

Original Article

Middle School Students' Attitudes towards the Environment and Factors Affecting their Attitudes

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Abstract

Objective: This cross-sectional and descriptive study was conducted to determine middle school students' attitudes towards the environment and the factors affecting their attitudes.

Method: The study using the simple random sampling and sample was 720 students. Data were collected with Sociodemographic Characteristics Questionnaire and Environmental Attitude Scale (EAS). Mean, percentage, t-tests, variance analysis (One-Way ANOVA), were used in the analysis.

Results: Of the environmental issues, the ones which drew the students' attention most were the protection of animals (75.2%) and afforestation (65.0%) whereas the ones they considered as the most important were the environmental pollution (65.9%) and air pollution (60.5%). The students obtained the lowest ($\bar{X}=3.1870$) and highest ($\bar{X}=4.3172$) mean scores from the 3rd and 7th items of the EAS respectively.

Conclusions: It was determined that the participating students' attitudes towards the environment were positive in general, and that the participants at whose homes environmental issues are talked displayed more positive attitudes

Keywords: Environment, Middle school, Student, Environmental Attitude Scale, Education

Introduction

Environment is defined as living and non-living things that affect a living creature or community of living creatures throughout their lives (Nui et al., 2016). An environment is a medium in which people carry out their social, biological, and chemical activities (Sahin & Erkal, 2017). The lives of human beings and other living creatures undergo changes shaped by the physical and biological conditions of the environment in which they live (Zengin & Kunt, 2013). Problems related to our environment which is the habitat which affects all the living creatures and is affected by them (Zengin & Kunt, 2013; Cetin Balci 2012) have started to arise since the nature's ability to renew itself has been damaged (Yucel & Ozkan, 2014). Due to different types of

contamination which have arisen since the Industrial Revolution, increasing world population after the Second World War and excessive use of natural resources, environment has been under great threat. With the advances in industry, science and technology, human chances of interfering with nature have caused the ecological balance to deteriorate. Nowadays environmental issues has gained a global dimension over time and has become a matter of life and death for all the humankind (Uyanik, 2017; Onal & Buyuk, 2018). As the environmental problems have taken a greater place on the global agenda, the human beings' attitudes towards and awareness of the environment have been questioned more and more (Onal & Buyuk, 2018).

Environmental attitudes recognized as an indicator and component of environmental behavior and our environment-related values, attitudes, consciousness, knowledge, and intentions affect our behaviors towards the protection of the environment and environmental issues (Osman et al., 2014). Environmental attitude is the sum of the thoughts, beliefs and behaviors of the individuals regarding environmental activities or events (Zachariou et al., 2017) The 1977 Tbilisi Intergovernmental Environmental Education Conference is a very important meeting on environmental education and it is possible to say that the 1977 Tbilisi Declaration was a turning point in environmental (Sonmez & Yerlikaya, 2017). In the Tbilisi Declaration education environmental attitude has been defined as the society's and individuals' developing a set of values and feelings of concern for the environment and having the motivation to be active participants in the improvement and protection of the environment (Onal & Buyuk, 2018).

Determining students' attitudes towards environment plays an important role in determining positive attitudes they have gained and changes in their attitudes, and in identifying the educational precautions that should be taken to prevent students from developing negative attitudes towards the environment (Yucel et al., 2016). Today's students or younger generation will be ultimately in charge of ensuring the world survival. Providing environmental education and awareness, the future generation can ensure conserving, preserving, and sustaining the environment (Mohiuddin et al., 2018).

In their study conducted with 542 pre-school teachers attending elementary education departments Timur et al. (2013) that the female participants displayed better attitudes towards environmental problems than did the male participants. In their study conducted with middle school students, Aslan et al. (2008) determined that there was no statistically significant difference between female students' and male students' attitudes towards environment. In Aydin and Cepni's (2012) study conducted with 790 2nd grade middle school students, the girl students' attitudes towards the environment were determined to be more positive than were those of the boy students.

In Gokce et al. (2007) study carried out to determine primary school students' attitudes

towards the environment, it was determined that their attitudes towards the environment were affected not by the level of education of the father and mother or the family's income level but by gender and school achievement levels.

The analysis of the results of Cetin Balci's study (2012) conducted with 5th grade students demonstrated that the students displayed positive attitudes towards what they had to do to deal with environmental issues, particularly with the issues related water saving and energy conservation.

That educational activities play an important role in approaches aimed at finding permanent solutions to environmental problems is a well-known fact, and the most effective way to be used to solve such problems is to raise individuals who are conscious of and concerned about environment (Cetin Balci, 2012; Erten, 2012; Gok & Afyon, 2015). In order to combat the rapidly growing environmental problems and to reduce these problems, schoolchildren who will be the adults of the future should be trained in order that they could have an effective environmental awareness and sensitivity. The environment where this awareness and sensitivity is developed best is the family followed by primary and middle school (Yavuz et al., 2014).

Materials and Methods: This descriptive and cross-sectional study was conducted between April 2017 and June 2017 to determine the attitudes of middle school students towards the environment and related factors. In Turkey, the 12-year pre-university education comprises three steps; primary school education (the first 4 years), middle school education (the next 4 years), and high school education (the final 4 years). The study included the 5th, 6th, 7th and 8th graders attending three middle schools a city province, which were affiliated to Provincial Directorate of National Education and were selected using the simple random sampling method. The study population consisted of 1200 students, 720 of whom were included in the study sample. The study questions were as follows.

- 1- Are children aware of environmental problems?
- 2- What are children' attitudes towards the environment like?
- 3- What are the factors that affect children's attitudes towards the environment?

Of the students, those who volunteered to participate in the study and were able to read and

understand the survey questions were included in the study. Of them, those who did not agree to participate in the study or filled in the questionnaire inaccurately or partially were excluded from the study.

Data collection tools: The study data were collected with the Sociodemographic Characteristics Questionnaire and Environmental Attitude Scale

Sociodemographic Characteristics Questionnaire: The questionnaire was developed by the researcher in line with the relevant literature (Zengin & Kunt, 2013; Gokce et al., 2007; Erten, 2012; Genç & Genç, 2013; Kaya et al., 2009). The questionnaire consists of 14 items questioning the participants' sociodemographic characteristics such as age, year at school, gender, education level of parents, socioeconomic level and school achievements, and their opinions related to environment such as environmental issues which draw the participants' attention most, the most important current environmental problems, whether environmental issues are talked about in the family, what could be done individually to solve environmental problems, and names of the non-governmental organizations, associations or organizations aiming to protect the environment known by the participants.

Environmental Attitude Scale (EAS): The scale Children's Environmental Attitude and Knowledge Scale (CHEAKS) developed by Leeming et al. (1995), CHEAKS was derived from the 45-item scale developed by Maloney et al. (1975). Later, many items that were not applicable to primary school students were changed and new items were added. The final version of the scale consisted of 2 subscales: Attitude and Knowledge. The attitude subscale used to measure students' attitudes towards the environment included 36 items in 6 subdomains: animals, energy, pollution, recycling, water, and general issues.²³ In the original scale, of the 36 attitude items, while 9 are negatively connoted, 27 are positively connoted. The items are rated on a 5-point Likert scale. While the positive items are rated as 5 = Strongly Agree, 4 = Agree, 3 = Undecided, 2 = Disagree, 1 = Strongly Disagree, negative items are reverse scored as 5 = Strongly Disagree, 4 = Disagree, 3 = Undecided, 2 = Agree, 1 = Strongly Agree,

The CHEAKS was adapted into Turkish by Aslan et al. (2008) who performed its validity study in 2008. The Turkish version called Environmental Attitude Scale (EAS) has 24 items used to assess

elementary and middle school students' environmental attitudes.

The Cronbach's alpha coefficient which was 0.88 in the CHEAKS developed by Leeming et al. (1995) was 0.86 in the EAS developed by Aslan et al. (2008). The Cronbach's alpha reliability coefficient of the EAS was 0.90 in the present study.

Ethical Considerations: Before the study was carried out, ethical approval was obtained from the Scientific Ethics Committee Faculty of Medicine (date: 06/04/2017, a decision no: 2017/07-10). To conduct the study in the aforementioned schools, the necessary written permission was obtained from the Provincial Directorate of National Education. Verbal consent was obtained from all students. The data were collected from each class in a separate class hour (a class hour is 40 minutes) by the researchers using the Sociodemographic Characteristics Questionnaire and the Environmental Attitude Scale.

Statistical Analysis: In the analysis of the data, the SPSS 23.0 was used. In the evaluation of the sociodemographic data, numbers, percentages and arithmetic means were used. Whether the data was distributed normally was analyzed by using the Shapiro-W test. For the comparison of the numerical data in two independent groups, the Student's t test and Mann Whitney U test were used. The one-way ANOVA or Kruskal Wallis tests were used for the comparison of more than two independent groups. The relationships between categorical variables were tested with the chi-square test, and the relationships between the numerical variables were tested the correlation coefficient. P-values less than 0.05 were considered statistically significant.

Results

Of the participating students, 52.2% were female, 38.9% were fifth graders, 34.6% had a family income of \$370 to \$550 per month, 33.2% had high school graduate mothers, 31.4% had high school graduate fathers, 61.8% had homemaker mothers, 45.0% had fathers who were workers. Of the students, 52.8% stated that environmental issues were discussed at home. According to their statements, of the environmental issues, the ones which drew the students' attention most were the protection of animals (75.2%), afforestation (65.0%), keeping the environment clean (63.2%) and protection of forests (60.9%). According to the participating students' statements, the most important environmental problems were environmental pollution (65.9%), air pollution

(60.5%), water pollution (51.0%) and thinning or perforation of the ozone layer (47.1%). Of the organizations dealing with environment, the ones known by the students most were the Turkish Foundation for Combating Soil Erosion for Reforestation and the Protection of Natural Habitats (TEMA) (75.6%), Environmental Protection and Packaging Waste Recovery and Recycling Foundation (ÇEVKO) (26.9%) and Foundation for the Protection and Promotion of the Environment and Cultural Heritage (ÇEKÜL) (19.8%). According to the participating students' statements, not littering the environment (39.2%), keeping the environment clean (34.3%), afforestation (24.5%) and making efforts to raise environmental awareness (20.2%) were among the precautions to be taken to solve environmental problems individually (Table 1).

No statistically significant relationship was determined between the mean scores the

participants obtained from the EAS and the variables such as age, year at school, school achievements, family's monthly income, and occupation and education level of parents ($p > 0.05$). However, the relationship between their mean scores and the variables such as the school they attend, gender and having talks about environmental issues at home was statistically significant ($p < 0.05$) (Table 2).

While the mean score the students obtained from the Environmental Attitude Scale was 85.8518 ± 17.14000 , they obtained the lowest (3.2895 ± 1.18854) and highest (4.3172 ± 1.21386) mean scores from the 3rd (I would go from house to house to increase environmental consciousness) and 7th items (I turn off the water in the sink while I brush my teeth to conserve water) of the EAS, respectively (Table 3).

Table 1. Participating Students' Sociodemographic Characteristics

Characteristics	n (%)
Gender	
Girl	377 (52.2)
Boy	345 (47.8)
Grade	
5 th grade	281 (38.9)
6 th grade	160 (22.2)
7 th grade	177 (24.5)
8 th grade	104 (14.4)
Income	
≤ \$180	44 (6.1)
\$181- \$370	213 (29.5)
\$371 - \$550	250 (34.6)
\$551- \$725	181 (25.1)
≥ \$726	34 (4.7)
Mother's education status	
Illiterate	48 (6.6)
Primary school graduate	131 (18.1)
Middle school graduate	136 (18.8)

High school graduate	240 (33.2)
University	167 (23.1)
Father's education status	
Illiterate	35 (4.8)
Primary school graduate	96 (13.3)
Middle school graduate	150 (20.8)
High school graduate	227 (31.4)
University	214 (29.6)
Having talks about environmental issues at home	
Yes	382 (52.8)
No	340 (47.1)
Environmental issues which interest you most*	
Protection of animals	543 (75.2)
Afforestation	469 (65.0)
Keeping the environment clean	456 (63.2)
Protection and preservation of forests	440 (60.9)
Protection and preservation of water sources	387 (53.6)
Prevention of global warming	287 (39.8)
Reducing the use of electronic devices	147 (20.4)
Prevention of erosion	133 (18.4)
The most important environmental issues according to you*	
Environmental pollution	476 (65.9)
Air pollution	437 (60.5)
Water pollution	368 (51.0)
Global warming	316 (43.8)
Radiation	271 (37.5)
Thinning or perforation of the ozone layer	340 (47.1)
Non-governmental organizations dealing with environment *	

TEMA - Turkish Foundation for Combating Soil Erosion for Reforestation and the Protection of Natural Habitats	546 (75.6)
ÇEVKO - Environmental Protection and Packaging Waste Recovery and Recycling Foundation	194 (26.9)
ÇEKÜL - Foundation for the Protection and Promotion of the Environment and Cultural Heritage	143 (19.8)
DHKD - Turkish Wildlife Conservation Society	61 (8.4)
Green peace	45 (6.2)
What could be done to solve environmental problems individually?*	
Not littering the environment	283 (39.2)
Keeping the environment clean	248 (34.3)
Afforestation	177 (24.5)
Raising public awareness	146 (20.2)

*more than one answer possible

Table 2. Comparison of the Participating Students' Sociodemographic Characteristics and the Mean Scores they obtained from the Environmental Attitude Scale

Features	n	Mean± SD	F/t	p
Age				
10-11 years	249	86.3333±16.29533	.335	.716
12-13 years	350	85.8829±18.19397		
≥14 years	123	84.7886±15.74346		
Grade				
5 th grade	281	85.4840±16.86482	.904	.439
6 th grade	160	85.3375±18.68504		
7 th grade	177	87.6271±16.80696		
8 th grade	104	84.6154±15.93452		

School

A	235	86.9787±15.42045	3.593	.028
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B	188	82.9840±21.33248		
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C	299	86.7692±15.21403		
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Gender

Girl	377	88.2414±15.75249	10.300	.001
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Boy	345	83.2406±18.20499		
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Having talks about environmental issues at home

No	340	83.1647±18.40040	13.914	.000
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Yes	382	88.2435±15.57291		
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Table 3. The mean score the participating students obtained from the Environmental Attitude Scale and Cronbach's alpha levels

Items	Strongly Disagree n(%)	Disagree n(%)	Undecided n(%)	Agree n(%)	Strongly Agree n(%)	Mean \pm SD	Cronbach's Alfa
1. I would like to stop buying some products to save animals' lives.	72(10.0)	38(5.3)	108(15.0)	216(29.9)	288(39.9)	3.8449 \pm 1.27856	.898
2. To save energy, I would be willing to use dimmer lights.	60(8.3)	40(5.5)	50(6.9)	234(32.4)	338(46.8)	4.0388 \pm 1.22781	.898
3. I would go from house to house to increase environmental consciousness	71(9.8)	100(13.9)	275(38.1)	175(24.2)	101(14.0)	3.1870 \pm 1.14045	.901
4. I would like to write letters asking people to help reduce pollution.	52(7.2)	112(15.5)	221(30.6)	212(29.4)	125(17.3)	3.3407 \pm 1.14678	.899
5. I would go from house to house to teach people recycling.	61(8.4)	116(16.1)	234(32.4)	175(24.2)	136(18.8)	3.2895 \pm 1.18854	.900
6. I would like to talk to my parents about how I can help with environmental problems.	56(7.8)	56(7.8)	86(11.9)	231(32.0)	293(40.6)	3.8989 \pm 1.23496	.896
7. I turn off the water in the sink while I brush my teeth to conserve water.	58(8.0)	25(3.5)	30(4.2)	126(17.5)	483(66.9)	4.3172 \pm 1.21386	.896
8. To save energy, I turn off lights at home when they are not in use.	54(7.5)	34(4.7)	39(5.4)	179(24.8)	416(57.6)	4.2036 \pm 1.20509	.896
9. I ask my parents to recycle some of the things we use.	53(7.3)	67(9.3)	169(23.4)	236(32.7)	197(27.3)	3.6330 \pm 1.18575	.897
10. I ask others what I can do to help reduce pollution.	54(7.5)	94(13.0)	160(22.2)	231(32.0)	183(25.3)	3.5471 \pm 1.21073	.898
11. I do not let water run from the faucet when it is not necessary.	69(9.6)	26(3.6)	45(6.2)	154(21.3)	428(59.3)	4.1717 \pm 1.27751	.897
12. I separate things at home for recycling.	57(7.9)	80(11.1)	164(22.7)	243(33.7)	178(24.7)	3.5609 \pm 1.19860	.899

13. It frightens me to think of people's carelessness about the environment.	67(9.3)	83(11.5)	162(22.4)	211(29.2)	199(27.6)	3.5429±1.26028	.899
14. I get angry with polluters damaging the environment.	58(8.0)	50(6.9)	112(15.5)	231(32.0)	271(37.5)	3.8407±1.22768	.897
15. It makes me happy when people recycle used bottles, cans, and paper.	50(6.9)	35(4.8)	67(9.3)	205(28.4)	365(50.6)	4.1080±1.18566	.896
16. I get angry when I think about companies testing products on animals.	62(8.6)	44(6.1)	88(12.2)	165(22.9)	363(50.3)	4.0014±1.28201	.899
17. It makes me happy to see people trying to save energy.	51(7.1)	37(5.1)	63(8.7)	233(32.3)	338(46.8)	4.0665±1.18052	.897
18. I am not worried about if water runs unnecessarily.	405(56.1)	96(13.3)	53(7.3)	62(8.6)	106(14.7)	2.1247±1.51222	.915
19. I do not worry about environmental problems.	373(51.7)	128(17.7)	74(10.2)	58(8.0)	89(12.3)	2.1163±1.42799	.914
20. I am not frightened about the effects of pollution on my family.	358(49.6)	118(16.3)	93(12.9)	59(8.2)	94(13.0)	2.1870±1.44610	.913
21. I get upset when I see people throw away things that could be recycled.	130(18.0)	73(10.1)	130(18.0)	161(22.3)	228(31.6)	3.3934±1.46824	.901
22. It makes me sad to see houses being built where animals live.	110(15.2)	51(7.1)	76(10.5)	163(22.6)	322(44.6)	3.7424±1.46342	.899
23. It worries me to see how much energy is wasted.	67(9.3)	53(7.3)	101(14.0)	212(29.4)	289(40.0)	3.8352±1.28222	.898
24. It upsets me when I see people use too much water.	82(11.4)	48(6.6)	82(11.4)	48(6.6)	82(11.4)	3.8601±1.35044	.898
Total						85.8518±17.14000	.904

Discussion

Education is a factor which plays a key role in improving public's knowledge and awareness of issues affecting the future of a nation and the world (Esa, 2010). Due to the rapid growth of environmental problems, and living creatures' being in danger of extinction have drawn the attention to environmental education in recent years (Akinoglu & Sari, 2009). In the present study, it was determined that for most of the students, environmental pollution ranked first among environmental problems. While environmental pollution took the first place among the most important environmental problems in Oguz et al. (2011) and Yalcinkaya and Celikbas (2013) studies, in Demirbas and Pektaş (2009) study, almost half of the students regarded environmental pollution as the most important environmental problem.

In the development of environmental consciousness, non-governmental organizations have an active and important role (Seşen, 2015). In societies, volunteer organizations greatly contribute to attempts to bring environmental issues to the forefront of the agenda, and to create solutions to environmental issues and to raise environmental awareness of these issues (Erten, 2012). National and international organizations frequently emphasize the importance of environmental education in the enhancement of environmental awareness (Yalcinkaya & Celikbas, 2013). Therefore, in order to draw attention to environmental problems and decrease them as much as possible, a great number of volunteer organizations both in the world and in Turkey carry on their activities to raise environmental awareness. Turkish Wildlife Conservation Society (DHKD), Environmental Protection and Packaging Waste Recovery and Recycling Foundation (CEVKO), Foundation for the Protection and Promotion of the Environment and Cultural Heritage (CEKUL) and Turkish Foundation for Combating Soil Erosion for Reforestation and the Protection of Natural Habitats (TEMA) are some of these volunteer organizations in Turkey. In the present study, of these organizations, the ones known by the students most were the TEMA Foundation (75.6%) and CEVKO Foundation (26.9%). In their study conducted with university students, Oguz et al. (2011) found that in Turkey, the TEMA foundation was the most known non-governmental organization dealing with the environment, which was consistent with the

findings of the present study. In Kiper et al. (2016) study too, the great majority of the students (91.1%) knew the TEMA foundation whereas more than half knew the ÇEKÜL foundation. That the TEMA and ÇEKÜL foundations were the most known non-governmental organizations dealing with the environmental issues by the students might be due to the fact that these organizations are mentioned in their curricula.

The role of environmental education in the development of environmental consciousness and the evolvment of children's love of nature and environmental protectionism consciousness into permanent behaviors and life style is very important (Genc & Genc, 2013). In Turkey, although environmental education does not have a specific place in the curriculum of formal education, basic information about the environment is given to students within the scopes of different courses in the primary and secondary education programs (Sesen, 2015). In the present study, the mean score (85.85 ± 17.14) the students obtained from the Environmental Attitude Scale demonstrated that their attitudes towards the environment were positive. In study of Gok and Afyon (2015) attitudes students towards the environment were positive. It was also determined that the students obtained the lowest ($\bar{X}= 3.1870$) and highest ($\bar{X}=4.3172$) mean scores from the 3rd and 7th items of the Environmental Attitude Scale respectively (Gok & Afyon, 2015). However, in Aslan et al. (2008) study, the participants obtained the lowest mean scores from the items 12 and 5 related to recycling whereas they obtained the highest mean scores from the items 7 and 11 related to water saving. In Cetin Balci's (2012) study, the students obtained the highest scores from the items related to water saving (items 7, items 11) and the lowest scores from the items 3, 5 and 21 related to the teaching of recycling to other people. The results of the present study are consistent with the results of these two studies.

However, the results on the comparison of environmental attitudes in terms of gender varied from one study to another. In many studies conducted in our country, female students have more positive attitude towards environmental problems than male students (Yucel & Ozkan, 2014; Sonmez & Yerlikaya, 2017; Timur et al., 2013; Genc & Genc, 2013; Bostancioglu et al., 2017). In the present study too, female students displayed more positive attitudes towards environmental issues than did male students.

However, the results obtained in Aydin & Cepni (2012) and Aslan et al. (2008) studies were different from those of the aforementioned studies. In the former study, male students displayed more positive attitudes towards the environmental issues than did female students, whereas no significant difference was found between male and female students' attitudes in the latter study.

The socio-cultural features, living area facilities and development level of the students' place of residence also affect the students' opinions and attitudes about environmental problems. In study of Ocak and Ozpinar (2013) the thoughts of the students living in the city center are more positive attitudes towards environmental issues than the students who live in the districts, towns and villages. In this study, it was found that students studying at the school with low socio-cultural level had lower environmental attitudes.

In order to raise children who are sensitive to and conscious of environmental problems, families, educational institutions, educators and community leaders are expected to assume important responsibilities (Tesfaia et al., 2016). Environmental education first begins with the family at home pre-school period, then it is shaped in the close environment, and finally it is improved in educational institutions (Ocak & Ozpinar, 2013). In Bostancioglu et al. (2017) study, a significant correlation was determined between the environmental attitude scale scores and having talks about environmental issues in the family. In the present study, a significant relationship was determined between the scores the students obtained from the Environmental Attitude Scale and having talks about environment in the family.

Conclusions: At the end of the study, it was determined that the participating students generally displayed positive attitudes towards the environmental issues, and that they obtained the lowest ($\bar{X}=3.1870$) and highest ($\bar{X}=4.3172$) mean scores from the 3rd (I would go from house to house to increase environmental consciousness) and 7th items (I turn off the water in the sink while I brush my teeth to conserve water) of the EAS respectively. It was also determined that the female students and the students in whose families environmental issues were talked about displayed more positive attitudes towards the environmental issues. Given these results, it is recommended that studies to be conducted in the future on attitudes and behaviors towards the environmental issues

should include different sample groups, that cooperation should be established between relevant institutions, non-governmental organizations and the media to raise environmental awareness, that an adequate number of books and materials related to environmental education should be reached to target population, that training should be provided to teachers, school staff and students by public health nurses to gain them positive attitudes towards environmental protection and environmental issues, and that regular trainings should be given to the families by nurses in order to improve their sensitivity to the environment.

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