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Landscape Education Two Decades after the European Landscape Convention—A Study with Trainee Teachers

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Abstract: The European Landscape Convention promotes the protection, management and planning of landscapes and organises international co-operation on landscape issues. Member states committed to implement measures such as promoting social education about landscapes. The convention stated that, although it was part of the education curricula in some countries, landscape education was to be expanded from a multidisciplinary perspective. The Education Act in force in Spain in 2008 (LOE, 2007), when the convention was ratified, included landscape in the syllabus, but not from a broad perspective as that reflected in the ELC. Later education reforms have gradually increased the presence of the landscape in school curricula. This study examines landscape-related knowledge and awareness among current trainee primary school teachers, whose whole education has occurred under the umbrella of the ELC. This aims to assess whether the ELC's targets have been met in terms of social awareness of landscape issues. A mixed questionnaire was designed, validated, and implemented in a sample of 322 students studying subjects related to the teaching of geography. The answers were analysed with descriptive and inferential statistics. The results reflect poor landscape-related knowledge and awareness, suggesting that the educational measures implemented since the ratification of the ELC have not been successful.

Keywords: landscape; landscape with education; European Landscape Convention; geographic education



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1. Introduction

1.1. Education about Landscape

Since the Neolithic Revolution, humans have been a determining factor in the formation of landscapes. Throughout history, humans have interacted with their environment to meet their needs and take advantage of opportunities to create cultural landscapes. The degree of transformation of natural systems has been determined by technology, demographic dynamics, and the associated demand for resources [1]. More recently, the scale of the human footprint on Earth has become so large that it has inspired the definition of a new historical period, the Anthropocene [2], which began in the closing decade of the 18th century with the First Industrial Revolution and is characterised by global changes driven by exponential population growth and high per capita consumption [3].

In this context, early concerns for the preservation of natural heritage in the second half of the 19th century led to the enactment of laws and the creation of conservationist institutions and networks. However, the transformation and deterioration of landscapes continued apace, and even accelerated from the 1950s onwards. In response, environmental

education began to be imparted in the 1960s [4], and the concept of sustainable development was coined in the late 1980s [5]. In Europe, the loss and degradation of landscapes inspired the idea that balancing social, economic, and environmental concerns played a role in improving the quality of life of citizens, as expressed in the Declaración del Paisaje Mediterráneo/Mediterranean Landscape Charter (1992) [6], precursor of the European Landscape Convention (Council of Europe, 2000).

In this context, landscape education is to be understood as much more than simply transferring knowledge about the components, factors, and processes that shape landscapes [7]. One crucial aim, both academically and in less formal settings, is to generate a positive stance towards the landscape and its values [8]. As such, landscape education aims to provide the tools to understand the complexity of landscapes and appreciate their values and their contribution to individual and collective development and to raise social awareness about these values and frame them both as a right and as a duty [9]. A society educated about the landscape will be able to play an active role in its sustainable management, meetings its needs and those of future generations. For this reason, landscape education must play a central role in Education for Sustainable Development [10].

1.2. Landscape Education in the European Landscape Convention (ELC)

The ELC defines landscape as an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors [11], a broad concept that comprises the whole of the territory and objective and subjective dimensions. Therefore, the notion goes well beyond merely aesthetic perceptions, including everyday and degraded landscapes, because they all have an impact on the quality of life of people [12]. In Article 6—Specific measures—the convention refers to awareness and education:

- (A) Awareness-raising. Each Party undertakes to increase awareness among the civil society, private organisations, and public authorities of the value of landscapes, their role and changes to them.
- (B) Training and education. Each Party undertakes to promote (a) training for specialists in landscape appraisal and operations; (b) multidisciplinary training programmes in landscape policy, protection, management, and planning, for professionals in the private and public sectors and for associations concerned; (c) school and university courses which, in the relevant subject areas, address the values attached to landscapes and the issues raised by their protection, management, and planning [11].

To date, 39 member states of the Council of Europe have ratified the ELC, comprising a total population close to 600 million [13]. Spain ratified it on 26 November 2007 through the Instrumento de Ratificación del Convenio Europeo del Paisaje (BOE, 5 February 2008), in which it committed to comply with all its directives. Since landscape is considered in national and regional bills, regional governments have the jurisdiction over planning and are responsible for enacting the relevant legislation. Some regions, such as Comunidad Valenciana (2004), Catalonia (2005), Galicia (2008), the Basque Country (2014), and Cantabria (2014) passed specific landscape bills, and others, for instance Andalusia and Canarias, created instruments to promote and valorise landscapes, including research centres, observatories, and landscape catalogues. Following the ELC, one of the general aims of these bills and tools is to promote landscape education.

Concerning the impact of the ELC on landscape education in Spain, it must be pointed out that landscapes were part of the school syllabus enforced by the Education Act in place at the time of ratification (Ley Orgánica de Educación, 2006): in primary education, they were taught under the topic natural and social sciences; in compulsory secondary education, under the topics social sciences and natural sciences; and in non-compulsory secondary education, under the topic geography [14,15]. In subsequent education acts (LOMCE, 2013; LOMLOE, 2020), landscape-related teaching has increased [16], but this is regionally uneven, as the regional governments have considerable leeway in designing the school curricula [17]. Indeed, in Spain, as in the other signatory countries of the ELC, landscape education has been explicitly integrated into the geography curricula at all educational

levels (it is, in fact, mandatory to understand, appreciate, and promote the protection of the diverse landscapes of the countries). However, the means to achieve this are often not specified, and the study of the convention is generally not mandatory. The responsibility for this task specifically or almost exclusively rests with the geography teacher, undoubtedly leading to disparities not only among regions but even among schools within the same region. In the books used for subjects that address landscape-related issues, some of the principles of the ELC can be found, such as the definition of landscapes as heritage, their identity value, their subjective dimension, and explicit mentions of the ELC [18]. However, relevant content such as everyday landscapes and the subjective dimension of landscapes is still missing from the school syllabus.

1.3. Aim of This Study

Two decades after the proclamation of the ELC, the situation is ripe to investigate the achievements brought about by the specific measures proposed by the convention concerning awareness and education, using Spain as a case study. From our perspective, these measures have been channelled largely through pre-university school curricula.

As such, the main aim of this study is to examine student knowledge—about the objective and subjective dimensions put forth by the ELC—at the end of pre-university education, understood as an indicator of the efficacy of education-related measures implemented after the ratification of the convention.

This was carried out through a survey with a significant sample of students taking a BA in primary education (more details in the Methodology section). This group is regarded as relevant because first, they will likely be leading landscape education in primary schools, when students first comprehensively come into contact with basic landscape education [19–21], so a positive experience is of special importance, and second, because, owing to their age, their whole education has taken place under the umbrella of the ELC.

In order to establish the participants' knowledge about landscape, four secondary targets were defined, and these were used to design the survey:

1. Exploring the possible influence of socio-educational factors (based on personal data) on the participants' perception of landscape.
2. Determining scientific and institutional understanding of landscape (objective dimension).
3. Establishing the landscape education received during the participants' pre-university education (curricula).
4. Establishing the participants' critical personal relationship with landscape (self-reflection on subjective dimensions and ethical implications).

The results will be useful to infer scientific knowledge and awareness of landscape among population groups with secondary school studies, and also to establish whether the subjects taught and the methodologies followed efficiently achieve the targets set out in the ELC. Although recent studies have addressed the issue of landscape perception among trainee teachers [20,22–24], this study is different because it explicitly links with the ELC and because it is original in terms of design and sample selection. The results can be used to suggest improvements and point out weaknesses in landscape-related school subjects in primary education.

2. Materials and Methods

2.1. Data Collection and Study Sample

This study adopted a non-experimental methodology based on a survey and a sample selection specifically designed to address the research questions [25].

The study aim, to assess expectations and actual experience in the implementation of landscape education after Spain's ratification of the ELC, and practical and logistical considerations favoured carrying out the survey with trainee primary teachers whose primary education took place after said implementation.

A sample of 322 students from the largest presential university in Spain, the Universidad Complutense de Madrid, was selected among those enrolled in the module Basics and

Didactics of Geography, the first in the syllabus in which they are taught about landscape and its associated didactics. This sample is regarded as statistically significant for an unknown population, with a level of confidence of 95% and 5.5% sampling error, according to [26] sampling estimate formulas.

Participants were given a questionnaire at the beginning of the academic year. No previous information about the subject addressed by the survey was provided, to avoid short-term learning bias. The questionnaire was designed ad hoc and included open and closed questions. The questionnaire was in paper format and was to be answered manually (Appendix A). It comprised four blocks, each of which dealt with a construct related to one of the study's four targets (Table 1). The questionnaire did not explicitly explain the block structure, to avoid noise, but was preceded by an introduction that explained the general target of the study and informed participants that this study complies with UNESCO's ethical code for research in the social sciences, with particular emphasis on anonymity, confidentiality, and right to information. In contrast with previous surveys about the perception of landscape [23,24,27], the survey gave great weight to qualitative data, with items that invited honest personal comments from participants in addition to ticking boxes [28].

Table 1. Basic design of the questionnaire.

Block Construct	Research Target	Item
(A) Personal information	Exploring the possible influence of socio-educational factors on the perception of landscape	Degree
		Age
		Place of residence
		Place of birth
		Gender
		Geography as optional subject in secondary school
(B) Knowledge	Determining scientific and institutional understanding of landscape	Definition of landscape
		Knowledge of the ELC
		Ratification by Spain
		Protected landscapes
		Landscape-related legislation
(C) Experience	Understanding the landscape education received during pre-university studies	Landscape in ESO *
		How landscape was addressed in ESO *
		Landscape in BACH **
		How landscape in was addressed in BACH **
(D) Critical reflection	Establishing the personal critical relationship with landscape	Living in the landscape
		Being an agent of landscape
		Quality of landscape
		Landscape or territory

* ESO stands for "Educación Secundaria Obligatoria", compulsory secondary education in Spain (12–16 years).

** BACH stands for "Bachillerato", non-compulsory secondary education in Spain (16–18 years). Authors' own.

The design of the questionnaire was validated by an expert panel, using the basic criteria proposed by Yaghmaie [29]. Four experts in the didactics of geography and environmental sciences assessed the adequacy and relevance of each item, the answers of which were structured according to a 1:5 Likert scale. The questionnaire was validated and assigned high overall and average scores (4.7 ± 0.5 and 4.8 ± 0.5 , respectively), which endorses the reliability of results. Table 2 presents a summary of the marks assigned to each block: the best marks correspond to the block on critical reflection on landscape. The

expert panel also issued qualitative recommendations to improve the questionnaire, which were taken into consideration. The final questionnaire is presented in Appendix A.

Table 2. Quantitative assessment of the expert panel.

Blocks	Adequacy		Relevance	
	Average	SD	Average	SD
(A) Personal information	4.7	0.6	4.6	0.8
(B) Knowledge	4.7	0.6	4.8	0.4
(C) Experience	4.6	0.5	4.9	0.3
(D) Critical reflection	5.0	0.0	5.0	0.0
Global average	4.7	0.5	4.8	0.5

Authors' own.

In order to establish the reliability of the panel's judgements beyond the high consistency suggested by the low dispersion of average values, Cronbach's α internal consistency test for matrices with ordinal data was undertaken, which yielded a good result ($\alpha = 0.625$).

After the questionnaires were returned, the sample was characterised (Table 3) based on the responses to block 1 (personal information). The most widely represented groups were under 24 years of age, women, degree students, and those from urban backgrounds. The feature "has studied geography in secondary school" was fairly evenly distributed among participants.

Finally, these data were given an ordinal format so that their internal consistency could be calculated. This yielded a moderate score ($\alpha = 0.542$), which guarantees the statistical validity of the responses, especially given that the actual responses were nominal, and these tend to lose nuance when turned into ordinals.

2.2. Research Variables and Statistical Analysis of the Data

As noted, research variables were based on the questionnaire items. For closed items, the categories of each variable match the answers. For open-answer items, responses were re-categorised. Blank and hesitant responses were re-categorised as "no response" (NR) and "doesn't know" (DK), respectively. Table 4 presents the configuration of all variables considered, which are nominally qualitative in nature, in two or more categories.

Basic descriptive statistics, especially frequency and distribution, were applied to all research variables, based on the categorisations assigned. The results were visualised by block in various graphic formats.

In order to meet the first target, and to contribute towards the other three, the variables of the first block (personal information) were crossed with the rest (except those that referred to specific examples) through contrast hypothesis tests, leading to inferential statistics, namely Pearson's chi-square test, which is the most suitable for nominal qualitative variables and large samples [28]. When the survey returned less than 20% of "expected count less than 5", the chi-square test was replaced by Fisher's exact test, which is the most suitable in these instances, carried out in association with Pearson's [28]. When the statistical significance (p -value) was below 0.05, H_0 (null hypothesis), i.e., "there is no relationship between the categories of variables", must be rejected and H_1 (alternative hypothesis), i.e., a significant relationship exists, must be adopted.

Afterwards, the effect size of this relationship, that is, its strength, was calculated using Cramer's V test, which is the most suitable for qualitative variables when at least one has three or more categories. Relationships with an effect size under 0.3 were not considered relevant, even if statistically significant [28].

Table 3. Characteristics of the sample by percentage.

Ages		Gender	Relationship Birth–Residence		Groups	Place of Residence		Place of Birth		Has Studied Geography in Non-Compulsory Secondary School			
<20	51.2	Man	22.4	Always rural	7.1	Conventional	82.0	Rural	21.4	Rural	11.5	Yes	40.4
20–24	42.9	Woman	77.6	Urban to rural	14.3	Double or Bilingual Degree	18.0	Urban	78.6	Urban	88.5	No	58.7
25–29	3.4			Always urban	74.2							No response	0.9
30–34	1.2			Rural to urban	4.3								
>34	1.2												

Authors' own.

Table 4. Research variables.

Block	Item	Variable	Categories	Justification	
(A) Personal information	Degree	Type of degree	Re-categorised into Degree/Double or bilingual degree	Indirect measure of pre-university academic level, because double and bilingual degrees demand a high entry mark. The aim is to establish if academic achievement affects perception of landscape	
	Age	Age groups	Re-categorised into <20/20–24/25–29/29–34/>34	Conversion into a qualitative variable to facilitate statistical analysis. We created 5-year age groups, as these can mark significant periods in life	
	Place of residence	Place of birth	Place of residence	Re-categorised into Rural/Urban	The aim is to establish if degrees of daily contact with the natural environment, more typical of rural environments (at any point in life) affect the perception of landscape
			Place of birth	Re-categorised into Rural/Urban	
	Place of birth	Relationship birth/residence	Re-categorised into Always rural/Urban to rural/Always urban/Rural to Urban		
	Gender	Gender	Woman/Man		The aim is to establish possible gender differences
Geography as optional subject in BACH	Geography as optional subject in BACH	Geography as optional subject in BACH	Yes/No/NR	The aim is to establish if greater explicit presence in the curriculum affects the perception of landscape	

Table 4. Cont.

Block	Item	Variable	Categories	Justification
(B) Knowledge	Definition of landscape	Fitness of definition	Re-categorised into Full/Partial/Wrong/NR	ELC's definition used for reference, systematised in the ideas of perception of the environment (e.g., beauty, interpretation, sensations. . .), location of what is perceived (space, territory, place, site), and recognition of interaction between territorial elements: <i>area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.</i> Mention of all three ideas is regarded as full definition; mentioning at least one as partial definition; not mentioning any as wrong definition
		Presence of the perception component in the definition	Re-categorised into Yes/No/NR	
		Presence of the location component in the definition		
		Presence of the territorial components in the definition		
		Specification of territorial elements in the definition	Re-categorised into elements: Territorial (undefined)/Physical (only)/Physical and human (without interaction)/Physical and human (with interaction)/None	Distinction is made between physical elements (plants, climate, relief, fauna) and human elements (buildings, infrastructures) and whether interaction is alluded to in order to establish the alleged environmentalist approach suggested by the literature
	Knowledge of the ELC	Knowledge of the ELC	Re-categorised into Yes/No/DK-NR	Any mention of the ELC is regarded as a "Yes" answer
	Ratification by Spain	Ratification by Spain	Yes/No/DK-NR	Any mention, regardless of content, is regarded as a "yes" answer
	Landscape legislation	Existence of protected landscapes	Re-categorised into Yes/Yes (example)/No/DK-NR	Two affirmative categories are included to distinguish between simple "Yes" answers and those who mention examples
		Types of protected landscapes	Re-categorised into Mountain/Water/Coastal	Examples of (alleged) national landscape cites are counted, as a projection of prevailing ideas on protected landscapes in a shared territory
		Examples of protected landscapes	Homogenisation of mentioned names	
Landscape legislation	Landscape legislation	Re-categorised into Yes/No/DK-NR	Any mention, regardless of content, is regarded as a "yes" answer	

Table 4. Cont.

Block	Item	Variable	Categories	Justification
(C) Experience	Landscape in ESO	Presence of landscape in ESO	Re-categorised into Yes/No/DK-NR	Any mention, regardless of content, is regarded as a “yes” answer
	How landscape was addressed in ESO	Approach to landscape education in ESO	Re-categorised into Theoretical/Practical/DK-NR	Descriptions of the approaches adopted for their landscape education are distinguished by approach (theoretical/practical), didactic methods (master classes, commentary of images, debates), and resources (textbooks, videos, maps), as a reflection of the approximation to landscape in formal education
		Methodology of landscape education in ESO	Re-categorised into Oral activities/Written exercises/Class trips/Master classes	
		Resources for landscape education in ESO	Re-categorised into Interactive/Maps/Written/Visual	
	Landscape in BACH	Presence of landscape in BACH	Same as in ESO	
	How landscape was addressed in BACH	Approach to landscape education in BACH		
Resources for landscape education in BACH				

Table 4. Cont.

Block	Item	Variable	Categories	Justification
(D) Critical reflection	Living in landscape	Living in landscape	Re-categorised into Yes (without details)/Yes (urban)/Yes (rural)/No/DK-NR	“Yes” answers are divided into rural/urban to denote more detailed answers
	Agent of landscape	Agent of landscape	Re-categorised into Yes (without details)/Yes (individual outlook)/Yes (collective outlook)/Yes (educational outlook)/No/NR	“Yes” answers are divided into different outlooks: personal (individual actions), collective (social action), and educational (teaching duties)
	Quality of landscape	Quality of landscape	Re-categorised into Yes (without details)/Yes (aesthetic considerations)/Yes (space for everyday life)/Yes (natural/human resources)/No/NR	“Yes” answers that provided more detail are divided into categorisations of landscape in terms of aesthetic perception, as the locus of everyday life, and in terms of resources
	Landscape or territory	Landscape = territory	Re-categorised into Yes (without details)/No (without details)/No (with explanation)/DK-NR	As the “No” answer is correct, those who gave some explanation, even if cursory, are highlighted
Authors' own.				

The broken-down results of all statistical tests are available in an open access institutional web repository (Appendix B), alongside the data matrix based on the survey answers and the research variables. The main body of text will mention variables linked by statistically significant relationships that are above the size effect threshold noted above.

3. Results

3.1. Scientific and Institutional Knowledge of Landscape

None of the participants gave a full definition of landscape, using the ELC's definition as reference. Nearly all, however, could provide a partial definition, mentioning at least one component: (i) perceived space, (ii) in a set location, (iii) where physical and human elements interact (Figure 1). The idea of location was the least mentioned, and that of territorial elements the most. Figure 2 breaks down the way these elements were mentioned, almost exclusively from an environmental (physical elements) or an aseptic (territorial elements in general) perspective. Few respondents mentioned the interaction of human and physical aspects.

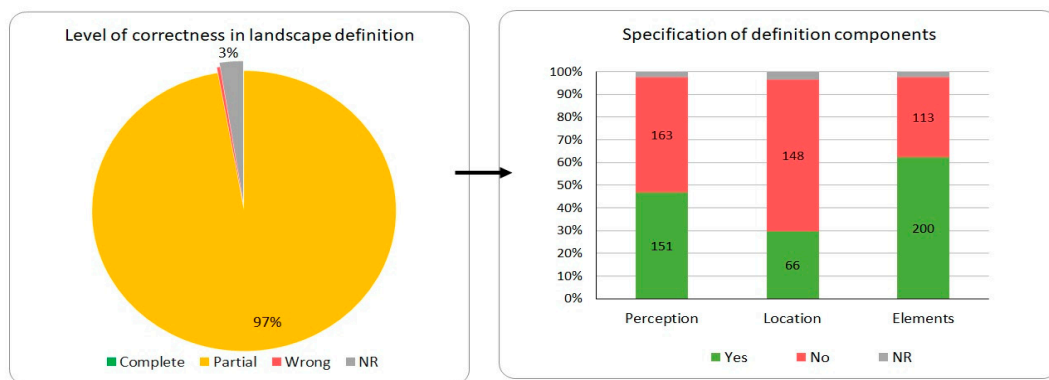


Figure 1. Adequacy of answers concerning the definition of landscape based on ELC's (perception, location, and constitutive elements). Authors' own.

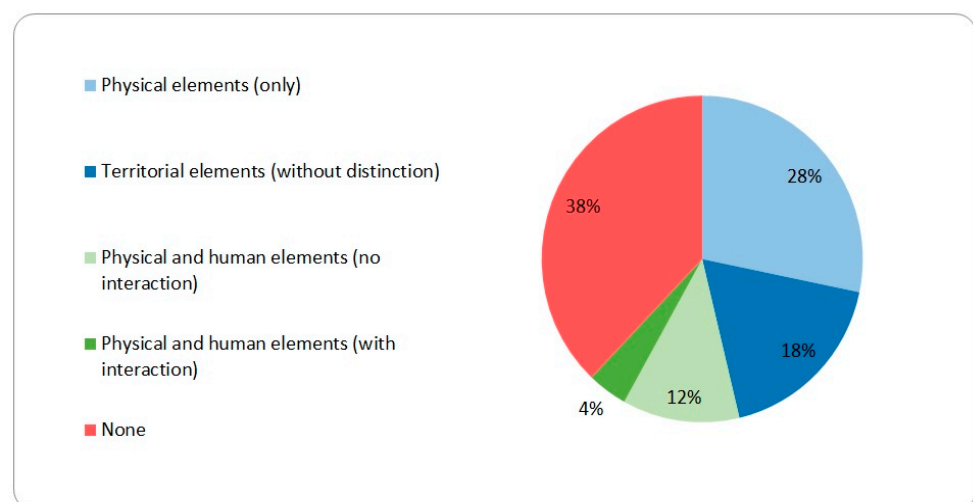


Figure 2. Typology of landscape elements in the definitions provided by participants. Authors' own.

The ELC was unknown to most participants, as was its ratification by Spain (Figure 3). Awareness of the existence of a specific norm to regulate landscapes, and of landscape-related legislation more broadly, was more widespread (Figure 4). Nearly all participants knew that there are protected landscapes (Figure 5). However, less than half of these gave examples, and none corresponded with institutionally recognised landscapes (Figure 5). Examples referred to 'natural spaces' that are protected, but as National Parks, rather

than landscapes. In addition, no typological variety is apparent in the responses, as most examples referred to mountains and wetlands/marshland areas. This reflects little understanding of the difference between protected natural areas and landscapes.

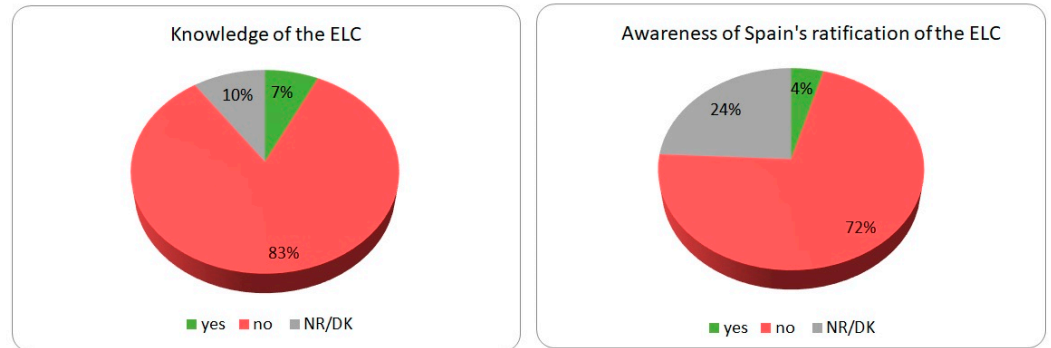


Figure 3. Percentage of participants familiar with the ELC and aware of the convention's ratification by Spain. Authors' own.

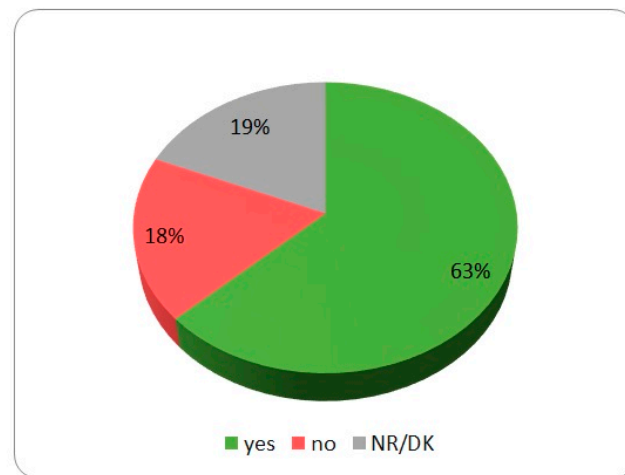


Figure 4. Percentage of participants aware of specific landscape-related legislation. Authors' own.

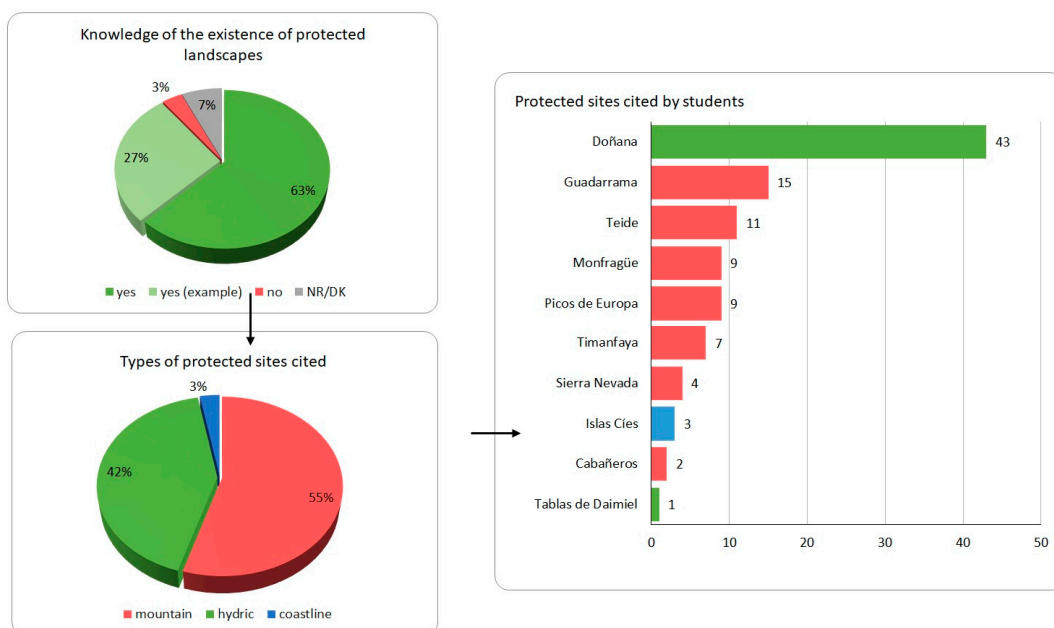


Figure 5. Percentage of participants aware of protected landscapes. Authors' own.

3.2. Perception of Pre-University Landscape Education

Landscape is part of the curriculum of compulsory secondary education in Spain (ESO), under the topic “Geography and History (Social Sciences)”. However, almost one quarter of the respondents were not aware of having received any landscape education, or were unsure about it (Figure 6). Less than half of the participants studied landscape-related subjects in non-compulsory secondary education (Figure 6). However, this figure matches that of participants who chose the non-compulsory subject “Geografía” (Geography) in the Bachillerato (see Table 1), so all of them had the choice to learn about landscape.

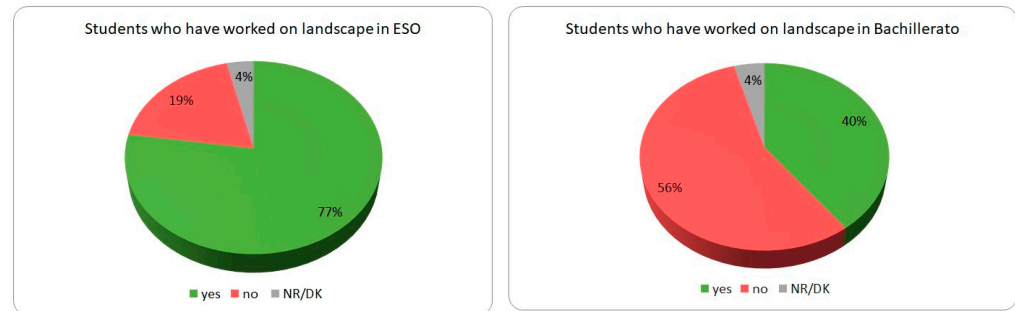


Figure 6. Percentage of participants to have studied landscape-related subjects in compulsory (ESO)/non-compulsory (Bachillerato) secondary education. Authors’ own.

Among those who remembered having studied landscape-related subjects in compulsory secondary education and provided further details, over 90% defined the learning approach as theoretical (Figure 7). Some participants were more specific, and their description indeed suggested a largely theoretical approach, with master classes and written or oral exercises (Figure 7). More participants provided details about the resources used in class, and these were again in line with a predominantly theoretical approach, using written and visual material, rather than more active methods, such as the use of cartography, excursions, or interactive resources (Figure 7).

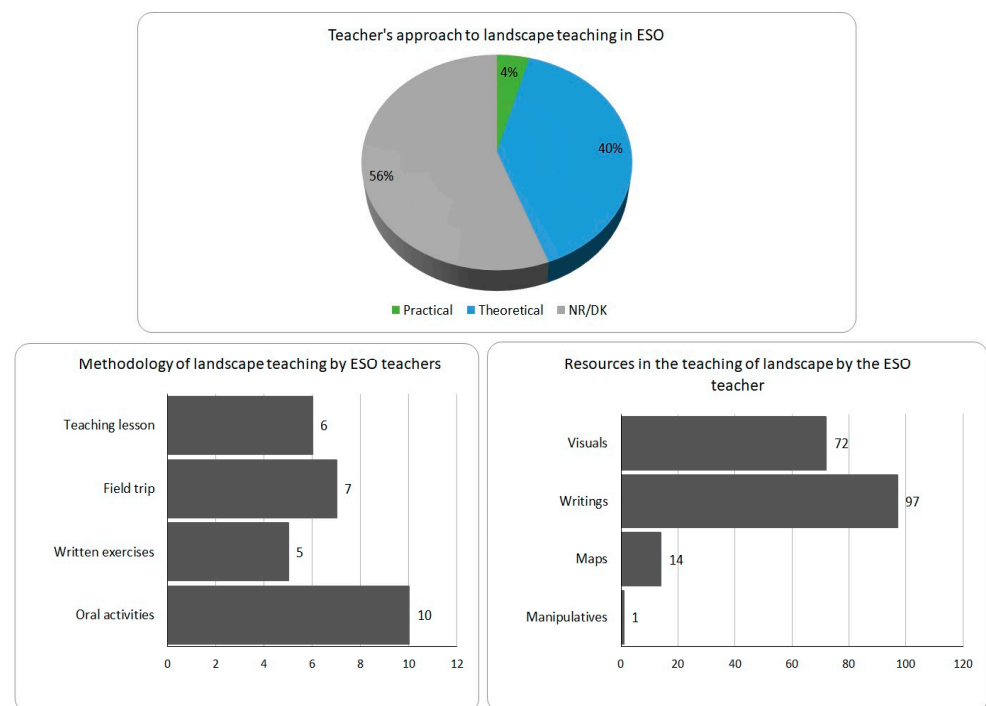


Figure 7. Approach, tools, and resources used in class by participants in landscape-related education in compulsory secondary school. Authors’ own.

Most of the participants who studied “Geography” in non-compulsory secondary education also followed a largely theoretical approach, although practical components were more prevalent (Figure 8). However, there is little difference between compulsory and non-compulsory secondary education in terms of methods and materials, as far as landscape-related education is concerned (Figure 8).

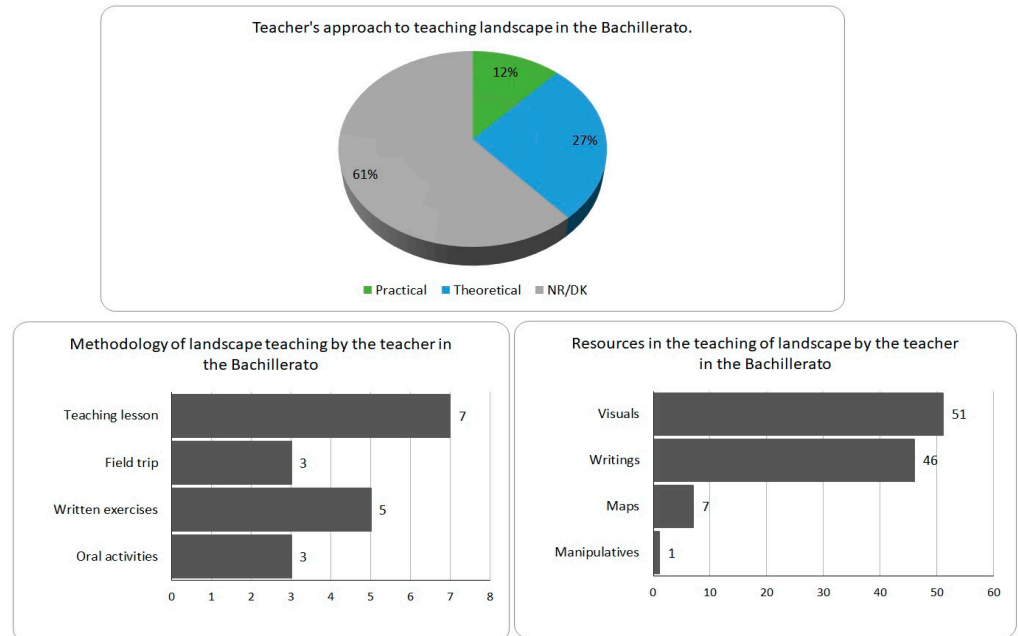


Figure 8. Approach, tools, and resources used in class by participants in landscape-related education in non-compulsory secondary school. Authors’ own.

3.3. Critical Reflection on Landscape

Although the landscape-related education received by most participants was poor, and their academic and institutional knowledge correspondingly shaky, most were capable of taking a critical stance towards the role of citizens in the management of landscapes. In this way, 91% recognised living in a landscape, although few gave details beyond describing their everyday habitat as urban or rural (Figure 9).

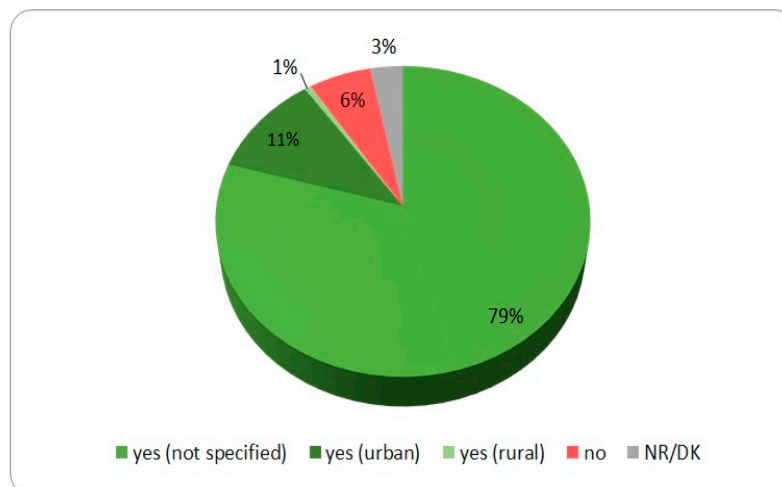


Figure 9. Percentage of participants aware of living in a landscape. Authors’ own.

When asked about the role of citizens in landscape management, the participants repeated the previous pattern; many recognised this possibility, but few gave further details

(Figure 10). Among those who did, most emphasised the individual approach, focusing on individual environmentally friendly actions, such as domestic recycling. Few referred to collective action, around social and political mobilisation. The number of participants that linked this to their future teaching role is negligible.

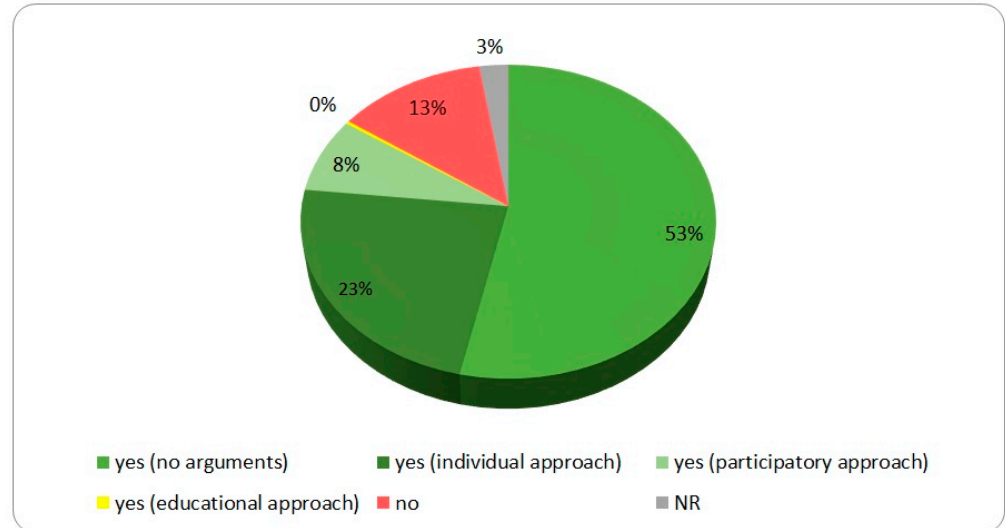


Figure 10. Percentage of participants aware of their role as landscape agents. “Yes” answers have been divided into those that provide no further details, take an individual approach, take a collective approach, and take an educational approach. Authors’ own.

Most participants agreed that landscape plays a role in quality of life and emphasised the features that valorise landscapes (Figure 11). The most widely mentioned features are the aesthetic value and its nature as a permanent geographical framework for everyday activities, including socialisation, the practice of sports, and leisure. Participants also mentioned the value of landscape as a source of natural and human resources, which must be managed, including air (pollution), sounds (noise), and mobility (accessibility).

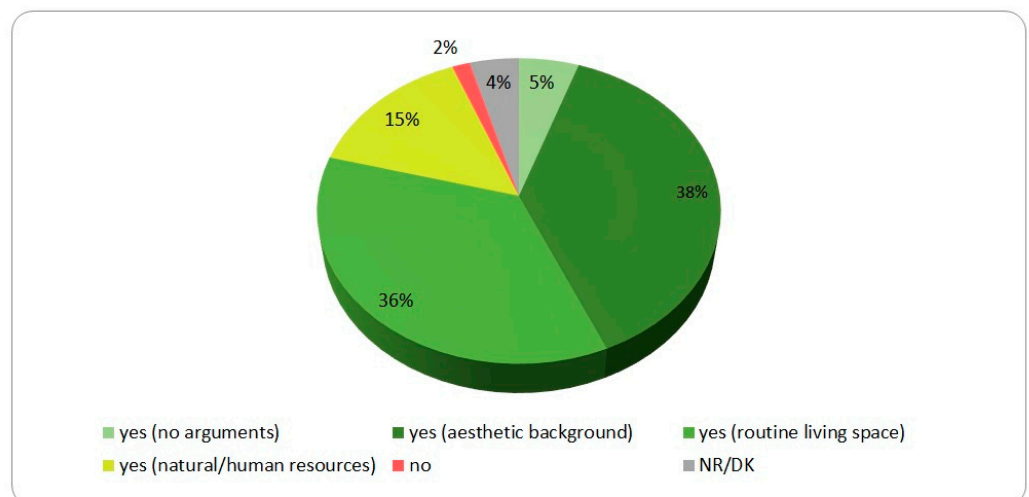


Figure 11. Percentage of participants aware that landscape plays a role in quality of life. Those who were aware have been divided into those who gave no further details, those who emphasised aesthetic features, those who emphasised landscape as a framework for everyday activities, and those who stressed landscape as a source of natural and human resources. Authors’ own.

The final item, which encouraged participants to think about landscape as a cognitive construction vs. territory as a tangible reality, held little sway in the critical thinking of

participants. Most sensed that they are not the same, but only a fifth of participants were able to give a more or less correct explanation (Figure 12).

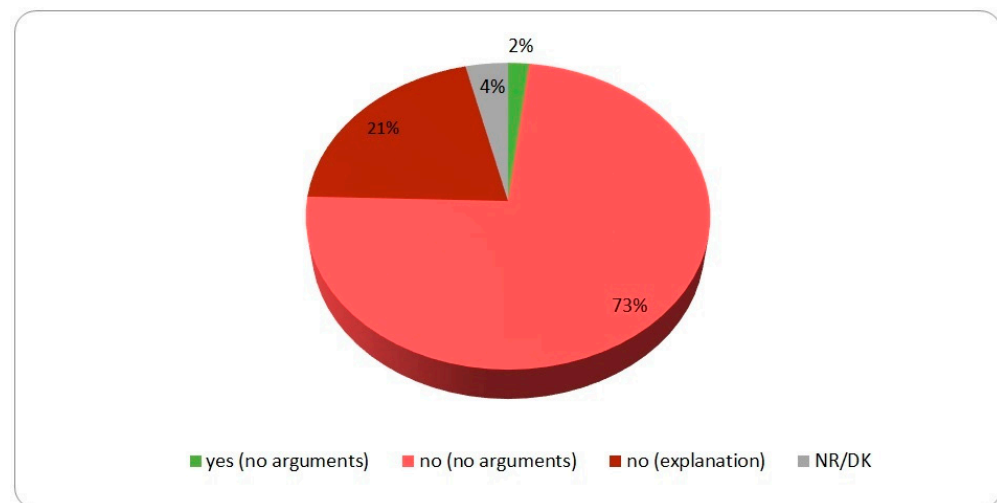


Figure 12. Percentage of participants who stated that landscape and territory are not the same. “No” answers have been divided into those who elaborated the point and those who did not. Authors’ own.

3.4. Socio-Educational Factors That May Have an Effect on the Perception of Landscape

Inferential statistics calculated out to establish the possible influence of socio-educational factors on the perception of landscape yielded no conclusive results.

On the one hand, a statistically significant (p -value < 0.05) and strong (Cramer’s $V > 0.3$) relationship between the categories of an independent variable (having studied “Geography” in non-compulsory secondary school) and a group of matching dependent variables (responding or not to items concerning landscape-related education in non-compulsory secondary school) was detected, suggesting a lack of statistical validity in terms of causality (i.e., no difference existed in the answers, regardless of whether the participant studied “Geography” in non-compulsory secondary education or not).

Other significant relationships between variables have been attested, but no patterns are apparent, and in no case is the size effect sufficiently high (Cramer’s $V > 0.3$) to suggest a causal relationship.

It can thus be argued that the socio-educational factors considered (Table 4) do not yield sufficiently significant results to stand out from the general trends shown by the sample overall. All the contrasting hypotheses test results are available in Appendix B.

4. Discussion and Conclusions

Knowing and understanding what landscape is stands as the first step towards meeting the targets of landscape education. As noted, the participants showed a partial understanding of landscape, largely related to its physical elements, a result in line with previous studies [21,23,24]. Subjective dimensions, such as the identity, heritage, and cultural values of landscape, were not recognised, although these are key for the construction of a critical and participative citizenship [13,30]. The results clearly imply that landscape is largely conflated with protected natural spaces, perhaps as a result of the greater weight of environmental education in formal and informal education [31]. The lack of a subjective dimension in the consideration of landscape can lead to perceiving landscape and territory as identical entities [32], and, even when they are seen as separate, to a lack of critical thinking about the difference.

The fact that, despite their only partial perception, most participants identified landscape as a relevant factor in quality of life can be explained through this association between landscape and protected natural spaces, which also play a role in quality of life [21,23]. On the other hand, approximately a third of participants based their positive answers on

everyday actions, such as socialisation, leisure, and sport. This emphasises the relationship between the quality of the lived space and the existence of green areas and public areas for socialisation. Concerning the citizen's role as an agent of landscape, only one tenth considered collective approaches. This suggests a widespread lack of awareness of public participation processes that affect the lived landscape [13].

One of this study's main targets was to establish the influence of students' educational experience—for instance, having studied the subject "Geography" in the year before entering university—on their landscape-related knowledge. The results are clear. Against what could be expected, the greater depth of non-compulsory secondary landscape education-related subjects [15] appears to have little impact on the perception of landscape. The answers concerning the methodology followed by teachers (mainly demonstrative) in both compulsory and non-compulsory secondary education could greatly contribute to explaining these results.

In addition, most participants only studied landscape-related subjects during their compulsory secondary education, when they were barely 13–14 years old, when few students are sufficiently mature to grasp the relevance of such a basic but complex subject [33].

It is necessary to recognise that this study is limited by the fact that the sample was limited to Madrid, one of the Spanish and European regions to have made fewer efforts to incorporate landscape and planning into the school curriculum; proficiency in these subjects is not regarded as a prerequisite to access teacher training degrees. However, it can be argued that this study illustrates broader shortcomings in terms of landscape education, as well as the need to reinforce the implementation of ELC directives to avoid landscape education being overwhelmed by exclusively environmentally oriented education. Future primary school teachers are to play a key role in the dissemination and protection of landscape values, because it is during primary school that future citizens can acquire the "landscape perspective" that will allow them to understand the complexity of the space they live in and the impact and consequences of human action upon it [34].

It is worth emphasising that these future teachers display little ability to critically think about landscape; they are not sufficiently aware of living in a landscape, or of the differences between landscape and territory. Landscape education can contribute to developing critical thinking, promoting holistic perspectives that can help, for instance, to cope with everyday problems [35]. The usefulness of a better education about landscape is illustrated by the fact that participants link quality of life and the physical and human dimensions of landscape; understanding landscape is critical for an accurate prognosis of the problems it faces and of the solutions that can be implemented to overcome them. Understanding landscape is key for the development of good "spatial thinking" and the adoption of good "spatial decisions" [36,37].

This study aimed to shed light on how geography-related subjects in teacher training courses in Spanish and European universities should be approached. If, as proposed by the ELC, we should aim to holistically educate citizens about landscape, the first step should be to raise awareness among future teachers and give them tools and directives with which they can promote interest in landscape conservation and valorisation from a critical perspective. The second priority is to give them the didactic toolkit to help them in their future tasks. Finally, considering the integrative value of landscape, its role in the classroom should be reassessed, turning landscape into the backbone of a broad eco-social education [1,38].

Obviously, landscape understanding is the result of a varied and large combination of factors (the quality and comprehensiveness of curriculum materials employed, how the curriculum materials are incorporated into the students' program of study, who and how the materials/classes are taught, and so forth), which cannot be under the control of this study. What we can clearly state is the lack and strengths of a general landscape knowledge (that can be considered itself as a reliable contribution), and we can discuss some possible reasons for these, referring to the literature and some didactical trends pointed out in our results.

This study reflects the preponderance of an eminently environmentalist perception of landscape, which mixes the concepts of landscape and nature. There can be little doubt that growing concern for the environment is good news for education in landscape, insofar as it promotes the dissemination of its values and raises awareness about the importance of conservation, but it also may have led to the overrepresentation of environmentally and ecologically valuable natural landscapes, to the detriment of cultural and agricultural landscapes or simply less aesthetically pleasing natural landscapes. It could be argued that there is greater awareness of protected natural landscapes, which are prioritised in the collective imaginary over others, whose cultural, industrial, and natural assets are equally valuable even if they sometimes go unnoticed. It can also be argued that this environmentalist perspective is often oversimplistic, focusing on one or several elements without considering their integration into a broader landscape unit.

As such, landscape education is a basic tool to erase these spatial prejudices and help to valorise the territory from a geographical and not only an environmental perspective. Based on the needs emphasised by the ELC two decades ago, and considering the shortcomings displayed by the participants of our study, the following actions are recommended:

- Improving the education about landscape of teachers (for instance, by including this specific topic in the curriculum of the didactics of geography, like with other lateral issues, such as gender perspectives and education in sustainability) following the principles of geographical education for sustainable development (ESD) [39]. It should be also of great convenience to promote landscape education in other fields to cover some landscape dimensions beyond the geographical perspective, such as literary narratives [40,41], mathematical spatial properties [42,43], physical education outdoors [44], history sceneries [30], artistic expression [45,46], and more. Natural sciences is another field that considers landscape training [47], although just from a natural perspective. In fact, in order to avoid bias, it could be even positive to include a specific subject of landscape education [35]. This is due to the cross-cutting nature of the concept and its relevance in the context of ESD, which is key in primary education. The unequal knowledge of future teachers will project significant asymmetries onto the conceptualisation and valorisation of landscape in future generations.
- Promoting a more practical education (active methodologies) over the theoretical and passive methods reflected in our study. There is much room for improvement in terms of didactics of landscape, as already argued by the ELC. Education should encourage the reading of landscape and a better understanding of the relationship between everyday life and landscape, which in turn will clarify the relationship between ecology and landscape and even between social and economic factors; these are complex issues that demand practical and interactive resources, materials, and methodologies [48–51].
- Encouraging the use of landscape in the classroom at various levels. Landscape should be understood as both a subject of study and a teaching tool. Educating with landscape significantly contributes to educating about landscape. This study shows that landscape education in Spain is approached from a largely theoretical perspective. But landscapes are a complex convergence of elements and interactions that is difficult to teach in this way. Their use as a didactic tool, especially using practical methodologies that can help to appreciate this convergence palpably, rather than abstractly, would help with a better understanding of this complexity. Study trips, simulations, recreations, GIS-based analysis, and landscape commentary are highly promising methods in this regard [52–55].

It is legitimate to wonder if, twenty years after the publication of the European Landscape Convention, the tenets of this document have percolated into the education system, specifically the teaching of geography. It is obvious that significant progress has been made, considering the presence itself of landscape in the geography curriculum or the transposition of the idea of its importance for a high-quality life. However, it would be too optimistic to argue that the concept has taken root in society, for many still hesitate

when it comes to defining landscape, what shapes it, and how it is regulated. This study illustrates that not even studying non-compulsory landscape-related subjects leads to a better understanding and use of the geographical notion of landscape. Non-academic factors, such as students' social background, gender, or academic achievement, also seem to have little effect on their permeability to a culture of landscape. It can thus be argued that the concept needs to be given more weight in the school curriculum and, given its complexity and relevance in the European context, a common European framework that supports the work of educational institutions and teachers, as has been the case with other essential EU-wide issues, such as digital and language skills.

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Institutional Review Board Statement: Ethical review and approval were waived for this study as it was conducted in accordance with UNESCO's ethical code for research in the social sciences, with a particular emphasis on anonymity, confidentiality, and the right to information. The complete explanation of the ethical code provided to the participants can be consulted in Appendix A.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are public and available in <https://www.ucm.es/carlos-martinez-hernandez/file/appendix2-statistical-data> (accessed on 23 September 2023).

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Conflicts of Interest: The authors declare no conflict of interest.

Appendix A. Questionnaire Model Given to the Students [In Spanish]

Estimado estudiante:

Desde el grupo de investigación GEODIDAC, de la Universidad Complutense de Madrid, estamos realizando un estudio sobre la educación en paisaje desde la firma del Convenio Europeo del Paisaje. Nos gustaría conocer cuál es la concepción del paisaje del futuro profesorado. Por eso te pedimos si, por favor, podrías complimentar el siguiente cuestionario, con sinceridad y con la tranquilidad de no ser evaluado.

Con tu cumplimentación aceptas el tratamiento de los datos proporcionados, que usaremos para nuestra investigación siguiendo las Orientaciones Éticas para la Investigación

Social Comparativa Internacional del código ético de investigación en Ciencias Sociales dictado por la UNESCO, a destacar, el anonimato en la recogida de datos, la garantía del consentimiento informado y el respeto a la confidencialidad en la publicación de la investigación.

Muchas gracias por tu colaboración.

1	Estudios/curso			
2	Edad			
3	Lugar de residencia			
4	Lugar de nacimiento			
5	Sexo	Mujer	Hombre	
6	Opción cursada en Bachillerato	Artes	Ciencias	Ciencias Sociales y Humanidades
7	¿Elegiste Geografía como asignatura optativa en Bachillerato?	Si		No
8	Define brevemente el concepto paisaje			
9	¿Son lo mismo paisaje y territorio?			
10	¿Recuerdas haber estudiado el paisaje en la ESO?	SI	NO	
11	¿Cómo se impartió este tema (ESO)?			
12	¿Recuerdas haber estudiado el paisaje en Bachillerato?	SI	NO	
13	¿Cómo se impartió este tema (Bachillerato)?			
14	¿Vives en un paisaje?	SI	NO	
15	¿Te consideras un agente con capacidad de intervención en la toma de decisiones que pueden afectar al paisaje?	SI	NO	
16	¿Piensas que el paisaje es un elemento de tu calidad de vida? ¿Por qué?			
17	¿Sabes lo que es el Convenio Europeo del Paisaje?			
18	¿Sabes si España ratificó este convenio?	SI	NO	
19	¿Sabes si existen leyes del paisaje?	SI	NO	
20	¿Sabes si existen paisajes protegidos? ¿Conoces alguno?			

Appendix B. Inferential Statistical Data and Data Matrix

All the results from the inferential statistical tests and the data matrix itself are compiled in the following zip file, hosted in an institutional open-access repository: <https://www.ucm.es/carlos-martinez-hernandez/file/appendix2-statistical-data>

The file contains 7 text documents in Spanish as follows:

- “spss_chi_edad”: Tests for the independent variable “Age”.
- “spss_chi_grupo”: Tests for the independent variable “Degree”.
- “spss_chi_nacimiento”: Tests for the independent variable “Born place”.

- “spss_chi_optativa”: Tests for the independent variable “Geo as optional”.
- “spss_chi_residencia”: Tests for the independent variable “Living place”.
- “spss_chi_resi-naci”: Tests for the independent variable “Housing trajectory”.
- “spss_chi_sexo”: Tests for the independent variable “Sex”.

The file also contains 1 spreadsheet document in Spanish:

- “Data_matrix”: Data matrix used as a result of the responses to the questionnaire and the adaptation to the research variables.

References

1. Crespo, J.M. Paisaje, un concepto geográfico para la educación ecosocial. *Con-Cienc. Soc. (Segunda Época)* **2020**, *4*, 59–72. [CrossRef]
2. Crutzen, P.J.; Stoermer, E.F. The Anthropocene. *Glob. Chang. Newsl.* **2000**, *41*, 17–18. [CrossRef]
3. Duarte, C. (coord.); *Cambio Global. Impacto de la Actividad Humana Sobre el Sistema Tierra*; CSIC: Madrid, Spain, 2006. Available online: http://aeclim.org/wp-content/uploads/2016/01/Cambio_global.pdf (accessed on 23 September 2023).
4. Zabala, G.H.; García, M. Historia de la Educación Ambiental desde su discusión y análisis en los congresos internacionales. *Rev. Investig.* **2008**, *63*, 201–218. Available online: http://ve.scielo.org/scielo.php?script=sci_arttext&pid=S1010-29142008000100011&lng=es&nrm=iso (accessed on 23 September 2023).
5. Brundtland, G.H. (Ed.) *Our Common Future*; Oxford University Press: Oxford, UK, 1987.
6. Zoido, F. De la Carta de Sevilla al Convenio de Florencia. *Patrim. Cult. España* **2021**, *12*, 39–56.
7. Castiglioni, B. *Education on Landscape for Children*; Council of Europe: Strasbourg, France, 2009.
8. Busquets, J. La Educación en paisaje: Una oportunidad para la escuela. El paisaje en la educación. *Íber Didáctica De Las Cienc. Soc. Geogr. E Hist.* **2010**, *65*, 7–16.
9. Del Pozo, M. Paisaje, ciudadanía y educación. In *Paisaje i Educación*; Nogué, J., Puigbert, L., Bretcha, G., Losantos, A., Eds.; Observatori del Paisatge de Catalunya: Barcelona, Spain, 2011; pp. 374–376.
10. Castiglioni, B. Education on landscape: Theoretical and practical approaches in the frame of the European Landscape Convention. In *Geographical Views on Education for Sustainable Development*; IGU: Lucerne-Symposium, Switzerland, 2007.
11. Council of Europe. *European Landscape Convention*; Council of Europe: Florence, Italy, 2000.
12. Zoido, F. La aplicación del Convenio Europeo del Paisaje en España. In *Convenio Europeo del Paisaje, Textos y Comentarios*; Cortina, A., Queralt, A., Eds.; Ministerio de Medio Ambiente: Madrid, Spain, 2007.
13. Fernández, R.; Plaza, J.I. Participación ciudadana y educación en materia de paisaje en el marco del Convenio Europeo del Paisaje en España. *Cuad. Geográf.* **2019**, *58*, 262–286. [CrossRef]
14. Martínez Medina, R. La enseñanza del paisaje en España. Una mirada a través de los manuales escolares de Ciencias Sociales. *Rev. Contexto Educ.* **2017**, *31*, 9–33. [CrossRef]
15. Crespo, J.M. La Educación en Paisaje en el Grado de Maestro de Educación Primaria: Una Propuesta de Modelo Didáctico. Doctoral Thesis, Universidad Complutense de Madrid, Madrid, Spain, 2018. Available online: <https://hdl.handle.net/20.500.14352/16281> (accessed on 23 September 2023).
16. Casas, M.; Ermeta, L. El paisaje en la Enseñanza Secundaria Obligatoria. Una oportunidad educativa en el cambio curricular LOE-LOMCE. *Didáct. Geográf.* **2016**, *16*, 45–71. Available online: <https://didacticageografica.age-geografia.es/index.php/didacticageografica/article/view/295> (accessed on 23 September 2023).
17. Casas, M.; Puig, J.; Ermeta, L. El paisaje en el contexto curricular de la LOMCE: Una oportunidad educativa, ¿aprovechada o desaprovechada? *Didáct. Geográf.* **2018**, *18*, 39–68. Available online: <https://didacticageografica.age-geografia.es/index.php/didacticageografica/article/view/382> (accessed on 23 September 2023).
18. Casas, M.; Puig, J.; Ermeta, L. El estudio del paisaje en la Educación Secundaria Obligatoria: Una mirada desde los libros de texto de Ciencias Sociales. *Rev. UNES Univ. Esc. Y Soc.* **2019**, *6*, 56–75. Available online: <https://revistaseug.ugr.es/index.php/revistaunes/article/view/12120> (accessed on 23 September 2023).
19. Bajo, M.J. El paisaje en el curriculum de Educación Primaria, dentro del área del conocimiento del medio natural, social y cultural. *Aula* **2009**, *13*, 41–74.
20. Fernández, R.; Fernández, J. Design and Initial Validation of a Questionnaire on Prospective Teachers’ Perceptions of the Landscape. *Educ. Sci.* **2021**, *11*, 112. [CrossRef]
21. Delgado, E. El paisaje en la formación de maestros, un recurso educativo de alto interés para la Educación Primaria. *Tabanque Rev. Pedagog.* **2015**, *28*, 117–138.
22. Mateo, M.R. Las concepciones sobre el paisaje en la formación inicial del profesorado. *Didáct. Geográf.* **2020**, *21*, 41–74. [CrossRef]
23. Bajo, M.J.; Fernández, R. El paisaje en la formación inicial de maestros: Un estudio de caso con métodos mixtos. *Rev. De Investig. En Didáct. De Las Cienc. Soc.* **2022**, *10*, 96–121. [CrossRef]
24. Fernández, J.; García, L. La percepción del paisaje de Castilla y León en los estudiantes del Grado de Educación. In *Análisis Espacial y Representación Geográfica: Innovación y Aplicación*; De la Riva, J., Ibarra, P., Montorio, R., Rodrigues, M., Eds.; Universidad de Zaragoza: Zaragoza, Spain, 2015; pp. 1357–1366.
25. Torrado, M. *Estudios de Encuesta. Metodología de la Investigación Educativa*, 2nd ed.; Muralla, L., Ed.; Universidad Oberta de Catalunya: Barcelona, Spain, 2009; pp. 231–257.

26. Barlett, J.E.; Kotrlik, J.W.; Higgins, C.C. Organizational research: Determining appropriate sample size in survey research. *Inf. Technol. Learn. Perform. J.* **2001**, *19*, 43–50.
27. Martínez, C.; Robles-Moral, F.J. Cuestionario sobre Educación Ambiental valorada a través del Análisis del Paisaje (CEAVAP). Diseño y validación con maestros en formación de España y Colombia. In *Igualdad y Calidad Educativa: Oportunidades y Desafíos de la Enseñanza*; Vico, A., Vega, L., Eds.; Dykinson: Madrid, Spain, 2021; pp. 1434–1454.
28. Cohen, L.; Manion, L.; Morrison, K. *Research Methods in Education*, 8th ed.; Routledge: London, UK, 2018.
29. Yaghmaie, F. Content validity and its estimation. *J. Med. Educ.* **2003**, *3*, e105015. [[CrossRef](#)]
30. Gómez-Zotano, J.; Riesco-Chueca, P. Landscape learning and teaching: Innovations in the context of European landscape Convention. In Proceedings of the 4th International. Technology, Education and Development Conference, Valencia, Spain, 8–10 March 2010.
31. García de la Vega, A. El paisaje y la Educación Ambiental. *Contexto Educ.* **2016**, *31*, 3–8. [[CrossRef](#)]
32. Martínez de Pisón, E. Paisaje, cultura y territorio. In *La Construcción Social del Paisaje*; Nogué, J., Ed.; Biblioteca Nueva: Madrid, Spain, 2016; pp. 325–337.
33. Gómez, I.M.; Yáñez, C. El aprendizaje del espacio en didáctica de la Geografía: Recursos tecnológicos y TPACK para adquirir la competencia espacial. *Didáct. Geográf.* **2022**, *23*, 103–123. [[CrossRef](#)]
34. Martínez-Medina, R.; Ávila-Marin, C. La noción del paisaje en el alumnado de Educación Primaria: Un análisis de su representación. *Doc. D'anàlisi Geogràf.* **2021**, *67*, 133–151. [[CrossRef](#)]
35. Rodríguez, F.; Riveiro, T.; Armas, F. From the study of landscape to landscape education: Research and teacher training for primary education (6–12 years). *Agua Y Territ./Water Landsc.* **2022**, *23*, e7200. [[CrossRef](#)]
36. De Miguel, R. Del pensamiento espacial al conocimiento geográfico a través del aprendizaje activo con tecnologías de la información geográfica. *Giramundo* **2015**, *2*, 7–13.
37. Martínez de Pisón, E. Saber ver el paisaje. *Estud. Geográf.* **2010**, *71*, 395–414. [[CrossRef](#)]
38. Marcén, A.C.; Benayas del Álamo, J. Aproximación cualitativa a la incorporación del “paisaje” en la nueva Ley Orgánica de Educación de Enseñanzas No Universitarias (LOMLOE). *Rev. Ecosist.* **2023**, *32*, 2556. [[CrossRef](#)]
39. Martínez-Hernández, C.; Mínguez, C. The Anthropocene and the sustainable development goals: Key elements in geography higher education? *Int. J. Sustain. High. Educ.* **2023**, *24*, 1648–1667. [[CrossRef](#)]
40. Ilgenfritz Toso, C.E.; De Moraes, M.M.; Copetti Callai, H. Ensinar geografia com literatura. In *La Investigación e Innovación en la Enseñanza de la Geografía*; Rafael, S.A., Monllor, T., María, E., Eds.; Universidad de Alicante: San Vicente del Raspeig, Spain, 2016; pp. 749–758.
41. García de la Vega, A. El desarrollo curricular del paisaje a través de las áreas instrumentales. In *CiDd: II Congrés Internacional de Didàctiques*; Universidad de Girona: Girona, Spain, 2010. Available online: <http://www2.udg.edu/portals/3/didactiques2010/guiaacdi/ACABADES%20FINALS/373.pdf> (accessed on 23 September 2023).
42. Ruiz, N.; Garrido, R. Recorridos matemáticos por la ciudad. In *Didácticas Específicas Aplicadas a Través del Patrimonio Local*; Pastor, M.M., Santisteban, A., Eds.; Paraninfo: Madrid, Spain, 2020; pp. 461–480.
43. Akinci, A.; Akinci, C. The Importance of Spatial Ability Research: The Case of Landscape Architecture Education. In *Environmental Sustainability and Landscape Management*; Efe, R., Cürebal, I., Gad, A., Tóth, B., Eds.; St. Kliment Ohridski University Press: Sofia, Bulgaria, 2016; pp. 535–545.
44. Cepollaro, G.; Zanon, B. The landscape as a learning space. The experiential approach of a ‘landscape school’ in Trentino, Italy. *Landsc. Res.* **2022**, *47*, 244–255. [[CrossRef](#)]
45. Fox, A.; Macpherson, H.; Oli, N.; Ranjit, A.; Thapa, S.; Aggett, S.; Church, A. Mobile drawing methods in landscape research: Collaborative drawing in Kathmandu Valley, Nepal. *Landsc. Res.* **2022**, *47*, 1009–1023. [[CrossRef](#)]
46. Fernández-Portela, J. La pintura como herramienta didáctica para explicar el paisaje agrario: El ejemplo del viñedo castellanoleonés desde mediados del siglo XX. In *Nuevas Perspectivas Conceptuales y Metodológicas para la Educación Geográfica*; Martínez, R., Tonda, E., Eds.; Universidad de Córdoba: Cordoba, Spain, 2014; pp. 153–164.
47. Dale, R.; Powell, R.; Stern, M.; Garst, B. Influence of the natural setting on environmental education outcomes. *Environ. Educ. Res.* **2020**, *26*, 613–631. [[CrossRef](#)]
48. Martínez-Hernández, C.; Cifo-Izquierdo, M.I.; Farinós-Celadrán, P.; Robles-Moral, F.J. Salida a un espacio natural para desarrollar competencias interdisciplinares de maestros en formación. *Rev. Interuniv. De Form. Del Profesorado. Contin. De La Antig. Rev. De Esc. Norm.* **2021**, *96*, 225–246. [[CrossRef](#)]
49. Hurtado, A.; Botella, A.M.; Fernández, R.; Martínez, S. Development of Social and Environmental Competences of Teachers in Training Using Sound and Visual Landscape. *Educ. Sci.* **2023**, *13*, 593. [[CrossRef](#)]
50. García de la Vega, A. Perspectivas de futuro en el aprendizaje del paisaje. *Didáct. Geográf.* **2019**, *20*, 55–77. [[CrossRef](#)]
51. Domínguez, A.; López, R. Patrimonio, paisaje y educación: Formación inicial del profesorado y educación cívica del alumnado de primaria. *CLIO Hist. Hist. Teach.* **2014**, *40*, 1–26.
52. Crespo, J.M. Un itinerario didáctico para la interpretación de los elementos físicos de los paisajes de la sierra de Guadarrama. *Didáct. Geográf.* **2012**, *13*, 15–34. Available online: <https://didacticageografica.age-geografia.es/index.php/didacticageografica/article/view/94> (accessed on 23 September 2023).

53. García de la Vega, A. La didáctica del paisaje a través de los itinerarios y la Cartografía. *Didáct. Geográf.* **2019**, *20*, 15–24. Available online: <https://didacticageografica.age-geografia.es/index.php/didacticageografica/article/view/438> (accessed on 23 September 2023).
54. Kerski, J.; Demirci, A.; Milson, A.J. The Global Landscape of GIS in Secondary Education. *J. Geogr.* **2013**, *112*, 232–247. [[CrossRef](#)]
55. Jericó, M.; Erneta, L. Propuesta didáctica para la enseñanza del paisaje a través del empleo de la metodología Flipped Classroom. *Publicaciones Didáct.* **2017**, *78*, 448–498.

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