



Students' awareness of the urban environment in a small Greek city

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Summary. Guided and open ended questionnaires are distributed to secondary school students in the small Greek city of Serres in order to study their preconceptions about the urban environment. According to students' responses the word city is mostly connected with negative natural, social and structural features. Evidence is provided that young people are developing a reasonable conscious of environmental issues, especially regarding acute everyday aspects of city life, *e.g.* solid waste management. Places of entertainment and leisure as well as places representing the history of the city are also highly appreciated. Noticeably, students have only a limited knowledge of the living species of their city, identifying as such mostly pets and other relatively large animals but almost no plants. Finally, a comparison is conducted with an analogous study from the small Spanish city of Orense leading to similar conclusions, a fact which lends support to the notion of a common European environmental education policy.

Introduction

It is beyond all reasonable doubt that downgrading of the environment has an adverse effect upon quality of life. As maintenance of the environment and its amenities has started to score heavily in recent years, attention has been focused on integrating environmental issues into school curriculum (Unesco No. 5, 1983; Unesco No. 22, 1986; Georgopoulos and Tsaliki, 1993). Serious gaps are identified in the literature concerning both students' understanding of environmental issues and availability of reliable educational methodology and curriculum design procedures (Hungerford *et al.*, 1983; Robottom, 1990; Flogaiti, 1996). On that account, international organizations have supported the idea of considering students' preconceptions about the environment as a diagnostic tool in the educational process, *e.g.* Unesco No. 8 (1983); Unesco (1988).

It is essential for the teachers to detect what the children think about a particular topic and

modify or extend alternative frameworks of conceptual understanding (Kinnear, 1994). Even though it has been reported that children's preconceptions may provide stable estimates of the characteristics of the environmental settings (Richards, 1990) it must not be forgotten that sometimes they are mainly based on abstract learning derived from different sources of information (Cohen, 1993; Paraskeuopoulos, 1996). In our era of abundant and widespread information one is tempted to believe that this kind of learning process may lead to similar preconceived ideas among different socio-cultural environments (Membela *et al.*, 1994).

In the 1980s, questionnaires regarding students' preconceptions were basically used in the field of "experimental science" to elicit beliefs about science (Pfund and Duit, 1988; Carmichael *et al.*, 1990) and to evaluate the effectiveness of science and math courses (Thijs, 1992). Although in the past a few environmental researchers employed specially composed questionnaires as a main device or as a part of their measurement methodology (Gump, 1978), questionnaires of *children's preconceptions* about the *natural environment* is a relatively new area of research

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(Moore, 1988; Membiela *et al.*, 1993; Membiela *et al.*, 1994).

The main objective of this work is to collect information helpful in shedding light on students' preconceptions about the urban environment in the Greek city of Serres. To the best of the authors' knowledge, such information is not available for any other provincial city in this country. Serres is a rather typical provincial Greek city with less than 100,000 inhabitants, surrounded by widespread flat fields on the one side and a low height mountain complex on the other side (Fig. 1). The city has an old and a new part with several worth seeing points of interest. One can sort out the ruins of the ancient Acropolis and the Byzantine castle at the pine-tree covered hill of Koulas, the archeological museum, the old cathedral church and several other remains dating back to the time of Turkish occupation of the city, *e.g.* Bezesteni.

Another motivation for this work is to compare with a similar project carried out recently in Spain. Membiela *et al.* (1994) conducted relevant research among secondary level students at the

Spanish city of Orense. In that work, certain observations were assessed, leading to the development of a sufficiently realistic picture of the preconceptions of students of Orense about the urban environment of their city.

Greece and Spain are countries located in the Mediterranean basin at the southern part of Europe and they are both members of the European Union. In these two countries environmental education is an unimportant part of school curriculum. In Greece it has been estimated that only 5% of secondary level students has received environmental education (Faraggitakis, 1996) which, however, does not exceed 14 hours of their total education time (Vasala, 1996) while in Spain, environmental education only "occupies a marginal position in educational practice" (Membiela *et al.*, 1994).

Serres in Greece and Orense in Spain are cities that have several features in common. They are of comparable size and as capitals of regional provinces, they are local centers for agriculture, trade and industry. Therefore, it would be very interesting to examine whether Greek and Span-



Figure 1. A general view of the Greek city of Serres.

ish students from Serres and Orense share similar preconceptions about the urban environment. This comparison can be of particular merit to European education policy-makers in their pursuit to integrate knowledge and develop strategies towards a common European environmental education.

Methodology

At the end of the school year 1995–96, written open-ended and guided questionnaires were distributed to 3rd grade students at five (out of the six) secondary schools in Serres, in an attempt to investigate what students believe about the urban environment of their city. In this kind of research it is of particular interest to combine open-ended and guided questionnaires in order to facilitate data interpretation and assess the validity, reliability and significance of the results. Open-ended questionnaires were distributed to two of the five schools and guided questionnaires to the rest three. Guided questionnaires included a number of reasonable optional responses while open-ended were left blank for the students to write whatever crossed their minds. Answers were not mutually exclusive.

The questions in the questionnaires were simple and essentially the same with the ones in Membiela *et al.*'s study (1994), in order to resemble conditions therein and allow further comparisons. The aim of the first question was to detect how the word city was perceived by the students and specifically to identify the features representing largely their concept of the city. The second question was used to identify specific problems and deficient components of the city as conceived by the students. Question three was meant to isolate the elements of the city that were mostly appreciated and valued by the students and question four allowed to examine the depth of knowledge and understanding of the students as regards the living beings found in their city.

Greek subjects were matched with Spanish subjects according to their age and background of environmental education. All Greek (as Spanish) students were 14–15 years old and none of them had attended extra curriculum courses about the environment. A total of 566 Greek subjects from

those completed the study protocol, fulfilled the inclusion criteria. Specifically, 265 students completed the open-ended questionnaire and 301 students completed the guided questionnaire. The responses of the open-ended questionnaires were contrasted against the responses of the structured questionnaires and against the responses of 201 open-ended questionnaires from Membiela *et al.*'s (1994) study for Orense, Spain.

Results

The calculated percentages are, in general, higher in the guided questionnaires than in the open-ended questionnaires (Tables 1–4). This is somewhat expected, for in the former the children had just to pick out their answers from a variety of offered options, while in the latter they had to think all by themselves. Therefore, caution must be exercised when making comparisons between the two types of questionnaires. All tables communicated in this study include also the responses

Table 1. Responses of students of Serres to the question (Item 1): Write down everything the word "city" suggests to you.

Answer	A	B	C
Noise	62.1	18.1	16.9
Amusement/leisure	54.2	24.2	5.0
Pollution in general	53.2	17.7	19.9
Large population	51.8	48.3	75.1
Atmospheric pollution	48.2	12.1	9.5
Lack of green places	46.8	1.9	12.4
Unemployment	46.8	0.8	0.5
Excessive traffic	45.8	24.5	26.4
Urban concentration	44.5	21.9	47.3
Employment opportunities	39.5	18.9	13.9
Civilization	35.2	10.9	2.5
Violence	32.9	2.6	3.0
Abundant services	32.2	—	34.3
Something better than rural areas	26.2	8.7	5.5
Industrialization	23.3	1.5	9.9
Power center	22.9	2.3	3.0
Municipal government	17.6	—	3.5
Monuments	13.6	—	3.5
Educational opportunities	—	9.8	—
Stress	—	3.0	—
Monotony of lifestyle	—	3.0	—

A: %, guided questionnaire; B: %, open-ended questionnaire; C: %, open-ended questionnaire from Orense, Spain (Membiela *et al.* 1994).

Table 2. Responses of students of Serres to the question (Item 2): *You have been appointed Mayor of Serres. Congratulations! Make a list of the problems you think your city has.*

Answer	A	B	C
Solid waste	54.2	65.3	29.9
Mendicity/poverty	52.2	0.8	7.0
Lack and/or deterioration of Green areas	50.8	26.4	23.4
Unemployment	43.9	10.2	17.4
Deficiencies in public services	40.5	51.3	46.8
Pollution in general	37.5	21.5	24.9
Noise	32.2	9.1	4.0
Drug abuse	29.9	2.3	12.4
Housing	28.2	2.3	4.0
Circulation and traffic	25.2	54.3	72.2
Criminality/insecurity	14.3	4.9	14.4
Education	—	8.7	—
Hospitals	—	5.3	—
Pollution in rivers	—	—	8.5
Bushfires	—	—	4.5

A: %, guided questionnaire; B: %, open-ended questionnaire; C: %, open-ended questionnaire from Orense, Spain (Membiela *et al.* 1994).

of Spanish students (from Membiela *et al.* (1994)), for the sake of comparison. Answers listed in Tables 1 to 4 are sorted by frequency with respect to those of the guided questionnaires (column A).

Table 3. Responses of students of Serres to the question (Item 3): *If you had to show the city of Serres to a friend who came to visit you, where would you take him / her?*

Answer	A	B	C
Amusement locations	76.7	22.3	21.9
City center	64.8	43.4	10.9
Old monumental part	50.5	95.5	48.3
Parks/gardens	50.2	31.7	99.0
Sporting areas	42.2	54.3	21.9
Museums	39.5	24.5	19.9
Places near the city	2.3	52.8	—
Thermal waters (Burgas)	—	—	87.6
Cathedral	—	—	71.1
Roman bridge	—	—	49.2
Other bridges	—	—	7.0

A: %, guided questionnaire; B: %, open-ended questionnaire; C: %, open-ended questionnaire from Orense, Spain (Membiela *et al.* 1994).

Item 1. Write down everything the word “city” suggests to you.

In all three questionnaires of Table 1, the highest *evenly* suggested preference ascribes the word city to the aspect of large population (A: 51.8%, B: 48.3%, C: 75.1%). Greek students, in both types of questionnaires, appreciably associate city also with noise (A: 62.1%, B: 18.1%), leisure/amusement (A: 54.2%, B: 24.2%), pollution in general (A: 53.2%, B: 17.7%), air pollution (A: 48.2%, B:

Table 4. Responses of students of Serres to the question (Item 4): *Give the names of living organisms you have seen in your city.*

Answer	A	B	C	Answer	A	B	C
Dogs	98.0	90.2	91.0	Mice	67.1	35.8	30.0
Cats	96.3	89.8	82.0	Chickens	65.1	37.4	18.5
Humans	95.3	25.3	17.7	Daisies	60.5	—	6.5
Trees	90.7	3.8	27.0	Canaries	60.1	6.0	48.0
Doves	90.0	24.5	70.5	Poplar trees	56.1	—	—
Flies	90.0	16.2	40.5	Lime trees	52.2	—	—
Birds	88.4	61.9	29.0	Ostriches	3.3	11.5	—
Plants	85.9	4.9	14.0	Reptiles	3.0	37.0	—
Mosquitoes	84.7	14.0	—	Cockroaches	2.3	13.2	—
Ants	84.7	17.7	29.0	Frogs	1.7	18.5	—
Sparrows	81.7	10.9	23.0	Horses	1.7	43.4	—
Grass	81.4	—	4.5	Donkeys	1.0	30.9	—
Roses	79.7	—	18.0	Sheep	—	17.4	—
Pine trees	76.7	—	12.5	Insects	—	17.7	—
Spiders	74.4	3.8	15.5	Turkeys	—	—	53.5
Maple trees	74.4	—	—	Cranebills	—	—	20.5

A: %, guided questionnaire; B: %, open-ended questionnaire; C: %, open-ended questionnaire from Orense, Spain (Membiela *et al.* 1994).

12.1%), excessive traffic (A: 45.8%, B: 24.5%), urban concentration (A: 44.5%, B: 21.9%) and employment opportunities (A: 39.5%, B: 18.9%).

A reasonable accord is found between Greek and Spanish students as regards the aspects of excessive traffic (B: 24.5%, C: 26.4%), employment opportunity (B: 18.9%, C: 13.9%), noise (B: 18.1%, C: 16.9%), pollution in general (B: 17.7%, C: 19.9%) and atmospheric pollution (B: 12.1%, C: 9.5%) whereas a moderate one as regards large population (B: 48.3%, C: 75.1%) and urban concentration (B: 21.9%, C: 47.3%).

Item 2. You have been appointed Mayor of Serres. Congratulations! Make a list of the problems you think your city has.

The aspect of *deficiencies in public services* markedly stands out in all three columns of Table 2. There is also a fair correspondence between Greek questionnaires as regards problems associated with public services (A: 40.5%, B: 51.3%), pollution in general (A: 37.5%, B: 21.5%), lack of green places (A: 50.8%, B: 26.4%) and circulation and traffic (A: 25.2%, B: 54.3%). The latter encompasses problems like: roads in bad condition, heavy traffic, limited parking places, traffic jams, bus services, lack of crossroads and deficient traffic lights.

The aspect of deficiencies in public services includes responses such as: inadequate lighting of streets and squares, lack of sport and cultural facilities as well as problems with the water and sewage network. Note that, as regards the Spanish students this particular aspect includes also all reports on problematic education and medical services while for Greek students these particular services have been sorted out (Table 2). However, if the aspects of deficient education (B: 8.7%) and medical services (B: 5.3%) in Greek open-ended questionnaires are added to the responses of general deficiencies in public services (B: 51.3%) then this aspect receives a very high percentage (65.3%).

A very high percentage is given by Greek students to *solid waste* (A: 54.2%, B: 65.3%) which is considered a major problem of the city. In this category, problems in all phases of waste handling are included: collection, temporal storage spots, cleansing and disinfection of refuse buckets. Al-

ternatively, some students refer generally to problematic waste management and only a few to lack of a biological treatment unit for liquid wastes.

Both Greek and Spanish children in open-ended questionnaires mention as main city problems the *structural* and *environmental* ones. Problems like circulation and traffic (B: 54.3%, C: 72.2%), deficiencies in public services (B: 51.3%, C: 46.8%), solid waste (B: 65.3%, C: 29.9%), pollution in general (B: 21.5%, C: 24.9%) and lack of green places (B: 26.4%, C: 23.4%), received high percentages. *Social* features like unemployment (B: 10.2%, C: 17.4%), criminality/insecurity (B: 4.9%, C: 14.4%), drug abuse (B: 2.3%, C: 12.4%) and poverty (B: 0.8%, C: 7%) received substantially lower percentages.

Item 3. If you had to show the city of Serres to a friend who came to visit you, where would you take him / her?

In Greek questionnaires, leisure places received A: 76.7%, B: 22.3%, the city center A: 64.8%, B: 43.4%, ancient monuments A: 50.5%, B: 95.5% gardens/parks A: 50.2%, B: 31.7% and sporting areas A: 42.2%, B: 54.3%.

In the category of old monumental part a large proportion of students mentioned the Acropolis and the Byzantine castle at Koulas which are considered emblems of the city (Fig. 2). The cathedral as well as other churches and monasteries and some Turkish time remains (Bezesteni: Fig. 3) received much lower percentages. Inasmuch as sport areas are concerned, the swimming pool was the most popular followed by the "OVA" sporting center. City center was mentioned as an accumulation of several meeting points where young people socialize (Fig. 4). Parks/gardens mostly referred to a small tree-covered valley which crosses the city at one end and which is ideal for promenades (Fig. 5). Finally, for places near the city the most popular ones were a leisure area just outside the city limits (St. John) which has plenty of trees and waters and a ski center (Lailias) a few kilometers up to the mountains.

When contrasting Greek to Spanish responses, Greek students mostly prefer places of historic interest, like ancient monuments (B: 95.5%), while Spanish students mostly prefer places of natural



Figure 2. The Acropolis with the ruins of a Byzantine castle at the hill of Koulas are the emblems of the city of Serres, Greece.



Figure 3. Bezesteni; Turkish occupation-time remains at the city of Serres, Greece.



Figure 4. Eleftherias Square, a popular meeting point for teenagers in the city of Serres, Greece.



Figure 5. The tree-covered valley of St. Anargiroi at the city limits of Serres, Greece.

interest, like parks/gardens (C: 99.0%) and Thermal Waters (C: 87.6%). As a second choice Greek students mention sport centers (B: 54.3%) and places near the city of Serres (B: 52.8%) while Spanish students mention places of historic-artistic interest, Cathedral (C: 71.1%), Roman Bridge (C: 49.2%).

Item 4. Give the names of living organisms you have seen in your city.

The most popular organisms that are mentioned in *all* questionnaires (Table 4) are pets, specifically dogs (A: 98%, B: 90.2%, C: 91%) and cats (A: 96.3%, B: 89.8%, C: 82%). As regards Greek questionnaires, it is interesting to note that human beings received A: 95.3%, B: 25.3%, trees A: 90.7%, B: 3.8%, pigeons A: 90%, B: 24.5%, flies A: 90%, B: 16.2%, birds A: 88.4%, B: 61.9% and plants A: 85.9%, B: 4.9%. With respect to large captured or domestic animals, substantial differences are found between the two types of questionnaires: horses (A: 1.7%, B: 43.4%) and donkeys (A: 1%, B: 30.9%)! Right after the pets, Spanish children mention mostly doves (C: 70.5%) and turkeys (C: 53.5%). Greek students hardly mention flora of any kind on their own free will (trees, B: 3.8% and plants, B: 4.9%). This is a little better with Spanish participants, for only 34% do not mention any tree, plant or vegetable while the generic category of trees is picked by 27%.

Discussion

Negative features of the city receive by far the highest percentages in all questionnaires. Greek students in guided questionnaires perceive the concept of the city as a place of pronounced negative *natural* and *sociostructural* characteristics (noise, pollution in general, air pollution, lack of green places, large population, unemployment, excessive traffic, urban concentration). This is somewhat different in open-ended questionnaires where the notion of the city is connected mainly with negative *sociostructural* aspects. A plausible explanation for this difference may be obtained by using arguments that have been reported in earlier studies which describe the natural urban

environment as a rather elusive feature, *e.g.* Kaplan (1983). Thus negative environmental aspects (*e.g.*, lack of green places) are linked to the concept of the city *only* when they are presented and reminded to the students in the form of optional responses. This fact strongly implies that Greek (and Spanish) adolescents growing up in a modern urban environment tend to forget or at least not to recall easily the natural aspects of city life which used to be, however, significant factors in their parents' childhood (Sebba, 1991).

Some positive sociostructural features (amusement, employment opportunities, abundant services) are also recognised in either Greek or Spanish questionnaires. Interestingly, social features like unemployment, violence, stress and monotony of living, which are exceedingly experienced by grownups due to the hectic lifestyle in the cities, are poorly mentioned in open ended questionnaires by both Greek and Spanish students.

Admittedly, the formation of children's attitude is influenced by the selective use of the various senses. In guided questionnaires it appears that Greek students perceive the surroundings not only with the dominant sense of sight but with hearing as well and, for instance, identify the noise as another major feature of the city. On the contrary, in open-ended questionnaires, the sense of sight undoubtedly prevails. This last observation indicates that children's spontaneous representations of the city are based mainly on their sight which is in accord with Gittin's finding (1988) that people tend to retain in their memory sight facts rather than hearing facts or facts based on the other senses.

What seems to be more interesting is that the concept of the city is perceived by both Greek and Spanish students as a place with comparable characteristics. These features are mainly negative (large population, urban concentration, excessive traffic, pollution) whereas the positive features, except employment opportunities, are secondly scaled. Moreover, while the negative aspects of the city are in common for Greek and Spanish students, the positive aspects are differentiated according to originality. Evidently, the most popular positive features are strongly associated with the particular lifestyle and culture of each country. So, Greek participants chiefly men-

tion amusement whereas Spanish subjects abundant services.

Greek and Spanish students identify environmental, structural and social problems as comparably important issues of their city. However, some discrepancy is found in the order of preference of their perception of the city as depicted in Items 1 and 2. For instance, it is noticeable that the lack of green places is mentioned chiefly as a *problem* (Item 2) and not as a *characteristic feature* of the word city (Item 1). Specifically, a percentage of B: 26.4% of Greek and C: 23.4% of Spanish students believes that lack of green places is a problem whereas only B: 1.9% and C: 12.4%, respectively, mention it as a descriptive feature of the city. This finding ascertains that young children do not consider green places as an inherent component of the city but, of course, they are worried for this shortage.

Children growing up in a modern urban environment are sparsely used—if at all—to seeing parks and gardens in every day life so their representations of a city do not refer to the lack of green places. On the other hand, students with the option of lack of green places presented in a questionnaire, they rather tick it (Item 1 and 2). This contradiction indicates that children frequently do not realise on their own pace the actual elements of the urban environment, but their perception is heavily influenced by other indirect sources, *e.g.* media, parents, teachers. The above arguments combined, also suggest that students may have not been taught in a proper way how to understand and appreciate the various environmental issues. This is in line with Cohen *et al.*'s (1993) and Membiela *et al.*'s (1993) findings.

In any case, it is apparent that the word city is synonymous to its negative features and problems in both countries. Interestingly, Spanish percentages of structural and social features are distinctly higher than Greek, whereas the environmental problems received percentages in closer proximity. Thus, regardless of the particular structural factors and social elements of each country, environmental problems are viewed in a rather similar manner. This information is considered essential as regards efforts headed towards a common environmental education in the two countries.

When Greek students are asked to appreciate the valuable features of their city in guided questionnaires, they largely tend to select places where they socialize and rest (amusement locations, city center). Traditional points of interest like monuments/museums, green places and sport areas are less mentioned. However, in open-ended questionnaires historical monuments are reported first and places of intense social life come next. It may be the traditional way that children in Greece are brought up or/and some shyness that prevents kids to admit freely their preference for entertainment locations. In the rather conservative Greek-Orthodox society children learn to believe that historical inheritance is a topmost aspect of life rather than leisure, amusement or sports. Nevertheless, when encouraged by guided questionnaires, students mention social elements of the city without hesitation. On the other hand, Spanish students prefer mostly parks/gardens and places of historical interest and show a little interest only in amusement locations.

Interestingly, none of the most popular preferences in Greek questionnaires represents the natural environment of Serres and places only a little further from the city, where vegetation can be found, are appreciably mentioned. Greek students' limited preference towards natural elements may be explained as being due to lack of green areas in the city of Serres, rather than as a deliberate lifestyle.

Although Greek and Spanish students do not report natural elements as main features of urban environment (Item 1), such elements are still considerably appreciated (Item 3). This observation strongly manifests the importance of nature and vegetation to human life within an urban context. Parks have been considered to have not only restorative influence on people (Parsons, 1991; Joardar, 1989) but aesthetic value as well (Ulrich, 1983). Even though the origin of liking vegetation areas in cities is unknown (Sheets, 1991), there are studies which claim that people of different cultures have similar visual preferences for natural over urban places in a city (Parsons, 1991). This can be explained by the fact that the impact of vegetation is feelings of stimulation (Ulrich, 1981, 1983; Hull and Harvey, 1989).

Regarding the identification of living organisms in the city, extraordinary deviations are found

in the percentages between Greek guided and open-ended questionnaires. These differences are by far the largest among questionnaires in all the items examined in this work and apparently demonstrate that children are not familiar *at all* with the living organisms of their city.

The living organisms that are chiefly mentioned in all questionnaires are pets (dogs, cats) and other domesticated or captured animals (*e.g.* chickens, turkeys, horses, doves). This finding is consistent with the earlier studies of Bell and Barker (1982) and Bell (1991) who claimed that the concept of animal among teenagers refers to zoo animals, pets and domesticated animals. Noticeably, students in Greece and Spain recognize readily as animals living creatures of relatively large sizes, an observation also made in previous reports, *e.g.* Stead (1980). Humans are also identified in the category of living beings but with a striking difference between structured (A: 95.3%) and open-ended questions (B: 25.3%). This occurs likely because students identify humans as superior to other animals.

Greek and Spanish students principally identify animals as living beings and not plants. Only in guided questionnaires the exact names of trees, plants and flowers are significantly mentioned. The majority of Greek and Spanish subjects does not mention the exact name of plants but they use generic names like “trees” and “plants” and according to Yi-Fu (1980) this is so because plants stir less emotions than animals and interest in plants in not *sophisticated* countries is mainly utilitarian.

The observation that Greek and Spanish students identify as living beings only a limited range of animals and nearly no plants is considered as a by-product of modern civilization. From the psychology standpoint, physical environment not only plays a significant role for the identity of individuals (Lalli, 1992) but it is also well recognised that people/plant relationships benefit the community cohesion, improve aesthetic pleasure and self-esteem (Kaplan, 1983). Many anthropologists claim that animals consist symbolic perceptions for the children (Kellert, 1983) and children learn personality traits in their roles as animals and gain a sense of self through the recognition that they transcend the roles they play (Fernandez, 1983). The fact that Greek and Spanish students

identify only limited species implies that they have not conducted a detailed observation and mimicry of the animal behaviors and they are not explicitly taught about them.

Recommendations

This work provides further evidence to support the necessity of key interventions in the design of school curriculum in order to make environmental education more effective. Since Greek and Spanish students (in Serres and Orense) identify more or less a common set of environmental problems while they seem to ignore some other features of their cities, a common strategy giving emphasis on the direct contact and familiarisation of students with nature should be followed in both countries.

It is said that *learning-by-doing* is the key for effective environmental education. The questionnaire of the present study can be used both as a mapping tool in order to assess children’s awareness for urban environmental issues and as a platform for developing short-term and long-term strategies in the school Curriculum of Environmental Education.

I. Short-term strategies

- Students should adopt a positive attitude towards their city instead of reluctance and indolence. Only if they appreciate the good points of their city could they be able to respect and care about it. In this sense, students could form teams that would issue a tourist-guide of their city presenting the most important places of interest (*i.e.* amusement locations, monuments, parks), or/and they could organise a voluntary environmental youth club which could generate attitudes friendly to the environment.
- A multisensory approach for learning about the living organisms could be an innovative and effective strategy. According to this approach students in teams could trace different ‘environmental paths’ by using all their senses. They could visit ecological unions (*i.e.* parks, zoos, gardens) and make a list of the organisms, sounds and smells they would be able to

recognise. This procedure could further motivate the students to undertake different projects regarding the flora and fauna in the city, while the most talented students could combine Environmental Education with Fine Arts by drawing or sketching some animals and places.

- As a next step, students should not only identify and discuss about city problems but they should also realise how and up to what extent their lives are affected by these problems. Projects about the every day city problems could challenge students to participate by gathering information, defining criteria and—why not—proposing solutions. A collection of these projects could be presented in an open to public school ceremony where the local authorities would be also invited to attend.

II. Long-term strategies

Specifically for Greece and Spain the similarities observed in this work demonstrate the potential for a fruitful collaboration. Summer short-term mutual exchanges of students, participating in mixed workshops and round-table discussions might be an essential step. Participants could gain maximum benefit from such an experience: they would actively relate to individuals from a different cultural background who share alike environmental concerns and this would arouse a spontaneous awareness of environmental issues which could gradually grow to a high esteem and ultimately to a robust ethic.

Although many environmental problems have been experienced for years now and repeatedly presented and analysed by communication media, little has been done to alleviate the situation. As a result, people have lost their initial flame of interest and made these problems part of their daily routine. The present authors believe that it will take more than a regular education scheme to stir emotions again. Over and above these words, interventions and modifications in the Environmental Education programme must not be viewed as a panacea for the prevention of the environment. Any effort can have a real meaning only if the environmental awareness continues beyond the school and the students and spreads to the whole society.

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