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DESIGNING A SURVEY ON 12-TO-16-YEAR-OLD STUDENTS' CONCEPTIONS OF LANDSCAPE: A PILOT TEST IN NAVARRA (SPAIN)

María Casas Jericó; Luis Erneta Altarriba; Jordi Puig Baguer

1. INTRODUCTION

The European Landscape Convention (ELC, henceforth) was held in Florence in 2000 in response to the increasing concern for landscapes loss and the maintenance of the natural and cultural European heritage. The convention proposed a consensual definition for landscape[1] that admitted the importance of the perceptual aspects and included both the areas of high landscape quality and the degraded and everyday landscapes.

Complementarily, the ELC highlighted the need to foster landscape awareness and education among the public (Council of Europe, 2000). To address these objectives, the Convention invited to carry out educational courses on landscape, specifically adapted to each school grade (Chapter 2, Article 6c). Additionally, in 2009 the Council of Europe published the report titled "Education on Landscape for Children". This document compiles several guidelines to establish and develop an appropriate education on landscape at school. It also includes some educational experiences that were carried out in different European countries (Council of Europe, 2009).

In Spain, education on landscape is carried out at school because the National Curriculum has been including some contents on this matter since the 70's. Nevertheless, despite the fact that Spain signed the ELC in 2000, the current curriculum does not include the conceptual framework that was settled on this Convention for landscape (Casas, Puig & Erneta, 2017).

[1] *"Landscape" means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors* (Council of Europe, 2000, p. 2).

On the other hand, education on landscape has a great potential for formal and informal education, owing to the conceptual complexity of this territorial reality. For example, the study of landscape allows the acquisition of skills as well as the development of respectful attitudes towards environment and society (Busquets & Rubert, 2011; Liceras, 2003).

Going back to the school courses on landscape, it is essential to find out the students' prior conceptions of landscape, which stem from both their own life experience and the school learning. This information will provide a basis to design appropriate educational proposals.

2. OBJECTIVES

This study presents a brief survey on 12-to-16- year-old students' conceptions of landscape. Firstly, it discusses the design of the survey (section 3). Secondly, it shows some of the results of the pilot study carried out in Navarra (north of Spain) (section 4). These results refer to the way that students fill out the questionnaire (section 4.1) as well as the contents of the students' answers (section 4.2). Results allowed proposing a new version of the survey (section 5) and designing some educational proposals, which are presented at the end of the paper (section 6).

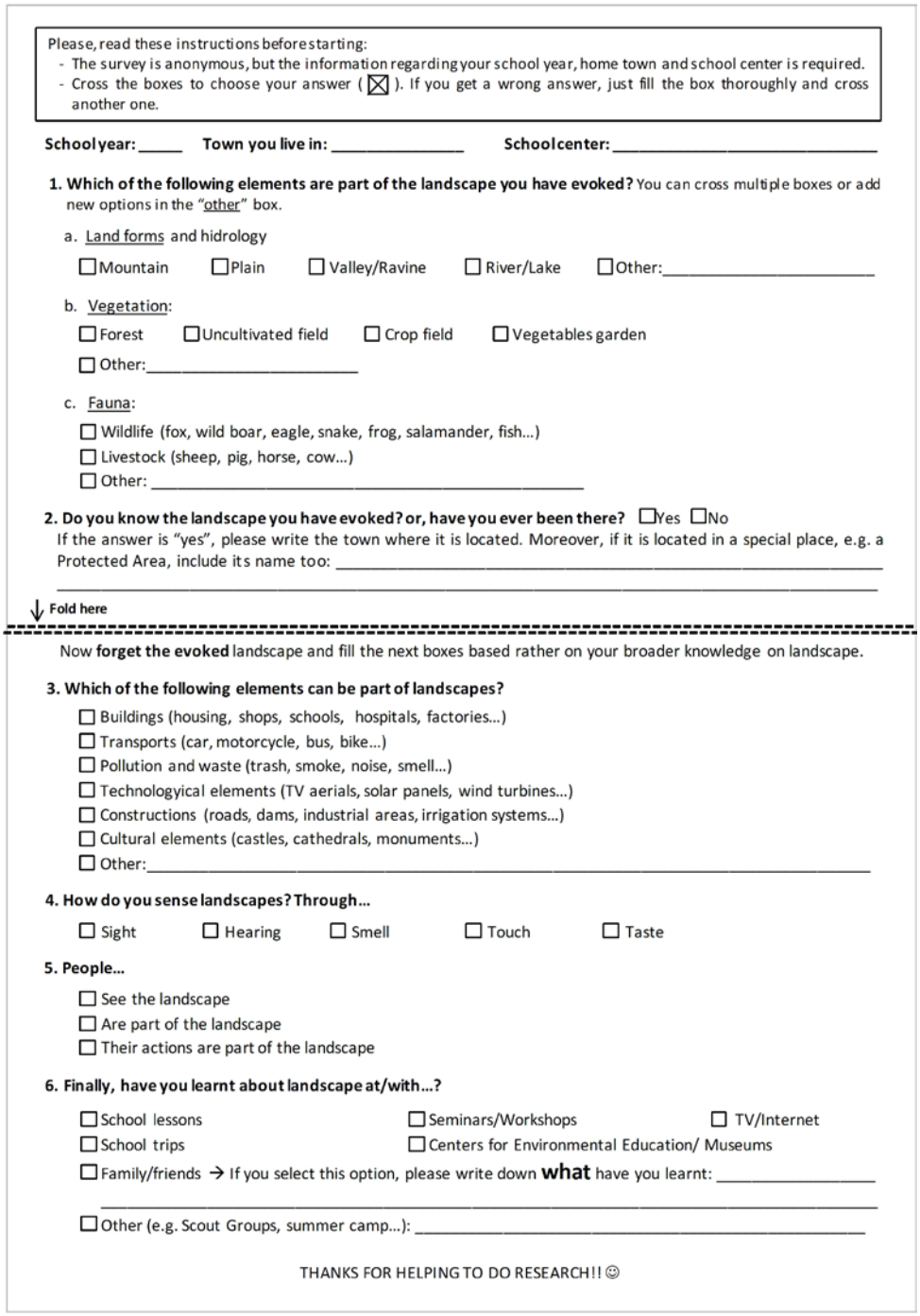
3. METHODOLOGY

3.1. Survey design

The designed survey consists of six close-ended and multiple-choice questions (Figure 1). Some of them include the open answer option "other", that widens the scope of possible answers.

The first and second question aims to unveil what kind of landscape is evoked by students when invited to think freely on a landscape. Taking into account previous studies on children' and youth' conceptions of landscape –that reveal an identification between landscape and natural landscape (Bernáldez, Gallado, & Abello, 1987; Adrados, 1998; Álvarez & Rubio, 1996; Tonda & Sebastiá, 2000)– the answer options for question one were focused on the natural elements of landscape. If the evoked landscape were an urban or a coastal one, the answer option "other" allows the students' to describe it properly. Complementarily, the second question gathers information about the geographical location of the evoked landscape.

Third to sixth questions prompt the students to complete the questionnaire according to their own conception and knowledge of landscapes. That is, the evoked landscape is not on focus henceforth.



Please, read these instructions before starting:
- The survey is anonymous, but the information regarding your school year, home town and school center is required.
- Cross the boxes to choose your answer (☒). If you get a wrong answer, just fill the box thoroughly and cross another one.

School year: _____ **Town you live in:** _____ **School center:** _____

1. Which of the following elements are part of the landscape you have evoked? You can cross multiple boxes or add new options in the "other" box.

a. Land forms and hidrology

☐ Mountain ☐ Plain ☐ Valley/Ravine ☐ River/Lake ☐ Other: _____

b. Vegetation:

☐ Forest ☐ Uncultivated field ☐ Crop field ☐ Vegetables garden

☐ Other: _____

c. Fauna:

☐ Wildlife (fox, wild boar, eagle, snake, frog, salamander, fish...)

☐ Livestock (sheep, pig, horse, cow...)

☐ Other: _____

2. Do you know the landscape you have evoked? or, have you ever been there? ☐ Yes ☐ No

If the answer is "yes", please write the town where it is located. Moreover, if it is located in a special place, e.g. a Protected Area, include its name too: _____

_____

↓ **Fold here**

Now **forget the evoked** landscape and fill the next boxes based rather on your broader knowledge on landscape.

3. Which of the following elements can be part of landscapes?

☐ Buildings (housing, shops, schools, hospitals, factories...)

☐ Transports (car, motorcycle, bus, bike...)

☐ Pollution and waste (trash, smoke, noise, smell...)

☐ Technologyical elements (TV aerials, solar panels, wind turbines...)

☐ Constructions (roads, dams, industrial areas, irrigation systems...)

☐ Cultural elements (castles, cathedrals, monuments...)

☐ Other: _____

4. How do you sense landscapes? Through...

☐ Sight ☐ Hearing ☐ Smell ☐ Touch ☐ Taste

5. People...

☐ See the landscape

☐ Are part of the landscape

☐ Their actions are part of the landscape

6. Finally, have you learnt about landscape at/with...?

☐ School lessons ☐ Seminars/Workshops ☐ TV/Internet

☐ School trips ☐ Centers for Environmental Education/ Museums

☐ Family/friends → If you select this option, please write down **what** have you learnt: _____

_____

☐ Other (e.g. Scout Groups, summer camp...): _____

THANKS FOR HELPING TO DO RESEARCH!! ☺

FIGURE 1. Applied survey. Source: self-made.

The third question exclusively refers to the anthropic elements of landscape: buildings, castles, transports, roads, dams, et cetera. The fourth question aims to discover which role students attribute to humans in relation to landscapes: observer, constituent part or shaping agent. By the same token, the fifth question will show the student's opinion regarding which senses are involved in landscape perception. Finally, the sixth question aims to determine the students' learning sources regarding landscape.

3.2. Pilot experience

Seven Navarrian school centers and 1096 12-to-16-year-old students were involved in the pilot test of the survey. The test was conducted in four phases (respectively to 286, 203, 347 and 278 students) to check the adequacy of the survey for the different ages and regions (rural or urban areas) considered. After the first phase, some typographical changes were introduced into the survey. In order to assure the reliability of the survey, the questionnaires of the 286 students' involved in this phase were excluded from the subsequent data treatment.

The procedure in each phase was as follows. Firstly, the survey was introduced to the students as part of a research on youths' conceptions of landscape. Secondly, the students' were invited to close their eyes and evoke a landscape for one minute. Afterward, the survey was delivered to the students and two instructions were given to them, namely: the evoked landscape should help to answer exclusively the first two questions, and the possibility to add information through the answer option "other". Then, the students' completed the questionnaire. The whole process took about fifteen minutes.

3.3. Data treatment

As it was mentioned before, data treatment consisted of a double analysis. On the one hand, it was analyzed the way the students completed the questionnaire, namely: the number of valid, blank and incomplete questions, as well as the multiple answers cases. On the other hand, the percentages for each answer option were calculated. Complementarily, in the case of question one, the evoked landscapes were categorized according to the answer options that students chose or added to describe them, resulting six types of evoked landscapes: "natural landscape", "rural landscape", "urban or periphery landscape", "coastal landscape", "landscape of energy and transport infrastructures", and "other landscapes".

4. RESULTS

According to the great amount of information gathered by the survey and the limited extension of this paper, is not possible to present all the results of the study.

Therefore, only the main outcomes are summarized below. Firstly, there is discussed the way that students filled out the questionnaire. Secondly, the results of the questions one, two and three are presented.

As it was mentioned before, the questionnaires of the 286 students' involved in the first phase were excluded from the data treatment. Therefore, the final number of study subjects was 828. These questionnaires were split into two groups: students' from the rural (347) and the urban (481) areas.

4.1. Students' way of filling out the questionnaire

4.1.1. Valid answers per questions

First and second questions were considered invalid when the students answered about two or more evoked landscapes. Question three was declared null if the students answered it providing information from their evoked landscape instead of their general knowledge of landscape. Only the 1.6% of the students' answers was declared invalid. This result points to a good general comprehension of the questionnaire by the study subjects.

4.1.2. Blank questions

The number of questions that the students left in blank was low: 2.4%. However, questions one and three obtained the highest percentages both in the rural (11.3% and 3.2%, respectively) and the urban (7.9% and 1.5%) areas. These results indicate a need of reconsidering the formulation of the question and the provided answer options.

4.1.3. Incomplete questions

A few students (1.2%, rural areas; 1.7%, urban areas) forgot to include some personal information (town, school center or school year) on the questionnaire. Complementarily, questions two and six were also incomplete in some cases.

The second question was classified as incomplete if the students left in blank the information of the evoked landscape location. This situation was detected in both the rural (5.1%) and the urban (9%) areas, but the number of cases was not very high.

Finally, question six obtained the highest percentages (11.4%, rural areas; 11.9%, urban areas) in this analysis. This question was considered incomplete if the students did not specify the things they had learned about landscape in their familiar context.

4.1.4. Multiple answers

The "multiple answers" phenomenon encompasses three different situations that affect questions one, two and three.

The first case involved questions one and two. They were classified as multiple answers when the students answered these questions with more than one evoked landscape. The incidence rate of this case was 2.1% in the rural areas and 2.3% in the urban ones.

In the second case, the students answered to question three using information from their evoked landscape, instead of their general knowledge of landscape. This situation was registered in a 5.5% and a 3.5% of cases in the urban and the rural areas, respectively.

The third situation affected to question six. Almost the half of the study subjects did not answer properly to this question (45.5%, rural areas; 46.5%, urban areas), that is: the students provided information about when, where or whit whom they had learned about landscape in their familiar context, instead of the particular things they had learned there. The high percentages obtained in this case points out to the need to reconsider the formulation of the question.

The two first described situations led to declare the answer options as null. In fact, the "multiple answers" explained the 100% of the invalid cases for question three.

4.2. Students' conceptions of landscape

4.2.1. Question 1 (types of evoked landscapes)

Question one results show that the natural landscape was the most evoked by the students' (49.2%). Following the natural landscape, there were the rural (20.9%), and the coastal (14.5%) ones. In contrast, the urban landscape and the landscapes of energy and transport infrastructures obtained the lower values, that is, a 2.9% and a 1.9%, respectively. Therefore, there were not important differences between the students' evoked landscapes from both the rural and the urban areas. Furthermore, these results concur with the findings of some studies that were carried out with children and youths nearly two decades ago (Bernáldez, Gallado, & Abello, 1987; Adrados, 1998; Álvarez & Rubio, 1996; Tonda & Sebastiá, 2000).

4.2.2. Question 2 (location of the evoked landscapes)

The 56.1% of the students' evoked landscapes consisted of places that they knew or had visited sometime. Most of these landscapes were located in Spain (86.6%) and more than a half of them belonged to Navarra (55.7%), the region where the study was carried out.

The provinces with more cases of evoked landscapes were the ones that border Navarra, namely: Guipúzcoa (4.7%), Zaragoza (4.9%) and Huesca (4.7%). Similarly, Cantabria (2.9%), Asturias (2.3%), Tarragona (3.2%), Castellón (3.5%) and Alicante (1.7%), obtained higher percentages than other provinces because of their location in the Cantabrian and Mediterranean coasts. In fact, most of the coastal landscapes evoked by the students were located in the Mediterranean provinces (Tarragona, 81.8%; Castellón, 91.7%; Alicante, 66.7%). These results might point out that the students evoked the landscapes that they visit during their vacation.

4.2.3. Question 3 (human elements of landscapes)

The 73% of the study subjects considered that the cultural elements, such as castles or monuments, are constituent parts of landscapes. The human constructions (roads, dams, industrial areas, et cetera) and the buildings obtained, respectively, a 41.6% and a 39.5%. In contrast, the answer option "waste and pollution" was the least chosen (17.4%). The same trends in the results are observed in both the rural and the urban areas.

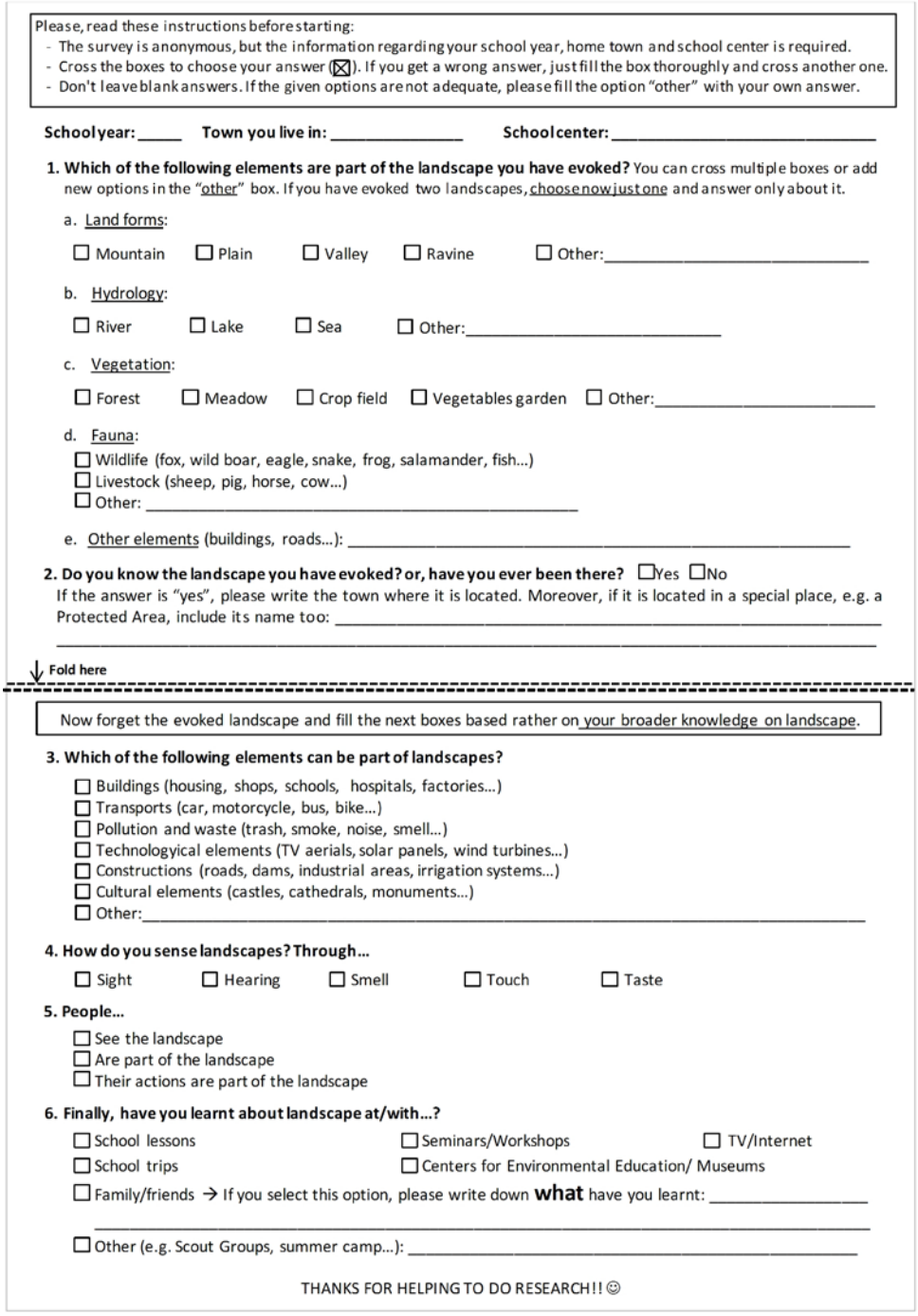
With respect to the open answer option ("other"), the 16% of the students used it to remark the absence of the natural elements of landscape. In addition, a 7.9% of the study subjects assured that human elements cannot be considered constituent parts of landscapes. These results might point out to a stereotyped conception of landscape, already revealed by previous studies, namely: the reduction of landscape to its natural elements. This idea may be also supported by the high percentage of natural landscapes that evoked the students in question one (see section 4.2.1.).

5. FINAL VERSION OF THE SURVEY

Taking into account the results of the pilot experience (see section 4.1.), a new version of the survey was designed (Figure 2).

An instruction regarding not to leave blank answers has been added at the top of the questionnaire. In addition, some typographical changes (bold, underlined…) have been introduced in order to clarify the way that the students' should complete the questionnaire.

With respect to the questions, the first one includes now more answer options. On the one hand, "land forms and hydrology" section (see Figure 1) is now split into two sections ("a" and "b"). This allowed including the answer option "sea", related to the coastal landscapes. On the other hand, a specific section for the human elements of landscape has been included (section "e"). Finally, questions two-to-six remain the same in terms of their formulation and answer.



Please, read these instructions before starting:
- The survey is anonymous, but the information regarding your school year, home town and school center is required.
- Cross the boxes to choose your answer (☒). If you get a wrong answer, just fill the box thoroughly and cross another one.
- Don't leave blank answers. If the given options are not adequate, please fill the option "other" with your own answer.

School year: _____ **Town you live in:** _____ **School center:** _____

1. Which of the following elements are part of the landscape you have evoked? You can cross multiple boxes or add new options in the "other" box. If you have evoked two landscapes, choose now just one and answer only about it.

a. Land forms:

☐ Mountain ☐ Plain ☐ Valley ☐ Ravine ☐ Other: _____

b. Hydrology:

☐ River ☐ Lake ☐ Sea ☐ Other: _____

c. Vegetation:

☐ Forest ☐ Meadow ☐ Crop field ☐ Vegetables garden ☐ Other: _____

d. Fauna:

☐ Wildlife (fox, wild boar, eagle, snake, frog, salamander, fish...)
☐ Livestock (sheep, pig, horse, cow...)
☐ Other: _____

e. Other elements (buildings, roads...): _____

2. Do you know the landscape you have evoked? or, have you ever been there? ☐Yes ☐No
If the answer is "yes", please write the town where it is located. Moreover, if it is located in a special place, e.g. a Protected Area, include its name too: _____

_____

Fold here

Now forget the evoked landscape and fill the next boxes based rather on your broader knowledge on landscape.

3. Which of the following elements can be part of landscapes?

☐ Buildings (housing, shops, schools, hospitals, factories...)
☐ Transports (car, motorcycle, bus, bike...)
☐ Pollution and waste (trash, smoke, noise, smell...)
☐ Technologyical elements (TV aerials, solar panels, wind turbines...)
☐ Constructions (roads, dams, industrial areas, irrigation systems...)
☐ Cultural elements (castles, cathedrals, monuments...)
☐ Other: _____

4. How do you sense landscapes? Through...

☐ Sight ☐ Hearing ☐ Smell ☐ Touch ☐ Taste

5. People...

☐ See the landscape
☐ Are part of the landscape
☐ Their actions are part of the landscape

6. Finally, have you learnt about landscape at/with...?

☐ School lessons ☐ Seminars/Workshops ☐ TV/Internet
☐ School trips ☐ Centers for Environmental Education/ Museums
☐ Family/friends → If you select this option, please write down **what** have you learnt: _____

_____

☐ Other (e.g. Scout Groups, summer camp...): _____

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FIGURE 2. Final version of the survey. Source: self-made.

6. DIDACTIC PROPOSALS ON LANDSCAPE

The information about the students' prior knowledge of landscape, as derived from the survey, was used to design two didactic proposals. They were carried out in two Navarrian school centers, and in both cases the learning process and outcome was assessed through a pretest-posttest method.

The first educational activity is named "Discovering landscapes!" and it is designed for 10-to-13-year-old students. It consists of a one-hour-long game (quiz) (Casas, Erneta & Puig, 2017)[2]. The students, split into two groups, have to correctly answer eight questions to obtain the pieces of a puzzle, which represent the different elements of landscape. One team works with northern Navarrian landscapes and the other team with southern ones. Comparing photographs of both types of landscapes allow students to identify similarities and differences between them.

The second educational proposal is named "Seeing with new eyes the everyday landscapes". It's designed for 15-to-16-year-old students and its implementation takes about five hours (Casas & Erneta, 2017). The students have to do some exercises using the Information and Communication Technologies.

7. CONCLUSIONS

The results of this research allow the following conclusions to be drawn:

1. This survey is considered a useful research instrument to obtain information of students' conceptions of landscape.

   The questionnaire with closed-ended questions and the answer option "other" are an appropriate option for 12-to-16-years-old students. This is suggested by the high percentage of valid answers obtained (98.4%) in the pilot experience.

2. Both the questions and the answer options included in the survey are adequate.

   71.5% of the students evoked landscapes where the natural components were predominant. Therefore, the answer options for question one, focused on the natural elements of landscape, were useful. Complementarily, the answer option "other" allowed the 28.5% of the students to describe their non-natural evoked landscapes. Even so, some changes have been introduced on the answer options for question one (see section 5) in order to improve the efficacy of the survey.

[2] This article contains a detailed explanation for the didactic proposal. Furthermore, the didactic materials designed specifically for this proposal are available for downloading from the following sites: http://hdl.handle.net/10171/43099 (Spanish version); http://hdl.handle.net/10171/43100 (English version).

3. The results of question one confirm what previous studies reveal about youths' conceptions of landscape.

   The natural (49.2%), rural (20.9%) and coastal (14.1%) landscapes were the ones that students evoked mostly. Generally, all these landscapes were familiar to the students (56.1%) and the 86.6% of them were located in Spain. In fact, about half of the evoked landscapes were located in Navarra (55.7%), the region where the study subjects live.

4. Some anthropic elements are in fact considered by students as integrating parts of landscapes. The most frequent answer to the third question was "cultural elements" (73%). In contrast, the option "waste and pollution" was the least chosen (17.4%). However, some students (7.9%) specified in the answer option "other" that only the natural elements can be part of landscapes.

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