents is organize an environmental forum or symposium with your fellow youth and the community people (M=3.30)

This supports the claim of Puri & Joshi (2017) that the green attitude of the students is clearly visible in their action which is step towards Education for Sustainable Development (ESD). Likewise, the findings of the study is consistent with the results of the previous studies that the environmental practices of the students is high (Puri & Joshi, 2017).

3.3 Relationship between Environmental Awareness and Environmental Practices of Science Students

Table 5 shows the correlation between environmental awareness and environmental practices.

Table 5.

Correlation Coefficients among the Variables of Environmental Awareness and Practices

Variable	1	2	3	4
1. Awareness of Environmental Concepts	-			
2. Awareness of Environmental Issues	0.680**	-		
3. Practices on the Need to Solve Environmental Problems	0.600**	0.582**	-	
4. Practices on the Need to Possess a High Degree Commitment	0.410**	0.573**	0.573**	-

***. Correlation is significant at the 0.01 level (2-tailed)*

There was a significant positive moderate correlation between awareness of environmental concepts and awareness of environmental issues (r=0.680; p=0.01) which implies that as the awareness of environmental concepts increase, the awareness of environmental issues will likely increase.

The awareness of environmental concepts was significantly positively related to practices on the need to solve environmental problems as revealed by the r-value of 0.600. (p=0.000). This suggests that as the awareness of environmental concepts increases, the practices on the need to solve environmental problems will also increase.

Additionally, results of the correlation revealed that the awareness of environmental issues was moderately related with the practices on the need to solve environmental problems (r=0.582; p=0.01). This means that students who are aware of environmental issues were more likely to practice the need to solve environmental problems.

The students' awareness of environmental concepts was significantly positively related to practices on the need to possess a high degree of commitment (r=0.410; p=0.01) which implies that as the students' awareness of environmental concepts increase, the practices on the need to possess a high degree of commitment will likely increase.

A statistically significant correlation was likewise noted between awareness of environmental issues and the practices on the need to possess a high degree of commitment (r=0.573; p=0.01). This means that the students who are aware of environmental issues will more likely to practice the need to possess a high degree of commitment.

The practices on the need to solve environmental problems was significantly positively correlated with the practices on the need to possess a high degree of commitment (r=0.573; p=0.01). This implies that the students who practice on the need to solve

environmental problems were more likely to practice on the need to possess a high degree of commitment.

The findings corroborates previous studies (Gonzaga, 2016; Marpa & Juele, 2016) that the level of awareness and extent of practices were positively correlated to a moderate degree.

Meanwhile, the study of Sharma (2016) counter the result of the present study that there exists no significant correlation between environmental awareness and environmental practice. College students are aware of the environmental issues but when they are going to practice it they fail. Owens, (2000) in his study stated that increase in knowledge and awareness did not lead to pro-environmental behavior.

3.4 Proposed Ecological Management Plan

The proposed ecological management plan was crafted based from the survey results. The authentic activities included were based from the least weighted means obtained from the survey.

Proposed Activities				
Specific Objective/s	**Activity Title**	**Person/s Involved**	**Duration**	**Expected Output**
• To develop localized, indigenized information education and communication (IEC) materials on environmental education	*Project IEC Eco-Material:* An IEC material production project	Teachers, Students, DENR, LGUs, NGOs	June to July	Developed IEC Eco-Materials Research Output
• To educate the students on the current and future situations of the environment.	*Project Eco-likula:* A film-viewing activity with interactive lecture and film processing	Teachers, Students, Resource Persons	August to September	Attendance sheet of participants, monthly monitoring report, evaluation report
• To practice the science of composting to improve soil and enhance plant growth.	*Project Vermicomposting:* A composting project with the use of vermi worms	Teachers, Students, Parents	October to March	Vermicast for income generation, Photo documentation, Monthly progress report,
• To lessen the use of detergents.	*Project Deter Detergents:* A symposium on the disadvantages of the use of detergents	Teachers, Students, Resource Persons, Parents	November	Attendance sheet of participants, evaluation report, student and parents' manifesto

• To conduct an environmental forum or symposium involving the youth and the community people.	*Project Usapang Kalikasan:* An environmental forum highlighting the present environmental problems facing the community	Teachers, Students, OSYs, Resource Persons, Community People	Decembe r	Attendance sheet of participants, evaluation report, Commitmen t Form
• To produce a newsletter which highlights articles on engaging people to contribute to environmental conservation.	*Project Eco-Gazette:* A newsletter production which reports the programs, projects and activities being done by the school and community on environmental conservation.	Teachers, Students, OSYs, Community People	Quarterly	Newsletter, Official Facebook Page
• To encourage everyone to be ambassadors of the environment in their respective communities specifically the youth.	*Project e-COOL-ological Drive:* A series of environmental programs to be led by the students such as coastal clean-up, endemic tree-planting activity, eco-bricks, and other environmental advocacy campaigns	Teachers, Students, OSYs, Community People	January-March	Attendance sheet of participants, evaluation report, pamphlets

4. Conclusions

The study concluded that the Science students are very aware of environmental concepts and state of the environment; and in environmental issues and problems. The respondents often practice the need to take actions to solve environmental problems while they sometimes practice the need to possess a high degree of commitment. There is a significant high positive relationship between environmental awareness and environmental practices. There are significant relationships among the variables of environmental awareness and environmental practices. There are varied authentic activities included in the proposed ecological management plan. The study recommends that information dissemination programs regarding environmental concepts, the state of the environment, ecological issues and problems must be sustained by the school to keep the awareness of the students high. Environmental advocacies and eco-movement must be institutionalized in the school through the YES-O Club and/or Science club to increase the degree of commitment of students towards biodiversity conservation. The crafted ecological management plan is recommended for implementation to increase the degree of commitment of students towards ecological conservation.

5. Translational Research

The results of the study could be translated through an infographics showing the proposed ecological management plan which can be implemented in schools and its nearby communities to enhance the students' and even the out-of-school- youths' environmental awareness and practices. The schools should serve as the learning habitats of the students that mold them to be ambassadors of the environment. Finally, the study can be translated through flyers, posters and pamphlets to make environmental education more dynamic in the school and in the community as a whole.

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International Electronic Journal of Environmental Education
Vol.9, Issue 2, 2019, 106-119
RESEARCH ARTICLE

Çevre Bilinci ve Fen Öğrencilerinin Uygulamaları: Ekolojik Yönetim Planına Yönelik Girdiler

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Özet (Turkish Abstract of Paper)

Bu araştırmanın amacı okul öncesi eğitim alan çocukların kuş hakkındaki zihinsel modellerini çizimler aracılığıyla belirlemektir. Araştırma sosyal yapısalcı felsefe temelinde yürütülen bir heuristik fenomenoloji araştırmasıdır. Araştırma için çalışma grubunun oluşturulmasında tipik durum örnekleme tekniği kullanılmıştır. Araştırmanın çalışma grubunu Kastamonu İl'i Merkez İlçe'sinde okul öncesi eğitim alan 325 çocuk oluşturmaktadır. Araştırma kapsamında veriler çiz ve açıkla tekniği kullanılarak toplanmıştır. Çocuklardan öncelikle bir kuş resmi çizmeleri istenmiş, sonrasında çizimleri üzerinden yarı-yapılandırılmış görüşme yapılmıştır. Çalışma grubundan elde edilen veriler incelendiğinde çocukların önemli bir bölümünün (*f*=167, *%*=51.3) kuşu ana hatları çizilmiş tarzda çizdikleri belirlenmiştir. 181 çocuk (*f*=181, *%*=55.6) kuşa ait temel özellikleri çizmiş, 83 çocuk (*%*=25.5) kuşu davranış gösterirken şeklinde çizmiştir. Çocukların çok büyük bir bölümü (*f*=279, *%*=85.8) kuşu açık hava mekanlarda gördüğünü belirtmiş ve yine çok sayıda çocuk (*f*=127, *%*=39.0) kuşa ait en temel özelliğin uçmak olduğunu belirtmiştir. Elde edilen bulgular dikkate alındığında çocukların kuşlar hakkında biyolojik temelli olmayan ancak, temel fiziksel ve şekilsel özelliklere sahip zihinsel modellere sahip oldukları sonucuna ulaşılmıştır. Ayrıca çocukların kuş kavramına ait temel bilgileri açık hava mekanlardan edindikleri de belirlenmiştir. Bu sonuçlar ışığında Türkiye'deki okul öncesi eğitim programında hayvanlara yönelik doğrudan kazanımlara yer verilmesi gerektiği ve verilecek eğitimin mümkün oldukça açık hava mekanlarda, hayvanları doğrudan gözlemlemeye ve doğrudan deneyimlemeye izin verecek şekilde tasarlanmasının önemli olduğu vurgulanmaktadır.

Anahtar Kelimeler: Kuş, çiz ve anlat, zihinsel model. çocuk.

ISSN: 2146-0329
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