Assessing Preference of Informal Environmental Education Sources for Greek Primary School Students

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ABSTRACT
This study aims to examine the attitudes of primary school students regarding their interests and habits in relation to the media they use to receive information about them. Using the responses of 412 students from the 5th and 6th grade of primary school in the region of Evros, it is concluded that students' TV preferences, as well as the means of information they use, differ depending on their interests. The school, TV and the Internet constitute important sources for them, while, concerning TV programmes, comedy series are dominant.

Keywords: environmental communication, mass media, environmental perceptions, TV preferences

INTRODUCTION

Nowadays, the realization that the downgrading of the environment constitutes a social problem (Kenterelidou, 2013) with direct consequences on modern man's quality of life has resulted in a study of the reasons behind the low level of environmental awareness, on the one hand, and the ways of reversing the current situation, on the other. The values, attitudes and beliefs, with regard to wealth and modern technological and scientific achievements (Catton & Dunlap, 1980; La Trobe & Acott, 2000), cultivated by the main socializing institutions of children –the family, the school, the mass media– are viewed as key components of their low environmental awareness.

Stern et al. (1993), by forming "the value-belief-norm theory", distinguished "three types of values relevant to environmentalism: self-interest, altruism towards other humans, and altruism towards other species and the biosphere". Therefore, motivation for the preservation and protection of the environment is the combination of these three factors (Kollmuss & Agyeman, 2002; Stern et al., 1995; Stern et al., 1999).

Environmental awareness, on the other hand, is considered to be a trigger for the cultivation of positive attitudes towards the environment and is viewed as one of the main variables for the creation of environmentally responsible behavior (Karatekin, 2014; Skanavi, 2004). According to Newhouse (1990); however, environmental awareness implies that the individual is knowledgeable, aware, alert and informed about environmental issues, but is not necessarily taking relevant action; other scholars have also reached the same conclusion (Hsu, 2004; Hungerford & Volk, 2003; Mei et al, 2016). The relationship between the terms 'awareness' and 'taking action' is neither linear nor deterministic. So, the character and depth of the relationship between awareness and behavioral change, as well as the factors that lead to the transition from

'intention' to 'responsible environmental behavior', have been the main object of research by numerous scholars.

Mass media, due to their power and access to numerous social groups, are considered to be the most beneficial and effective means of formulating the attitudes and building environmental awareness in people of all ages and social classes (McQuail, 1994). They dictate to the public not only the subjects that they should be dealing with, through the information and images conveyed, but also the way in which these subjects will be evaluated and prioritized (McCombs & Shaw, 1972; Papathanasopoulos et al., 2014).

The development of environmental awareness, knowledge, skills, attitudes, and values at an early age is of great importance for the creation of future citizens with high levels of environmental consciousness and behavior (Shumea, 2016; Tampakis et al., 2011; Tilbury, 1994). Students, therefore, being part of the audience which the media addresses, and in particular of the most receptive and special type, constitute the age group which is considered to be the pillar for the future display of pro-environmental behavior. Thus, it is of major importance to define those factors that will contribute to the transmission of values and the construction of positive attitudes towards the environment, resulting in the formulation of environmentally aware personalities. At the same time, mass media, in addressing the requirements of a demanding and environmentally aware audience made up of children, will be obliged to adjust their programmes within a more eco-friendly context; this includes not only quantitative adjustments, but also qualitative ones regarding the coverage of environmental concerns (Chan, 1999). In this way, a "circular relationship" is formed between the mass media and the public, including children, through their mutual influence.

These particular characteristics of the mass media and the necessity to create an environmentally aware audience of children highlight the need to investigate the daily habits and attitudes of this segment of the audience, and in this paper of the students of Evros region. At the same time, it is important to define the strategies used by the mass media to effectively approach this age group, in order to ensure a successful transmission of messages that will influence their knowledge and attitudes concerning environmental problems. In particular, the aim of this paper is to study the students' interests on a range of issues, regarding their daily habits in relation to the means through which they get information on environmental issues. Moreover, the present study aims to identify the issues involved and their opinions on them, and ultimately to determine the factors that shape their TV preferences. The findings of this research extend and complete previous studies about the factors which lead to the development of environmental awareness of the students in primary education, in relation to the sources used while searching for and obtaining information concerning the environment. The results are important in order to determine those characteristics that will eventually lead the practitioners in the field and the policymakers to choose the best practices for the development of the students' environmental awareness.

RESEARCH METHODOLOGY

For the collection of data regarding the perceptions and attitudes of students in the 5th and 6th grade of primary school in the prefecture of Evros, a questionnaire with closed questions was used. This research constitutes part of a larger project for which the questions were divided into five categories, namely: 1) student activities-interests and the role of parents, 2) information – communication media, 3) student knowledge of environmental matters, 4) habits of the students and their families and 5) demographic characteristics of the students and parents. In order to achieve the goal of the present research, only part of the above-mentioned questions were used. The sampling method used was cluster sampling. The sample included seventeen (17) primary schools in the Prefecture of Evros, and 412 questionnaires were completed by 5th and 6th grade students. Regarding the required permission to conduct the research, the researchers followed the guidelines provided by the Pedagogical Institute (Pedagogical Institute, 2004). The collection of data was carried out during the period May-October 2014. Cronbach's α coefficient, descriptive statistics, Friedman's non-parametric test and factor analysis (of first and second order) were used for the data processing. In addition, the researchers used the statistical programme SPSS (Siardos, 1999). Descriptive statistics, Friedman's test, Cronbach's α coefficient and factor analysis were applied to the multidisciplinary variables, namely "students' interests" *(QA),* "the media through which you obtain information on issues of interest" *(QB)*, "types of TV programmes you watch" *(QC),* "topics about which you surf the Internet" *(QD)*, "communication media you use to get information on nature" (QE) and "which environmental issues do you find most interesting" (QF), which were measured using the Likert scale from 1= never to 5= always.

RESULTS

As regards the students' demographic characteristics, there were a few more boys (52.4%) than girls, and the 6th grade students (50.5%) exceeded the 5th grade students by one percent. As for their parents, over half the fathers were employees (public 33.3% and private 19.2%), self-employed (27.7%) or farmers (10.8%), while less than half the mothers were employees (public 26.2% and private 18.7%) and 28.4% were housewives. Finally, almost one in three fathers were university graduates (29.4%) and also one in three were secondary school graduates (31.1%); there is a similar pattern for the mothers (31.1%).

Table 1 presents the perceptions of students regarding their satisfaction with TV programmes: 42.7% say they are "very" or "a great deal" satisfied with them, while 41.5% that they are "quite" satisfied with the programmes shown on TV. Over one in ten students (13.1%) state that they are "slightly" or "not at all" satisfied with them.

Table 1. Level of satisfaction with TV programmes

	Percentage (%)
Don't know	2.7
Not at all	1.2
Slightly	11.9
Quite	41.5
Very	24.3
A great deal	18.4
Total	100.0

As regards the students' interests (**Table 2**), over half state that they are "usually" to "always" interested in issues involving their education (54.9%) and sports subjects (59.7%). Approximately four out of ten students seem to be "usually" to "always" interested in topics related to the natural (42.3%) and social – man-made environment (40.0%). Another large percentage of students spend time on entertainment/pleasure and various personal issues. Finally, over half the students say they are "rarely" to "never" interested in financial subjects (56.8%). The classification of the students' interests was the result of the application of Friedman's test. After the application (N=412 Chi-Square=429.818 df = 6 Asymp. Sig = 0.000) and with Cronbach's α coefficient being 0.771, it is noted that the main subject of the multidisciplinary variable "students' interests" is "entertainment/pleasure" with a mean rank of 4.86. Second in the classification of interests is "personal issues", then "sports", with "educational matters related and unrelated to school" coming fourth. As expected, they are not interested in issues related to finance and nature.

Table 2. Percentages of "students' interests" (QA) (N=412)

	Percentage (%)				
	Never	Rarely	Sometimes	Usually	Always
Educational matters related and unrelated to school	10.2	12.4	22.6	25.5	29.4
Sports	10.4	11.7	18.2	17.0	42.7
Entertainment / Pleasure	4.4	8.0	17.5	30.6	39.6
Nature	8.7	22.6	26.5	22.6	19.7
Social (on the relations of the people around you – between them and with you)	8.5	21.8	29.6	20.1	19.9
Finance	32.8	24.0	21.4	12.1	9.7
Personal issues (your family. friends etc)	6.8	10.0	19.9	23.3	40.0

After applying the factor analysis method on the multidisciplinary variable *"students' interests" (QA),* the KMO index has a value of 0.739, Bartlett's sphericity test rejects the null hypothesis (X^2 = 402.373, df = 21 (p< 0.001) and two factors emerged (**Table 3**). The first factor (QA_1) includes the variables: "Social issues", "Finance", "Nature", "Personal issues" and "Educational matters". The second factor (QA_2) includes the variables: "Sports" and "Entertainment/pleasure".

Table 3. The factor loadings for *"students' interests" (QA)* data following rotation

	Factor loadings	
	Following rotation	
Students' interests	**QA_1**	**QA_2**
Social (on the relations of the people around you – between them and with you)	*0.753*	0.186
Finance	*0.699*	-0.278
Nature	*0.601*	0.218
Personal issues (your family. friends etc)	*0.582*	0.323
Educational matters related and unrelated to school	*0.525*	0.143
Sports	0.039	*0.791*
Entertainment / Pleasure	0.264	*0.764*

Table 4. Percentages of "the media through which you obtain information on issues of interest" (QB) (N=412)

	Percentage (%)				
	Never	**Rarely**	**Sometimes**	**Usually**	**Always**
Discussion with family/friends/fellow students	1.7	7.0	21.1	38.8	31.3
Education – School	3.2	13.1	21.6	34.0	28.2
Television	4.9	16.5	34.0	23.3	21.4
Radio	49.3	31.6	10.9	5.1	3.2
Newspapers	63.1	25.0	5.3	2.9	3.6
Magazines	36.9	24.3	25.5	8.0	5.3
Internet	6.8	14.6	25.2	23.1	30.3
Information leaflets	28.9	33.3	21.4	8.7	7.8
NGOs (WWF. Make a Wish Greece. etc)	44.4	23.1	16.3	9.7	6.6
Books – Encyclopedias	20.1	29.9	20.9	15.3	13.8
Events	20.1	26.2	26.0	17.5	10.2

Regarding sources of information and their frequency of use (**Table 4**), it is noted that the students "usually" to "always" use the information they receive through discussions with family/friends/fellow students (70.1%), through school and other educational media (62.2%), TV (44.7%) and the Internet (53.4%), while they "rarely" to "never" use information from the radio (80.9%), newspapers (88.1%), magazines (61.2%), information leaflets (62.2%), NGOs (67.5%), books and encyclopedias (50.0%) and various events (46.3%). Next, a Friedman's test was applied to determine the means through which they obtain information on issues of interest; they mainly involve interpersonal communication methods, such as discussions with friends or their family, and the school. In second place, mass media, namely the Internet and TV are found. The final places are taken up by NGOs, the radio and newspapers (N=412 Chi-Square=1.600.546 df = 10 Asymp. Sig = 0.000).

Factor analysis was used for the multidisciplinary variable *"the media through which you obtain information on issues of interest (QB) (Cronbach's a coefficient 0.732).* The Kaiser-Meyer-Olkin index has a value of 0.781, Bartlett's sphericity test rejects the null hypothesis ($X^2 = 770.67$, df = 55 and p< 0.001) and three factors emerged (**Table 5**). The first factor (QB_1), which involves "printed and traditional media", includes the variables: "Radio", "Newspapers", "Magazines" and "Information leaflets". The second factor (QB_2), which involves "interactive sources of information", includes the variables: "Education-School", "Discussion with family/friends/fellow students", "Events" and "Books-Encyclopedias". The third factor (QB_3), which involves "modern audiovisual information media", includes the variables: "Television" and "Internet". The variable "NGOs" does not belong to any of the above-mentioned factors.

Table 5. The factor loadings for *"the media through which you obtain information on issues of interest (QB)"* data following rotation

Factor loadings			
The media through which you obtain information on issues of interest	Following rotation		
	QB_1	QB_2	QB_3
Radio	*0.773*	-0.007	0.136
Newspapers	*0.763*	-0.043	0.059
Magazines	*0.585*	0.185	0.299
Information leaflets	*0.552*	0.419	-0.114
Education – School	0.073	*0.710*	0.107
Discussion with family/friends/fellow students	-0.172	*0.694*	0.136
Events	0.372	*0.517*	-0.024
Books – Encyclopedias	0.484	*0.506*	-0.013
NGOs (WWF. Make a Wish Greece. etc)	0.426	0.438	-0.075
Television	0.103	-0.010	*0.780*
Internet	0.053	0.112	*0.760*

Table 6. Percentages of "types of TV programmes you watch" (QC) (N=412)

	Percentage (%)				
	Never	**Rarely**	**Sometimes**	**Usually**	**Always**
Information programmes	20.6	29.1	30.1	12.9	7.3
Sports programmes	12.4	20.4	18.2	15.8	33.3
Children's programmes	7.5	17.7	18.9	24.5	31.3
TV games / Quiz shows	10.9	19.9	28.6	18.0	22.6
Documentaries	11.4	21.1	26.5	22.8	18.2
Environmental programmes	21.6	32.8	19.7	10.7	15.3
The news	21.4	29.4	24.8	13.3	11.2
Comedy series	6.8	8.0	21.4	29.4	34.5
Police stories	24.5	19.2	19.4	16.0	20.9
Drama series	35.4	22.8	17.0	11.2	13.6
Entertainment programmes	12.9	19.2	26.9	21.4	19.7
Historical series / films	13.3	23.3	25.0	18.7	19.7
Social series / films	22.8	24.5	24.8	15.0	12.9
Children's films	5.3	13.3	21.8	21.6	37.9
Old Greek films	12.1	17.2	24.5	18.4	27.7
Action films	8.5	12.1	19.9	20.6	38.8
Fiction films	7.5	11.9	23.1	19.4	38.1
Comedy films	6.8	11.7	21.6	22.1	37.9
Horror films	34.7	19.9	12.9	8.0	24.5

As regards the students' preferences of various TV programmes (**Table 6**), about six out of ten students answer that they "usually" to "always" watch children's films (59.5%), action films (59.4%), fiction films (57.5%), comedy films (60.0%) and comedy series (63.9%). At the same time, it is observed that approximately half the students "usually" to "always" watch sports programmes (49.1%), children's programmes (55.8%) and old Greek films (46.1%). Furthermore, the TV programmes that about four out of ten students say they "usually" to "always" watch are TV games/Quiz shows (40.6%), documentaries (41.0%) and entertainment programmes (41.1%). Concerning historical films, no major difference is noted between those who watch them "usually" to "always" (38.4%) and those who watch them "rarely" to "never" (36.6%). Finally, the TV programmes that approximately half the students say they watch "rarely" to "never" are information programmes (49.7%), environmental programmes (54.4%), the news (50.8%), police stories (53.7%), drama series (58.2%), social series/films (47.3%) and horror films (54.6%). Next, the Friedman's test was applied in order to classify the students' preferences regarding various types of TV programmes. Their preferences are dominated by comedy series followed by films (children's, comedies, action and fiction films). At the bottom of the list we find drama films, information programmes and environmental programmes (N=412 Chi-Square=1,017.384 df = 18 Asymp. Sig = 0.000).

Factor analysis was used to investigate the structure of the students' views concerning the multidisciplinary variable *"types of TV programmes you watch" (QC) (Cronbach's a coefficient 0.841)*. The

Table 7. The Factor loadings for *"types of TV programmes you watch" (QC)* data following rotation

	Factor loadings				
Types of TV programmes you watch	**Following rotation**				
	QC_1	**QC_2**	**QC_3**	**QC_4**	**QC_5**
Environmental programmes	*0.752*	0.069	0.211	-0.025	-0.016
Information programmes	*0.715*	-0.029	0.036	0.076	0.246
The news	*0.660*	-0.084	-0.006	0.034	0.257
Documentaries	*0.603*	0.032	0.230	0.095	0.098
Historical series / films	*0.601*	0.238	0.064	0.190	0.130
Social series / films	*0.582*	0.221	0.068	0.281	-0.241
Entertainment programmes	*0.512*	0.118	0.020	0.429	-0.126
Drama series	0.155	*0.787*	0.056	0.101	-0.197
Horror films	-0.034	*0.776*	-0.050	0.032	0.212
Police stories	0.075	*0.685*	0.128	0.150	0.190
Action films	0.091	*0.535*	0.048	0.351	0.525
Children's programmes	0.068	-0.044	*0.883*	0.038	0.095
Children's films	0.075	0.031	*0.874*	0.114	0.078
TV games / Quiz shows	0.224	0.245	*0.483*	0.144	0.032
Old Greek films	0.292	0.017	0.408	0.292	-0.266
Comedy films	0.146	0.144	0.081	*0.814*	0.142
Comedy series	0.113	0.118	0.222	*0.776*	0.032
Sports programmes	0.302	0.097	0.080	-0.042	*0.696*
Fiction films	0.120	0.354	0.133	0.386	*0.527*

Kaiser-Meyer-Olkin index has a value of 0.818 and Bartlett's sphericity test rejects the null hypothesis ($X^2 = 2411.620$, df = 171 and p< 0.001), which means that the relevant correlation matrix presents a statistical significance to the unitary matrix. The application resulted in five factors (**Table 7**). The first factor (QC_1), which involves "TV programmes for knowledge and awareness", includes the variables: "Environmental programmes", "Information programmes", "The news", "Documentaries", "Historical series/films" and "Social series/films". The second factor (QC_2), which involves "TV programmes with questions for the viewer", includes the variables: "Drama series", "Horror films", "Police stories" and "Action films". The third factor (QC_3), which involves "TV programmes for children", includes the variables: "Children's programmes" and "Children's films". The fourth factor (QC_4), which involves "comedy programmes", includes the variables: "Comedy films" and "Comedy series". The fifth factor (QC_5), which involves "TV action programmes", includes the variables: "Action films", "Sports programmes" and "Fiction films". The variables "Entertainment programmes", "TV games / Quiz shows" and "Old Greek films" do not belong to any of the above-mentioned factors.

Table 8 presents the subjects that students say they are interested in and about which they look for information on the Internet. Over half the students "usually" to "always" look for issues related to entertainment/pleasure (51.9%), while they "rarely" to "never" use the Internet for information regarding their education (42.0%), the natural environment (53.4%), society (61.7%), finance (83.5%) and personal issues (53.9%). As regards looking for sports information on the Internet, a minor difference is noted between those who answer "usually" to "always" (41.8%) and those who answer "rarely" to "never" (43.7%). Following the application of Friedman's statistical test, it is observed that the main topic of the multidisciplinary variable "topics about which you surf the Internet" is "entertainment/pleasure", with a mean rank of 5.26 (N=412 Chi-Square=506.643 df = 6 Asymp. Sig = 0.000), with Cronbach's α coefficient being 0.698. Students also surf the Internet for issues related to sports, education and nature. As regards the latter and the environment in general, they most probably receive stimuli from school to do so, rather than being driven by their own concerns.

Table 8. Percentages of "topics about which you surf the Internet" QD) (N=412)

	Percentage (%)				
	Never	**Rarely**	**Sometimes**	**Usually**	**Always**
Educational matters related and unrelated to school	14.6	27.4	30.3	15.0	12.6
Sports	25.7	18.0	14.6	15.8	26.0
Entertainment / Pleasure	11.9	12.6	23.5	23.5	28.4
Nature	24.3	29.1	20.6	12.4	13.6
Social (on the relationships of the people around you – between them and with you)	31.1	30.6	20.9	8.7	8.7
Finance	62.4	21.1	8.7	4.1	3.6
Personal issues (your family. friends etc.)	35.2	18.7	19.4	13.1	13.6

Table 9. Factor loadings for *"topics about which you surf the Internet" (QD)* data following rotation

	Factor loadings	
	Following rotation	
Topics about which you surf the Internet	**QD_1**	**QD_2**
Educational matters related and unrelated to school	*0.711*	-0.275
Social (on the relationships of the people around you – between them and with you)	*0.684*	0.343
Nature	*0.678*	0.216
Finance	*0.617*	0.138
Personal issues (your family. friends etc.)	*0.610*	0.329
Sports	0.072	*0.761*
Entertainment / Pleasure	0.191	*0.690*

Table 10. Percentages of "communication media you use to get information on nature" (QE) (N=412)

	Percentage (%)				
	Never	**Rarely**	**Sometimes**	**Usually**	**Always**
Discussion with family/friends/fellow students	6.6	17.2	27.4	26.2	22.6
Education – School	2.7	9.2	15.5	28.4	44.2
Television	4.6	17.2	28.6	24.0	25.5
Radio	50.5	24.8	13.6	6.8	4.4
Newspapers	60.4	22.8	9.7	3.4	3.6
Magazines	40.0	25.0	19.9	7.3	7.8
Internet	9.5	15.0	28.6	18.4	28.4
Information leaflets	33.0	26.0	22.3	9.7	9.0
NGOs (WWF. Greenpeace. etc)	43.0	19.7	19.4	10.0	8.0
Books - Encyclopedias	23.1	23.8	22.6	11.7	18.9
Events	26.9	24.3	21.1	14.6	13.1

After using factor analysis on the multidisciplinary variable *"topics about which you surf the Internet" (QD),* the Kaiser-Meyer-Olkin index presented a value of 0.767 and Bartlett's sphericity test rejects the null hypothesis (X^2 = 456.067, df = 21 and p< 0.001); two factors were identified (**Table 9**). The first factor (QD_1) includes the variables: "Educational matters", "Social issues", "Nature", "Finance" and "Personal issues". The second factor (QD_2) includes the variables: "Sports" and "Entertainment/Pleasure".

In **Table 10**, we see that the sources that students "usually" to "always" choose for information regarding the environment and the problems it faces are the following: the school and other educational media (72.6%), TV (49.5%), discussions with family, friends and/or fellow students (48.8%) and the Internet (46.8%). At the same time, the sources students "rarely" to "never" use for their environmental information are newspapers (83.2%), the radio (75.3%), magazines (65.0%), NGOs (62.7%), information leaflets (59.0%), events (51.2%) and books or encyclopedias (46.9%). Next, Friedman's test was applied in connection to the communication media they use to get information on nature; they primarily obtain this information from school, TV, their family and friends, and from the Internet. On the other hand, they do not receive information, as expected, from newspapers, the radio or magazines, which are not as accessible to them and are also not viewed as suitable tools (N=412 Chi-Square=1,396.871 df = 10 Asymp. Sig = 0.000).

Table 11. Factor loadings for *"communication media you use to get information on nature" (QE)* data following rotation

Communication media you use to get information on	Factor loadings		
	Following rotation		
nature	QE_1	QE_2	QE_3
Newspapers	*0.844*	0.013	0.031
Radio	*0.723*	0.076	0.246
Magazines	*0.680*	0.129	0.279
Information leaflets	*0.600*	0.393	-0.004
NGOs (WWF. Greenpeace. etc)	*0.516*	0.514	-0.144
Books - Encyclopedias	0.288	*0.710*	0.002
Education – School	-0.137	*0.689*	0.200
Events	0.316	*0.643*	0.046
Discussion with family/friends/fellow students	0.051	*0.624*	0.173
Television	0.117	0.111	*0.842*
Internet	0.145	0.117	*0.727*

Table 12. Percentages of "which environmental issues do you find most interesting" (QF) (N=412)

	Percentage (%)					
	I don't know	Not at all	A little	Fairly	Very much	Extremely
Forest	0.7	5.3	12.4	27.9	24.3	29.4
Sea	1.9	3.2	4.6	16.7	25.2	48.3
Animals	2.2	2.9	6.8	15.3	24.0	48.8
Plants	2.7	6.3	15.3	23.1	24.3	28.4
Insects	3.2	27.9	28.2	16.3	10.4	14.1
Soil – Ground	4.6	18.7	20.6	22.1	15.0	18.9
Water	2.7	4.4	3.6	15.3	19.7	54.4
Litter – Recycling	2.4	8.7	12.6	18.0	21.8	36.4
Air pollution	4.6	6.1	16.3	15.8	22.1	35.2
Energy	5.8	7.8	14.3	21.8	21.4	28.9
Climate change	8.5	9.7	14.1	18.2	19.2	30.3

Factor analysis was used to examine the structure of the students' views on *"communication media you use to get information on nature" (QE) (Cronbach's a coefficient 0.791),* which provided three factors. The Kaiser-Meyer-Olkin index has a value of 0.818 and Bartlett's sphericity test rejects the null hypothesis (X^2 = 2411.620, df = 171 and p< 0.001) (**Table 11**). The first factor (QE_1), which involves "printed and traditional media", includes the variables: "Newspapers", "Radio", "Magazines", "Information leaflets" and "NGOs". The second factor (QE_2), which involves "interactive information sources", includes the variables: "Books-Encyclopedias", "Education-School", "Events", "Discussion with family/friends/fellow students" and "NGOs". The third factor (QE_3), which involves "modern audiovisual information media", includes the variables: "Television" and "The Internet".

Table 12 shows the students' preferences regarding certain environmental issues that are included in the school curricula of the 5th and 6th grade of elementary school. Over half the students say that they are "very much" to "extremely" interested in the forest (53.7%), plants (52.7%), litter and recycling (58.2%), the problem of air pollution (57.3%), energy (50.3%); less than half the students are interested in the phenomenon of climate change (49.5%). At the same time, over seven of ten students state that they consider the following to be "very" to "extremely" interesting topics: the sea (73.5%), animals (72.8%) and water (74.1%). Finally, students have "little" to "no" interest in insects (56.1%) and the soil/ground (39.3%). The application of Friedman's test on topics related to nature that mainly concern students indicated that water is the primary topic, followed by animals, the sea, litter-recycling and the forest. On the contrary, in the last places we find insects, soil and climate change (N=412 Chi-Square=845.731 df = 10 Asymp. Sig = 0.000).

Regarding the multidisciplinary variable '*which environmental issues do you find most interesting*' (QF) (Cronbach's α coefficient 0.878), factor analysis was applied with the following results: the Kaiser-Meyer-Olkin index has a value of 0.880, Bartlett's sphericity test rejects the null hypothesis (X^2 = 1807.675, df = 55 and p< 0.001), and two factors were identified (**Table 13**). The first factor (QF_1) includes the variables: "Water",

Table 13. Factor loadings for '*which environmental issues do you find most interesting*' (QF) data following rotation

Which environmental issues do you find most interesting	Factor loadings	
	Following rotation	
	QF_1	**QF_2**
Water	*0.826*	0.117
Sea	*0.811*	0.123
Animals	*0.659*	0.276
Forest	*0.541*	0.515
Energy	*0.481*	0.435
Insects	-0.005	*0.824*
Soil – Ground	0.192	*0.727*
Plants	0.395	*0.675*
Air pollution	0.483	*0.517*
Climate change	0.435	*0.486*
Litter – Recycling	0.476	*0.486*

Table 14. Results of second - order factor analysis. Rotated Component Matrix

Factor –Subjects in each factor	Loadings	Eigenvalue	Variance (%)
Q_1		3.754	22.082
QE_2	0.806		
QB_2	0.789		
QA_1	0.714		
QD_1	0.677		
QC_1	0.673		
QF_2	0.622		
Q_2		2.231	13.124
QE_1	0.880		
QB_1	0.868		
Q_3		1.769	10.403
QD_2	0.767		
QC_5	0.749		
QA_2	0.721		
Q_4		1.418	8.341
QE_3	0.824		
QB_3	0.800		
QC_2	0.597		
Q_5		1.182	6.950
QC_4	0.761		
QF_1	0.674		
Q_6			
QC_3	0.934	1.013	5.957

"Sea", "Animals", "Forest". The second factor (QF_2) includes the variables: "Forest", "Insects", "Soil-Ground", "Plants" and "Air pollution". It is observed that the variable "Forest" is included in both factors, while the variables "Energy", "Climate change" and "Litter-Recycling" are not included under any of the two factors.

Next, in order to examine the structure of the students' views as a whole regarding their interests and habits, as well as the mass media they use to gain information, second-order factor analysis was applied, with an orthogonal rotation of the factors resulting from the factor analyses of the multidisciplinary variables QA, QB, QC, QD, QE and QF. After performing the necessary tests, the analysis pointed towards six important factors which in total explain 66.85% of the total variance (**Table 14**). The Kaiser-Meyer-Olkin index has a value of 688, Bartlett's sphericity test rejects the null hypothesis ($X^2 = 1992.228$, df = 136 and p< 0.001), and two factors emerged (**Table 14**).

The first factor (Q_1), includes the students who are interested in issues related to education, society, nature, finance and personal issues. The environmental issues they are concerned with are related to the forest, insects, the soil - ground, plants and air pollution. They mainly draw information on general and environmental subjects from books-encyclopedias, school, events, discussions with their family/friends/fellow

students and NGOs. Finally, their TV preferences include environmental programmes, information programmes, the news, documentaries, and historical and social series. The second factor (Q_2), includes students who look for information regarding their general and environmental interests in the printed and traditional media, i.e. newspapers, the radio, magazines, information leaflets and NGOs.

The third factor (Q_3), includes students who are interested in issues related to sports and entertainment/pleasure and surf the Internet looking for relevant information. Their TV preferences are mainly action programmes, such as action films, sports programmes and fiction films. The fourth factor (Q_4), includes students who use modern audiovisual information media, such as the TV and Internet, in order to obtain information both regarding their general interests and also on environmental issues. Their TV preferences involve TV programmes that raise questions for the viewer, such as drama series, horror films, police stories and action films. The fifth factor (Q_5), includes students who are interested in environmental issues related to water, the sea, animals and the forest, and their TV preferences mainly involve comedy programmes, i.e. comedy films and comedy series. The sixth factor (Q_6), includes students who watch children's programmes and children's films; no other attribute is identified.

DISCUSSION

The purpose of the present paper was to empirically examine the characteristics of the interests of primary school students and of their habits concerning the mass media, through which they are informed about numerous issues related to them; to also determine their TV preferences and the data that can be used and connected with the building of environmental awareness, as a main precondition for the display of pro-environmental behavior.

One of the primary results, as regards their interests, is that entertainment and pleasure feature amongst the main interests of students, while nature and environmental issues come out low on their list of preferences, along with economic issues. The reduced interest and concern of students in environmental problems constitute a negative prospect for their future participation in pro-environmental movements and their action for the solution of environmental problems; according to Schwartz (1977), values, beliefs, personal norms and feelings of obligation that are connected to one's self-expectations constitute the base for general movement support. Taking into consideration Stern and Dietz's (1994) assumption that value orientations take shape during the socialization process, it is understandable that the mass media, as a means of socialization, lead in this direction. One can therefore assume that the reduced interest of primary school students in the environment is possibly due to the stimuli and information the students receive or do not receive through the mass media, regarding both the cultivation of values and beliefs concerning nature and the environment. The findings of this study show that environmentally and socially aware students obtain information on these issues mainly through interpersonal communication methods (school, discussions with family and friends and NGOs). At the same time, relevant TV programmes, such as environmental and information programmes, the news and documentaries feature highly on their list of TV preferences. Even though people mainly shape their perceptions through interpersonal communication and their contact with their immediate social surroundings, they depend on mass media for information, entertainment, even to communicate, as mass media constitute the most frequently used, direct or indirect source of information (Papathanasopoulos et al., 2014).

Furthermore, as regards their habits concerning the sources of information they use to research issues of interest, high on the students' list of preferences are the Internet and the TV. These findings are in line with scholars who describe the television and the Internet as the dominant types of mass media in children's lives and suggest that their use takes up a lot of their free time (Izrael, 2013; Papathanasopoulos et al., 2014; Vryzas & Tsitouridou, 2002). Through television, children enter a part of the adults' world very early on, and its allure lies in the variety of programmes and films.

Moreover, it is noted that students, as a whole, prefer certain types of TV programmes, primarily comedy series and then films, while, on the other hand, information and environmental programmes are at the bottom of their list. As regards children's preferences regarding specific types of programmes, the AGB data for 2005-2006 shows that young viewers watch children's programmes, but also Greek comedy films are one of their top choices, with TV games, "light entertainment" and reality shows also high on the list; furthermore, Greek and Latin American soap operas are also popular with many children. The relevant data are not particularly encouraging, since objective knowledge and information is considered to be a precondition for shaping pro-environmental behavior and undertaking suitable action (Bartkus et al., 1999; Hines et al., 1986). This study adds to previous findings not only by providing this data concerning the students' habits and preferences about

TV programmes and issues of interest to them, but also by classifying them into groups in relation to their interests and the sources they use for information, and by determining each group's characteristics. This data could be taken into consideration by the media practitioners and the policymakers for the development of appropriate strategies, targeting each group for the enhancement of environmental awareness, while taking into account its particular characteristics. Scholars agree that in order to design a message for and effectively approach any target group, a basic precondition is to identify the audience's particular characteristics and habits (Jurin et al., 2010; Monroe et al., 2000; OECD, 1999). For instance, the target group of students with low environmental awareness does not choose printed sources of information; instead, they receive information from school and from modern audiovisual media, while showing a preference for particular programmes. Therefore, educational policy-makers and those responsible for the media have the opportunity to take this data into consideration, in order to create the most effective message for this group and to choose the most adequate means for its transmission (Monroe et al., 2000; Skanavi, 2004).

Another element that mass media practitioners should take into consideration is the fact that, as the audience's awareness about environmental issues increases, the latter demands more detailed and valid information from the mass media (Theodosiadou et al., 2012). As a result, the media are asked to find ways to offer the most appropriate and integrated environmental information to the audience in the most alluring way. The function of the mass media as profitable organizations, therefore involves not only the influence of the media on the students' group, but also the influence of this segment of the audience on the media, via a two-way, interdependent relationship (Skanavi, 2004). Thus, concerning environmental issues, it is important for the mass media, through the diffusion of environmental information, to present aspects of various environmental problems and risks, and the numerous choices of action offered to individuals as regards these subjects (CEIA, 2000). Through this process, environmental awareness in this age group could be developed and the undertaking of action about the protection of the environment could be promoted. At the same time, an environmentally aware children's audience, that, according to this research, is constantly informed on environmental issues of interest (such as the forest, insects, soil, plants, air pollution) through environmental and information programmes, along with documentaries, can put pressure on the mass media practitioners to upgrade their role as "environmental instructors" (Skanavi, 2004).

Finally, students in this particular region are concerned about water, the sea, animals and the forest on the one hand, which they place high on their agenda, while comedy programmes and children's series are dominant in their TV preferences. The students' region is dominated by water and characterized by numerous sites of natural beauty, as well as areas of particular natural importance, such as the Evros river Delta and the Forest of Dadia. In fact, on several occasions, the river Evros, which is second in size to Danube in Southeast Europe, and the main river of the Balkan Peninsula, causes flooding in the region and large-scale disasters that affect farming and animal breeding, as well as residential areas. According to Barraza and Cuaron (2004), children do not only tend to remember but can also understand and explain environmental terms when they are related to their own experiences. Moreover, according to Chou et al. (2015) direct experience is closely connected with strong attitudes.

 Therefore, the children's place of residence and their own experiences affect the way in which they view environmental issues or concerns through the mass media. This is in line with Nitz (2000), who asserts that public awareness is raised when people believe that the related message directly concerns them, but the final rate of achieving any goal depends on the context and the way the message is transmitted. Moreover, as it is shown in a study of secondary education students carried out by Papapanagou (2006), in which educational material about the wetlands of Mesologgi was evaluated, the natural environment alone does not suffice in order to raise awareness. It was also proved that the main precondition for this to be achieved, is to find the proper means of interpreting this environment and to apply an appropriate transformation of scientific knowledge. Finally, another interesting extension of this data involves the use of multimedia and images, as tools that enrich the students' learning process and act as stimuli (Özdaşli & Göl, 2013). At the same time, however, these same means also provide feedback regarding the representations and information received by children concerning the natural environment in which they live and act (Papapanagou, 2006).

CONCLUSIONS

The present study is an attempt to examine the interests of primary school students and their habits and preferences regarding the media they tend to use to get information concerning their everyday needs and the environment, in order to identify the most suitable strategies for raising environmental awareness. Concerning the students' interests, the findings show that they differ from those of the adults. More

specifically, the former mainly focus on entertainment and pleasure**,** as well as personal issues, while issues related to finance and nature are low on their preferences. In particular, the students interested in sports and entertainment are indifferent towards the environment and nature, while those who are interested in the environment are aware of social issues, as well. As regards the sources of information used, it is concluded that the students' habits are consistent. In other words, even when they seek information on issues of general interest or on more detailed issues about nature and the environment, they resort to the same sources of information, without differentiating from them. The school, TV, their immediate social surroundings and the Internet feature high in their preferences, while causing a debate about their role in the development of environmental awareness. It is evident that the fragmented information provided by the Internet can often be unreliable and misleading. The same also applies as regards the students' random and sporadic discussions about these issues with family and friends. Thus, the role of the school and interpersonal contact with specialized scientific staff through events concerning these issues, as well as the NGO members, is of primary importance, as suggested by the environmentally aware students, who choose these sources of information.

As regards television, it is observed that students are not very satisfied with the quality of its programmes. However, when they decide to watch television during their free time, they mainly choose to watch comedies, children's films and TV series; documentaries and environmental programmes are at the bottom of their list of preferences, even though these are the TV programmes watched by students interested in the environment. Therefore, it is obvious that each group of students, having varying characteristics, eventually expresses different TV preferences.

At first, what needs to be examined is the quality of environmental films and programmes, in order to identify those elements that would make them more attractive and appealing to students. Taking into account the students' preference for comedy films and programmes, and aiming to raise environmental awareness, media practitioners should not only try to convey messages with an environmental content through certain programmes, but also present them in a comical manner where possible, in order to achieve maximum results. Moreover, it is important for improvisations to be avoided and for the environmental information to be conveyed according to the preferences and interests of each group, so that it may reach the target audience. For instance, it is suggested that comedy series and films focus on issues related to water, the sea, the animals or the forest, so as to attract the interest of, raise awareness and influence students who are fond of such programmes.

Another proposal is for policy-makers, while in the process of designing environmental education policy, to use the mass media for a systematic and effective transmission of stimuli and information concerning nature and the protection of the environment, within informal education. At the same time, the relevant mass media products (films, documentaries, YouTube videos, etc.), designed under the above-mentioned preconditions, could be used within formal education. Therefore, in order for schools to encourage a positive attitude towards the environment and raise awareness among students regarding environmental issues, they should incorporate the use of mass media and films of a comical or entertaining nature in the educational process, since the latter attract the interest of students and are at the top of their list of preferences.

Moreover, it is concluded that children are subject to stimuli and awareness raising through the environment they live in and their experiences, and their interests and preferences are accordingly formed. The students of this region consider water to be the most important local environmental issue, along with the forest, which constitutes a common ground for both groups of students, apparently due to the particular natural characteristics and resources of their region, including the rivers Evros and Ardas and the forest of Dadia. Thus, since comedy films and series constitute the children's favorite TV choices, it is suggested that local media and the educational community of the area include these natural resources in their programmes and lessons in a more attractive and assimilable way for this age group, in order to enhance their environmental awareness.

Finally, it is suggested that this research be repeated with face-to-face interviews and a semi-structured questionnaire that could highlight new data to be examined or clarify ambiguous perceptions. Similar studies should not only focus on students but also their parents, since they influence the perceptions and attitudes of their children; such a method however requires specialized knowledge, experience and quite a lengthy period of time. Furthermore, it would also be interesting to expand the present study in order to cover the population of neighboring regions, where a significant differentiation exists regarding religious and cultural customs.

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