

Optional environmental education in the Greek schools^(*).

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Abstract. *Environmental education constitutes a major component of the Greek schools' activities. It is delivered as formal education, as optional education programs and as informal activities. The formal education includes specific courses or, more often, modules and related activities within the syllabus of all the school subjects. The optional education programs take place outside the normal school hours, usually in the form of 'environmental education groups' studying in depth a specific environmental issue. The informal activities are within the context of the school culture in its daily operation. In this work, we present a review of the optional environmental education programs during the previous years as they were implemented by the schools of Heraklion, a prefecture in the area of Crete, which may be considered as representative of the whole Greece.*

Keywords. Environmental education.

1. Introduction

The Environmental Education started as a separate education subject in the decade of 1970 as the result of a raising awareness on environmental problems and the inadequacy of Science and Technology alone to solve these problems without a conscious change in society modes of life. The education of environmentally responsible citizens, with knowledge, dexterities attitudes and behaviours, who participate actively in environmental issues, has been considered since then as one of the most important factors that will contribute in the confrontation of environmental crisis and the implementation of sustainability. The introduction of optional environmental education in the education systems of most countries indicates the public awareness on environmental problems. The Non-

formal environmental education in Greece was introduced on a pilot basis the school year 1983-84. It was established as official supported optional school activity in 1990 and since then it is an important element of the school activities.

Environmental education now constitutes a major component of the Greek schools' activities to an extent greater than in most other European countries [2]. It is delivered as formal education, as optional education programs and as informal activities [1]. The formal education includes specific courses or, more often, modules and related activities within the syllabus of all the school subjects. The optional education programs take place on a voluntary basis outside the normal school hours, usually in the form of 'environmental education groups' studying in depth a specific environmental issue. These studies are of long or short term duration. Long term (project) activities have a duration of a semester (at least) or a whole school year. The environmental group selects a topic to study in depth. At the end of the school year a school fair with the results from all the environmental groups of the school (or of the schools in the region) is usually organized. It is the form of environmental activities encountered mostly in secondary education. These programs quite often complement the formal education courses. Short term optional environmental activities have duration of less than a semester. They may be only of one day (environmental visits – sightseeing) as environmental awareness activities. Their character is to develop environmental awareness and they are encountered mostly in primary education. The informal activities are within the context of the school culture in its daily operation.

In this work, we present a review of the optional environmental education long term (project) activities during the previous years as

they were implemented by the schools of Heraklion, a prefecture in the area of Crete, which may be considered as representative of the whole Greece. This study complements other studies on optional and informal environmental education [3], [4], [5].

2. Methodology

The current study is based on an analysis of the optional environmental projects that were implemented in the schools of the Prefecture of Heraklion during the school years 2001-02 until 2004-05. They include Pre-Elementary (infant school ages 4-6), Elementary school (ages 6-12), Gymnasiums (ages 13-15), Lyceums (ages 15-18) and Technical Vocational schools (ages 15-18). Optional environmental activities (especially long term ones) may have financial support from central (or, less frequently, from local) education authorities. To this end the schools should apply including the title, the duration, the plan of activities, the requested budget The application forms were used extensively in this study and, where necessary, were complemented by supplementary information from the schools (only in a few instances to clarify some ambiguous points).

The Prefecture of Heraklion includes the highly urbanized greater area of Heraklion city (urban area), large villages mainly in the valleys and the sea coast (semi-urban area) and rural areas mainly in the mountains. About half the population of Crete (0.6 million habitants) live in the Heraklion prefecture. In the greater area of Heraklion city live about 150.000 habitants. The number of schools and their distribution is presented in Table 1 while in Table 2 the distribution of secondary education teachers in the area of the Heraklion prefecture is presented. Of the total number of teachers about 60% are within the schools of the Heraklion urban area. The numbers are consistent with the corresponding numbers for the whole of Greece.

Table 1. Schools in Heraklion prefecture

Area	Pre -elementary	Elementary	Secondary
Urban	79	59	29
Semi -urban	16	12	4
Rural	152	34	49
Total	247	105	82
Percentage (%)	57.57	24.47	19.11

Table 2. School Teachers in Heraklion prefecture

	Total	%	Females	%
Language	602	26	498	83
Mathematics	349	15	98	28
Science	292	13	108	37
Other	1.048	46	624	60
Total	2.291	100	1.328	58

3. Results

During the three school years 2001-05, the secondary education schools realized 262 environmental projects. The primary (pre-elementary and elementary) education schools realized 191 environmental projects.

Tables 3, 4, 5 and 6 present distribution of environmental activities of the secondary education schools in the Prefecture of Heraklion.

Table 3. Projects in general secondary education

Year	Gymnasiums	Lyceums	Technical
2001-2002	37	22	2
2002-2003	57	24	7
2003-2004	39	11	5
2004-2005	27	19	12
Total	160	76	26
Percentage (%)	61	29	10

Table 4. Projects in Gymnasiums

Year	Urban	Semi -urban	Rural
2001-2002	19	3	15
2002-2003	21	6	30
2003-2004	15	3	21
2004-2005	2	1	26
Total	57	13	92

Table 5. TVE schools

Year	Urban	Non-urban
2001-2002	2	0
2002-2003	5	3
2003-2004	5	0
2004-2005	10	1
Total	22	4

Table 6. Lycei

Year	Urban	Semi -urban	Rural
2001-2002	3	4	12
2002-2003	7	2	10
2003-2004	4	2	5
2004-2005	7	5	13
Total	21	13	40

It is apparent that Gymnasiums are more active than the Lycei in environmental activities. Also schools in non-urban areas are more active than schools in the urban area. This is consistent with the results obtained in [3]. Possible reasons include:

- Students in Lycei are absorbed with their preparation for the entrance examinations to higher education and do not volunteer to any other activity,
- Students in urban areas have also other opportunities for their time (private lessons, foreign languages, sports, etc),
- Teachers in non-urban area are younger and, presumably, more energetic.

The number of environment projects per year seems constant for the period under study. A closer examination reveals that while some schools implement environmental activities occasionally quite a few schools do it on a regular basis. Possibly, in these schools a critical mass of supervising teachers has been formed and a relative culture has been developed.

Worth noticing is also the activities of the TVE schools (9 in total 2 of them night schools).

Tables 7 to 9 present the number of optional environmental projects for the primary education schools. There are 192 environmental projects in total 67% of which were implemented by pre-elementary schools. Taking into account the number of schools in each category it seems that the per school optional environmental activities is comparable between elementary and pre-elementary schools despite the significant age differences a rather pleasant result for the pre-elementary schools. It may also be observed that pre-elementary schools in the urban area are much more active than in the non-urban areas. This is in contrast with the situation in elementary schools and in secondary education schools. Comparing the per school activities between the different types of schools (see also Tables 10 and 11 in reference with Table 1) the Gymnasium schools seem more active. It should however be noted that the primary school activities observed in this study are more numerous than a corresponding study in the prefecture of Rethimno [3]. The explanation of these results requires further study taking into account the following:

- Prime objective of the pre-elementary school is the socialization of the children including familiarization with the local (social) environment,

- In the urban areas a short term (a couple of hours) visit to a local institute park or service is easier for the pre-elementary schools in the urban areas,
- Recently, a great number of pre-elementary and elementary school teachers were appointed. These teachers are young (and presumably more energetic) University graduates who have sound environmental education training.
- The circulars and guidelines in primary education suggest that all student study should preferably be done within the school hours only (avoid homework if not specifically justified).

TABLE 7. Primary education schools

Year	Pre -elementary	Elementary
2001-2002	28	24
2002-2003	35	16
2003-2004	34	10
2004-2005	31	14
Total	128	64

TABLE 8. Pre elementary schools

Year	Urban	Semi -urban	Rural
2001-2002	13	2	13
2002-2003	23	1	11
2003-2004	24	0	10
2004-2005	19	2	10
Total	79	5	44

TABLE 9. Elementary schools

Year	Urban	Semi -urban	Rural
2001-2002	10	2	12
2002-2003	6	2	8
2003-2004	3	2	5
2004-2005	9	0	5
Total	28	6	30

TABLE 10. Primary and secondary schools

Year	Primary	Secondary
2001-2002	61	52
2002-2003	88	50
2003-2004	55	44
2004-2005	58	45
Total	262	191

TABLE 11. Primary and secondary schools

Area	Primary	Secondary
Urban	107	100
Semi -urban	11	26

Rural	73	136
Total	191	262

The number of programs per year appears to be generally constant in the elementary and secondary education as well

In secondary education all specialties' teachers participate as supervisors of the environmental education groups as is shown in Table 12.

	2001	2002	2003	2004
	-02	-03	-04	-05
Language	55	71	35	38
Mathematics	6	17	6	7
Science	31	36	30	21
Other	53	101	50	65
Total	145	225	121	131

Taking into account Table 2 the percentages of the different specialties as environmental group supervisors are 33% for Language

Table 13 Type of projects

	Gym	Lyc	TVE	Pre-el	Elem
Activities for the environment (Recycling, - cultures, cleanings, configuration of spaces)	20	16	7	6	12
Environmental subjects general or world interest, Environmental questions	41	8	6	28	51
Study and acquaintance with the local environment	29	18	5	9	27
Social subjects, modern economic activity, Sensitization of public	20	9	3	1	2
Cultural environment, Traditional occupations and professions	45	25	5	19	36
Structured and artificial environment	5				
TOTAL	160	76	26	63	128

4. References and Notes

- [1] See a summary in P. G. Michaelides, 'Environmental Education in the Greek Schools' in G. Flouris, M. Kassotakis (editors) Honorary Volume of Professor B. Masialas, Rethimno, 2005.
- [2] Result obtained in the context of an Erasmus project (ICP-89-0026/05).
- [3] Michaelides P., Kimionis G. "Fifteen Years of Environmental Education in the Prefecture of Rethimno - First assessment, conclusions and perspectives" proceedings of the conference on "Optional Education programs in Schools", University of Patras, 28-30 May 1999, pp 350-358 published by Mpagakis G (ed.) Athens 2000, Metechmio publishers (in Greek)

teachers, 10% for the Mathematics teachers, 40% for the Science teachers and 26% for the other specialties with an average of 27% of secondary school teachers participating to the (voluntary) optional environmental education activities.

We used the categories introduced in [4] to classify the 453 optional environmental education projects of the different types of schools. The results are presented in Table 13. The first 3 classes refer mainly to the natural environment while the remaining 3 refer mainly to human environment.

There is a slight prevalence of the project related to the natural environment in Gymnasium. This is increase in the other types of schools. For the primary education schools this is rather expected because of the age of the students [6]. However the missing class of *t* even from TVE should be noticed.

- [4] Georgios Kimionis, P. G. Michaelides, 'Environmental Education in Greek Schools: The Viewpoint of the Local Coordinators', proceedings of the 2nd International Conference on Hands on Science: Science in a Changing Education, July 13-16, 2005 – Greece, The University of Crete campus at Rethimno pp 196-200
- [5] Theodore Antoniou, 'Environmental Issues on the Newspapers of HERAKLION – CRETE', 2nd International Conference on Hands on Science Hsci2005 – Science in a Changing Education, July 13-16, 2005 – Greece, The University of Crete campus at Rethimno (<http://www.clab.edc.uoc.gr/2nd/>).
- [6] In a Piagetian context children in primary education are before or approaching the stage of formal logic so the observation of the natural environment is more appropriate than concepts from the social organization.

