How evident is the apparent? Students’ and teachers’ perceptions of the terraced landscape

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The aim of this study is to investigate how Greek students and teachers perceive and interpret a cultural landscape element, namely cultivation terraces, in terms of the various uses and values (economic, environmental, ecological and cultural) that they may represent for those involved in the educational system. The study was carried out with a structured questionnaire, addressed to 362 students and 97 geography teachers, with different types of exposure to terraced landscapes: (1) inhabitants of the larger metropolitan area of Athens and (2) inhabitants of the Aegean islands of Lesvos and Nisyros – both featuring highly terraced agricultural landscapes. Results indicated that terraces per se escape the respondents’ perception, irrespective of respondents’ age. Students’ knowledge about terraces seems to be inadequate, although both the concept and the issue appear in geography curricula and geography textbooks. The respondents’ general attitude toward the terraced landscape was positive, while the majority of survey participants placed the primary value of terraces on their soil and water management properties. Teachers’ perceptions regarding the terraced landscape are not reflected on the students’ respective knowledge. Finally, findings seem to point out that everyday life experiences play a positive role in the formation of lay attitudes toward local environments and landscapes.

Keywords: agricultural terraces; cultural landscape; perceptions; geography; environmental education; Aegean islands

Introduction

A fundamental aim of geographical and environmental education is to enable citizens to act wisely with respect to the environment and its quality and to empower people to create a sustainable future (UNESCO, 2006). In this context, the new Geography Curriculum in Greece mentions that the goal of teaching primary- and secondary-level geography is to strengthen students’ knowledge of physical and human features of places, as well as of their interrelationships (Pedagogical Institute, 2003: Official Gazette of Greece, issue B, nr 304/13-3-03; pp. 474–475). According to the same source, the general aims of teaching geography include the acquiring of skills in (1) identifying and describing environmental features, (2) understanding that responsible environmental management and conservation encompass human–environment interactions and (3) recognizing this interaction as the effect of human activities on the environment. Finally, according to the same source, another goal of teaching geography is to help students develop a positive attitude toward
the protection of the environment, at all geographical scales (local, national, continental and global). In the same line of thought, it is often argued (Houtsonen, 2004) that geographical education may promote sustainable development by providing students with basic knowledge, skills and willingness to work for sustainable development, to develop a more sensitive and well-rounded response to the environment and to act with conviction, as regards all issues concerning their surroundings.

In the past, terracing has proven to be a very effective tool in the sustainable management of the agricultural landscape of the Aegean region of Greece, by its local people, toward the goal of improvement of hard living conditions, in remote rural areas of the country. Often considered as one of the most striking and typical features of rural landscapes in the Aegean, terraces are specifically and explicitly presented in geography textbooks (Galani, Katsaros, Katsikis, & Tsounakos, 2003, p. 68; Karampatsa, Klonari, Koutsopoulos, & Tsounakos, 2003, p. 90) of both primary and lower secondary school curricula. This article explores perceptions and interpretations of terraces in terms of various uses and values (economic, environmental, ecological and cultural) that the terraced landscape is put to or may represent for contemporary Greeks and specifically those involved in the educational system. It concludes that, though plainly apparent, this most significant – in terms of scale – intervention to the rural landscape remains largely “invisible” to educators and users of a valuable cultural, economic and environmental resource and part of Greek countryside heritage.

The theoretical context of the study

The contribution of environmental and geographical education to the development of a high quality of life is paramount and manifold. Several studies have recently explored the views and the holistic ways in which children tend to experience their environment (Derr, 2002; Mathews, 1992; Mathews & Limb, 1999; Nabhan & Trimble, 1994). Children often view and interpret the environment in a manner that is more elaborate and personal compared with adults (Chawla, 1986; Nabhan & Trimble, 1994). Furthermore, the places where they live are especially important for the development of children’s personality, because children tend to attribute feelings of attachment and “belonging” to them (Mathews, 1992; Robertson, Walford, & Fox, 2003). Also, as regards the significance of natural green spaces to children’s well-being, it has been shown that access to such spaces enhances their concentration power and cognitive abilities (Chawla, 2002; Faber Taylor, Kuo, & Sullivan, 2001; Wells, 2000).

In the last three decades, increased interest has been observed for the ways in which students apprehend different phenomena taking place in environments of their everyday lives and respective concepts that they encounter either in class or in daily life (Dal, 2006; Blake, 2005; Owens, 2005; Ravanis, Koliopoulos, & Hadzigeorgiou, 2004). Children, from a very young age, shape their intellectual images of landscape and the environment through experiences and related ideas that help them compose their mental schemata of the natural world, as an entity (Ravanis, 2003; Trend, Everett, & Dove, 2000; Hull & Revell, 1989). Owing to this increased interest in children’s environmental notions and concepts, various studies have recently been conducted internationally, in order to trace, understand and interpret these ideas (Kerr, Beggs, & Murphy, 2006; Toili, 1996). Moreover, in recent years, geographical and environmental education programs have often also included the notion of a “sense of place” in their curricula, assuming that if children care about one place in particular, they will eventually care about the environment, in general (Leslie, Tallmadge, Wessels, & Zwinger, 1999; Sobel, 1998). According to geographers and planners, preserving and developing this sense of place is very important for community prosperity and preservation (deGroot, 1992; Derr, 2002; Jackson, 1994). The challenge
remains, first, to understand sense of place within a specific context, and, second, whether and how this sense of place affects societal prosperity (Derr, 2002).

On the other hand, research on teachers’ ways of thinking and attitudes has grown enormously in recent years, illustrating that teachers’ ways of thinking and teaching practices in class largely depend upon the extent of their knowledge about and personal beliefs on the subject at hand (Brophy & Good, 1986; Cotton, 2006; Yount & Horton, 1992). However, relatively little research has focused on geography teaching in schools, despite the fact—and one of this study’s basic assumptions—that geography constitutes a subject that greatly contributes to students’ environmental education (Corney, 2000). What few studies have been carried out on geographical education indicate that teachers’ attitudes in class tend to concern several issues: (1) the subject matter itself, with a negative attitude generally prevailing vis-à-vis geography (Grosman, Wilson, & Shulman, 1989; Katsikis, 2004; Klonari & Koutsopoulos, 2005; Rellou & Lamprinos, 2004); (2) pedagogy, i.e. teaching methods related to students’ learning (Corney, 2000; Katsikis, 2001; Lamprinos, Chatzipantelis, & Gratsonidis, 2002; Thompson, 2009); and (3) influences from prior educational experiences on the teachers themselves (Corney, 2000; Klonari & Koutsopoulos, 2005).

In this study, we investigate schoolchildren’s and teachers’ perceptions of one of the most significant landscape elements of Mediterranean environments (i.e. agricultural terraces). Cultivation terraces are human-made horizontal spaces supported by dry stones (stone walls) on hilly and mountain slopes, constructed for purposes of managing agricultural land (Petanidou, Kizos, & Soulakellis, 2008). Although they constitute one of the most conspicuous and typical elements of the landscape of the Aegean islands, they often seem to escape the attention of lay viewers. Thus, one of the most apparent landscape features in this part of the world becomes “invisible” for many. The problem is further compounded by the fact that the rural and/or cultural landscape, generally speaking, is equally “invisible” for most contemporary Greeks.

Terracing used to be more common in the past, whereas most terracing of any sort has been abandoned (Figure 2), in recent years (Dalaka & Petanidou, 2006; Dalaka, Veili, & Petanidou, 2005). Furthermore, although still in place, existing agricultural terraces suffer dramatically from lack of management and care. It has been changing attitudes toward the landscape and the environment, during the last 40–50 years, stemming from rural exodus and migration to the main urban centers of Greece, that resulted in the abandonment of terraces and, consequently, in the overall deterioration of the terraced landscape (Dalaka & Petanidou, 2006; Petanidou, Soulakellis, Karistinakis, & Spastra, 2004). This trend, in conjunction with rapidly growing urbanization and the spread of urban ways of life throughout the country’s territory (including the countryside), has gravely affected Greeks’ relationship with their environment and landscapes, at all levels and scales (Kizos, Dalaka, & Petanidou, 2009; Petanidou et al., 2004).

Terraces, Figure 1(a) and 1(b), are often considered as one of the most striking and typical features of rural landscapes in the Aegean (Dalaka et al., 2005). They are not, however, only a Greek phenomenon. Terraces represent a human intervention of a major scale on the Mediterranean landscape. Terracing, a common agricultural practice for purposes of land improvement in the Mediterranean and the Aegean, in the past, has been largely abandoned. Its imprint on the landscape, however, remains significant; in fact, it may be argued that terracing typifies rural and cultural landscapes in this part of the world. They exhibit a striking degree of spread not only on the Dalmatian coastline, in Spain, Portugal, France, Italy, Albania, Turkey, but also on the south and south-east coasts of the Mediterranean (Algeria, Tunisia, Lebanon) and of an even more intense degree in the insular part of the basin (Grove & Rackham, 2001). The geographical distribution of their usage denotes their
Figure 1. (a & b). Terraces on Lesvos Island, still used for olive cultivation.
efficacy as a landscape management technique, while highlighting their appearance as cultural historical heritage; moreover, it dates back to the Iron Age, throughout the Mediterranean basin (Petanidou, Dahm, & Soulakellis, 2001). As far as the Greek territory is concerned, evidence abounds on their existence, since historic and prehistoric times, as, for example, in the case of agricultural terraces surrounding certain rural structures on the island of Delos (Doukellis, 1998). Nowadays, they still cover whole islands, such as the Cyclades, in the southern Aegean Sea. In fact, the “typical” Cycladic landscape is considered to be the terraced landscape: the landscape resulting from shaping sloping areas into terraces for cultivation and human habitation. Such practices, at the basis of the creation of Mediterranean landscapes, are currently in the process of being abandoned due to the desertion of lands on mountain or hill slopes by contemporary cultivators (Petanidou et al., 2004).

Finally, the Greek landscape itself has been plagued by much neglect, misuse or even irreparable destruction, throughout the country’s history, but especially so since Greece’s era of rapid urbanization (1950s and 1960s). Moreover, the landscape has been absent from most expressions of everyday private or public life in Greece, whereas, in most European countries, it has repeatedly been attributed to properties of an essential context and product of high quality in life. Various dangers and problems plague and threaten the contemporary Greek landscape (Terkenli, 2004), of which, perhaps the most significant may be (1) rampant urbanization in the 1950s and 1960s, leading to a mass migration of the rural population into the major urban centers and to the abandonment of agriculture and livestock raising, (2) the boom in vacation home construction – much of it illegal – and (3) unplanned growth of tourism and recreation development in the countryside. As a result, the Greek cultural landscape, and particularly the rural landscape, has essentially been a nonentity; overwhelmingly dependent on public or private economic or political interests, while local interests, input and decision-making concerning the landscape tend to be ignored or essentially nonexistent. This problematic relationship of Greeks with their landscapes may be traced to a lack of a defined and well-developed landscape conscience, with deep roots in its history and cultural makeup of the country as a modern nation-state (Terkenli, 2008). A situation that may be overturned mainly with proper environmental and geographical education and awareness raising of the broader public, at all levels of the educational system, and in all sectors of social life.

Research aims

The broader objective of this study was to investigate how Greek students and teachers perceive and interpret the cultural landscape elements of the human-made agricultural
terraces. In order to capture the widest possible range of students’ age-related perceptions and interpretations, the study was designed to be cross-age, including students from both elementary and secondary schools as well as their teachers (hereafter called “respondents”). It also purported to span a broader part of the Aegean region and, thus, focused on two of the most highly terraced islands, Lesvos and Nisyros. Of the two islands, Lesvos, in the north-east Aegean Sea, tends to be more urbanized – at least in its medium-scale urban centers, and predominantly its capital city, Mytilene – while Nisyros (south-east) has a more pronounced rural and village character. Furthermore, for comparative and context-related purposes, the sample also encompassed students and geography teachers from the greater metropolitan area of Athens. Perception and interpretation were measured in terms of the values (economic, environmental, ecological and cultural) terraced landscapes may represent to individual respondents.

In particular, the following research questions were explored:

1. School teachers’ and children’s knowledge, perceptions and interpretations of agricultural terraces and of the respective landscapes, in which these are located.
2. The degree to which prior experience/knowledge of these landscape features influences respondents’ perceptions and attitudes toward terraces.
3. Cross-age differences in children’s knowledge and perceptions toward terraces.
4. The degree to which teachers’ knowledge and perceptions regarding terraced landscapes is related to their students’ knowledge and perceptions of terraces.

Methodology

Respondents of the survey

The survey-based ethnographic methodology followed a stratified sampling technique (Cohen, Manion, & Morrison, 2007). A total of 459 individuals (215 males and 240 females, 4 gender not stated) participated in the research – a population sample considered statistically substantial. The composition of the sample (Table 1) was selected in a manner that reflected average national demographics, in terms of sex, age and social status. In specific, the sample included 97 teachers of geography and 362 students, of whom 56% originated from and lived in from the greater Athens metropolitan area and 44% from the islands of Lesvos and Nisyros (Aegean). All respondents were provided with structured questionnaires (Appendix 1), to which they were invited to answer. The survey was conducted by the researchers themselves, in person, during the first semester of the school year 2007.

Table 1. Demographic characteristics of respondents groups.

<table>
<thead>
<tr>
<th></th>
<th>EL</th>
<th>LS</th>
<th>US</th>
<th>TE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males (%)</td>
<td>47.0</td>
<td>45.5</td>
<td>43.1</td>
<td>53.6</td>
</tr>
<tr>
<td>Females (%)</td>
<td>50.0</td>
<td>53.8</td>
<td>56.9</td>
<td>46.4</td>
</tr>
<tr>
<td>Not stated (%)</td>
<td>3.0</td>
<td>0.7</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Mean age (years)</td>
<td>9.8</td>
<td>12.7</td>
<td>15.7</td>
<td>42.6</td>
</tr>
<tr>
<td>N</td>
<td>100.0</td>
<td>132.0</td>
<td>130.0</td>
<td>97.0</td>
</tr>
</tbody>
</table>

Note: EL, elementary; LS, lower secondary; US, upper secondary; TE, teachers.
Questionnaires

Two questionnaires were used in the research survey (Appendix 1). The first was aimed to the elementary (EL; aged 6–12) and lower secondary (LS; aged 12–15) schoolchildren and consisted of 14 questions (see Appendix 1 except for Q11 and Q12). The second questionnaire was intended for both the upper secondary schoolchildren (US; ages 15–18) and for all geography teachers (TE) and contained two additional questions (Q11 and Q12 – 16 in total). The questionnaire questions addressed (1) personal data of the respondents and included (2) 11 closed-ended questions and (3) 5 open-ended questions, all referring to respondents’ perceptions of terraces. Of the closed-ended questions, one was yes/no scale, two measured on the Likert scale, five were multiple choice and three were ordinal scale questions (ranging from 1 for “less important” to 5 or 10 for “most important”). Seven questions referred to the extent of the respondents’ knowledge on terraces and three to their familiarity with terraced landscapes, while the remaining questions were designed to explore students’ and teachers’ ideas and overall views of the terraced landscape (context of the subject in question, i.e. terraces). A series (nine in total) of terraced landscape photos (terraces of two different types, on several Greek regions – mainly on islands) were presented to the respondents (EL and LS) after the first question, in order to familiarize them with or refresh their memory vis-à-vis landscape terraces, before continuing with the rest of the questionnaire.

Data analysis

Survey answers were codified and entered into the “SPSS 15.0” statistical package for analysis. Statistical tests performed on the collected data included $t$-tests and one-way ANOVA, employed in order to compare responses across different subgroups and to investigate whether variables such as gender, age, place of residence, place of origin and social status of students’ families (educational level and profession) have an effect upon the students’ and teachers’ knowledge of, perceptions of and attitudes toward terraces and the terraced landscape itself.

Results and discussion

Students’ and teachers’ knowledge of terraces

The results show that the majority (52.3%) of the respondents in this research know what terraces are, but a very high percentage (44.0%) stated ignorance on the subject. It is interesting to note, however, that regarding these results, there is a statistically significant difference ($\chi^2 (6, N = 459) = 89.4$, $p > .001$) between the different age groups (Figure 3).

![Figure 3. Participants’ knowledge about terraces related to age.](image-url)
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Figure 4. Participants’ knowledge about terraces related to place of residence.

and the participants’ place of residence (Figure 3; \( \chi^2(4, N = 459) = 59.5\), \( p > .005\)). The place of participants’ origin shows exactly the same pattern. In fact, 50% of the elementary (EL) and the majority (69.7%) of the lower secondary school students (LS) stated that they do not know “what terraces are”, whereas a lower percentage among the upper secondary students (US) and teachers (36.9% and 12.4% respectively) gave the same answer to the same question.

As regards places of residence (or origin), the results of the statistical analysis (Figure 4) indicate that the respondents from rural areas have a better knowledge of terraces than those from urban areas (71.8% and 37.0% respectively). It should be noted, however, that these outcomes are very important, considering the facts that terraces constitute a significant topic in school curricula and that terraces are a very common feature of these Aegean island landscapes, on both Lesvos and Nisyros.

As regards the rest of the questions addressing the knowledge of the concept of terraces (e.g. local differences in the ways either terraces or locations of terraces are called), approximately the same proportion of respondents as in the answers to the previous question gave the wrong answers. Thus, only half of the respondents selected the correct definition for terraced landscape; out of them, the majority was composed of teachers and students from upper secondary schools. In addition, the respondents’ places of residence and origin play a significant role in their answers, since most wrong answers were given by the respondents living in urban areas. Furthermore, the majority of respondents did not give any other name for terraces besides the conventional name – widely used around the country. Thus, irrespective of place of residence or origin (64.7% and 58.4% respectively, \( \chi^2 (6, N = 459) = 42.9\), \( p > .005\)), the most common name that they offered for terraces was “pezoules” (terraces; 19.2%), as opposed to adopted and rised in this study, “anavathmides” (gradations). As concerns as the question “Give the name of one or more areas with an impressive density of terraces”, only 31% of the sample mentioned Lesvos and Nisyros (although about 44% of them live on these islands), while 29.5% of the total sample did not answer at all. The latter outcome points to the fact that terraces escape the attention of even those students and teachers who live on these two islands: the apparent is not at all evident, even for the locals.

**Students’ and teachers’ perceptions and overall views of the terraced landscape**

Answers given to questions in this section do not indicate any statistically significant differences between different survey groups on the basis of age or place of residence (or
Table 2. Answers to the multiple-choice question concerning ways of describing terraces from an esthetic point of view.

<table>
<thead>
<tr>
<th>Description</th>
<th>No of choices</th>
</tr>
</thead>
<tbody>
<tr>
<td>No answer</td>
<td>62</td>
</tr>
<tr>
<td>Your own expression: please, specify</td>
<td>40</td>
</tr>
<tr>
<td>Levels holding up the landscape so that it may not roll into the valley</td>
<td>28</td>
</tr>
<tr>
<td>Human-made geometric play on the landscape</td>
<td>27</td>
</tr>
<tr>
<td>Levels breaking landscape monotony</td>
<td>23</td>
</tr>
<tr>
<td>Human-made wrinkles on the land</td>
<td>21</td>
</tr>
<tr>
<td>Variable color patches on the land</td>
<td>15</td>
</tr>
<tr>
<td>Breath on the land</td>
<td>14</td>
</tr>
<tr>
<td>Straps tying agriculture land together</td>
<td>5</td>
</tr>
</tbody>
</table>

Consequently, the respective results are presented in an aggregate way (teachers and students together) and not separately, as follows: three questions were addressed to the respondents (students and teachers), concerning their overall view of the subject in question. In specific, the first question was “How interesting is a terraced area to you?” The outcome showed an agreement among study groups, as concerns their interest in this landscape, since almost 73% of them stated that a terraced landscape is very interesting. The second question was about “ways of describing terraces, from an esthetic point of view”; it was addressed only to upper secondary students and teachers. Those of the respondents who answered this question mainly quoted descriptions highly associated with terrace uses or ways of construction, like “levels that can keep the landscape high”. Second in order were answers referring to the formal or visual and – broadly speaking – cultural characteristics of this type of landscape (Table 2).

With regard to the question “As far as the relationship of terraces to humans is concerned, which of the following characterizations would you use to describe your impression of a terraced landscape view?”, the participants used an ordinal scale with grades from 0 to 10 for their answers. Results are given in Figure 5. Among the most highly quoted answers

![Figure 5](image.png)

Figure 5. Respondents’ answers to the question on the relationship of humans with terraces.
were “admiration for the creators”, “balance between humans and nature” and "challenge for re-lands use”.

The role of participants’ experiences in their perceptions and values regarding the terraced landscape

The majority of participants (52.3%) stated that they were not familiar with the terraced landscape. Here, as expected, there exists a statistically significant difference between groups, on the basis of their place of residence. Specifically, only 35.4% of respondents living in urban areas indicated a good knowledge of terraces versus 61.3% of the respondents from the rural areas. Their justification of these answers (56.6%) was that they had become acquainted with terraces at the place of their residence or at the places of their summer holidays (often related to places of family origin). It should be noted, however, that only 9.2% of the respondents stated that they had learned about terraces in school.

Regarding students’ and teachers’ perceptions and interpretations of terraces, in terms of values represented in and by terraced landscapes, the results of data analysis pointed to a focus by the respondents on the use of terraces for purposes of soil and water management and less emphasis on terrace usage for cultivation. Significantly, however, 84 individuals responded that terraces are no longer of importance (Table 3).

Finally, the last two questions, addressing reasons of terrace abandonment, requested the participants’ opinions on the reconstruction of destroyed terraces (whether funds spent for this purpose are well spent). Answers provided by all subgroups were more all less the same. Among reasons for not investing in terraces, they mentioned first the “industrialization of agriculture” (19%), second “changes in lifestyle” (12.5%) and third “urbanization” (8%). Here, it is important to note that a very large portion of the sample (41%) did not provide any answers to this question at all.

Table 3. Answers concerning students’ and teachers’ perceptions about the values of terraces.

<table>
<thead>
<tr>
<th>The main reasons for terraces construction</th>
<th>The role of terraces today</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answers</td>
<td>No. of choices</td>
</tr>
<tr>
<td>Soil retention and reduction of erosion</td>
<td>364</td>
</tr>
<tr>
<td>Water management</td>
<td>343</td>
</tr>
<tr>
<td>Soil retention for purposes of cultivation and curbing erosion</td>
<td>320</td>
</tr>
<tr>
<td>Land leveling on slopes for easier cultivation</td>
<td>299</td>
</tr>
<tr>
<td>Landownership delineation</td>
<td>276</td>
</tr>
<tr>
<td>Improvement of the ecological value of the slopes</td>
<td>245</td>
</tr>
<tr>
<td>Creation of a more esthetically pleasing landscape</td>
<td>235</td>
</tr>
<tr>
<td>Creation of access potential by people and animals to higher grounds</td>
<td>232</td>
</tr>
<tr>
<td>Usage of field stones</td>
<td>207</td>
</tr>
<tr>
<td>Other</td>
<td>52</td>
</tr>
<tr>
<td>No answer</td>
<td>0</td>
</tr>
</tbody>
</table>
On the basis of responses to the last question, it seems plausible to conclude that there is an overall positive attitude toward spending money for the reconstruction of the destroyed terraces (with only 45.1% negative answers). However, in the minds of the respondents, the main reason for such an investment apparently remains ecological: soil and water management (Figure 6).

Finally, data analysis shows no statistically significant differences, in terms of terraced landscape knowledge and perception, between male and female respondents and among students with varying family characteristics, such as their parents’ educational levels and professions.

Conclusions
In general, as becomes obvious through the findings of the research survey, there exists great ignorance on the subject of terraces and terraced landscapes, among students of all age groups, and insufficient knowledge about terraces and terraced landscapes, among teachers. What is astonishing is that this finding also concerns respondents from rural areas (22.5%), where terraces constitute a very common landscape feature.

Knowledge about terraces seems to be generally inadequate, although both the concept and the issue appear in geography curricula and geography textbooks. This fact is perhaps not surprising; in Greek schools, geography is a secondary subject in school curricula, and there exist no geography teachers per se in service, that is why geography is usually taught by science teachers or other specialties. Furthermore, in the Greek educational system, up to date, the vast majority of teachers use teacher-centered strategies in teaching, which tend not to be especially effective. In addition, teachers’ variable attitudes toward the subject of geography itself highly affect their way of teaching geography and, consequently, students’ learning (Katsikis, 2001, 2004; Klonari & Koutsopoulos, 2005; Lamprinos et al., 2002; Rellou & Lamprinos, 2004). Moreover, the teachers themselves do not appear to be especially familiar with this landscape, and as a result, teachers apparently make no particular effort to raise students’ awareness on this subject. This is considered an extremely
significant finding of this research endeavor, since teachers always have and will continue to be responsible for shaping the cultural and environmental views and attitudes of students (and future generations of children) in the years to come.

Furthermore, the majority of participants in this study place the primary value of terraces on soil and water management, while esthetic and cultural values of terraced landscapes emerge from their answers as relatively unimportant or subsidiary. A significant number of respondents plainly stated that terraces are not important at all. This view accords perfectly with the general reluctance for private investment in (or state financing of) their reconstruction. Of particular significance, among findings, was the general consensus, across different age groups, that everyday life experiences play a positive role in the formation of lay attitudes toward local environments and landscapes. Lack of such experience seems to be the main reason why the majority of respondents from urban areas have less knowledge and are less sensitive vis-à-vis terraced landscapes, since such landscapes do not figure as prominently in their everyday lives as they do in the case of rural respondents.

In conclusion, it may be suggested that the need for more effective professional training and development in geographic and environmental education becomes crucial for Greek primary and secondary teachers. Teachers’ educational training needs to raise their awareness, concerning links existing between ways of life and environmental damage, and to provide them with all the necessary skills to address and negotiate these issues sensitively in class. Furthermore, teachers need to be educated on the importance of engaging their students in local environmental activities and environmentally friendly practices, as suggested by Ballantyne and Packer (2002) and Fien (2000), who argued that active involvement of students in generating solutions to environmental problems would promote confidence in the possibility of change. Teachers need to be effectively trained in geographic education pedagogy, carry a positive attitude toward the subject matter taught and possess a sound awareness of the environmental concepts, values and issues. Only under these conditions, will they be able to make a significant contribution toward their students’ geographical knowledge, in the context of the new curricula, and ultimately toward environment and landscape preservation, management and quality promotion, for future generations, in the years to come.

References


Appendix 1. The survey questionnaire

Q1 Do you know what agricultural terraces are? (Yes–no scale)

Q2 Which of the following sentences, according to your opinion, best describes agricultural terraces? (Nominal and ordinal data)
   - Agricultural terraces are
     (a) Flat areas on a mountain, like enormous steps on the slopes
     (b) Cultivated land on mountain slopes
     (c) Horizontal lands created by humans on slopes; usually propped up by low stonewalls
     (d) Flat areas that arose naturally next to rivers
     (e) Artificial steps created in quarries from excavating activities

Q3 Give the name of one or more areas (island, village or region) where you have seen a very large number of terraces. (Nominal data)

Q4 How familiar is a landscape of agricultural terraces to you (that is how well do you know it – how often do you see or used to see it)? (Ordinal)

Q5 Terraces are a familiar landscape to you, because (Nominal data)
   - You grew up in a place of many terraces and remember them since childhood
   - You remember them from places of summer vacations
   - You learned about them in school (which grade?)
   - You see them during excursions in the countryside
   - Other

Q6 (1) In the area of your family origins, terraces (Nominal data)
   - Exist, but you have never noticed them, so far
   - Exist, and you have noticed them from the outset
   - Do not exist
   - I do not know / do not remember
   (2) In the area where you were born, terraces
   - Exist, but you have never noticed them, so far
   - Exist, and you have noticed them from the outset
   - Do not exist
   - I do not know / do not remember
   (3) In the area where you often vacation, terraces
   - Exist, but you have never noticed them, so far
   - Exist, and you have noticed them from the outset
   - Do not exist
   - I do not know / do not remember
   (4) In the area where you are currently living, terraces
   - Exist, but you have never noticed them, so far
   - Exist, and you have noticed them from the outset
   - Do not exist
   - I do not know / do not remember

Q7 What are terraces called in the area of your family origins (area where your parents were born)? (Nominal data)

Q8 What are terraces called in the area where you are currently living? (Nominal data)

Q9 How interesting is a terraced area to you? (Nominal data)

Q10 According to your opinion, what are the most significant reasons that people used to make terraces in the past? (Nominal and ordinal)
   - Water management (rainwater retention)
   - Creation of a more esthetically pleasing landscape
   - Landownership delineation
   - Creation of cultivable land
   - Soil retention for purposes of cultivation and curbing erosion
   - Land leveling on slopes for easier cultivation
   - Usage of field stones
   - Creation of access potential by people and animals to higher grounds
   - Improvement of the ecological value of the slopes (protection of plant and animal life on slopes)
   - Other
Q11 From an esthetic point of view, terraces have been described as (Nominal data)
“human-made geometric play on the landscape”, “straps tying agricultural land together”,
“levels breaking landscape monotony”, “human-made wrinkles on the land”, “levels
holding up the landscape, so that it may not roll into the valley”, “breath on the land”,
“variable color patches on the land”, (your own expression: please, specify).

Q12 As far as the relationship of terraces to humans is concerned, which of the following
characterizations would you use to describe your impression of a terraced landscape
view? (Nominal and ordinal)
- Human imposition of order on the land
- Balance between humans and nature
- Admiration for the people who created and cultivated it through the centuries
- Pity for the people who created and cultivated it
- A sign of primitive cultivating means
- An image of abandonment and poverty
- A challenge for landscape re-use and the regeneration of traditional cultivation
- A work of art with cultural value
- A piece of work that no longer carries a meaning, considering new ways of production
- Other

Q13 Using your recollection, note the amount of existing terraces in terraced areas of which you
have personal empirical knowledge, and provide their most significant characteristics.
(Interval scale)

Q14 What do you think is the value of terraces today? (Nominal and ordinal)
- Creation of areas appropriate for cultivation, as in the old days
- Creation of areas appropriate for specific types of cultivation (i.e. organic crops, etc)
- Water management (rainwater retention)
- A piece of work that no longer carries any significance
- A means of securing subsidies for marginal lands
- Improvement of landscape appearance
- Soil retention and reduction of erosion
- Contribution to agrotourism
- Cultural heritage preservation
- Other

Q15 Is there a reason for state or private monetary investment in the preservation of terraces,
today? (Nominal data)
- No – terraces are no longer needed today
- No – it is not economically rational (minimal returns from their cultivation)
- No – there are no agricultural workers to work on them
- No – they do not contribute to local development
- No – they have a negative impact on the local natural flora and fauna
- No – (your own answer here)
- Yes – they carry a significant cultural heritage
- Yes – they contribute significantly to landscape esthetics
- Yes – they play a significant role in the preservation of soil from erosion
- Yes – they offer significant area stretches for cultivation
- Yes – higher quality products are produced on terraces
- Yes – they play a significant role in the water regime of the region
- Yes – they aid in population retention in mountainous areas
- Yes – (your own answer here)
- I have no opinion

Q16 What changes have occurred since those times in which terraces were constructed and
intensively cultivated so that terraces are no longer today constructed or existing ones no
longer cultivated? (Nominal data)