

A Research on Electronic Waste Awareness and Environmental Attitudes of Primary School Students

Orhan Ercan¹ and Kadir Bilen²

¹ Faculty of Education, Kahramanmaraş Sutcu Imam University, Kahramanmaraş, 42700, Turkey

E-mail: orhanercan@gmail.com

² Faculty of Alanya Education, Akdeniz University, Kestel, Alanya, Antalya, 07425, Turkey

E-mail: kadirbilen@gmail.com

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ABSTRACT The study aims to examine primary school second level students' electronic waste awareness and environmental attitudes. A total of 250 students attending primary schools in Kahramanmaraş province center in Turkey during 2011-2012 educational year participated in the study. The study that employed survey model utilized "Environmental Attitude Scale" and "Electronic Waste Awareness Survey". Results of the study presented meaningful relationships between students' environmental attitudes and the type of school they attend to and parental income level while no meaningful relationships were found between environmental attitudes and variables of gender, grade and mother's or father's educational levels. Electronic waste survey results show that students have insufficient information or are misinformed about electronic wastes.

INTRODUCTION

The real reason of environmental pollution is the density of industrial facilities and population of some regions and the extreme increase in consumption. To achieve the objective of sustainable development, it is imperative to conserve current resources and keep waste materials under control. Environmental pollution resulting from the consumption rate of natural and environmental resources in Turkey along with uncontrolled and unregulated disposal of wastes has reached to very serious levels especially in some focal locations. Among the 3213 municipalities surveyed according to "Municipality Solid Waste Indicators" of Turkish Statistical Institute (2004), approximately 25.01 million tons solid waste was collected with a daily average of 1.32 kg per person (TUIK 2006).

Consumption trends also change along with rapidly advancing technology and new types of waste materials emerge. One of these new types of wastes is electrical or electronic wastes (E-Waste). These electronic wastes include several

metals such as copper, aluminum and gold and they also release poisonous metals such as lead, cadmium and mercury when they are reassembled, dismantled, burned or processed chemically for recycling or reuse (Kaya and Turan 2005). While the electronic appliances/items sector grows throughout the world and in Turkey, the ratio of electronic wastes in garbage is increasing as well. Electronic wastes in developed countries constitute an average of 1% of all solid waste and this ratio is expected to grow two-fold in the next 5 years. An increase of annual 5% to 8% is observed in electronic waste market in the world. The total electronic waste resources throughout the world are estimated to generate an annual 20-50 million tons electronic wastes according to United Nations Environmental Program. For instance, 2012 data obtained in Turkey shows that a total of 539.000 tons electronic wastes is generated in one year which amounts to more than 7 kg electronic waste per person. This number is expected to increase in the coming years. Although several projects are implemented in countries with the highest level of electronic wastes such as USA, China, India and EU countries, no serious work is currently undertaken in Turkey in this regard (Aorora and Agarwal 2011).

Need for environmental education for individuals and societies has emerged with the current increase in environmental problems in the

Address for correspondence:

Dr. Orhan Ercan
Kahramanmaraş Sutcu Imam University
Faculty of Education (42700)
Kahramanmaraş, Turkey
Telephone: +90 (344) 219 13 60
Fax: +90 (344) 219 13 62
E-mail: orhanercan@gmail.com

world agenda. All efforts to conserve the environment, to prevent environmental pollution and to develop the environment stem from the need to provide individuals with comfortable, peaceful and healthy/safe environments (Eten 2003; Nates et al. 2012; Erdogan 2011). Environmental protection will be possible only through awareness of the community. Therefore, environmental education should be provided extensively. The prioritized purpose of environmental education in various countries is the acquisition of positive attitudes and behaviors by individuals. Attitudes are developed based on feelings, knowledge and thoughts and on individual and social values and beliefs and they change from individual to individual. The attitude of an individual is the combination of what he thinks, what he believes in, how he feels and how he acts (Sakalli 2001). It is identified through research that lack of environmental awareness and the extent of environmental damage is caused by lack of environmental education (Yilmaz et al. 2010; Ogunbiyi and Ajiboye 2009).

Although many researchers emphasize that environmental education should be an interdisciplinary course (Cobb 1998; Davis 2000), it is observed that environmental education is provided as a part of science classes (Rickinson 2001; Erdogan and Ozsoy 2007; Sadik and Cakan 2010). It can be mentioned that environmental education is recently more prioritized in Turkey along with the currently revised primary school programs. For instance, science teaching program of year 2000 included less environmental topics (MEB 2002) compared to science and technology teaching program prepared in 2004 which includes more topics with more quality related to environment, as a parallel to national and international environmental policies (Kose et al. 2011).

Today it is known that raising awareness in environmental issues is possible through environmental education. Therefore, interest and attitudes are crucial in environmental education (Erten 2004). In their study, Poortinga et al. (2004) emphasize that in addition to knowledge, interest and attitudes are also effective in individuals' behavior towards the environment. Several studies that examined the attitudes of primary school students to environment have been undertaken in Turkey (Tuncer et al. 2006; Yilmaz et al. 2004; Alp et al. 2006; Gokce et al. 2008; Aslan et al. 2008; Sagir et al. 2008; Unal 2009; Ozpinar 2009; Aslanyolu 2010; Bas 2010; Aydin and Cep-

ni 2010; Yilmaz et al. 2013). Results of studies show the existence of serious problems in environmental education despite the revised and renewed primary school curriculum. Lack of effective environmental education opportunities negatively affect the measures that will be taken in environmental conservation and solution of environmental problems. Acquisition of positive attitudes towards the environment is closely related to environmental awareness.

Knowledge, skills and values acquired in primary school form the basis for higher levels of learning. The importance of primary schools in environmental education is also noteworthy since a large number of individuals do not continue with further education in Turkey (Atasoy and Erturk 2008). Therefore, the current study aims to investigate primary school students' electronic wastes awareness and environmental attitudes. It is believed that the findings of the study will lead us in the identification of primary school students' attitudes towards the environment and will provide information as to whether topics in science and technology classes related to environmental issues generate environmental awareness or not. The questions investigated to determine primary school students' electronic wastes awareness and environmental attitudes are as follows:

1. What is the electronic wastes awareness level of primary school students?
2. What is the environmental attitude level of primary school students?

The study aims to investigate electronic wastes awareness and environmental attitudes of primary school students. The reason for selecting primary school students as the target group is related to the importance of forming a foundation for environmental education during the childhood years. Environmental education practices at school will contribute to the development of responsible behavioral patterns towards the environment (Ay 2010).

MATERIAL AND METHODS

Model

Survey model was used in the study to identify primary school second level students' electronic wastes awareness and environmental attitudes. Survey models are research approaches that aim to describe a past or current case as is.

The event, individual or the subject of the research is tried to be defined and described in its own specific conditions (Karasar 1994).

Data Collection Tools

Two separate scales were used in the framework of the study. "Environmental Attitude Scale" developed by Kocak (2008) was used to identify student attitudes regarding the environment. Kocak (2008) developed the "Environmental Attitude Scale" by benefiting from the environmental scales developed by Uzun and Saglam (2006) and Morgil et al. (2004). "Environmental Attitude Scale" is composed of 16 statements. 5 point Likert type scale uses the ranking for items in the following manner: "Completely agree=5", "Agree=4", "Undecided=3", "Disagree=2" and "Completely disagree=1". Reverse coding was done for negative statements. Cronbach's Alpha reliability coefficient for the scale was calculated to be 0.70.

The other scale employed in the study is the "Electronic Waste Awareness Survey" developed by Aydin (2011) (Appendix 1). The scale was developed by adapting the questionnaire developed by Aydin (2011) and includes 10 questions.

Data Analysis

Assessment tools were administered to the students participating in the study and the data obtained in this manner was analyzed utilizing a statistical program. Independent samples t-test was utilized to determine whether gender related differences existed and one way analysis of variance (ANOVA) was employed to identify whether significant differences occurred due to different variables such as school of attendance, age, mother and father's educational level and the income level of the family. Bonferonni analysis was undertaken to examine the differences between groups. Level of significance was taken as $p = .05\%$.

Sample

The sample of the study was composed of primary school second level students randomly selected from 2 state and 1 private primary schools in the province of Kahramanmaraş. 142 of the students participating in the study were females and 108 were males. 82 students in the study attended the 6th grade, 78 attended the 7th grade and 90 students attended the 8th grade (Table 1). The average age of the students in the study was calculated to be 13.2 %.

Table 1: Demographic properties of the students in the study

Variable	Property	N	Ratio (%)
Gender	Girl	142	56.8
	Boy	108	43.2
School	Group 1	96	38.4
	Group 2	53	21.2
	Group 3	101	40.4
Grade	6 th	82	32.8
	7 th	78	31.2
	8 th	90	36.0
Education Level of Father	Primary	46	18.4
	Secondary	80	32.0
	B.A	124	49.6
Education Level of Mother	Primary	101	40.4
	Secondary	74	29.6
	B.A	75	30.0
Income Level (TL)	≤750	25	10.0
	751-1500	55	22.0
	1501-2250	67	26.8
	2251-3000	44	17.6
	3001≥	59	23.6

FINDINGS

This section of the study analyzes the findings obtained through the data collection tools and provides some comments regarding the findings.

Findings about Student Attitudes towards the Environment

Total attitude scores of students related to environment were analyzed with different variables. Table 2 displays the relationship between

Table 2: Environmental attitudes and gender

Gender	Mean (%)	Std. deviation	Levene test		t	df	Sig.
			F	P			
Girl	63.78	9.87	0.324	0.570	1.727	248	0.085
Boy	61.55	10.48					

gender and students' total environmental attitude scores. Table 2 examines the relationship between female and male students' attitudes towards the environment and no significant differences were found [$t(248) = 1.72\%$; $p > .05$]. Therefore attitudes towards environment do not change according to gender.

Study also examined whether total attitude scores of students were affected by the school of attendance and the findings are provided in Table 3. Table 3 shows that there are statistically meaningful differences between students' total environmental attitude scores and the school of attendance [$F(247) = 7.53\%$, $p < .05$]. Bonferonni analysis was undertaken to examine the location of the difference among the groups. Results of the analysis between Group 1 ($M=60.01\%$) and Group 2 ($M=66.34\%$) display statistically meaningful differences in favor of Group 2 and results of the analysis between Group 1 ($M=60.01\%$) and Group 3 ($M=63.63\%$) provided significant differences in the favor of Group 3. The results show that students' environmental attitudes change according to the school they attend.

Study investigated the relationship between students' grades and their total environmental attitude scores and the findings are provided in Table 4. Table 4 shows the relationship between

students' grade levels and their attitudes towards the environment and no significant differences were observed between the two variables [$F(247) = 0.44\%$, $p > 0.05$]. This finding shows that students' environmental attitudes do not change according to their grade levels.

The study examined whether students' total environmental attitude scores changed according to paternal education levels and the findings are provided in Table 5. Table 5 shows that there are no statistically meaningful differences between students' attitudes towards the environment and the education level of their fathers [$F(247) = 0.48\%$; $p > .05$]. This finding shows that students' environmental attitudes do not change according to the education level of their fathers.

The study examined whether students' total environmental attitude scores changed according to maternal education levels and the findings are provided in Table 6. Table 6 shows that there are no statistically meaningful differences between students' attitudes towards the environment and the education level of their mothers [$F(247)=0.46\%$, $p > .05$]. This finding shows that students' environmental attitudes do not change according to the education level of their mothers.

Table 3: Environmental attitudes and school of attendance

<i>School</i>	<i>N</i>	<i>Mean %</i>	<i>Std. deviation</i>	<i>Source of variance</i>	<i>Sum of squares</i>	<i>Df</i>	<i>F</i>	<i>Sig.</i>
Group 1	96	60.01	10.34	Between groups	1481.21	2	7.53	0.001
Group 2	53	66.34	7.29	Within the group	24306.32	247		
Group 3	101	63.63	10.67					

Table 4: Environmental attitudes and grade

<i>Grade</i>	<i>N</i>	<i>Mean %</i>	<i>Std. deviation</i>	<i>Source of variance</i>	<i>Sum of squares</i>	<i>Df</i>	<i>F</i>	<i>Sig.</i>
6th	82	62.65	9.12	Between groups	92.25	2	0.443	0.642
7th	78	63.68	10.68	Within the group	25695.29	247		
8th	90	62.22	10.70					

Table 5: Environmental attitudes and father's level of education

<i>Father's level of education</i>	<i>N</i>	<i>Mean %</i>	<i>Std. deviation</i>	<i>Source of variance</i>	<i>Sum of squares</i>	<i>Df</i>	<i>F</i>	<i>Sig.</i>
Primary	46	61.50	10.73	Between groups	101.09	2	0.486	0.616
Secondary	80	63.28	11.06	Within the group	25686.44	247		
University	124	63.01	9.39					

Table 6: Environmental attitudes and mother's level of education

Mother's level of education	N	Mean (%)	Std. deviation	Source of variance	Sum of squares	Df	F	Sig.
Primary	101	63.16	10.65	Between groups	97.55	2	0.469	0.626
Secondary	74	63.31	9.45	Within the group	25689.98	247		
University	75	61.87	10.29					

Table 7: Environmental attitudes and income level

Income level	N	Mean (%)	Std. deviation	Source of variance	Sum of squares	Df	F	Sig.
≤750	25	56.48	9.14	Between groups	1319.46	4	3.303	0.012
751-1500	55	63.35	11.44	Within the group	24468.08	245		
1501-2250	67	63.57	9.78					
2251-3000	44	65.20	9.16					
3001≥	59	62.37	9.72					

Table 8: Products regarded as electrical or electronic waste

	N	Ratio %
Mobile phones	107	42.8
Batteries	160	64.0
Computers	91	36.4
Automats/vending machines operated with tokens or coins	75	30.0
Tools for illumination (light bulbs, fluorescent bulbs etc.)	102	40.8

The study examined whether students' total environmental attitude scores changed according to family income level and the findings are provided in Table 7. Table 7 shows that there are statistically meaningful differences between students' attitudes towards the environment and the family income level [$F(245) = 3.30\%$; $p < .05$]. Bonferonni analysis was undertaken to examine the location of the difference among the groups. Results of the analysis between Group1 and Group 2 display statistically meaningful differences in favor of Group 2 and results of the analysis between Group 1 and Group 4 provided significant differences in the favor of Group 4. The results show that students' environmental attitudes change according to family income level.

It can be stated that students coming from families with higher income levels have higher environmental attitude scores.

Findings Regarding Electronic Waste Awareness

Products in the Category of Electrical or Electronic Equipment (Product) Wastes: In the first question, students were asked which of the materials (such as mobile phones, batteries, vending machines operated with tokens or coins and illumination tools) were considered as electrical or electronic equipment waste. Findings are provided in Table 8. Table 8 shows that 64% of the students selected the option of batteries ($N=160$). However, batteries are not regarded as electrical or electronic products wastes. It is believed that this result is related to the fact that students are familiar with the waste material containers for batteries and therefore think that batteries are electrical or electronic waste products. The study examined the differences between the environmental attitudes of students who selected the option of batteries and the environmental attitudes of other students and the findings are provided in Table 9. Table 9 shows that there are

Table 9: Environmental attitudes of students who regard batteries as electronic waste and environmental attitudes of other students

Batteries are Electronic Waste products	N	Mean (%)	Std. deviation	Levene test		t	df	Sig.
				F	P			
Yes	160	64.93	9.57	0.218	0.641	4.552	248	0.000
No	90	59.06	9.92					

statistically meaningful differences in environmental attitudes of students who regard batteries as electronic wastes and the students who do not [$t_{(248)}=4.552$; $p<0.05$]. Arithmetic means show that total environmental attitude scores of students who regard batteries as electronic wastes is $M=64.93$; whereas total environmental attitude scores of students who do not regard batteries as electronic wastes is $M=59.06$.

Use of Electrical or Electronic Products That Are Broken and Cannot Be Reused: The second question asks students what they do with electrical or electronic products that are broken or cannot be reused. The answers students provided are provided in Table 10. As can be seen from Table 10, 45.2% of the students stated that they returned electrical or electronic products that are broken or cannot be reused to companies which recycle these materials. This ratio is rather high because the ratio of returning broken or unusable electrical or electronic items to the place of purchase was found to be 17.2% and the ratio of giving the broken or unusable electrical or electronic items to junkyards was found to be 23.6%.

Table10: Use of electronic waste materials

	<i>N</i>	<i>Ratio %</i>
I give them to junkyard	59	23.6
I return them to the store I bought them from so that they can be included in the recycling system	43	17.2
I give them to companies which recycle these materials so that they can be included in the recycling system	113	45.2
I keep the product at home although I have bought a new one because I do not know what to do with the broken one	43	17.2
I leave them by waste containers	29	11.6

Views about The Content of Electrical or Electronic Products: The third question asks students which of the following materials of plastic, gold, arsenic, glass, copper and platinum can be found in electrical or electronic products. Stu-

Table 11: Materials found in electrical and electronic products

	<i>N</i>	<i>Ratio %</i>
Plastic	112	44.8
Gold	38	15.2
Arsenic	76	30.4
Glass	61	24.4
Copper	142	56.8
Platinum	78	31.2

dent responses are provided in Table 11. When Table 11 is examined, it is seen that 56.8% of the students selected copper as the material found in electrical or electronic products. It was found that 15.2% and 31.2% students thought gold and platinum exist in electrical or electronic products respectively. It is thought that as end-users, students give little probability that precious metals such as gold and platinum could exist in electrical or electronic products. The findings show that students are not quite aware and informed of the content of electrical or electronic products

Level of Awareness About Warning Signs and Symbols for Electronic Wastes: Question 4 asks students whether they have noticed a warning or a symbol on electrical and electronic products sold in the market that warns about not disposing of the electrical and electronic products in the trash. Student responses are provided in Table 12. As can be gleaned from Table 12, 58% of students have noticed the warning symbols on electrical and electronic products whereas 42% have not noticed such symbols at all. The study examined the environmental attitudes of students who noticed the symbols and the ones who have not and the results are provided in Table 13.

Table 12: Level of awareness about warning signs and symbols

	<i>N</i>	<i>Ratio %</i>
Yes	145	58
No	45	18
I don't have an idea	60	24

Table 13: Environmental attitudes of students who have noticed the warning symbols and the other students

<i>I noticed the symbol</i>	<i>N</i>	<i>Mean (%)</i>	<i>Std. deviation</i>	<i>Levene test</i>		<i>t</i>	<i>df</i>	<i>Sig.</i>
				<i>F</i>	<i>p</i>			
Yes	145	64.08	9.75	4.06	0.04	2.33	248	0.02
No	105	61.07	10.54					

Table 13 shows that there is a statistically significant difference between the environmental attitudes of students who have noticed the warning signs and symbols on electrical and electronic equipment and the other students [$t_{(248)}=2.333$; $p<0.05$]. Arithmetic means show that total environmental attitude scores of students who noticed the warning symbols is $M=64.08$; whereas total environmental attitude scores of students who did not notice the warning symbols is $M=61.07$. The environmental attitudes of students who have noticed the warning symbols are found to be higher.

Disposal Methods of Electrical or Electronic Waste Products: Question 5 asks students their ideas about the disposal methods of electrical and electronic products that are not in use anymore. Student's responses are provided in Table 14. As can be seen from Table 14, 41.2% of the students had no idea regarding the issue. This ratio is thought to be rather high. 34.8% of the students were found to think that they were collected separately from the other waste products.

Table 14: Disposal methods of electrical or electronic waste products

	<i>N</i>	<i>Ratio %</i>
They are taken to landfills	59	23.6
They are collected separately from other waste materials	86	34.4
They are burned	36	14.4
They are sent abroad	13	5.2
I don't have an idea	103	41.2

Information about Equipment Used in Recycling of Electrical or Electronic Products: Question 6 asks students if they have ever come across recycling containers for electrical and electronic products and their parts like the ones used for materials such as for paper, metal and glass. Student answers are provided in Table 15.

Table 15: Information about equipment used in recycling of electrical or electronic products

	<i>N</i>	<i>Ratio %</i>
Yes	128	51.2
No	122	48.8

Disposition to Use Recycling Equipment: Question 7 aims to determine student dispositions to use recycling equipment when recycle

containers for electrical and electronic products and their parts are available in their area.

Table 16 shows that 76.8% of the students answered yes whereas 7.6% selected no and 14.8% stated that they had no idea. It is believed that training students about containers used in recycling and placing these containers in areas with easy access will increase the currently low recycling ratios for electrical or electronic waste materials.

Table 16: Disposition to use recycling equipment

	<i>N</i>	<i>Ratio %</i>
Yes	192	76.8
No	19	7.6
I don't have an idea	37	14.8

Frequency of Renewing Domestic Appliances: Question 8 asks students the frequency of renewing domestic appliances such as refrigerators, ovens, washing machines and dishwashers. Table 17 provides the student responses. Table 17 shows that 82.4% the students stated that the maximum duration for renewing domestic appliances is 5 years. Therefore, materials found in these appliances can be recycled 5 years after the production date.

Table 17: Frequency of renewing domestic appliances

	<i>N</i>	<i>Ratio %</i>
3-5 years	44	17.6
5-10 years	121	48.0
10-15 years	86	34.4

Reasons of Renewing Domestic Appliances: Question 9 asks students the reasons for renewing domestic appliances such as refrigerators, ovens, washing machines and dishwashers. Table 18 provides the student responses. The most preferred option with 52.0% was the current product's unusable condition. The percentage of stu-

Table 18: Reasons for renewal of domestic appliances

	<i>N</i>	<i>Ratio %</i>
Availability of more functional products in the market	52	20.8
The fact that the current products are unusable	130	52.0
More advantages in buying a new one instead of having the broken one repaired	101	40.4

dents who believed it to be more advantageous to buy a new product instead of getting the broken one repaired was 40.4%. It is believed that buying a new one instead of getting the previous one repaired will increase the quantity of electronic wastes.

Conservation of Natural Resources through Metal Recycling: Question 10 asks the students whether recycling of metals from electrical or electronic equipment wastes contribute to the conservation of natural resources. Student responses are provided in Table 19. Table 19 shows students are informed that recycling of metals contributes to the conservation of natural resources. However, when the data obtained for this question and the other questions are considered together, it is apparent that different methods (trainings etc.) should be provided to increase electronic wastes awareness of the students.

Table 19: Conservation of natural resources through metal recycling

	<i>N</i>	<i>Ratio%</i>
Yes	179	71.6
No	19	7.6
I don't have an idea	52	20.8

DISCUSSION

The study set out to study the electronic wastes awareness and environmental attitudes of primary school students. Findings of the study show that type of school and income level of students' families cause significant differences in their environmental attitudes. Results in Table 3 point that students in Group 1 have lower environmental attitude scores compared to the other groups in the study. This finding is thought to be related to the socio-economic levels of students in this area and shows that student attitudes may change according to their socio-economic levels. Previous studies also pinpoint the fact that student attitudes change according to the location of the school (Tuncer et al. 2004; Kahyaoglu and Ozgen 2011; He et al. 2011). Examination of environmental attitudes of students in terms of income level shows that students from lower income levels have lower environmental attitude scores. This finding has resulted in the statistical differences among the groups. Research shows that socio-economic level plays an important part in attitudes towards environ-

mental problems (Yilmaz et al. 2004; Sama 2003; Uyeki and Holland 2000; Thompson and Gasteiger 1985). Yilmaz et al. (2004) identified that students with higher income levels who live in urban settlements have more positive environmental attitudes compared to students with lower income levels who live in suburbs. On the contrary, Thompson and Gasteiger (1985), in their study with university students, found that students with higher income levels have lower environmental attitudes compared to students with lower income levels. Similarly, Uyeki and Holland (2000) identified that individuals with lower income levels have more positive attitudes towards environmental conservation compared to individuals with higher income levels. In their study with primary school children, Yilmaz et al. (2004) found that female students have more positive attitudes towards environmental problems compared to male students, students with higher income levels have more positive attitudes towards environmental problems compared to students with lower income levels and urban students have more positive attitudes towards environmental problems compared to rural students.

Although the current study did not find a significant difference in the attitude scores between female and male students ($p > 0.05$), the average attitude scores of the female students ($M = 63.78$) were found to be higher than those of the male students ($M = 61.55$). Many studies support the findings that gender plays an important role in environmental attitudes, that females are more interested in environmental problems compared to males and that females have more positive attitudes towards the environment (Alp et al. 2006; Hacıeminoglu et al. 2006; Uzun 2005; Ekici 2005; Ozmen et al. 2005; Yilmaz et al. 2004; Paraskevopoulos et al. 2003; Tikka et al. 2000; Davidson and Freudenberg 1996; Gardos and Dodd 1995).

The finding in the current study that educational levels of the mother or the father did not play a role on students' environmental attitudes is supported by the findings of many previous studies (Gokce et al. 2007; Chu et al. 2007; Kose 2010; Ozsoy 2012). However, Ozsevgec and Artun (2012) asserted the fact that when mother or the father is uneducated, they will not be able to provide a sound environmental education to their children. Following the same line of thought, they mentioned that educated parents with suf-

ficient knowledge about the environment will transfer these information and experiences to their offspring and therefore children will develop positive attitudes towards the environment, have more knowledge about the environment and will be more sensitive to environmental problems.

CONCLUSION

The results of the electronic wastes survey implemented in the framework of the study show that primary school second level students do not have detailed information about electronic wastes. For instance, the question “which materials can be regarded as electronic wastes?” which elicited selection of batteries (64%) for the most part and limited selection (only 30% of the students) of vending machines operated with tokens or coins as electronic wastes shows lack of information or misinformation on the parts of the students. These findings point to the fact that primary school science curriculum does not sufficiently include this topic and the media does not focus on the topic as it should. The question regarding the content of electronic products was answered by only 24% of the students as glass. Today, 130.000 computers are thrown away daily in the USA but our students are not totally informed of electronic tools that are considered in the framework of electronic wastes.

Another important finding obtained from the electronic wastes survey is the increase of the frequency of renewing domestic appliances at homes along with the increase in per capita income in Turkey.

RECOMMENDATIONS

Some suggestions are provided in the light of the findings of the study:

- Primary school programs should be revised in detail in terms of the objectives of environmental education and modifications should be made that will positively affect student attitudes.

- Non-governmental organizations that work in the field of environment should be introduced to students and the objectives and targets of their activities should be explained in detail. In this way students' awareness in environmental issues can be increased.

- Studies should be undertaken for conserving the natural environment and especially the

environment and students should be made aware of the topic.

- Students are influenced by out of school and non-formal environments to a great extent. Therefore large projects that will involve the parents are required. Work should be undertaken to produce more positive results with the cooperation of media and other organizations. For instance, “Ecology Based Environmental Education” project organized by TUBITAK and various universities can be expanded with the participation of primary school teachers and parents.

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