Elementary School Students' Knowledge about Environmental Issues in Turkey

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Abstract
The capitalist lifestyle and the economic understanding, which are widespread throughout the world today, threaten the natural life and the world by spreading every passing day. Individuals' approaches towards the environment, their knowledge levels and behaviors play important roles in the increase of environmental problems. The change of behaviors necessitates the change of attitudes, knowledge and value judgments. The emergence of positive attitudes and value judgments towards the environment is possible through environmental education. In this research, which examines the elementary school second grade students' knowledge levels about several environmental issues; it was determined that while their knowledge levels about some issues are adequate, their knowledge levels about some others are inadequate.

Introduction
The social and economic understanding of human beings threatens the natural life. The human intervention in nature has peaked after scientific and technological advancements (Kılıç, 2008). For centuries, the humankind used natural resources limitlessly and tried to extract the maximum benefit from them in order to survive and satisfy his needs and expectations (Mert, 2006).The capitalist lifestyle and the economic understanding, which are widespread throughout the world today, threaten the natural life and the world by spreading every passing day. Approximately one quarter of all people around the world possess the high living standards provided by the capitalism. The rest of the world population, on the other hand, strives for increasing their living standards. This inevitably means further consumption of the world's natural resources both in developed and developing countries and the pollution of the world more (Kılıç, 2008).

Many environmental problems that we face today are caused by problems such as increased population, uncontrolled urbanization, global warming, breakdown of the natural life, thinning and depletion of the ozone layer, greenhouse effect, increase in solid wastes, nuclear pollution, decrease of green areas and extinction of plant and animal species (Erten, 2003; Ministry of Environment and Forest, 2004). These problems do not stem from the nature itself but from human behaviors (Kılıç, 2008). The human beings' understanding of the environment plays a significant role in the increase of environmental problems (Koavel, 2004). In front of this negative picture of environmental problems, individuals' environmental knowledge and behaviors need to be questioned more (Kılıç, 2008). Ethical approaches, which not only guide human behaviors but also question these behaviors, should be of an environmentally-friendly character (Kılıç, 2008). Therefore, individuals have to do their parts in order to find solutions to environmental problems as soon as possible.

Today, environmental problems can not be solved only through technology or laws. The solution of these problems is only possible through the change of individual behaviors. The change of behaviors necessitates the change of attitudes, knowledge and value judgments. The emergence of positive attitudes and value judgments towards the environment is possible through environmental education (Erten, 2004). In this context, environmental education seems to be the most appropriate way to make people conscious of their responsibilities and enable them to participate in the solution of the environmental problems they create (Doğan, 2007). Undoubtedly, environmental education is the most important and effective solution to remove the existing problems and prevent others from happening (Koavel, 2004). Education for environment, as a whole, can be defined as the process of creating a world society that is conscious of the environment and the problems related to it, and that possesses the knowledge, attitudes, behaviors, motivations and skills to contribute to the removal of the existing problems and the prevention of potential ones (Ayvaz, 1998). The main objective of the environmental education is to encourage all individuals passing through the process of education to exhibit responsible behaviors on the issue of environment and to have knowledge, skills and value judgments on this issue (Doğan, 2007).

In today's world, the development and popularization of a clean and sustainable environmental protection is among the inevitable priorities of education. The transformation of the received education into behaviors and attitudes will be a significant force in the protection of the environment (Şahin and Gül, 2009).Environmental education starts in the family and continues throughout the life not only through the formal training but also through various media organs (brochures, journals, newspapers, books, radio etc.); through knowledge acquisition from the internet, panels, conferences and symposia; and through observations and evaluations in activities such as zoo and museum trips and nature walks (Gezer et al., 2008). The earlier the environmental education begins, the more beneficial the results are, since the interests and attitudes that are formed in the pre-school and school periods underlie the future desired behaviors. The value judgments and attitudes formed especially in childhood and adolescence are very important in the development of empathy in relationships with the nature and the emergence of love towards the nature at early ages (Erten, 2003). Environmental education should start at the pre-school period and continue during the elementary education in order for people to acquire knowledge, consciousness and positive attitudes towards the nature (Uzun and Sağlam, 2007).

Students are generally open to learning at this period and they possess the required motivation. Besides, the knowledge acquired during these ages becomes permanent. Individuals should be provided with the environmental consciousness before coming to university (Meydan and Doğu, 2008) Various legal regulations have been made and the protection of the environment has been accepted as a civic duty in Turkey against the increasing environmental problems. The protection of the environment and the removal of the environmental problems are possible through the acquisition of an accurate environmental consciousness. This will be possible through an effective, practical and behavior-changing environmental education to be provided at schools. Therefore, the change of environmental attitudes and knowledge is among the priorities of this education. In this research, the aim is to examine elementary school second grade students' knowledge levels about the environment, and then, to provide suggestions to improve students' knowledge related to the environmental protection.

Method

This research was carried out in “Inonu Elementary School” in the Polatli District of Ankara. The students who were included within the scope of the research were selected randomly from students enrolled in the 7^{th}, 8^{th} and 9^{th} grades of this school. The research was based on voluntariness, and a total of 150 students -62 girls and 88 boys- were included within the scope of the research. The data of the research were collected through face-to-face interviews. The data obtained after the research were analyzed through the Chi-Square (X^2) analysis in the SPSS Win 11 software (Sümbüloğlu and Sümbüloğlu, 1994).

General Information about the Children

Of the students included within the scope of the research, 41,3% are females and 58,7% are males. While 6^{th} graders (58,0%) are in majority among girls, 7^{th} graders (74,0%) are in majority among boys. Among both genders and among all grades, those who reported that both of their parents have education levels of “elementary school or less” are in majority. Of both girls and boys (female: 53.2%, male: 53.4%) and of students from all grades (6^{th} grade :58.0%, 7^{th} grade: 52.0%, 8^{th} grade: 50.0%), approximately half live in families of four-five.

Finding

General Knowledge Regarding the General Environmental Problems

Students were asked to evaluate the five expressions, which were given to them in order to assess the students' knowledge levels about the general environmental problems, by giving the answers of “I agree”, “I disagree”,

"I don't know". Table 1 demonstrates that the knowledge levels of most of the students about environmental problems are high. When considered both generally and according to students' grade levels, the expressions with which the students reported that they agree most are the following: "the destruction of forests is an important threat that has a negative impact on life" (92%) and "the rapid population growth is an important factor in the emergence of environmental problems" (87,3%). As the grade level increases, the rate of those who reported that they agree with the expressions "erosion is one of the most important problems of Turkey" and "the destruction of forests is an important threat that has a negative impact on life" increases.

Although students' knowledge levels about environmental problems seem to be high, the total rate of those students who responded as "I disagree" and "I don't know" to the expressions "erosion is one of the most important problems of Turkey" (I disagree: 19.3%, I don't know: 6.0%), "The insensible use of the existing resources is an important issue in the development of Turkey" (I disagree: 6.0%, I don't know: 18.7%), "Thousands of trees are cut down for paper napkins that are used once and thrown away" (I disagree: 13.3%, I don't know: 9.4%) is substantial.

Table 1. The Students' Knowledge About General Environmental Problems

Expressions related to general environmental problems	GRADE LEVELS																							
	6th Grade (n=50)						7th Grade (n=50)						8th Grade (n=50)						TOTAL (n=150)					
	I agree		I disagree		I don't know		I agree		I disagree		I don't know		I agree		I disagree		I don't know		I agree		I disagree		I don't know	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
The rapid population growth is an important factor in the emergence of environmental problems	46	92.0	-	-	4	8.0	42	84.0	1	2.0	7	14.0	43	86.0	1	2.0	6	12.0	131	87.3	2	1.3	17	11.4
The insensible use of the existing resources is an important issue in the development of Turkey	38	76.0	6	12.0	6	12.0	36	72.0	3	6.0	11	22.0	39	78.0	-	-	11	22.0	113	75.3	9	6.0	28	18.7
Erosion is one of the most important problems of Turkey	32	64.0	13	26.0	5	10.0	39	78.0	8	16.0	3	6.0	41	82.0	8	16.0	1	2.0	112	74.7	29	19.3	9	6.0
The destruction of forests is an important threat that has a negative impact on life	45	90.0	1	2.0	4	8.0	46	92.0	2	4.0	2	4.0	47	94.0	1	2.0	2	4.0	138	92.0	4	2.7	8	5.3
Thousands of trees are cut down for paper napkins that are used once and thrown away	42	84.0	5	10.0	3	6.0	32	64.0	12	24.0	6	12.0	42	84.0	3	6.0	5	10.0	116	77.3	20	13.3	14	9.4

Knowledge Regarding Water Pollution and Water Saving

Table 2 demonstrates that the rate of students who agree with the expressions "our water resources are being polluted each passing day due to domestic and industrial wastes" and "the insensible use of pesticides and fertilizers causes both soil and water pollution" is very high, both generally and in the 6th, 7th and 8th grades individually.

As the grade level increases, the rate of agreeing with these two expressions increases. The issue that students have the lowest knowledge level regarding water pollution and water saving is that "synthetic detergents affect the water quality and render it unusable by polluting water resources" (I don't know: 21.4%; I disagree: 13.3%).

Knowledge Regarding Energy Saving

When considered both generally and according to grade levels, the most notable expressions among the expressions with which students reported that they agree indicated in Table 3 are "electrical devices should be turned off when not in use in order to save energy" and "regular cleaning and maintenance of electrical devices provides energy saving".

It is highly notable that the rate of students who reported that they either disagree with or do not know about the expressions "Using economical lamps provides energy saving" (I disagree: 18.0%, I don't know: 23.3%), "using partial lighting instead of general lighting while working provides energy saving" (I disagree: 26.7%, I don't know: 13.3%), "for the door of the refrigerator to remain open for long increases the amount of consumed energy" (I disagree: 20.0%, I don't know: 16.0).

Knowledge Regarding the Environmental Problems Created by Wastes

Those students who reported that they agree with the expressions related to wastes are in majority among the participant students. However, the total rates of those who responded as "I disagree" or "I don't know" to all expressions related to the subject were found to be very high. For example; for the expression "products with recyclable packages should be preferred while shopping", 26,0% of the students reported that they don't know about and 17,3% of them reported that they disagree with. When the subject was examined according to the grade levels; it was observed that as the grade level increases, the rate of students who agree with the expressions "using plastic items is harmful not only for our health but also for our environment", "the destruction of forests and the environmental pollution are prevented by recycling waste paper", "products with recyclable packages should be preferred while shopping" increases (Table 4).

Table 2. The Students' Knowledge About Water Pollution and Water Saving

Expressions related to water pollution and water saving	GRADE LEVELS																							
	6th Grade (n=50)						7th Grade (n=50)						8th Grade (n=50)						TOTAL (n=150)					
	I agree		I disagree		I don't know		I agree		I disagree		I don't know		I agree		I disagree		I don't know		I agree		I disagree		I don't know	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Our water resources are being polluted each passing day due to domestic and industrial wastes	41	82.0	5	10.0	4	8.0	42	84.0	4	8.0	4	8.0	43	86.0	-	-	7	14.0	126	84.0	9	6.0	15	10.0
Synthetic detergents affect the water quality and render it unusable by polluting water resources	31	62.0	8	16.0	11	22.0	31	62.0	5	10.0	14	28.0	36	72.0	7	14.0	7	14.0	98	65.3	20	13.3	32	21.4
The insensible use of pesticides and fertilizers causes both soil and water pollution	41	82.0	3	6.0	6	12.0	42	84.0	5	10.0	3	6.0	44	88.0	2	4.0	4	8.0	127	84.7	10	6.7	13	8.6
Waste of water is an environmental problem as much important as water pollution	42	84.0	4	8.0	4	8.0	36	72.0	8	16.0	6	12.0	42	84.0	6	12.0	2	4.0	120	80.0	18	12.0	12	8.0
The waste of water can be prevented by repairing malfunctioning faucets	33	66.0	10	20.0	7	14.0	29	58.0	12	24.0	9	18.0	40	80.0	9	18.0	1	2.0	102	68.0	31	20.7	17	11.3

Table 3. The Students' Knowledge about Energy Saving

Expressions Related to Energy Saving	GRADE LEVELS																							
	6th Grade (n=50)						7th Grade (n=50)						8th Grade (n=50)						TOTAL (n=150)					
	I agree		I disagree		I don't know		I agree		I disagree		I don't know		I agree		I disagree		I don't know		I agree		I disagree		I don't know	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Electrical devices should be turned off when not in use in order to save energy	32	64.0	8	16.0	10	20.0	37	74.0	6	12.0	7	14.0	37	74.0	4	8.0	9	18.0	106	70.7	18	12.0	26	17.3
Using economical lamps provides energy saving	28	56.0	12	24.0	10	20.0	24	48.0	7	14.0	19	38.0	36	72.0	8	16.0	6	12.0	88	58.7	27	18.0	35	23.3
Using partial lighting instead of general lighting while working provides energy saving	32	64.0	14	28.0	4	8.0	24	48.0	15	30.0	11	22.0	34	68.0	11	22.0	5	10.0	90	60.0	40	26.7	20	13.3
For the door of the refrigerator to remain open for long increases the amount of consumed energy	33	66.0	8	16.0	9	18.0	24	48.0	14	28.0	12	24.0	39	78.0	8	16.0	3	6.0	96	64.0	30	20.0	24	16.0
Regular cleaning and maintenance of electrical devices provides energy saving	34	68.0	9	18.0	7	14.0	34	68.0	5	10.0	11	22.0	37	74.0	8	16.0	5	10.0	105	70.0	22	14.7	23	15.3

Tablo 4. The Students' Knowledge About the Environmental Problems Created by Wastes

Expressions related to wastes	GRADE LEVELS																							
	6th Grade (n=50)						7th Grade (n=50)						8th Grade (n=50)						TOTAL (n=150)					
	I agree		I disagree		I don't know		I agree		I disagree		I don't know		I agree		I disagree		I don't know		I agree		I disagree		I don't know	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Using plastic items is harmful not only for our health but also for our environment	31	62.0	4	8.0	15	30.0	32	64.0	3	6.0	15	30.0	39	78.0	4	8.0	7	14.0	102	68.0	11	7..3	37	24.6
The destruction of forests and the environmental pollution are prevented by recycling waste paper	26	52.0	14	28.0	10	20.0	32	64.0	10	20.0	8	16.0	44	88.0	1	2.0	5	10.0	102	68.0	25	16.7	23	15.3
It is difficult to dispose of plastic items since the natural disintegration of them take very long	35	70.0	4	8.0	11	22.0	30	60.0	7	14.0	13	26.0	41	82.0	4	8.0	5	10.0	106	70.7	15	10.0	29	19.3
The wastes to be recycled can be decreased by collecting garbages separately as glass plastic and paper	36	72.0	5	10.0	9	18.0	35	70.0	6	12.0	9	18.0	40	80.0	5	10.0	5	10.0	111	74.0	16	10.7	23	15.3
Throwing used batteries in the trash causes the chemical materials in them to mix with water and soil	36	72.0	3	6.0	11	22.0	33	66.0	7	14.0	10	20.0	39	78.0	1	2.0	10	20.0	108	72.0	11	7..3	31	20.7
Products with recyclable packages should be preferred while shopping	22	44.0	11	22.0	17	34.0	30	60.0	7	14.0	13	26.0	33	66.0	8	16.0	9	18.0	85	56.7	26	17.3	39	26.0

Discussion and Conclusion

This study examined elementary school second grade students' knowledge levels about several environmental issues. Students' knowledge levels on general environmental problems, water pollution and water saving, energy saving and the environmental problems caused by wastes were tested in the study. In general, students' knowledge levels about the examined subjects can be considered to be good. In this respect, it can be thought that the environmental education given by schools is adequate. However, the rates -although seem to be low- of students who responded to several expressions as "I don't know" or "I disagree" are noteworthy. For example, 25,0% of students reported that they either disagree with or do not know about the expressions "The insensible use of the existing resources is an important issue in the development of Turkey", "Erosion is one of the most important problems of Turkey", "Thousands of trees are cut down for paper napkins that are used once and thrown away". This rate further increases up to 35-40% for some expressions.

For example; it can be concluded that students' knowledge levels about water pollution and water saving are low if we consider the responses they gave to the expressions "Synthetic detergents affect the water quality and render it unusable by polluting water resources" and "The waste of water can be prevented by repairing malfunctioning faucets". It is a very notable finding that the knowledge levels of around 44,0% of the participant students are inadequate about the facts that "using partial lighting instead of general lighting while working" and "using economical lamps" provide energy saving. For the expressions related to wastes, which constitute one of the most important problems of Turkey, 43,3% of students reported that they either disagree with or do not know about the expression "Products with recyclable packages should be preferred while shopping" and 32,0% of students reported that they either disagree with or do not know about the expressions "Using plastic items is harmful not only for our health but also for our environment" and "The destruction of forests and the environmental pollution are prevented by recycling waste paper". Based on the research findings, it is thought that the environmental education provided by schools is inadequate to reach the intended targets on students.

Various studies have obtained results that indicate that the elementary school students' environmental knowledge and the environmental education given by schools are inadequate (Atasoy and Ertürk, 2008; Erten, 2004). While it is expected that as the grade level increases students' knowledge levels about the relevant subjects increase, it was observed in the research that their knowledge levels about some of the examined subjects have increased. This finding gives rise to the thought that the environmental education given in elementary schools needs to be revised. Children who are sitting on school desks today will be the architects of all policies and practices that might influence the environment tomorrow by working at different echelons of the state. In addition, they will be influential in the decisions to be taken on the natural resources of this country, being the consumers of these resources and voting citizens. Their primary responsibility will be the quality of the environment they live in and the sustainability of the resources. Therefore, the assistance to be given to them now to render them knowledgeable, conscious and sensible individuals on environmental issues will be the most important economic and ecologic investment. For this reason, teachers are of high responsibility since they shape the future generations (Fidan and Erden, 1998).The environmental education of the 21st Century should not be an education that improves only the environmental knowledge and consciousness.

The educational understanding to be constituted should change fundamentally the environmental attitudes and behaviors of the contemporary human. More importantly, this educational model should create an individual who reacts to environmental problems, presents proposals to solve these problems, actively participates, thinks, discusses, questions, who has understood and embraced the idea of sustainable life and sustainable development, and who is in harmony with the world. Educational and teaching programs at all levels should be revised with his understanding. Educational programs should be designed in a way that all the environmental subjects that the students learns from kindergarten to university should be connected, should not repeat each other and should be put into practice in all schools at the same time and with the same methods to create a growing set of knowledge and experiences. This education should be cooperatively shaped by the family, mass communication organs, civil society organizations and educational institutions (Kiziroğlu, 2000; Jeronen and Kaikkonen, 2002). Conducting such studies throughout Turkey will help obtaining healthier and more reliable results in the processes of determining the necessity and the shortages of the environmental education and the process of curriculum development. The country will consequently be the one who gains after transforming the knowledge based on these results into behaviors.

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