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Emphasizing local features for effective environmental education: Environmental attitudes of elementary school students living in ancient Halicarnassus (Turkey)

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Abstract
Ancient Halicarnassus, the site of the Mausoleum of Halicarnassus, has become famous since the 1980s as one of the major tourism centers of Turkey. Although the contribution of Ancient Halicarnassus to Turkey's economy increases as the number of tourists visiting the area increases, the area's historical, cultural and environmental values have been depleted. Ancient Halicarnassus still hosts the Mausoleum, but it does not get enough care it deserves as far as sustainable use of natural resource is concerned. Developing environmental education (EE) may enhance environmental attitudes among local people and is one potential way in which to help preserve Ancient Halicarnassus. Moreover, as suggested by Prof. Dubos in the United Nations Conference on the Human and Environment, developing positive environmental attitudes should begin at home. Therefore, this study attempted to define environmental attitudes among primary school children living in the ancient town, in line with the local features of the area, and to direct the attention of EE researchers and decision makers to the importance of local features in developing effective EE and a sustainable future. Environmental attitudes among primary school students in Ancient Halicarnassus were analyzed by means of grouping percent frequencies of each item of Environmental Attitude Questionnaire (EAQ) into 3 categories, "items agreed on", "items disagreed" and "items difficult to decide". It was found that it was easy for the participants to agree with general terms related to the environment. However, the participants found difficulty agreeing on items that require some background knowledge of environmental issues and those items related to the human- environment - development relationship. It was inferred, as a conclusion, that the reason the participants experience difficulty agreeing on such items is a lack of knowledge on environmental issues, which results in difficulty making a choice between environment and economy.

Key words: Environmental education, environmental attitudes, primary school students, Ancient Halicarnassus.

Introduction

History is the study of the human past. It is a field of research that examines and analyzes the sequence of events and sometimes attempts to investigate objectively the patterns of cause

and effect that determine events. Historians define the Mausoleum of Halicarnassus (near modern-day Ancient Halicarnassus in Turkey), as the grave of King Mausolus, the Persian satrap of Caria, whose large tomb was one of the Seven Wonders of the Ancient World. Ancient Halicarnassus, which is the site of the Mausoleum of Halicarnassus, has become famous since the 1980s as one of the major tourism centers of Turkey. Although the contribution of Ancient Halicarnassus to Turkey's economy increases as the number of tourists visiting the area increases, the area's historical, cultural and environmental values have been depleted. Ancient Halicarnassus still hosts the Mausoleum, but it does not get enough care it deserves as far as sustainable use of natural resources is concerned. The 2009 population census indicates that the population of Ancient Halicarnassus is 118,237 (Turkish Statistics Institute (TSI), 2009) and the population density is 168.3 persons/km^2. However, the population during the tourist season increases up to 800,000, resulting in stress on the environment. Moreover, the economic structure of Ancient Halicarnassus depends mainly on tourism; 80 % of the population is occupied directly in the tourism sector. Therefore, at first glance, it may appear difficult for the local people to choose between economy and environment. However, the increasing rate of tourism for the sake of economic gains and the lack of awareness among local people about vulnerable features of local nature and history may make the town a good case-study for historians to investigate the pattern of how the history and nature of millions years could be destroyed in decades. It is still possible to preserve the historical and environmental assets of Ancient Halicarnassus; one way is to develop environmental awareness among local people, especially primary school students aged 10 – 14 years, who constitute 7 % of the total population.

As Smyth reported in 2006, there was no difficulty about environmental education for our hunter-gatherer ancestors. Competence as an individual, as a member of a society, and as a dependent part of an ecological system, were the ultimate objectives of learning, and success was measured by survival. Since then, the course of human history has been one of increasing capacities to modify and control the environment. Personal and social competence remained the main objectives of education in support of this progress. The educational response has grown and developed, but the rate of environmental change is growing faster, while some aspects of education are very resistant to change. Developing environmental awareness and supporting positive attitudes toward the environment, beginning from the primary school level, may help to foster environmentally literate citizens and to build a sustainable future. This idea has already been supported by several international acts (Belgrade Conference on Environmental Education, 1975; the Tbilisi Intergovernmental Conference on Environmental Education, 1977; the Moscow Conference on Environmental Education and Training, 1987; the Toronto World Congress for Education and Communication on Environment and Development, 1992; The Declaration of Thessaloniki, 1997). Determining and evaluating environmental attitudes, therefore, is one of the major areas of environmental education (EE) research in determining a baseline. This is especially needed for countries like Turkey, where tourism is described as an "industry with no chimney" and depletion of natural resources may be ignored for the sake of development. Therefore, having an idea about the environmental attitudes of people provides important clues for the development of effective EE strategies, and many studies were conducted to determine people's environmental attitudes. A person with positive environmental attitudes is more likely to make lifestyle choices that are less harmfull to the environment (Tıkka, Kuitunen & Tynys, 2000).

As suggested by Prof. Rene Dubos (an advisor to the United Nations Conference on the Human Environment in 1972), the development of positive environmental attitudes should

begin at home. As Prof. Dubos favored, the creation of a World Order in which "*natural and social units maintain or recapture their identity, yet interplay with each other through a rich system of communications*". In the 1980's, Dubos held to his thoughts on acting locally, and felt that issues involving the environment must be dealt with in their "unique physical, climatic, and cultural contexts. Hence, the phrase "*Think Globally, Act Locally*" urges people to consider the health of the entire planet and to take action in their own communities and cities. The phrase refers to the argument that global environmental problems can find solutions only by considering ecological, economic, and cultural differences of local surroundings. However, there have been few studies conducted to explore the effect of using local environmental issues in EE. In this context, while most countries are still trying to find the most effective environmental education policy to apply within their schools, recent studies which focus on determining people's perceptions toward global versus local environmental issues are the one of the methods that can be used to develop an effective environmental education program for schools.

Layrargues (2000) stated that, within environmental education, educators can prioritize explanations of local problems which people face in their daily life. People may therefore be more willing to take action to fulfill their responsibilities to solve these local environmental problems. Layrargues added that global problems mostly seem far removed from daily real life, and so provide little motivation for action to solve them. Similarly, Duan & Fortner (2005) reported that Chinese college students gave more importance to local than global environmental issues, and considered local environmental issues to be more real to them than global ones. They were concerned about environmental issues that were related to their daily life. On the other hand, they did not care about environmental issues that were distant from their daily life. As Connell, Fien, Lee, Sykes & Yencken (1999) pointed out, "If it does not directly affect you, you do not think about it". Therefore, it may be said that focusing on local environmental issues in environmental education helps such issues become more meaningful to students. Fisman (2005) investigated the influences of an urban environmental education program on students' awareness of local environment in New Haven. The results suggested that consciously encouraging students to apply their environmental knowledge to their home environment may be an influential strategy to develop local environmental awareness. Furthermore, as Layrargues (2000) reported, Brazil's environmental education policy was based on the resolution of real environmental problems; educators in Brazil use real-life examples related to local environmental problems to encourage students to take responsibility for solving local problems they faced in their daily life. Similarly, Connell et.al (1999) investigated environmental attitudes of young people in two Australian cities, Melbourne and Brisbane, and found that respondents in both cities were mostly concerned about local environmental problems of pollution and urban development. Petegem and Blieck (2006) investigated young people's environmental worldviews using the revised "New Ecological Paradigm" (NEP) scale for children. A total of 524 children living in Zimbabwe aged 13-15 years old and 613 children in Belgium aged 13 years old participated in the study. Responses to the NEP scale showed clear differences in the perception of the human-nature interrelationship between Belgian and Zimbabwean students. Belgian students had more environmentally protective attitudes. Both the Belgian and Zimbabwean students were aware of humankinds' negative impact on nature. However, Zimbabwean students also emphasized human dominance over nature and believed that people can use nature to supply their needs. Belgian children in the study did not share this human dominance view of nature. Therefore, Petegem and Blieck (2006) reported that, in industrialized societies, people mostly reject progress and growth that result in environmental degradation. However, in less-industrialized societies, the distinction between the human dominant view and the ecology dominant view

may not be as distinct as in industrialized ones; people of less-industrialized societies may have a holistic view of the human-environment relationship. As research results showed, Zimbabwean students were also concerned with the adverse human influence on ecological systems and, at the same time, their responses showed they believe in limited human usage of nature. The authors explained the finding with Zimbabwean students as deriving from their nature-extractive tradition. The result of that study also showed the effect of cultural differences on children's worldviews. Sustainability emphasizes the importance of achieving a balance between environmental protection and using nature for human needs. Petegem and Blieck (2006) stressed the necessity of continuous educational support for young people to allow them to find different ways of supporting sustainability, to understand the main causes of environmental problems, and to find solutions for the conservation of remaining environmental assets. Moreover, Mutisya and Barker (2011) recommended as a result of their study with 276 8th grade students in the rural town of Narok in Kenya's Rift Valley that, EE policy shall be implemented so to empower schools (teachers and pupils) and surrounding communities to collaborate in taking action to conserve their immediate environments. The authors reported that, "*EE should be taught both theoretically in class and practically in the environment, providing solutions to local environmental issues*"(p.55). Trumper (2010) reached a similar conclusion as a result of the study realised with ROSE data related to students' perception on environmental issues. The author reported the importance of developing environmental science education programs based on each country's own cultural, educational, and economic context. This is compatible, according to the author, *"with a 'place based pedagogy" that promotes a narrative of local and regional politics adjusted to the particularities of where people actually live and linked to global development trends that impact local places "*(p.217).

Additionally, the present study also considered the role of gender in shaping students' environmental attitudes, since girls and boys have different socialization levels. In line with the related literature, females are socialized to be more altruistic, cooperative, nurturing, and interdependent, while males are socialized to be more independent and competitive (Zelezny et al., 2000). Bord and O'Connor (1997) reported that gender differences in environmental surveys resulted from differences in perceived vulnerability to risk from the environment, not necessarily differences in ecological sensibility. They stated that females expressed a higher level of concern in most of the research "in risk-related environmental issues" such as nuclear power, irradiated food, chemical and radioactive wastes, and food preservatives. Therefore, as the authors concluded, once risk to health and personal wellbeing become associated with environmental issues, females' levels of concern tend to exceed those of males. A similar finding was reported by Eisler et al. (2003), who found that girls had a more goal-oriented worldview and were more inclined to think about new ways of solving environmental problems, thus displaying more positive attitudes towards environmental issues compared to boys. The research conducted in Turkey consistently shows that girls exhibit more favorable attitudes towards the environment than boys (Alp et al., 2008; Ozden, 2008; Taskin, 2009; Tuncer et al., 2009; Yilmaz et al., 2004).

Therefore, in line with both the above summarized research and the current state of Ancient Halicarnassus, the aim of this study was to determine the environmental attitudes of elementary school children living in the ancient town in line with the local features of the area, and to direct the attention of EE researchers and decision makers to the importance of local features in effective EE and a sustainable future. In addition, the study examined the potential effect of gender on environmental attitudes for the purpose of directing attention to gender mainstreaming in shaping EE strategies.

Method

Sample

The sample of this study is comprised of elementary school students in Ancient Halicarnassus, Turkey. In 1997, the educational structure in Turkey was revised so that elementary education lasts 8 years, comprising Grades 1 to 8. The present study included 6th, 7th, and 8th graders enrolled in 8 public schools in Ancient Halicarnassus. Participating schools were selected randomly from 25 elementary schools in the town, where the total number of elementary school students is 14,163 and 6th to 8th grade students number 4,881. The number of students who completed the study questionnaire was 817 (n= 442 girls, n= 361 boys and n= 14 gender not provided). Therefore, the accessible population for the study is 5.8 %. The mean age of the participants was 13.02 years (St. Dev. =1.58) and ages ranged from 11 to 16 years.

It is found as a result of evaluating the answers given to the questions related to the parents' level of education and job status that, almost half of the mothers of the participants have a primary school degree (49.7 %) and do not work (64.1 %). Almost 62 % of fathers, on the other hand, have a primary school and secondary school degree, where 24.3 % are high school graduates. The participants' fathers are mainly self-employed (39 %) or work in the private sector (40.3 %).

Instrument

The present study used the Environmental Attitude Questionnaire (EAQ), originally developed by Herera (1992), adopted by Worsley and Skrzypiec (1998), and translated and adapted to Turkish conditions by Tuncer et al. (2005). The instrument is comprised of 4 dimensions (Tuncer et al., 2005) as, (1) General awareness of environmental problems (AEP), (2) General attitude towards solutions (GAS), (3) Awareness of individual responsibility and attitude through changing lifestyles (AIR) and (4) Awareness of national environmental problems (ANEP). The questionnaire comprises 45 items, which are scored using a 5-point Likert-type scale,

Analysis

The questionnaire responses were analyzed by means of grouping percent frequencies of each item of the EAQ into 3 categories as, "items agreed on", "items disagreed" and "items difficult to decide". The items were categorized as "agreed" if the percentage frequency for agreement was equal to or greater than 50 and that of "undecided" was smaller than 20. The items were categorized as "disagreed" on condition that the percentage frequency for disagreement was equal to or greater than 50 and that of "undecided" was smaller than 20. The items were categorized as "difficult to decide" on condition that the percentage frequency for agreement and "disagreement" was smaller than 50 and that of "undecided" was higher than 20.

The effect of gender on environmental attitudes was analyzed by means of considering the 4 dimensions of the questionnaire and by the use of an independent t-test, using gender as a categorical independent variable and environmental attitude as a continuous dependent variable.

Implementation

The questionnaire was administered in eight randomly selected elementary schools in Ancient Halicarnassus during the 2008-2009 academic year. Students completed the survey instrument in their classrooms, participation was voluntary and students' responses were considered

confidential. Students were informed about the research project by the 1st author of this study and were provided with an explanation sheet clarifying the purpose of the project and confidentiality. Teachers were generally not present in classrooms during implementation and the average time to complete the instrument was 30-40 minutes.

Result and Discussion

The frequencies presented in Table 1 show the items of the EAQ on which more than 50% of the participants are agreed, with 2 exceptions (items 20 and 8), Agreements shown in Table 1 indicate that it was easy for the participants to agree with the general terms related to environment. For example, almost 82 % of the participants agree that humanity should live in harmony with nature (item 2); 81 % agree with the idea that we must conserve our resources for future generations; and 75 % agree with the idea that there are many plant and animal species in our country that are at the edge of extinction. In contrast, there are other items that seem more difficult for the participants to agree with. These items can be defined in 2 groups: The first group of such items (items 12, 18, 33, and 22) requires some background knowledge on the environmental issues, such as the item related to causes of climate change (item 18) and loss of biological diversity (item 33). Therefore, it may be inferred that the reason why the participants have difficulties agreeing on such items is the lack of knowledge on environmental issues. The second group of items that was evaluated as being difficult to agree can be defined as the issues related to the human- environment - development relationship (items 20, 15, 7, 40, 19, 8, and 45). Within this group, items 20 and 8 are related to economic growth, development and environmental protection. In these items, the distribution of responses exceeds the criteria defined above (undecided by more than 20% of the participants) for the "items agreed" category. According to the frequencies for the "undecided" response to these items, it can be inferred that participants found it difficult to make a choice between environment and economy. Alternatively, this result may be because of the idea represented in those two items: It may not be feasible to force participants to make a strict choice between environment and economy; instead, the items may be revised/sharpened in line with the concept of sustainability. Item 20, for example may be re-phrased as; "*Turkey needs to be industrialized, therefore every investment should be evaluated for the sake of its environmental, economic and social impacts before it is implemented*". Among the rest of the items in this group, item number 19 deals with consumption patterns and environmental degradation; as the percentage frequency response shows, it was difficult for the participants to either accept or reject this idea. The reason for such an attitude, failing to make a relation between environmental problems and lifestyles or living habits, is presently an important concern for environmental education research and potential solutions must be sought within the environmental education context itself. This result, actually supports the statement made by Gurevitz (2000), that ecological concepts alone shall not be accepted as environmental knowledge, and greater emphasis must be given to the affective domain together with the cognitive domain. Similarly, Hungerford and Volk (1990) pointed out the insufficiency of environmental education programs for resolving environmental problems. This insufficiency may stem from various reasons, including the focus of these educational programs. Most of the curricula and educational materials used in environmental education programs were designed to address an understanding of basic ecological concepts rather than developing higher-order cognitive skills such as investigation, evaluation, and citizenship participation; and considering affective skills such as developing moral values and making ethical choices to enhance environmentally responsible behaviors of students (Pomerantz, 1991; Volk, 1983). Therefore, environmental education programs whose focus is limited to basic ecological knowledge and awareness have struggled to achieve the ultimate goal of environmental education.

Table 1. Items agreed with: percentage frequencies

Item no	Item	Frequency (%)			
		Agree	disagree	Undecided	don't know
2	Humanity should live in harmony with nature.	81.8	9.3	7.1	1.7
14	We must conserve our resources for future generations.	80.6	10.4	7.1	2
26	As population increases in big cities like İstanbul, İzmir, and Ankara, the environmental problems also increase.	77.9	8.8	10.9	3.2
27	Erosion and desertification are types of environmental problems.	77.8	8.1	10.4	3.7
24	Individual responsibilities are very important in preventing environmental pollution.	77.6	11.4	6.6	4.4
23	There are many plant and animal species in our country that are at the edge of extinction.	75.1	12.8	7.7	4.5
35	Environmental pollution has harmful effects on human health.	73	14.9	8.6	3.4
25	The hole in the ozone layer will never stop growing if we continue to operate as we do now.	72.1	10.2	9.4	8.3
44	Economical use of water and energy is important for the sustainable use of natural resources.	71.2	10.7	11.3	7
20	Turkey needs to be industrialized, therefore environmental destruction due to industrialization can be ignored.	68.1	44.3	23.5	4.5
15	Fast food consumption is harmful for both our health and nature.	62	19.2	13	5.8
12	It is increasingly likely that a nuclear accident will contaminate the environment.	61.1	17.7	12.7	8.6
28	Humanity is abusing the environment.	60.7	17.7	13.7	7.8
7	The ultimate solution for environmental problems depends on drastic changes in our lifestyles.	60.4	14.2	17	8.3
40	Society should encourage the conservation of nature.	59.7	13.7	17.7	8.9
18	Exhaust gases produced by automobiles cause climatic changes.	58.7	17.2	13.3	10.9
33	Extinction of dinosaurs was due to natural causes, but decreasing numbers of sea turtles is caused by humans.	55.3	15.7	15.8	13.2
22	Storing nuclear waste is too dangerous.	55.1	14.2	14	16.8
19	If we do not change our current consumption patterns, land degradation and topsoil losses will increase to the point where they can no longer support crops.	55	14.9	18.6	11.5
8	Protection of the environment is more important than economic growth.	53.7	15.2	21.9	9.2
45	Everybody has a part in environmental degradation but it varies according to individual consumption patterns.	52.9	12.4	18.5	16.3

"Disagreed" items, presented in Table 2, support the idea presented for the "agreed" items above, namely that it was easy for the participants to disagree with the general terms related to reasons, current state and general results of environmental pollution (items 4, 1, 6, 3, 16, 10, 34). However, for the items related to the use of natural resources (items 29 and 37), participants are seemed to hardly disagree and (in response to item 36), more than 20% of the participants living in Ancient Halicarnassus, just at the Aegean Sea coast, regards marine pollution as a natural event, as well as almost 15% of them not recognizing population increase as one of the reason for environmental pollution (in response to item no. 34).

Remanding the local features of Ancient Halicarnassus, as having vulnerable natural and historical values, experiencing an extreme population increase during tourism seasons and having no means of economic income other than tourism, the most important attitude expected from the young people is to be aware of and to have a strong feeling related to their responsibility to protect these resources. The only way to tackle this inadequacy, in which children do not having a positive attitude toward environmental problems, especially marine pollution, is therefore to strengthen environmental education implementations in the town.

The reason for the insufficiency of some of the environmental education programs, on the other hand, may be given as problems related to their objectives. It was seen that most of the curricula and educational materials used in environmental education programs were designed to address basic knowledge of ecological concepts rather than more higher-level educational goals such as investigation, evaluation or citizenship participation so that lessons are able to encourage environmentally responsible behaviors in the society (Volk, 1983). Therefore, it can be concluded that environmental education programs whose focus is limited to environmental knowledge and awareness are not sufficient to achieve the ultimate goal of environmental education, which is to educate environmentally responsible citizens (Leeming, Dwyer, Porter & Cobern, 1993).

Table 2. Items disagreed: percentage frequencies

Item no	Item	Frequency (%)			
		Agree	Disagree	Undecided	Don't know
4	There is no environmental pollution in Turkey.	7.6	85.8	4.8	1.8
1	Environmental pollution is not at the dangerous level all over the world.	14.10	77.2	7.7	1
6	Mankind is very adaptive so there is no need to be concerned about human survival in a polluted environment.	10.1	71.3	12.7	5.9
3	Environmental pollution is a temporary problem.	15.8	67.6	15.5	4
16	Environmental problems have always existed & been solved, so there is no need to worry about the future.	10.6	67.6	14.8	7.1
10	Environmental protection is a governmental responsibility.	20.4	66.2	9.7	3.7
34	Environmental pollution is not related to population growth.	14.5	66.2	12.5	6.7
29	Turkey is rich in natural resources; therefore it is not possible to use them up.	11.8	60.6	17.3	10.3
36	Marine pollution is a natural event.	21.8	60.4	11.5	6.4
39	Over the next ten years environmental problems will diminish.	15	55.1	17.5	12.4
41	Consumption patterns are not related to natural resources depletion.	14.7	52.4	21.2	11.8
37	The natural sources of energy, such as sun, wind and water, can never be exhausted, so energy will never be scarce on earth.	15.6	54.3	18.7	11.3

Study participants had far most difficulty in deciding interrelations between environment, development, life styles, consumption patterns, the role of science and technology, and sustainable uses of natural resources (Table 3).

The distribution of answers given to the items related to science and technology as a reason and solution to environmental problems (items 11, 17, 21, and 11), for example, may be

accepted as another indication of the need to reconsider current environmental education practice within primary schools in Turkey. A similar result was found by Littledyke (2004), who examined children's views on science and environmental issues. That study found that students mostly did not view science as an important issue in society or as a factor in environmental issues. Students mostly viewed science as an approach to learning. For environmental issues, younger students mostly saw environment as a living place for animals; Older children mostly thought about the environment in terms of transport and pollution. Vaske and Kobrin (2001), on the other hand, examined the effects of attachment to a local natural resource on environmentally responsible behavior in a person's daily life. They worked with young people aged 14-17 years old. They found that if people develop an emotional connection to their local natural resources, they feel greater responsibility toward their environment and so behave more responsibly in their daily activities. Similarly, Cullinford (1996) reported that young people's view of the environment changed according to their personal experiences related to environmental issues. It was suggested that if young people experience pollution in their environment, they would think of the environment in terms of pollution (cited by Loughland et al., 2002, p. 188). Most recently, Uittlo et al. (2011) explored the relationship between students' interests in environmental issues, attitudes to environmental responsibility and biocentric values in school science education. The factors were investigated within the framework of three moderators: gender, school and residential area of the school. The survey was carried out using the international ROSE questionnaire with ninth-grade students (N = 3626) from 68 schools. The authors found significant correlations between the attitude and value factors and interest and attitude, whereas the correlation between interest and value was negligible. Attitudes among girls were found to be significantly more positive and their biocentric value stronger than those among boys; In terms of interest, the gender difference was small. The effect of residential area was found to be negligible, but there were significant differences between schools in all the factors studied. It was concluded that the role of interests, attitudes and values in teaching environmental issues are important fields for future research in science, environmental and sustainability education. Moreover, such concern has also been discussed very recently by Kim (2011), who examined views on science and technology among 86 South Korean sixth graders from Seoul, a highly urbanized city. A drawing and writing activity and an open-ended questionnaire were administered for data collection. Kim (2011) concluded that the children's views were grounded in optimistic and positive expectations and visions of science and technology, even as some of the children showed awareness and concern about environmental destruction. However, students also offered contradictory views toward social development and environmental destruction. The author discussed these findings in light of the complex meanings of development in modern Korean society and the challenges teachers there may face in cultivating sustainable views and relations via science and environmental education.

Research on environmental attitudes of primary school students in Turkey reported similar findings to the current study. For instance, Yılmaz, Boone & Anderson (2004) used the Attitude toward Environmental Issue Scale to investigate the views of 4th to 8th-grade students about 30 environmental issues that are emphasized in the current Turkish science curriculum. According to results of the study, Turkish students gave more importance to economic growth and industrialization than environmental protection. The researchers suggested that if the inquiry teaching method is used more effectively and efficiently in science classes, students may understand these concepts more clearly and think about environmental and economic issues in more detail. They highlighted the importance of collaboration among different stakeholders to develop more effective science education and environmental education in Turkey. In 2005, Tuncer, Ertepınar, Tekkaya & Sungur

investigated the effect of school type and gender on environmental attitudes among 1497 private and public school students in grades 6 to 10. It was found that students who attended private schools had more positive attitudes toward environmental issues. This finding was explained by the different financial, physical and functional conditions in such schools. One of the important study findings was that, although young people believe in the significance of environmental conservation, they were not able to integrate environmental conservation and economical development. The researchers also claimed that students were undecided between environmental protection and economical growth or profits and disadvantages of technology. In addition, Tuncer et al. (2005) stated that students were unable to comprehend the relationships between lifestyles and concern for the environment. According to the authors, the students accepted the importance of individual responsibility and the need to change lifestyles to protect the environment, but they did not seem to know what this meant in practice. Thus authors stated that environmental education courses should be designed to include both natural environment and cultural, technical, constructed and social environments. Tuncer, Sungur, Tekkaya & Ertepınar (2005) made a similar conclusion in a study examining the attitudes of young people towards sustainable development. They concluded that young people did not see environmental pollution as a temporary problem and they were concerned about environmental problems and nature.

Table 3. Items difficult to decide on: percentage frequencies

Item no	Item	Frequency (%)			
		agree	disagree	Undecided	don't know
9	We are overloading the Earth's natural ability to support life on earth	23.6	22.4	31	23
11	The benefit of technology is greater than its harmful effects.	34.4	28.6	29.1	7.8
5	Industrialized societies give most people who live in them a high standard of living.	33.8	17.6	28.4	19.7
13	The world authorities will find ways to decrease population growth, so over-population will not be problem in the future.	16.9	37.5	26.4	19.2
43	The sustainable use of natural resources means the continuous use of them.	32.8	23.2	25.9	18.1
31	Spending long times in shopping centers is a type of lifestyle that has negative effects on both consumption patterns and the exploitation of natural resources.	35	23.7	25.7	15.7
17	Science and technology are advancing so rapidly that it will be always in control of any environmental problems that arise.	20.8	27.6	25.1	12.4
42	The solution to environmental problems in Turkey is closely related to raising environmental awareness.	46.1	13.8	24.2	15.8
21	Just as science and technology monitor environmental problems, they also solve them, so such issues will not be causes for concern in the future.	16.8	48.3	22	12.9
30	We can accept lifestyle changes to protect natural resources.	48.8	18.5	19.2	13.5
32	We should exploit current resources for the benefit of our own generation	42.4	35	16.9	5.8

Young people were not able to make a correlation between economical growth and industrialization but, at the same time, instead of expecting environmental solutions only from science, technology and the government, they highlighted the importance of taking individual responsibility to protect the environment. As a result, it was concluded that, "despite their

positive attitudes, the young people are not equipped to identify a relationship between environmental issues and living habits. This single finding could have an important implication that education, in its traditional forms, is not sufficient to meet the immense challenge posed by the phenomenon of unsustainable living. As far as course contents are concerned, EE should go beyond nature and environmental protection and should cover both the natural environment and the cultural, technical and social aspects" (p. 192). In a similar study, Alp, Ertepınar, Tekkaya & Yılmaz (2006) conducted a study to determine 6th, 8th and 10th grade students' environmental knowledge and attitudes in Turkey. Data were obtained from 1977 students attending 22 schools in urban areas. The results showed that all students' environmental knowledge on basic environmental issues was low for both elementary and high school level. The cause was explained as inadequate emphasis on environmental issues within the formal science curriculum in Turkey. On the other hand, all students had positive attitudes toward the environment, but decreased by grade level. As a result, Alp, Ertepınar & Tekkaya (2006) emphasized the importance of activity-based science classrooms in developing students' role in protecting the environment and solving environmental problems.

Consequently, the importance of emphasizing local environmental issues within general EE policies is a globally accepted consideration for EE, being a stronger actor to address environmental pollution and promote a sustainable future. Rene Dubos' phrase "think globally and act locally" explains the main focus of many international conferences about EE. One of the guiding principles of the Belgrade Charter emphasized that EE should examine major environmental issues from a global perspective, but should also incorporate regional differences. In the Belgrade Charter and World Summit 2002, one of the main principles of EE was explained as promoting the necessity of local and national cooperation in the solution of environmental problems. Therefore, educators and researchers should focus more on local environmental issues for effective EE implications. Moreover, as Resor (2010) reported, so called "place-based education" is a growing trend in education, which needs to be researched for applications of EE.

Gender Effect

The effect of gender on the students' environmental attitudes was investigated by considering 4 dimensions of the EAQ, as stated above. Before the analysis, the data was checked and confirmed for normality (except a few extreme outliners, which were omitted before the analysis), by means of Q-Q plots, histograms and box plot. Equality of Variances were also checked by means of the "Levene test for equality of variance" and populations were found to have equal variances for each dimension ($p > 0.005$). Table 4, below, presents the results of independent t-test for the 4 dimensions of the questionnaire according to gender.

According to the mean values displayed in Table 4, male students displayed significantly more positive attitudes towards environmental problems ($\overline{X} = 32.09$) compared to female students ($\overline{X} = 30.66$) ($t(807) = -3.33$; $p < 0.005$). Thus, in the present study, students' attitudes towards environmental problems differ according to gender.

Although male students display more positive attitudes toward solutions for environmental problems ($\overline{X} = 44.16$) compared to females ($\overline{X} = 44.00$), the gender difference was not significant, $t(805) = -.283$ $p > 0.005$. However, when awareness on individual responsibility was examined, it was found that female students display a significantly higher mean score ($\overline{X} = 39.88$) compared to males ($\overline{X} = 37.56$). In other words, students' awareness on individual responsibilities related to environmental problems differs according to gender.

No significant gender difference was found in the students' awareness of national environmental problems (t (875) = .737 p <0.005). Thus, gender is not one of the factors shaping students' awareness of national environmental problems.

Overall, students' environmental attitudes differ between genders according to the dimensions of the EAQ: Although females seemed more aware of individual responsibilities, males seemed more decisive on the general attitudes towards environmental problems.

Table 4. Independent t-test scores for AEP, GAS, AIR, ANEP according to gender

	Gender	**N**	$\overline{X}$	**SD**	**df**	**t**	**P**
General attitudes toward environmental problems (AEP)	Female	443	30.66	5.96	807	-3.33	.001**
	Male	336	32.09	6.17			
General attitudes toward solutions (GAS)	Female	442	44.00	7.81	805	-.283	.777
	Male	365	44.16	8.49			
Awareness of individual responsibility (AIR)	Female	442	39.88	8.03	805	4.000	.000**
	Male	365	37.56	8.39			
Attitudes on national environmental problems (ANEP)	Female	443	16.71	3.34	807	.737	.461
	Male	336	16.53	3.49			

The results of this study related to the effect of gender on the general attitudes of students toward the environment are consistent with those obtained by Cavas et.al (2009). The authors explored 9th grade Turkish students' views on environmental challenges and found as a result that, there was a significant gender difference with respect to attitudes toward the environment and interest in learning environmental protection; while, girls tended to have more favourable attitudes toward the environment, boys appeared to express higher interests in learning environmental protection. Moreover, as Eisler et al. (2003) reported, female students living in Ancient Halicarnassus may also have a goal-oriented worldview and may be more inclined to think about new ways of solving environmental problems and thus express positive attitudes towards assuming individual responsibilities; or, as Zelezny et al. (2000) reported, female students in Ancient Halicarnassus may be socialized to be more altruistic, cooperative, nurturing, and interdependent, thus being aware of their individual responsibilities as future citizens. Whatever the reason for the differing attitudes of males and females, the connection between history, nature and people is so strong that it should not be overlooked today and in the future. Cevat Sakir, who was to become the great raconteur of Turkish literature under the name "Fisherman of Halicarnassus," tells the story of his forced march in his memoirs: "On a curve of the road, he reminisces, the sea "cracked upon the horizon without warning like a vast blue thundering infinity." The sea dominated the town, where it "infiltrated through alleys and courtyards with a shimmering, transparent light." It "sparkled to an incomprehensible depth, full of yearning and beauty and terror." The air was "dry and bright, as if lit by an inner light." The town was "modest and dazzling white, with straight lines that cut the sky's blue with knife-like precision." People lived close to the basics of existence with simple direct passions and the distilled wisdom of countless civilizations."

Conclusions and Recommendations

The present study evaluated environmental attitudes among primary school students in Ancient Halicarnassus in Turkey and found a need to emphasize local features in ensuring effective EE. Although the results are similar to those of previous studies, as far as the students' attitudes toward environment are concerned, the study is significant because it analyzed environmental attitudes among primary school students living in a world heritage site, where environmental protection is currently secondary to economic considerations.

Therefore, the current study underlines the need for constructing and revising EE practice in such places to consider, in particular, the sustainable use of natural resources, local economy and attitudes of local people, especially young people, who are accepted as future decision makers. We recommend, therefore, that EE implementations in such areas should incorporate the results of similar research; such as, in places where the local economy relies solely on agriculture and where pollution due to agricultural activities constitutes a threat, the content of EE may aim to enhance students' attitudes related to environmental pollution and agricultural activities, etc.

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