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DOCUMENT

"Pedagogical material for landscape education in primary school"

Mentioned in the

***Draft* Recommendation of the Committee of Ministers of the Council of Europe to member States Parties to the European Landscape Convention, on pedagogical material for landscape education in primary school**

Document of the Secretariat General of the Council of Europe
Directorate of Democratic Governance

Content

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Document drawn up by the Working Group of the Council of Europe on the European Landscape Convention on "Landscape and education" for the preparation of a Draft Recommendation on landscape education pedagogical material for primary school chaired by Mrs Mireille DECONINCK (Officer, Public Service of Wallonia, Belgium) – [Report of the Meeting: CEP-CDCPP (2014) COE/WG-EP 1 - http://www.coe.int/t/dg4/cultureheritage/heritage/Landscape/ReunionGroupe/CEP-CDCPP-2014-WGEP1-REPORT.pdf.]. The Working Group of the Council of Europe was composed of national representatives for the implementation of the European Landscape Convention who took part in the 3rd Meeting of the CDCPP, Strasbourg, 19-21 March 2014 (CDCPP (2014) 18), and of a Representative of the Steering Committee for Education Policy and Practice (CDPPE) of the Council of Europe: Mr Stefan DELPLACE, Honorary Secretary General of the European Association of Institutions in Higher Education (EURASHE). The working document was prepared by Experts of the Council of Europe: Mrs Maria del TURA BOVET PLA, Professor, Faculty of Geography and History, University of Barcelona, Spain, Mr Jordi RIBAS VILÀS, Researcher, Faculty of Geography and History, University of Barcelona, Mrs Rosalina PENA VILA, University of Barcelona, with the cooperation of Mrs Annalisa CALCAGNO MANIGLIO, Professor of Landscape Architecture, Genoa, Italy. Mrs Maguelonne DEJEANT-PONS, Executive Secretary of the European Landscape Convention and CDCPP and Mr Barry HYNES acted as Secretariat of the Council of Europe. The 8th Council of Europe Conference on the European Landscape Convention (Strasbourg, 18-20 March 2015) decided to transmit the draft Recommendation of the Committee of Ministers of the Council of Europe to member States Parties to the European Landscape Convention on pedagogical material for landscape education in primary school to the Steering Committee for Culture, Heritage and Landscape (CDCPP), with a view to presenting it for adoption to the Committee of Ministers.

1 Introduction

1.1 Presentation

This document “Landscape teaching activities for Primary Education” has been developed as a teaching material for primary school teachers, who work in landscape education. Based on the principles of the European Landscape Convention, the following presents a series of activities applicable to any landscape aimed specifically at elementary school pupils.

Content is distributed, besides in this preamble, in two distinct sections: one theoretical and the other practical.

The concept of landscape as a system and methodology for its study, on which this proposal is based, is presented in the theoretical section. It also contains a list of basic pedagogical guidelines for the implementation of the program that is proposed.

The practical section describes the educational programme of landscape that includes a series of activities distributed into five sections corresponding to the methodological stages referring to the study of landscape as a system.

The activities, of an interdisciplinary nature, are designed to follow the same structure and have been tested and evaluated for elementary education. The activities enhance the awareness of the landscape and develop literacy in the area of landscape. The titles of the activities have been chosen in such a way that will be attractive to pupils of this age. Sometimes they are taken from games that most of us will already be familiar with. Teachers can change these titles and adapt them to the local and linguistic peculiarities in each case.

Finally, the text is accompanied by a glossary, which defines landscape science words or other technical terms.

1.2 Preliminary considerations

The first sign of the concept of landscape, as we understand it today, was detected in ancient Rome (First century). The text of Petrarch “climbing Mont Ventoux” in the 14th century (1336) is considered the first document that shows an interest in a European landscape. He briefly describes what he sees and what he feels. But it was not until the 17th century that the concept of Landscape is accepted. It emerges from the field of art, and from that moment the word appears in dictionaries.

In the 20th century, the word landscape begins to be used extensively, not only in various professional fields, but it becomes part of the everyday, colloquial language as well. One can speak of beautiful landscapes, scenery construction, political, cerebral landscapes...

In its beginnings, the landscape was elitist because it was enjoyed only by some small groups of society, with a limited number of specific cases being considered landscapes. At the beginning of the 21st century, the European Landscape Convention democratises the concept of landscape and brings it to all citizens. Since then territory has become landscape. All of us are born, live and die in one or some landscape.

The European Landscape Convention defines Landscape as “an area, as perceived by people, and whose character is the result of the action and interaction of natural and/or human factors”. The fact that it is defined as a result of natural and/or human actions is to accept the dynamics of the landscape, which is tied to these actions, change: day to night, seasonally, and above all, over the years.

The Convention is an international instrument, which is dedicated to the protection, management and

planning of landscapes. However, the protection, management and planning of the landscape is inevitably linked to the interests of the population or the prevailing cultural pattern in a determined historic moment. They depend on the dominant ideology and policies applied.

When we talk about recovering the European landscape, to what landscape do we refer? The landscape before or after the black plague, before or after the industrial revolution, before or after the world wars for example, in the Middle Ages after the epidemic of the black plague, the landscape changed dramatically. The huge loss of population greatly reduced the labour force and so the fields were abandoned and forest regained much of the territory. Therefore the landscape is dynamic and as it is a system with its interrelated elements, the modification of one of them affects the whole and therefore the landscape in itself.

Very often, notable changes in the landscape are now analysed in the light of present knowledge, which we didn't have previously. Twentieth century industrialists' did not aim to contaminate the water, soil and atmosphere leading to the climate change issues of today. They just wanted "to produce". The lack of understanding about the systemic nature of the landscape in which an action, such as the dumping of certain products into the ocean, can trigger a cluster of events that may affect not only near landscapes but other more distant ones as well with long-term consequences. These facts lead us to the present situation in which we have many endangered landscapes.

For this reason, it is essential to deepen the knowledge of the landscape as a system so we can treat it properly, depending on the needs of the population. The ability to forecast developments in the application of regulations and policies for the management of the landscape will be essential to achieve the objectives demanded by society.

Therefore, and for this reason, the concept of landscape and its knowledge must be present at all educational levels. It is vital that the population participates in, and is well informed about, actions taken to improve the landscape, because landscapes are people's life framework, sign of identity and generational legacy. As all types of heritages, they are in the hands of the present owner to improve them, maintain them or perhaps worst squander it.

We are all major stakeholders in the landscape. We must democratically decide how we are going to act on our landscape. To take a decision on the matter, we should act with knowledge of the facts, and that is only achieved with good information and knowledge.

However, the final decision on the action in the landscape, as with any heritage, will depend on a number of factors: economical, social, and emotional. Sometimes we strive to maintain an old house, which has a costly upkeep and minimal economic value. However, it is the home of our ancestors and we want to bequeath it to our descendants. Emotional and traditional factors prevail in this decision.

The same goes for landscapes, its maintenance can be costly at times, but we will defend them at any cost because we identify with them. The philosopher Ortega y Gasset said: "a man with no landscape is nothing".

Sometimes driven by emotional issues, we want to get rid of a landscape that brings back bad memories. In that case we can abandon it carelessly or we can transform it completely. This illustrates that landscape is the result of many individual and also collective actions.

Economic factors are also crucial and sometimes a priority because they are necessary to meet the basic physiological needs of survival, which is the first stage of welfare. In this sense, the exploitation of resources can significantly alter landscapes. Tourism has dramatically changed many Mediterranean coastal areas with buildings along the coast causing serious ecological aggression and visual pollution and as a result damaging the landscape.

On the other hand, the kind of society and key policies in every historical stage have caused a style of construction in urban areas which has led to a certain distribution of agricultural plots (large landed estate or small), deforestation, types of cultivation, road networks, centralized or not, to name a few of the many anthropogenic activities.

Technological and scientific advances allow people to travel great distances in short periods of time and new technologies of communication bring us closer to distant landscapes and, according to the interconnectivity, local landscapes become far away.

This displacement also modifies our everyday landscape. Historically, work and family life unfolded in a landscape. People would walk to work, the market and festive or religious activities which enabled them to develop social relations. Nowadays, we can live in a coastal landscape, work in a continental one and rest during the holidays in an exotic landscape. In this sense, what is our landscape? Probably each one in which we operate, but emotionally, we will surely identify strongly with one of them, with which we are going to get more involved.

Climate change challenges the weather forecasts and ever more increasingly the weather events. These have become more or less devastating over recent years as well as being more unpredictable. These events put our landscapes in extreme danger. Some of them can recover, others must be redeveloped, and in that case it will require the effort and participation of all citizens.

Current technology allows us the capacity to transform the landscape which was unimaginable a few decades ago. Because of this, in this era the Anthropocene, so called due to the high degree of change thanks to the technological advances, people can cross a sea by train, make the hills disappear, turn deserts into orchards or vice versa, change the course of rivers and practice many modifications that dwarf the most daring futuristic predictions from a few decades ago.

This technological armed wing, now available to society, can accelerate changes in the landscape which will help or harm its dynamic. Therefore, there is a need to understand how it works in order to avoid any negative impacts.

Communication technology, on the other hand, brings us closer to distant landscapes. However it can only show us some visual aspects, sometimes spreading landscape stereotypes that become rooted in the collective cultural heritage.

Video games, TV or films spread images of virtual landscapes among young people which can be completely fantastical or show more or less the reality. If there are no criteria to discern the difference between the real and the virtual, it can become the accepted reality and lead to attitudes of rejection towards their own reality.

Tourist enterprises and travel agencies, an industry on the rise around the world, attempt to create stereotypes of landscapes of consumption. Using audiovisual technologies, they sell clichés of landscapes. Tourists then try to capture them with their cameras and modern communication technologies.

Tourist consumption of landscapes throughout Europe, due to its great cultural heritage can, in the long run, transform some areas into thematic parks. This is allowed to happen if the only priority is to satisfy the needs of the visitors (economic factor). This tends to lead to a massive influx of tourists who favour artificial frames to take “pictures” that could be anywhere in the world. It is necessary to take into account that the landscape is not only what you see in the foreground, but also the background, and that the functioning of the landscape comprises not only the stage but the entire scene.

A characteristic of the European landscape is its variety and diversity with various natural and cultural conditions ranging from the landscapes of the northern latitudes down to the Mediterranean. From those clearly influenced by their proximity to the ocean, to those further inland. These landscapes vary from wastelands, dense forests, tundra, bogs, steppes, deserts, coasts, cliffs, lake areas, moors, and steep forested foothill. The enumeration of different physiognomy landscapes could be tedious and extensive. If we also add cultural diversities, the list is multiplied exponentially. For millennia, the European continent has been visited, occupied by various peoples, and ultimately influenced by more distant cultures. It can be said that Europe is a melting pot of cultures. Arab culture has left a deep imprint in the Mediterranean, Asian to the East, Celtic in the West and Viking in the North to name a few. These cultures have intervened in the natural landscape in a way consistent with their idiosyncrasies and this has resulted in anthropic landscapes with peculiar characteristics, very particular and localised.

This great diversity of landscapes could create a chaotic landscape with few elements in common, but it doesn't. There is a proper and indisputable peculiarity in the European landscape which is its high degree of anthropisation and intensity of occupation of the territory. We could say that Europe suffers a chronic human occupation.

Practically in any European area, we find remains of previous civilisations. That is why historical heritage is inseparable from our landscapes. Although every country or nation has many cultural differences with its neighbours, due to a common history, there are in certain cases, many areas and features which they share. For example as a result of feudalism there was a distribution of populations across many territories. Hence the distribution of towns and cities in response to similar patterns in different countries.

Landscape is understood, according to the European Landscape Convention of the Council of Europe, "as an essential component of the framework of life of the populations, expression of the diversity of their common cultural and natural heritage, and basis of their identity". It is also considered an "essential element of individual and social well-being". It is, therefore, essential that it forms part of the education of its citizens in all educational stages, in formal as well as in non-formal and informal education, and during all stages of life. Generational exchanges between grandparents and grandchildren are highly productive and enriching to the interpretation of a landscape. Experience and historical knowledge of a few and the creativity and knowledge of others make the activity very rewarding for each other and very beneficial for the landscape in particular.

Any European citizen, regardless of their age, condition and training, should participate in intergenerational meetings and interdisciplinary interpretation of the landscape. In this way, their involvement and acceptance of standards for the management, conservation and planning would be more positive.

More and more often, movements involving different agents and groups concerned by the accelerated transformation of the landscape atre detected because of negative anthropic actions. Associations of landscape defence, politicians, entrepreneurs, technicians, teachers and other professionals associated with the landscape are working together to propose activities for rational planning of the territory.

The landscape is subject to protection, management and planning and it is clear that the population needs further education on this topic to enable citizens to better participate in discussions and queries that arise as a result of the frequent and striking activities on the landscape.

1.3 Landscape in Education

European landscapes are different. The organisations of school and university institutions in the various states also differ along with the methodologies and approaches that can be used for understanding the landscape.

This document proposes a methodology that can be used in different landscapes and aims to harmonise the pedagogical guidelines which promote exchanges and cooperation among various schools of primary and secondary level education and in university.

With regard to formal education, it must start from kindergarten and continue up through primary and secondary education. It shall introduce concepts and strategies for the interpretation of the landscape according to different ages, to be continued at the college level.

We will specify in this report a series of landscape learning-activities based on the methodology proposed, aimed at primary school as a first step to lay the foundations of knowledge and interpretation of the landscape, although the methodology is useful for any level of education.

The proposal of the "Landscape" program is intended to provide a basic methodology for knowledge of the landscape and some examples of specific activities for pupils of primary education.

The goal is to provide a basic box of educational tools that allow us to understand the landscape, as defined in the European Landscape Convention. Later, and depending on the local specific needs and the success of the programme, some necessary tools to move forward in the understanding of the landscape may be used.

The landscape itself is an object of study and at the same time a resource that can be observed from the perspective of different subjects or disciplines.

The methodology is based on the idea of landscape as a system in which all its elements are interrelated, which allows us to understand its dynamics and the importance of the anthropogenic actions that are carried out on it. This holistic, global landscape interpretation is the best way to contribute to landscape protection, management and planning for present and future generations.

If landscape literacy is to be attained, it should begin in the early formative stages. The conceptual bases are established and strengthened allowing for increasing complexity in later educational stages such as secondary level and university. However, landscape education does not end at the end of the regulated studies but rather, as citizens it is important to maintain a non-formal or informal lifelong learning. We will live and will act in the landscapes and it is desired we will opine democratically on interventions that are to be carried out on them.

The "Landscape" programme facilitates educational resources to enhance the knowledge of pupils' local landscape as well as those that are farther away. The paragraph "Report" invites the class to share their knowledge with other European pupils or internationally and at the same time discover other European landscapes,

Two cities may be distinct in appearance but as landscapes they can operate in the same way, with its old town in the centre, its area of expansion, and its knots of communication and commercial or industrial periphery zones. Therefore these two seemingly different cities can apply similar development or conservation programs as their dynamic performance might be the same. This idea of landscape as a system can thus allow for the sharing of management and planning tools as well as increased cooperation in projects across all European landscapes.

Activities that arise for primary education can be in any landscape, whatever the population's socio economic characteristics might be. Each teacher can adapt the activities not only to age and the knowledge of their pupils but also to the nature of the landscape in question and the resources available to the teacher.

The section "Explore", as its name suggests, invites us to go out and discover the local landscape mainly through the senses. "Classify" requires that we identify the elements and fluxes that characterise each and every landscape, while "Investigate" delves deeper into the particularities of the elements and their interactions. The section titled "Act" allows us to reflect on the impact of our actions on the landscape according to their dynamics. Finally, "Report" allows the pupils to demonstrate the knowledge they have acquired on the landscape and exchange with pupils who live in other landscapes.

This education in the landscape "should provide an opportunity for pupils to discover the duties of each individual in his or her role as an inhabitant of the landscape surrounding them, as a guardian of its identity and its culture and as a protagonist aware of its future development" (Appendix to Recommendation CM/Rec(2014)8).

The proposal of the Landscape Programme does not make any references or offer specific material as every village, city and European State, especially those who ratified the European Landscape Convention, currently have multiple resources at their disposal.

In many countries, there are already landscape atlases available for consultation via the internet. Different regions have specific information (programmes, brochures, publications, audiovisuals...) on the landscapes of the area. Official and private environmental organisations publish information, studies and routes of their landscapes. Municipal, regional and national websites often provide varied information about the features of its landscapes.

In primary school the use of mapping is still premature, at least in the early stages. From the age of 10 years old, when the sense of abstraction is more developed, they may start using thematic, schematic maps, aerial photography, orthophoto maps, mostly for learning and becoming familiar in this two-dimensional representation of reality and place landscapes territorially. Currently 3D landscapes via the Internet provide us with an easier approach, although sometimes these can be distorted from reality, but pupils learn to handle with relative ease. All this cartographic information even photographic information can be accessed through the official cartographic services of each region or country.

It must not be forgotten the important information that seniors may offer on landscapes and their evolution over time. They may have written or photographic documentation as well as the important oral history. This relatively recent historical memory can provide much information on the dynamics of the landscapes. It is also very interesting to encourage the intergenerational relationship that can be set with the pupils who may have the opportunity to avail of these valuable sources of information.

It would be of special interest that each State had a number of official resources on landscape that could be offered to schools.

The development of this program can also provide useful information to the education system. The different experiences that are noted in primary schools can be collected and disseminated to share, comment on, and put them into practice with the corresponding adaptations in each place and thus increase knowledge about the educational practices in landscape.

2 Theoretical and methodological bases

2.1 The concept of landscape as a system

At the beginning of 20th century, science recovers the Aristotelian idea that "the whole is more than the sum of its parts" and the concept of a system is defined from the deterministic to the systemic paradigm, which implies establishing structures and dynamics and accepting principles of uncertainty, chaotic systems, indeterminacy and complexity.

In this new scientific context, it is necessary to understand the interrelationships between elements and fluxes and learn how to predict the possible evolution of the environment, which is not static but dynamic. Mankind are another element of this environment. Not only are the natural elements taken into account but also the socio-economic and the cultural ones as well.

For the first time in the history of humanity, the technological advances that allow a rapid transformation of the environment also enable us to take consciousness of the capacity of the transformation and at the same time of conservation. Nowadays, more than just being domain to exploit, efforts are made to relate, understand and preserve.

Following this revitalising power of science, the concept of landscape is also affected. It is defined scientifically as a portion of the Earth's surface, structured by the interrelations of its elements (abiotic, biotic and anthropic) which evolve as a whole, in turm transformed by anthropogenic and natural energies.

The landscape, understood as an open system, exchanges matter and energy with the outside. It can be studied from a theoretical model of landscape, the geosystem. Similarly to how the ecosystem studies the interrelationships between living beings that occupy a territory, the geosystem, as a reality model, is the landscape. Geosystem studies the interrelations between the elements and fluxes that shape this real landscape, located spatially and temporarily since "the landscape is not more than the geosystem in a given space and time" (M. de Bolòs, 2001).

The functioning and features of a landscape are not determined by the sum of the characteristics and properties of its elements and fluxes but it must be approached holistically. Linear and reductionist methodologies are not enough. A systemic study is required, which foresees non-linearity, the complexity and therefore the emergent properties.

The landscape is not static, it is in continuous evolution. Works or constructions of man, once finished, start a process of irreparable degradation that requires constant maintenance and a considerable contribution of human energy. It is so because they have no ability to evolve naturally. Once finished, they no longer live, they are dead. On the other hand, a forest will suffer storms, fires and will change, but its adaptive capacity and the contribution of free and unavoidable natural energy will perhaps allow it to move towards other forms and dynamics, but it will continue its process.

The historical study of most of the European landscapes confirms this ability of innate regeneration of the landscapes. We can see how ancient cultivated areas are abandoned and the forest returns to occupy that space where it had previously flourished. Climate change, pests, fire, clearing for farming, construction of terraces to fight erosion, exploitation of peat bogs, marshy areas or wetlands, even the sea, are all issues casuing difficulties on our territories. Generations follow each other, cultural traditions are adapted to the new times and the landscape continues to evolve recording this close and ever-changing relationship between humans and the environment.

When we want to study the landscape, we must start from this idea of an open system, but somehow we need to structure its study for a better understanding of the landscape and thus to intervene consciously and properly in its conservation, planning and management.

A practical way is to consider the elements that make the landscape by definition and the fluxes responsible for its dynamics.

2.1.1 Elements

The elements that structure the landscape can be classified first according to their natural or anthropic origin. Within the natural elements also it is possible to distinguish the abiotic or lifeless elements as well as the biotic comprising all living beings. Anthropogenic elements are the result of human intervention.

Abiotic elements (natural elements, inert, without life): rocks and its erosion products (gravel, sand, silt,), water courses or standing water; depending on its scale, the relief is considered an abiotic element.

Biotic elements (living elements that are born, grow and die): vegetation and fauna.

Anthropic elements (everything created by humanity): built artefacts and several infrastructures (housing, dams, communications, airports...) urban or not; mining and agriculture, tourism...

Mankind becomes part of the anthropic elements because they do not live like any other animals, since humans create and use artefacts. Farms, where animals don't live in a natural way, but with the help of a major anthropogenic contribution (constructions, stables, feed from farm, cleaning...) are also considered anthropic elements. The remnants of vivid elements (wood, leaves, shells, etc.) are not considered alive but inert, abiotic elements.

A landscape may be formed by the three groups of elements in similar proportions or with clear dominance of one or more groups. According to that, there are desert landscapes, forests, big cities, rural landscapes, urban landscapes, etc.

2.1.2 Fluxes

As an open system, landscape, like humans, continuously evolve throughout life or like society, throughout history. The dynamic process that enables the change of scenery is determined by flows of different nature: matter, energy, money, information. Fluxes that change the dynamics of landscapes belong to two types: natural and anthropogenic.

Natural fluxes: They are those whose source is natural. The most important natural flux is received from the sun, which is assimilated through the photosynthetic process in the vegetation. This solar radiation also directly influences the climate processes. Climate as a manifest of atmospheric circulation from weather changes, resulting in turn from solar energy, can also be considered a natural flow. Other natural fluxes are also considered: gravity (responsible mainly for erosive processes) and the energy coming from inside of the Earth, which is manifested in volcanism and earthquakes, leads to new geomorphologic formations.

Anthropogenic fluxes: These are provided by humanity. They can include manual work or mechanical work and the energy made from production processes, as well as the materials resulting from the exploitation of natural resources (hydroelectric power, natural gas, oil, biomass...). The economy and communication are very important types of fluxes that also influence the dynamics of the landscapes. Changes in the landscape are determined by different possible combinations of fluxes. The anthropogenic and natural fluxes can act simultaneously or independently and with varying degrees of intensity. That is why there are multiple possibilities for change. Dominance or combination of the fluxes will define the type of functioning of the landscape. These variables are essential tools in forecasting landscape evolution.

2.2 Methodology: from the analysis to the diagnosis, prognosis and prevention

There are many methodologies that allow for the study of landscape. There is no unique one, and they are not mutually exclusive, but rather all methodologies can be complementary.

The methodology we introduce below is intended to consider the landscape as an open system. It presents a series of phases: analysis, diagnosis, prognosis and prevention or synteresis[1].

This methodology is similar to that used in medical sciences. Landscape and human beings are equally open systems which interchange matter and energy with the external environment. The constant tension between order and chaos, in an open system, is called complexity and is the result of two dynamic processes. On one hand, the autopoietic[2] need to preserve identity, focusing on the inside, while on the other hand, the vital need of change, growth, and focus on the outside. The interaction between these two trends marks the dynamics of the system, in this case of the landscape.

Taking into account the analogy with the medical sciences, the landscape is the patient and the landscape expert is the physician. First of all they face an exploration, recognition, an *analysis* of the different elements that compose the system, and this study will allow the physician to issue a *diagnosis*, or define the current state of the system. According to the dynamics of the system, a prediction of its future evolution, a *prognosis*, can be made. Finally a plan of *prevention* or *synteresis* will be put in place to avoid the unwanted consequences of certain actions on the landscape.

The stages of analysis and diagnosis allow us to better understand the landscape, its nature and its current dynamics. The prognosis and the synteresis are projected into the future and present different scenarios for the landscapes evolution, which are very interesting to take into account in the planning and management of the landscape.

2.2.1 Analysis and classification

The first phase of the methodology used in this study of landscape as a system, is analysis. A landscape can be composed of multiple and diverse elements. The most significant ones, those whose influence is most relevant in the functioning of the landscape, will be analysed.

Once the characteristics of a landscape are well known it can be classified. There are many types of possible classifications, depending on the scale, and on the criteria that apply to the classification, which can be based on some specific objectives. Landscape can be classified with political, economic, social and cultural objectives, or according to the capacity of the landscape, for a particular use. They can be classified by size, functionality, time scale and by the description of one or several of its elements.

The classification used in this educational proposal is based on the analysis of the structural elements of the landscape and in the study of the dynamics that generate the geosystem. Therefore it is based on the dominance of elements and fluxes.

This classification by dominance is applicable to any type of landscape and can be used at different spatial scales and in different geographic areas.

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[1] Etymology: from Medieval Latin *syntērēsis* (in Thomas Aquinas), from Ancient Greek (theology, historical). An aspect of one's conscience by which one can judge wrong from rightand decide on what makes good conduct (as distinguished from *syneidesis*).

[2] "Autopoiesis" (from Greek *αὐτο-* (auto-), meaning "self", and *ποίησις* (*poiesis*), meaning "creation, production") refers to a system capable of reproducing and maintaining itself.

We can classify surfaces of 10 Km^2 or 100 Km^2. But keep in mind that a landscape according to the spatial scale at which we are working may present different qualifier ranges. The characteristics of the landscape, if the scale is modified, are also altered, as well as its classification. It is important to learn how to work at a certain scale and define what elements we are going to consider.

To carry out this classification, the following three main premises must be taken into account:

1. Landscape is made up of three types of elements: abiotic, biotic and anthropic. The proportion of dominance among them, including its possible absence, can be different and depending on them we get the variety of existing landscapes.
2. Landscape is a system, so all the elements are interrelated and the modification of one of them affects the rest. Natural fluxes, and/or anthropogenic fluxes lead the dynamics. The dominant flux that keeps the landscape in operation confirms the previous classification from the dominance of elements.
3. The landscape evolves over time, responding to the entry, increase or liberation of different fluxes. Therefore the classification of the landscape is valid for a time, T, since the landscape can evolve to timescale and change its position within the classification. This type of classification is also a dynamic classification.

Nomenclature basis of classification of landscape units: Landscape elements are identified by uppercase, lowercase, and italics. The letters are F, f, *f* (for abiotic or physical elements), B, b, *b* (for biotic elements) and A, a, *a* (for the anthropic elements). Landscapes are classified with the association of the corresponding letters depending on the complexity with which the elements are presented in them.

Dominance degree of the elements: It is determined according to the letter font and order that the letter occupies. Range 1. Max (50 or >50%): capital letter. Example: F. Landscape unit with predominance of abiotic elements. It would be the case of a cliff or a bare rock mountain. 2nd rank. Intermediate (< 50 to 20%): lowercase letter. Example: Fb. Landscape unit with predominance of abiotic elements. Here the small letter indicates a secondary dominance of biotic elements. It would be the case of cliffs with some narrow land of forest, scrub or meadows. 3rd rank. Minimum (<20%): italics lowercase letters. Example: Fb*a*. Landscape unit with predominance of abiotic elements. Here the lowercase italics letter indicates a small presence of anthropic elements. It could be a bare mountain, with some type of vegetation, and a country house.

2.2.2 Diagnosis

The result of the analysis allows the establishment of a diagnosis that is to define the state of the landscape. It is to describe its structure and functioning according to its elements and fluxes. We can distinguish two types of diagnosis:

- Descriptive diagnosis: it details the features of the landscape;
- Diagnosis of potentiality: defines the suitability or capacity of the landscape to host certain possible anthropic actions or activities.

2.2.3 Prognosis

This methodological phase presents the evolution and development of the landscape in accordance with its dynamic state and is directly related to the diagnosis since it provides the conditions of departure of the evolution of the landscape.

The forecast focuses on the study of the processes and conditions of the changes that occur in the landscape, allowing us to develop alternatives to evolution laid down according to the structure and dynamics of the studied landscape.

Forecasting allows for targeted current and future actions on the landscape. It may reduce the influence of natural disasters and encourage the optimal use of natural resources. It also facilitates optimal land-use planning, taking into account respect for the landscape and predictions on the secondary effects of anthropogenic actions.

The prognosis should be periodically reviewed since anthropogenic actions and needs may vary in a short space of time and in this case estimated expectations and trend forecasts also vary.

It is not intended to reach an optimal and stable landscape for a type of particular society; since the local culture and society evolve and the landscape with them. The forecast allows us to advance possible changes so that we can refocus the anthropogenic actions with a view to respect and planetary sustainability.

2.2.4 Synteresis or prevention

It is the last phase of a comprehensive study of landscape. At this stage, in accordance with the established prognosis, the most suitable management of the landscape can be defined in order to avoid any negative potential impacts in the future and maintain the normal operation of the landscape as a system. The basic objectives of the synteresis are the following:

1. Forecast future impacts;
2. Propose the proper management to avoid or mitigate predictable impacts according to the forecasted evolutionary trend of the landscape.

There are various methodological techniques for studies of synteresis but the most useful are those of simulation which use new technologies of information and communication, and audiovisual multimedia to feed the educational techniques and performances or shows.

2.3 Landscape in primary education

The European Landscape Convention makes specific reference to the need to raise awareness in society along with the commitment to promote training in all areas. It specifically advocates dealing with the values linked to the landscape and the issues arising from the protection, management and planning, from the relevant thematic areas.

This recognition has strengthened the educational value of landscape as it implies that pupils should study socially relevant themes, which are also significant and participative themes at individual and collective levels.

Landscape conceptualised as a system in teaching, connects with the traditional study of the environment (the *Heimatkunde*) bringing new possibilities and advances through the comprehensiveness and complexity that the methodologies require and also because it is aimed at promoting participation.

The study of landscape is integrated into education for citizenship as that brings knowledge and basic skills empowering people to reason with and ultimatelyface territorial problems, under sustainability criteria and common well-being.

The functional and structural character of formal thought, which trains us to interpret and predict based on thorough knowledge of the reality is not developed until certain ages, when pupils arrive at the level of cognitive and moral development. This development allows the pupil to understand the conceptual basis and the ethical projection which advocates the study of landscape.

A pupil's maturity, in addition to chronological age, depends on a number of factors which need to be taken into account when considering the different levels of learning. It is important that the great educational potential of the landscape be a joint purpose at all levels of education. Objectives and activities are sequenced coherently from the earliest ages.

It is interesting to take advantage of the ability in the holistic understanding of elementary school pupils, to grasp the characteristics of the landscape as a whole. Later the methodology and structuring of knowledge in different subjects will determine global understanding. At the higher levels of education the mind can be better prepared for both analysis and synthesis.

At the primary level, it is intended to provide the necessary tools to facilitate a literacy of the landscape. Children learn to read and understand simple texts, through this training. They develop their skills for reading, understanding and communication before moving on to more complex texts, the same can be expected in landscape learning.

The language is innate. Spoken language evolves spontaneously. On the other hand verbal literacy must be learnt through a progressive system. We first learn a system of symbols, abstract shapes that represent the letters of our alphabet and learn their combinations which are the words that represent the ideas and actions. The final stage in attaining verbal literacy involves learning a common syntax which will allow reading and writing, as well as expressing and understanding written information.

We can also speak of a landscape literacy. The landscape is seen, it is captured with all the senses, people live it innately but it is necessary to learn to read it, to act in the landscape, to write about it and to express, understand and communicate the landscape. This process of landscape literacy starts before even primary education. It is at this stage, when the basic tools can be facilitated to acquire this literacy.

Children can realise the reality of their landscapes, perceive and learn to capture information and understand how they are also part of the landscape and have the ability of our species to transform it. This process starts when children are 6 years old and they still own this global capacity. This is a basic educational objective at this stage. Further down the line, they can acquire a deeper knowledge in different phases and in methodological techniques of knowledge of the landscape, when they are in secondary and higher education.

The technology and specifically telecommunications have revolutionised everyday life and society. We have gone from mass culture to the network society and education is affected.

Before the rise of information and communication technologies, education was basically centralised and regulated by each State, with programs and itineraries. Educational programs in general were rigid and based on instructions that were received passively by the pupil. Currently, there are new trends and education can be spread through networking. Educational curricula are flexible and optional disciplines appear which are diversified and personalised. The goal is to promote more participation of pupils with interactive and constructionist models, sometimes with an international approach.

This new approach requires interdisciplinary education. The landscape thus becomes an invaluable resource since its study and knowledge is essential to address this combination of subjects. The systemic complexity of the landscape requires applying holistic techniques with interaction and participation of the pupil and it requires also new open and interactive models that may be valid on a global level.

2.3.1 Landscape program proposal

The landscape programme, which is based on the methodology that studies landscape as a system, is presented with the aim of achieving a landscape literacy of the population starting from the formal

education at Primary level. The program establishes five sections of activities: explore, classify, investigate, act and report.

Activities, from perception to analysis, classification, diagnosis, prognosis and synteresis are presented. They allow pupils and teachers to advance gradually in the understanding of the landscapes and the importance of landscapes as indicators of quality of life.

It should be noted that all the activities of this didactic proposal for primary pupils respond to a global proposal that should prevail in secondary school for their full development and attainment of objectives and content of the study of the landscape.

Being primary education, as it has been said, a key stage to lay the groundwork in the training of pupils, it is important that teachers share the model to avoid undermining its globalism, so that the activities are not isolated from their purpose.

In educational practice, we consider the study of landscape as a research project on the territory from an interdisciplinary, communicative and emotional perspective. Therefore we must ensure the meaning of learning, through the assimilation of knowledge linked to near realities, and also through the generalisation of knowledge and their application to different situations as well.

This comprehensive proposal should be understood, as a whole, as a project of action research in an innovative concept intended to enhance problem solving. It is necessary to learn how to read and interpret the landscape, predict its possible evolution and become aware of the importance of prevention to get land use alternatives depending on its potential and what is desirable.

Landscape study	Procedures	Techniques
Analysis	Perception Observation Collection of information Treatment of data	Intuitive Organoleptic (sensitive) Field work Office work
Diagnosis	Interpretation of the information Issue conclusions Problem identification Impact detection	Descriptions Graphic representation Numerical Communication
Prognosis	Prediction Asking questions Develop answers	Simulation Communication

	Elaboration of proposals	Creative
Prevention	Argumentation	Simulation
Synteresis	Debate	Communication

The majority of procedures and techniques can be recurrent and useful in several of the methodological stages, but they have been applied according to the relevance acquired in each case and therefore according to the need of promoting them.

For the analysis phase, it is important to foster the overall perception and lead to direct and indirect observation of the elements and the dynamic processes to understand the interrelationships and, progressively, reach its complexity.

Elementary school pupils are not expected to reach a full knowledge of the network of relations established between the geo-ecological and the geo-economic structure of the landscape; however their understanding of some basic interrelationships among biotic and abiotic elements can be strengthened, as well as the incidence of human action in the physical environment. Thus, the conceptual map that will be extended in upper stages will be formed.

The analysis of the landscape should also develop an understanding into how and why the landscapes change. It is feasible to directly observe certain indicators in determined processes where they can be "seen", this enables us to deduce what happened in the landscape. It is also important to introduce the idea of continuity or its occasionallity in some processes. The assimilation of these key ideas in primary education will later facilitate the understanding of the concepts of dynamics and evolution of the landscape in all its dimensions.

Next, we look at the innate ability of pupils at this stage, to view things holistically, which is a useful skill for the study of landscape. We should also seize the interest aroused in them in both the detail and the grandeur of the phenomena. The curiosity to learn and discover, channelled properly, is the principle of interest in scientific research. In early ages the pupils are often great collectors of information, tireless explorers of insatiable data. In Primary education, it is necessary to drive pupils towards meaningful and sufficient information for the analysis of landscape, which is at their reach and it is liable to be interpreted according to their cognitive level.

The assimilation of new knowledge from the proper interpretation of the information to define the diagnosis must be ensured through the ability to formulate conclusions about how the landscape is studied.

Communicative competencies are fundamental to the understanding and construction of knowledge. In this way, the oral and written expression or the use of arithmetic and geometric tools will be key in the study of the landscape. We also know that graphic representation techniques are particularly relevant in relation to the description of the landscape reality.

Drawing as a means of expression has a decisive role in this stage. Elementary pupils develop the ability to be more objective in their creations and find a more faithful reproduction of reality. Therefore, they especially appreciate the more realistic works, and for example, they are really impressed by naturalistic drawing. This feature can have a didactic use in relation to the importance of detailed observation of the landscape and its scientific value in history.

At the primary stage, we must limit the degree of abstraction of the maps, by avoiding the use of maps containing too much information and a coded language which is too complex. On the other hand, at this stage, it is important to initiate pupils into the possibilities of representation and how, by means of symbols and signs, in a clear and simple manner, relevant information can be transmitted which make communication easier.

In the description of the landscape, we can initiate elementary pupils in the assessment of the suitability of the landscape (agricultural, extractive, urban development or conservation activities), to strengthen previous ideas that later can be useful in understanding the concept of potentiality.

We can also introduce the identification of certain environmental, ecological or aesthetic impacts of environmental degradation. Thus, we can guide the reflection, without imposing preconceived or catastrophic visions, so that they reach to formulate their own opinions.

A complex but key phase in studies of landscape is the prognosis. The art of prediction in landscape requires an advanced knowledge of the interrelations between elements as well as the spatial temporal dimension of the process. In Primary education, we can initiate the predictive approach by posing simple questions which relate cause and effect, both of them over time and in specific situations.

With the teaching of the prognosis, adapted to the possibilities for primary school pupils, somehow it embodies the value of prediction in scientific practice, and, as in research, this helps to know what may occur in the future, and react accordingly. In this sense, reflection must be directed not only to how the landscape will look, but also how we wish it to be, to introduce to the pupils the importance of prevention.

Prevention, depending on certain values that integrate landscape quality objectives, is the great purpose of landscape studies. The education of pupils on the capacity to act to preserve or improve our landscape should be a common goal of society. The preparation of concrete proposals for action, its argumentation and debate, connect the study of landscape with the pupils knowledge on participation and citizenship. Therefore, it is recommended to start primary school pupils on small, well delimited and concrete landscape dilemmas over which to discuss and decide.

From initiation to prognosis as in synteresis (prevention), it will be useful to practise simulation techniques, which allow pupils to “play” on a duly simplified reality to develop an understanding of it. That means training pupils in practices which encourage them to act, a participatory experimentation allowing them to assess actions and consequences. The intellectual mobilisation of this simulation will address decision-making, as well as its operatability.

From the study of specific cases close to the pupils, and therefore containing implied motivation, until the study of imaginary but credible, well represented and tangible situations that arouse their interest, the need to consider different points of view will appear.

At this point, role-playing games will be useful to understand the diversity of opinions that concur to a given situation. We know that the ability of empathy unfolds once self-centeredness is overcome. The pupil becomes cooperative and is already able to understand and situate himself at the point of view of others when he is already located in the social world. Although primary school pupils have not yet developed the best features of the cognitive development in adolescence, we must consider already their possibilities to integrate the concept of common good in relation to the landscape. That is to say that they understand that to take care of the landscape is to take care of themselves through what landscape provides, both at the level of subsistence and enjoyment.

The innate and uninhibited creativity of primary school pupils will be a useful source of resources in these stages. Take advantage of it, launch it and promote it, as it can be a pleasant surprise to see how

pupils offer imaginative and also logical solutions in relation to the management of the landscape.

2.3.2 Pedagogical guidelines

2.3.2.1 The role of the teachers: motivator and interdisciplinary

The European Landscape Convention promotes the importance of taking landscape values into account in the process of teaching and learning considering its importance to society. The study of the landscape can and should be incorporated into all phases of education taking into account the strategic role of the teachers in their proper development.

Learning to know the landscapes, their values and issues require processes of analysis and synthesis. It is important to break down the landscape and unify it, to understand a complex reality, on which we must predict to act accordingly. Teachers are who must choose, sequence, and establish content in a logical order to achieve its progressive integration.

Pupils not only have access to infinite information, but being immersed in media culture they constantly receive information processed under different points of view. Therefore, more than ever, the role of teachers will be decisive in guiding minds, to develop skills to learn how to learn, as well as to integrate the ethical dimension into the study of the landscape.

Teachers should also consider feasible methodologies for the study of landscape, which facilitate the organisation of knowledge, their assimilation and transference.

The proposal is structured on the basis of scientific methodology, and in turn it allows the use of a diverse range of techniques, which teachers can locate and combine according to their own pedagogical criteria. The traditional educational role of direct contact with the real landscape is revitalised and is complemented by the great potential of information and communication technologies, an especially useful tool in the study of the landscape.

To awaken the interest of primary school pupils in the landscape, certain strategies of motivation are required. These shall be progressively strengthened. What is a landscape for them? A place far away and exotic? Their own neighbourhood? A place they use to go in summer?

To motivate the pupils, it is useful to tap into their preconceived ideas formed through their own experiences. The local environment as a resource remains the key for the study of real and everyday landscape, in which pupils can experience and act. Many pupils know other landscapes from an early age, because they have travelled with their families. They also constantly receive images from different parts of the world, often manipulated images to create fictitious and unreal landscapes. In this context, the ability of the teaching staff is crucial to evenly place the implicit spatial dimension of the landscape.

The debate between “the near” and “the far away” should be raised from its own relativity and through the understanding of the pupils to the diversity and difference of landscapes. Thus the model of concentric centres in the learning of the landscape has to take into account the sufficient degree of flexibility to adapt the stimuli that pupils receive from not everyday environments.

The inclusion of Landscape on the curriculum at all educational stages, responds to the educational will to develop the skills needed for the formation of a conscious, critical and responsible citizenship.

In all disciplines, we can define the objectives and contents related to the landscape. This gives the opportunity to develop cross-disciplinary skills, being they communicative, methodological, and personal.

Each area can provide resources for the study of landscape, so it is important that teachers, get to know all the possibilities and share common projects. This is especially feasible in primary studies given that there are fewer subjects on the curriculum.

All the activities that arise in relation to the proposal connect with different subjects, so they foster cooperation among teachers.

2.3.2.2 Work of pupil. Social projection and dissemination

The proposal allows teachers to facilitate activities that foster both individual and collaborative work among pupils. In any case, it is important to consider the permeability between the teaching strategies that will decide different ways to proceed in the classroom. Essential teacher exhibitions can be optimized promoting self-learning activities as well as activities based on interaction and cooperation between equals.

The flexibility between individual, small or large group work, must respond to organisational purposes, according to the educational objectives of reference for each activity. It is important that pupils understand both the intrinsic value of the individual and the group work. This is a basic characteristic in the scientific and technical development of society.

The motivation and knowledge of the landscape which the pupils are integrating, no doubt, has a projection in their family and social sphere. Pupils, especially in the primary ages, are insistent transmitters of what is considered important to defend. This role of the pupils in raising awareness in society towards the landscape may be helped through activities requiring the participation of family and friends, promoting their involvement and interest.

It is equally important to promote the exchange and dissemination of knowledge about landscapes wider spheres, exploiting the extraordinary capacity of communication technologies and the mobility opportunities available.

An explanation of the landscape, its values, elements and products allows the pupils not only to get a high motivation, but also to consolidate their knowledge and develop their skills in synthesing the information as well as in communication both linguistic and artistic.

The reciprocity of this exercise will allow pupils to gain knowledge about other landscapes, about their own country, about Europe and, even, about other continents, facilitating comparison, identifying differences, similarities and singularities. In this sense, programs which enhance mobility among pupils are important, especially those which include the landscape in the working proposal.

2.3.3 Landscape Programme

Under the theoretical umbrella of landscape as a system, the landscape program as an instrument at the service of teachers and pupils of Primary education is born. The goal is to achieve landscape literacy in the population, starting with the formal education between the ages of 6 to 11 years old.

Considering the methodological basis of the studies of landscape with its phases ranging from perception and analysis to the diagnosis, prognosis and prevention, five sequential sections in the program are set: explore, classify, investigate, act and report.

The programme is presented as a suggestive and useful tool that facilitates the knowledge of the landscape with all its complexity and globalism and allows practices aimed at solving the problems faced, taking into account the forecast and prevention. Altogether the main pedagogical aims are:

- Localisation, distribution and recognition of the role of the elements of the landscape in the spatial organisation;
- Take into account the special consideration of the socio-cultural and economical aspects;
- The integrating vision of the interaction of all the elements that constitute the landscape;
- Understand the dynamics of phenomena in the explanation of the processes that occur in the landscape;
- Promote coherent transmission of experiences and learning by making use of various communication strategies.

The proposed activities in each section or methodological sequential block are suitable to be performed in any landscape, regardless of its functionality: natural, rural or urban. The activities allow the pupils to familiarise themselves with local and distant landscapes, thanks to technologies of information and communication. From the field work (direct contact with the landscape, sampling, data...) to the cabinet (photographs, engravings, maps, oral or written information, telematics...) pupils can experience the real and/or virtual landscape. In general, activities can be done independently from the others.

Each block introduces a type of activity, which through determined procedures and educational techniques, pose an approach to some of the methodological stages – analysis, diagnosis, prognosis and synteresis or prevention – for the study of the landscape.

Block	**Activities**	**Methodological stages**
Explore	I can see... Listen, who goes there? Touch something... It smells like... Tasting, tasting ... I feel...	Perception and analysis
Classify	What's what Is it what it seems to be? The same but different Even more difficult Near or far	Analysis and diagnosis

Investigate	Growing and growing Remains Footprints What is first? Who goes there? What is first? The magic of a landscape	Analysis, diagnosis and dynamics
Act	Take care of your landscape You decide What do you think would happen if...?	Analysis, diagnosis, prognosis and prevention
Report	My landscape is like this… Routes Our landscape My landscape stickers	Analysis, diagnosis, prognosis and prevention

Altogether the activities involve the achievement of specific content from the different learning areas. They are applicable to different levels, from a fully interdisciplinary perspective. With these activities, the construction of global thinking by means of integration and synthesis is addressed, because it contributes to the knowledge and basic skills and stimulates learning through individual and social projection in the local environment.

Although the program arises for the stage of primary school in formal education, the activities are not strictly for school use and can satisfy the interests of other groups and non-formal education.

2.3.3.1 Explore with the senses

'Explore' is the block of activities which aims to understand the aesthetic and emotional impressions on the landscape and discover that there is a great diversity of landscapes, some different but similar in colours and shapes, with similar or different smells and sounds which vary during the day and at night, or during the seasons causing us different sensations.

The first approximation to a landscape is given through the senses, our agents of environmental information. We can capture colours, intensities, shapes, smells, sounds, feel cold, heat, humidity... thanks to our five senses.

The first experience of learning as a child takes place through the sense of touch. However this sense expands with the sense of smell, hearing, and taste, and finally with the sense of sight that quickly surpasses the other senses. The visual experience is basic to understand the environment and react to it.

Through the sensory organs (eyes, nose, ears, skin, tongue), we receive information from the environment. The perception is how the brain interprets the information received from these organs. In this way, an idea of the landscape is formed by the brain. Therefore the organisation, interpretation, analysis and integration of stimuli, implies the activity not only of our sensory organs, but also of our brain.

In elementary school, children aged 7 to 11, have a less egocentric sense. They already present a new understanding (concept of grouping) of concrete objects that they have experienced with the senses. The objects they imagine or those which they have not seen, heard or touched continue to be something mysterious since at this age, abstract thinking has not been developed.

This block is very important, since the information received through the senses at this stage, will play an essential role in the proposed programme. Activities ensure that the pupils observe, distinguish and differentiate the landscapes through its organoleptic characteristics. Later, in high school, pupils will have the chance to dig deeper into the landscape from the abstract thinking, therefore may reinforce and put more emphasis on activities of the other blocks.

Sight

The sense of sight is traditionally considered the sense par excellence. Vision requires little energy and works at the speed of light. An infinite number of units of information are sent by the eye to our brain in a fraction of a second. To see is to perceive objects by the action of light, so that you get information flowing through the sense of sight and the nervous system to the brain. Eye perceptual system transforms the bright sensations into electrical stimuli that are sent to the brain which re-codes them into visual images.

The word “image” presents three fundamental meanings: one in the field of neurology and optics, another in the field of visual productions obtained by technical means (photographs, maps, films...), and the third in psychology (mental images, memories, imaginations).

In fact everything you see is images made by the eye and the brain. Perception is a function that allows us to receive, process and interpret the information that comes from the outside through the senses.

Perceive is an energetic activity, it is not only to see, but to look at, participate actively. But perception is not synonymous with sensation. A sensation is an experience that is lived from a stimulus. It is the clear answer to a fact grasped through the senses. A perception is the interpretation of a feeling. What is grasped by the senses takes on meaning and is classified in the brain. It is often said that the feeling is what precedes the perception. If the former is an intuitive and automatic process, the latter is much more elaborate and rational.

According to our memories, the association of ideas and knowledge, we can have different perceptions of the same landscape. There are biological factors of perception, with which we are born, and others learned. For this reason the perception of our environment is modified throughout our life through the experiences.

The landscape can be understood as human perception of the territory and interpreted as the result of the interactions between the natural environment and different cultures. Then, perception will be essential to enhance the awareness of society in what refers to the value of the landscape to promote the protection, management and planning of landscapes.

Through our eyes we can perceive different landscapes, their colour, and morphological, differences of harmony or contrast. We can distinguish the elements that shape it and even its texture will be strengthened with the sense of touch.

But if seeing is to perceive objects by the action of light, it is a passive activity, instead of this, to look at is to apply the view to an object and this already requires an intention. Watching is to look at carefully. In the activities proposed in "Explore", enhancing this observation is the main objective. Learning to observe the landscape is the first step to then understand its operation and to decide on the actions we are going to take.

But perception is not only visual, there is the perception of sound that is the result of the psychological processes that take place in the central auditory system which allow you to interpret the received sounds.

The theory of perception of Marshall McLuhan argues that the image needs to be reinforced by other senses since human perception has a heavy dependence on visual perception. The sense of hearing needs confirmation from the sense of sight to verify its perception.

Hearing

Perception is not only visual but also sound. Sound perception is a result of psychological processes at work in the central auditory system, which interprets the received sound. According to the theory of perception developed by Marshall McLuhan, the sound image should be strengthened by other senses, since human perception depends very much on visual perception. Thus, hearing requires a confirmation of the view of his perception.

Hearing is a complex process which begins in the ear, a very sophisticated organ but physiologically well known, and ends in the brain where information is treated. Hearing is the human perception of sound qualities. It is three-dimensional, we hear on the left, right, up and down. The brain uses the differences in sound intensity perceived between the pair of ears to infer the direction of each sound source and assign a spatial orientation.

Sound or combination of sounds that make up a specific environment, i.e. a sound environment, is known as sound landscape (soundscape). These sounds provide data essential for survival and understanding of the environment in which we live. The auditory references provide us information of the spaces in which we live, situate us and inform us of possible dangers.

The sound of a locality, a landscape, gives us information and helps us to describe it. Often we are so accustomed to hear that we hardly pay attention to it and it can go unnoticed. In general, the dominant sound already gives us information on the type of landscape, traffic in urban landscapes, or the sound of animals, water, leaves moved by the wind, among others, in natural and rural landscapes.

Sight and hearing are senses that do not require physical contact, but work through a medium, light for the eye, air or water for sound. However, touch or taste need contact, skin and tongue, i.e. the body is directly involved and smell requires volatile olfactory stimuli, i.e. solids and liquids have to become gas. The taste and smell have been qualified as chemical senses, more subjective senses than objective.

Touch

Touch is the sense of the perception of stimuli that include contact and pressure, the temperature and pain. Its sensory organ is the skin. Perception of temperature is known as thermo perception. And there are thermo receptors in the skin which are quite different from homeostatic thermo receptors which provide the regulation of the internal temperature of the body. Tactile perception is a mental function that allows us to identify different textures (smooth, rough, soft, sharp...) by touch and define according to the pressure in soft or hard objects and their different degrees of hardness.

Through touch we can obtain information from the environment in which we are involved, especially

weather conditions (cold, heat, humidity, wind) and the characteristics of the elements making up the landscape. Rough and sharp leaves in plants living in dry climates with low humidity, smoothness and viscosity of elements that live in wetlands such as mosses, mushrooms and slugs...

Smell

Smell and taste are called primitive because even single-celled organisms can find the chemicals they need to survive through smell.

The sense of smell for many species is one of the most important for survival. It is especially important in nightlife animals. Some animals have an extraordinary sense of smell, like many of our more common pets such as dogs and cats. These beings are called macrosmatics. We are microsmatics, we don't have this sense so highly developed, although when foetus are 24 weeks old, they can absorb odours present in the amniotic fluid; this is the beginning of their sense of smell. Since their birth, babies establish connections and begin to form opinions, recognising people by smell, especially their mother and closest relatives.

Olfactory perception allows us to identify the different types of odours perceived through the sense of smell from its receiver, the nose, where there are olfactory neurons. In the brain, olfaction is processed by the olfactory system. We can identify through the sense of smell, different landscapes and corroborate them with information received from other senses. The smell of humidity, wet earth, manure, gaseous pollutants, waste, food, etc., gives us clues of the landscape in which we are or we can evoke through smell. The olfactory memory brings back memories stored in the brain and evokes certain landscapes or situations. In Literature it is a classic example the character *Madeleine* of Proust in his book "In search of lost time".

Taste

Finally, along with the sense of smell, taste is another chemical sense. The tongue is the taste receptor through which we can detect five known tastes (sweet, salty, bitter, acid and umami (savoury)). Gustatory perception helps us to differentiate these flavours carrying information to different brain areas.

Some researchers speak of a mouth sense that actually would combine, taste, smell, chemical sensitivity, temperature and touch.

We can see, hear, touch, and smell landscapes, but can we savour them? In fact, we can discover the unique taste of local products due to terroir (sense of place), specific to certain landscapes and thus relate gastronomy with the landscape. However, it is nor possible to establish a direct link between taste and landscape, unless we can symbolically set a landscape as sweet, salty, acid, bitter or umami. In any case the abstraction in this school stage is not yet possible, and in this case the flavour can be used to identify specific elements of a landscape. Fish in coastal areas, certain vegetables according to the season, fruits of the forest, or fruit characteristics of the area. Flavours of different edible wild plants can be identified and thus it is possible to locate the places where one can find them.

Mind

The senses provide us with information through stimuli in the form of electromagnetic waves. The brain transforms this waterfall of waves and creates a mental universe transforming reality, reformulating it. In this way, our world, the complexity and beauty of the landscapes is a result of this mental interpretation. Therefore, where is the border between real and virtual? The reading and interpretation that we learn to do from the landscapes will be very important, in the first place through our senses. They are the first gateway of reality to our mind that is what sets us apart from other living beings.

Activities from "Explore", as its name suggests, will allow the pupils to discover and capture impressions through the senses, and observe the main features of the landscape mainly from direct contact. With the sense of sight or hearing, audio-visual techniques can also be used in the classroom which would bring us more distant or inaccessible landscapes and so their characteristics can be compared, classified and discussed.

An explorer is a person who recognizes, examines and records data from one place to learn and discover about its nature. To know the environment requires, sooner or later, direct contact with reality, which is the landscape, being that natural, rural or urban.

The use of the senses, the direct observation, and the field work make it possible to read and interpret the global and complex reality of landscape.

At this stage it may be interesting to learn about the preparation to do field work. Decide what to do during the excursion, what is necessary to take and what specific activities are to be performed.

Later, with the results of the direct exploration of the landscape, the information can be prepared so it can reach other groups of elementary school pupils. In this way, they may exchange experiences and knowledge of their landscapes. This knowledge increases the chances of enjoying the landscape and appreciating it.

2.3.3.2 Classify by elements dominance

In this block, activities to sort and classify landscapes are introduced. In primary education and especially from age 10 years old, children can group the objects according to their properties and sort items according to the changing quality, through comparisons and quantifications.

If the section "Explore" enhances observation, in the section "Classify" observation is systemised. The result of the analysis of the landscape allows its classification, i.e. to know which elements and fluxes form it and keep it.

There are three main types of scientific concepts: classificatory, comparative and metric, ranging from a lesser to a greater degree of precision. A classification is a collection of concepts that applied to certain set of objects divide them into groups. In a classification all individuals must belong to a group and no individual can be found in two groups. Classify is to order, arrange by group or class. Class is the order according to certain conditions or qualities depending on what is being classified. Any landscape of the planet can be classified into different formed groups, when classification is done by dominance of elements and energies.

A landscape is a geosystem located in space and time. The landscape is the reality and the geosystem the model. The geosystem is a system on the surface of the Earth. A system is a set of interrelated elements that evolve over time. An element is a part of the set.

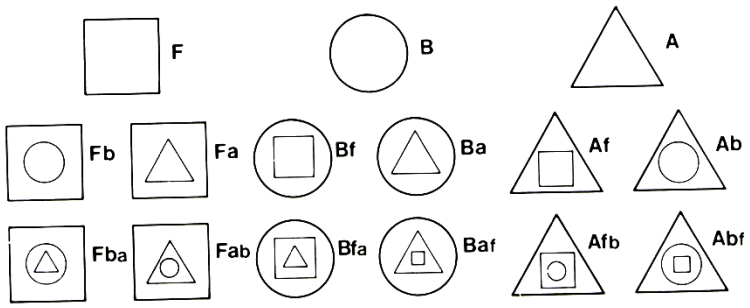
The elements of the landscape can be classified in abiotic (non-living), biotic (living) and anthropogenic (man-made). Fluxes (natural and anthropogenic) give the landscape its dynamic character i.e. that evolves over time.

In this infantile stage of primary education, identification of elements and its description is a very good practice and children show predilection for it, especially living beings for which they feel a natural attraction. Passion for living beings or biophilia is acquired by children during outdoor exposure and seems to be presenting an innate component as well as a learned one. Human beings feel an affinity for all living things, since our survival depends on the close connection with the environment, especially with plants and animals.

In our environment, different landscapes can be distinguished. It is also possible to find similar landscapes in different parts of the world. The classification allows the comparison of the characteristics of local and distant landscapes.

Landscapes can be classified under many criteria. One way to classify them is from the dominance of its elements and fluxes. There will be landscapes easy to classify because their dominance will be from elements of a single group (abiotic, biotic or anthropic). Other landscapes may contain two groups or all three elements. In this case it must be considered which group takes up more space, that is to say which group dominates spatially. Sometimes the presence of human fluxes can make us vary the dominance. For example in a field of fruit trees, the biotic elements dominatebut the flux that keeps the field is anthropogenic, therefore dominance will be anthropic and biotic.

This classification of landscapes is represented by combining a few assigned symbols (see table of symbologies). The square figure is for the abiotic, the circle for the biotic and the triangle for the anthropic. When there is more than one element or flux, the dominant will be larger and the others will fit into the first in order of dominance.



According to ages the classification of landscapes maybe more complex. It will generally begin by the classification of clear dominance and can gradually develop increasing complexity.

Classification involves a prior visual reading of the location and distribution of the elements of the landscape that allows us to interpret it and make a previous diagnosis that will require educational techniques of descriptive type (types of elements and energies), also of representation (symbolism), numeric (space dominance, space occupation) and communication (express the result).

The classification of landscapes for dominance using the described symbolism develops capacities for analysis and diagnosis, two-phases key in the study of the landscape.

2.3.3.3 Investigate through clues

The body and the brain of the human species are designed to recognize the environment and find food and shelter, as well as to keep track of animals, and have got skills to find water and other food and thus survive in a given environment.

This block of activities is based on proposing a search to solve an enigma (question) or a problem brought up through clues. The innate ability of solving enigmas and finding clues to solve problems is what this proposal is based on. Resolutions of the enigma turn information into knowledge.

Analysing and learning about the interrelationships of the elements in a landscape is the basis of a scientific work, which then allows us to predict. To find the interrelationships between elements and solve problems that arise in a landscape it is necessary to investigate, what it means to perform a series of intellectual and experimental activities to discover something that we were unaware of or were ignorant of.

It may arise in the same stage or landscape, different riddles, problems or approaches to hypothesis. The different tracks discovered can lead us to discover the solution.

The activities of this block will present common characteristics:

- *The scene or landscape*, in which tracks or elements will be found to analyse such as rocks, plants, remains or traces of animals, artefacts (man-made), etc.;
- *The measuring instruments* that will allow us to analyse the tracks or will give us information about the state of the landscape. They will also allow us to solve the enigma. Some of the useful tools can be the compass, a measuring tape to determine distances or lengths, some simple reagents to identify and analyse, soil, rocks and water, magnifying glass to identify micro-organisms, plant details or artefacts, a thermometer to determine different temperatures, etc.;
- *Archived information*: documents which will inform us of the evolution of the landscape along a certain time (photographs or old drawings, documents, reports, records of climate, vegetation, news in newspapers, analysis, etc.).

Research can take place in diverse landscapes, from the old town of a big city, to the shore of a lake, a river, a cliff, a rural area with scattered population, a suburb of a city, a wasteland or a mountain slope with different vegetation, just to mention some examples. If the work takes place in a large space, transects can be marked and pupils can be distributed in groups to obtain information that later will be compared and contrasted.

Participation in this block is important. There will be participation among the groups of pupils, with family, with inhabitants and with institutions that can provide information and opinions which may help to solve the enigma.

The importance of a systematic and precise sample to get evidence of scientific value and clues to solve the problem will be revealed in this type of activity and will lay the foundations which in higher stages of school education can be developed into more complex levels.

This block of activities proposes, for primary school pupils, methodologies that foster skills and abilities for scientific research, cultivating critical and curious minds. Therefore it is useful to initiate pupils in the approach of good questions that lead to research on the landscape, and choose the relevant information to answer them as well as expose and argue conclusions.

2.3.3.4 Act on landscape

Once analysed, classified and investigated the interrelationships in the landscape, its evolution and present proposals for synteresis or prevention can be predicted.

This block of activities allows us to understand the complexity of management and planning of the landscape.

The landscape is the result of the interaction of different elements and fluxes, including the anthropic elements and anthropogenic flux, which can have a considerable importance. The transformation of landscapes will often depend on our attitudes, hence acquiring certain attitudes to the landscape will be fundamental to its development.

Behaviour is the ability to reproduce actions and achievements already known and often institutionalised. Hence the importance of acquiring attitudes that promotes the sustainability of the landscape.

At this stage, pupils still do not have the capacity of abstraction required to fully simulate the multiple

possibilities of landscape creation on the same territory. Planning, ordering and managing landscapes are a complex task and the prognosis evidence that interrelations of elements and fluxes should be bore in mind. During simulations, in a real or virtual game, the knowledge to plan a landscape under the criteria of sustainability and quality of life are synthesised.

At this pupil's age, it can be difficult to perform complex simulations, but causal relations can be organised and it is also possible to think of concrete actions that can be performed on the landscape to maintain it or avoid consequences that could lead to its degradation or its negative sustainability. It is true that creativity at this age is an aptitude on the rise and is not yet driven or straitened. This ability of the mind to explore the world of new forms is the capacity of innovation and invention. In landscape management and planning, creativity is essential.

In this block, action plans can be proposed. These plans involve three types of skills:

- Heuristics skills: for to find solution;
- Strategic skills: apt for combining a set of decisions based on some aims;
- Inventive skills: suitable for new combinations.

Creative skills in this block are fundamental. Seeking new solutions for the sustainability of the landscape in front of a concrete action is the main objective of these activities, always considering the value of relationships and the importance of prediction. Educational techniques are based on the simulation, the creativity and the communication using procedures of prediction, debate and argumentation, approach to questions and preparation of proposals and responses.

2.3.3.5 Report experiences

The knowledge of the landscape produces information that can be transmitted using diverse expression systems, from oral, written, or artistic, up to the new languages of communication. New information and communication technologies modify our perception of two fundamental territorial parameters in the history of mankind: the time and distance.

We can communicate at the same time bridging the gap. Internet makes video-conferencing, transmission of immediate information and puts us within reach, albeit virtually, of distant landscapes. Modernity constitutes a new vision of space-time and the landscape is the geosystem model (interactions of elements and fluxes) applied to a particular time and space. These far away landscapes now become near, by their continued media presence, while the everyday and closest landscapes can remain forgotten or ignored. This fact alters the classical notion of remoteness or proximity depending only on the distance. Landscapes depend on other economic, political and social factors as well as on media coverage to highlight some issues.

This facility in the transmission of the information is useful to communicate. If the information is the message, the communication is the relationship. In this century, the revolution is not the production and distribution of information through more or less sophisticated techniques, but revolution is the acceptance or rejection of the information by the increasingly heterogeneous receivers in terms of cultures and therefore visions of the world. The challenge is not to transmit information but to obtain the communication, the relationship and the coexistence or living together.

To study a landscape it is not just about exchanging images of spectacular, every day or degraded landscapes, or sending a massive amount of data and descriptions about elements of the landscape. To deal with landscape is getting to share what we have in common and to learn to live with the differences and understand that landscapes are the heritage of all mankind and that we must learn to manage them peacefully, organising coexistence if necessary through negotiation which is based on the respect of different points of view.

Report is nothing else than extend, publish, i.e. put within the reach of the public, a thing, which in this case is the landscape. We want to make public our knowledge, perceptions and the problems we face, and we want to share it with those who live in this landscape but also with all whom that information can reach. The exchange will enrich our knowledge. And education in those processes linked to the acquisition of expressive and communicative capabilities must take into account new forms of communicative exchange mediated by the new languages of communication.

The activities of this section focus on learning to express and communicate information on the landscapes that we know and exchange this information in order to acquire capabilities for discussion and debate and thus reach the solution to certain dilemmas that may occur in the landscape. There will be a particular focus on descriptive, graphic representation, creative techniques, simulation and communication. Different media: oral, written, artistic expression and new information and communication technologies can be used. Some of them do not exclude others and the synergy among them to achieve effective communication is required.

To carry out good communication it is essential to understand the importance of the receiver, who should receive the information accurately and clearly. In general people are not interested in medicine, but they are interested in their health. Neither they are interested in design, but in some products of design, and they are not interested in the science of landscape but in a landscape that provides quality of life. Each culture will assess conditions in the landscape which will identify with the quality of life. If the landscape provides quality of life, that landscape will be well appreciated and therefore civil society will be interested in participating in the decisions related to the landscape. In this sense, education is essential to foster a suitable awareness by making reference to the values of the landscape.

3 Landscape activities

3.1 Presentation of landscape activities files

A series of activities has been designed for primary education which is adapted to the different methodological stages of the study of landscape, understood as an open system, which can be applied to any landscape.

The presentation of the activities follows a very practical model in which a set of identical sections are distinguished for all activities and in which the most useful information for the teacher stands out clearly.

First of all, the activity is described in one, or maximum two, lines. Then the block (there are five different blocks) of corresponding activities is described in detail.

Following that, the objectives of each activity are briefly defined and put in order of the subjects according to the most significant. The subjects that appear first of the list are the most suitable.

The item “Where” tells us where the best place to do the activity is, and “When” refers to the time of year or the most suitable season.

The dynamics of the activity is explained in the item “How”. They are always just suggestions which the teachers can assess and adapt depending on their pupils, the school curriculum, local landscape and so on.

“Who with” refers to the most suitable age and school year group for the activity and it may specify if it is better for groups or pupils working on their own. The “Length” gives the approximate time the activity will take.

The item “What do you need?” indicates the material that is required to carry out the activity. It is just a guide, and in no way complete, so it is the teacher who can decide exactly how to carry out the activity. Therefore, depending on the age of the pupils, the availability of equipment at the school and other circumstantial factors, the teacher can decide exactly what material is required.

Finally, some key concepts and basic contents to bear in mind for each activity are highlighted in a box. The contents, objectives and didactic approach are described in more detail in the next chapter for each of the five blocks of activities.

3.2 Explore activities

In this block the proposed activities involve a close approach to the landscape through the senses and respond to the methodological stage of the study of the perception and analysis of the landscape. In Primary education, this practice of sensory perception is more appropriate and for this reason there are more activities in this block:

- I can see…
- Listen, who goes there?
- Touch something…
- It smells like…
- Tasting, tasting…
- I feel...

3.2.1 Contents, objectives and didactic orientations

Contents

- Use of visual stimuli as preferred in a first approximation to the knowledge of the landscape: the initial perception of the whole.
- Selective observation of significant aspects: features, proportions and distributions of the elements of the landscape.
- Sensorial initiation to the composition, dynamism and complexity of the landscape: visual appreciation of colours, shapes and changes.
- Sensorial potentiating of hearing, smell, touch and taste, in relation to the perception and knowledge of the landscape.
- Identification of landscape typologies and combinations: natural, rural and urban.
- Aesthetics assessment of the landscape according to attitudes of conservation and protection.
- Understanding the landscape as our surroundings.
- Analysis of the emotional response that causes each landscape and its impact on the construction of individual and collective attitudes.

Objectives

- Encourage the habit of observation.
- Raise awareness towards beauty, harmony and the functionality of the landscape.
- Stimulate the visual retention of shapes, colours and structure of landscape composition.
- Consider the observation of shapes and colours of the landscape under different conditions.
- Detect the accumulation of information that provides images of landscape.
- Discern visual effects provided by each group of elements of the landscape.
- Become aware of the importance of the senses of hearing, smell, touch and taste, in the perception of landscapes and the type of information that we can provide.
- Sense and define emotions and feelings in face of the landscape.

Didactic orientations

The sensory exploration of the landscape is an endless source of activities, which may be especially

motivating if they are properly organised and expectations are in accordance with the possibilities. In this sense it is recommended to:

- Manage and link the use of material in the classroom (photographs and previously selected objects) with experiences in the real landscape, to start intellectual mobilisation which requires observation and perception.
- Link experiments that have been done in the classroom (see, hear, touch...) with those that will be made in the real landscape, where it can be more difficult to practice all the sensations. So excursions should be prepared strategically, to ensure a minimum of results.
- Provide the minimum time required for each pupil individually and freely so they can develop their perceptual responses. Teamwork will be raised from contributions from each pupil, so that results are enriching, but not coerced by the individual expression.
- Take advantage of the activities to work the artistic expression of the landscape. The landscape as a source of inspiration can be and should be related to plastic, musical and literary education. Promoting and channelling the creativity and artistic sensibility of primary school pupils, is gratifying and especially useful for the study of the landscape.

3.2.2 I can see

An activity to identify landscapes through colour and shape. Section: *Explore.*

Objectives
To discover information about the characteristics of landscape, and thus the landscape itself, that the sense of sight can provide us with.

Subjects
Language, Art, Science, Geography, History and Mathematics.

Where
The activity may take place in the classroom or outside.

When
It may be carried out in the classroom at any time. If carried out outside, it should include a route in which different landscapes may be identified and in which the visual information is relevant to its identification. The time of day may be very important for the contrast of light which can alter the perception of colours and shapes.

How
In the classroom: a series of pictures of landscapes are shown in which certain colours dominate (there may be landscapes with shades of green, ochre and grey etc.). The pictures may be found by pupils on the internet, in magazines or they may be photos that they have taken themselves. It's all about seeing how landscapes with the same range of colours may be very different. A landscape in which grey is the dominant colour may be totally abiotic or anthropogenic, although in general, landscapes in which green is the dominant colour tend to be biotic. There may also be anthropogenic landscapes with this dominance of colour. The same process can be followed with shapes as with colour. Landscapes which are predominantly natural or anthropic may present very different, or at times, similar shapes. In general, curved shapes are more usual in natural landscapes and sharp and geometrical ones in anthropic landscapes. However, sometimes they feature interesting similarities. If the activity is done outside, the places where the identification of the landscapes is made through colour should be well defined. The influence of light will be important to distinguish how it changes the intensity of colour and how the tones of colour of a landscape vary on a cloudy day compared with a sunny day. With regard to shapes, observation points in the landscape should be found, in general elevated points which allow a variety of shapes to be made out: the geometry of fields, a street plan of a town, or a Versailles-type garden, the round shapes of lakes, wooded areas, etc.

Who with
Pupils from 6 to 11 years old. Pupils work on their own. The discussion is in groups.

Length
From 20 to 60 or 120 minutes, depending on age, and whether the activity takes place in the classroom or outside. It also depends on whether just colour, or both colour and shapes are being worked on.

What do you need?
In the classroom: a selection of pictures (from 15 to 30 or more) to contrast colours and forms. Outside: well-chosen observation points. Crayons to reproduce the landscape's dominant tones of colour and the forms discovered. Computers may also be used.

Key concepts

Sight is our most dominant sense, but at times the first aesthetic impression may hide very different natural aspects of the landscape. The colour and its distinctive tones, as well as the forms of the landscapes, is what the sense of sight allows us to perceive and analyse. Sight allows us to sense that there are landscapes with structures and different dynamics which help us discover more things.

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R. Pena Vila

3.2.3 Listen, who goes there?

An activity to identify landscapes through sound. Section: *Explore*.

Objectives
To discover information about landscapes through the sense of hearing.

Subjects
Language, Art, Science, Geography and History.

Where
In the countryside/landscape itself. It may also take place in the classroom with a recording of the sounds which come from different settings.

When
If carried out outside, it should include a route in which different landscapes with corresponding sounds may be identified. The time of day may be very important to catch a wider range of different sounds. It may be carried out in the classroom at any time.

How
In the classroom: pupils listen to a recording of sounds from a variety of landscapes. They may be recorded by pupils or downloaded from the internet. Pupils may then also play around with a sound of a landscape at home or present landscapes with sounds that do not correspond to that landscape. For example, a train station where you can only hear birds and the mooing of cows. Outside: find points on a route where it is easy to identify landscapes by listening. The time of day will allow you to catch different sounds according to some landscapes. Animals might make sounds at specific times of the day or more loudly depending on the moment of the day or season. For example, the croaking of frogs at the end of the day and during the warmest seasons, the buzz of mosquitoes at dusk, the tweeting of birds first thing in the morning, the sound of waves, the water of a torrent, the wind in the trees... Or in urban areas, the sound of heavy traffic at rush-hour or in certain streets, the murmur of people in shopping centres or markets, the arrival of trains at a station or planes at an airport... To identify sounds in the chosen places, the children either close their eyes or are blindfolded. In silence they count the different sounds they identify, putting up a finger to count each sound as they hear it. Then they try to remember and define the sounds. This will be the soundscape of this landscape. You can also make a recording of a soundscape from which the pupils can try and identify the landscape. They can also draw a picture. The youngest children usually draw the person or the thing that makes the sound. They find the abstract more difficult, but you can help them realise that the bird is probably on a branch of a tree or that the train is in a station where people are waiting, and so on.

Who with
Pupils from 6 to 11 years old. Pupils work on their own. If soundscapes are prepared, they may be done in groups.

Length
From 20 to 60 minutes, depending on age, and whether the activity takes place in the classroom or outside. It also takes less time if the work is limited to the identification of sounds, rather than the preparation of soundscapes.

What do you need?
In the classroom: recordings of sounds of different landscapes and pictures related, or not related, to these landscapes. Outside: well-chosen listening spots. Pencils and paper to note down the different sounds which are heard and to draw a picture of the landscape the sound suggests.

Key Concepts

Hearing gives us information about landscapes and the landscapes are described through hearing.
To listen carefully and catch the sounds, it is necessary to concentrate hard to avoid being distracted by other senses.
Soundscape is the combination of sounds that define a sound environment or a sound landscape.
Each landscape has its own corresponding soundscape.
In general, the main sound of a soundscape defines the function of the landscape: urban, rural or natural.

3.2.4 Touch something...

An individual activity to identify elements through touch. Section: *Explore.*

Oobjectives
To discover information about the characteristics of landscape, and the landscape itself, through the sense of touch.

Subjects
Science, Language and Art.

Where
In the classroom or outside.

When
It may be carried out in the classroom at any time. If carried out outside, it should include a route in which different landscapes may be identified and in which the tactile information is relevant. The time of day may be very important to discover humidity, warmth and other characteristics through thermo receptors.

How
In the classroom: prepare some opaque boxes in which the pupils put their hands and touch the objects they find inside. It is useful to use cardboard boxes and make holes in them. Then attach an old sock with the foot cut off it to the box with drawing pins. In this way they can put their hands inside and feel around without seeing what's inside the box. Some pupils may feel reluctant to put their hand inside a box where they cannot see what's inside. In this case do not force them to do the activity. Put things in the boxes (5 or 6 of them) which make us think of the landscape in question. For example, we associate a pinecone with a pine forest, moss with a damp wood, gravel with a path or wasteland, sand or shells with a beach, etc. In general, natural elements are the easiest things to relate. If the activity is carried out outside, you should find spots where the identification of heat or damp are sufficiently contrasted to be able to distinguish them. The bark of trees, smooth and rough leaves, spikes or spines, sharp or smooth stones etc. may also be identified. The identification of different tree bark may be done in pairs: one pupil blindfolds the other and takes him/her to the trees that they are going to identify. Then they change roles. After that, they should also visually identify the pulped trees, checking them through touch. There are endless touching games that can be played outside. It is important that at the end of this activity, which is great fun for children, it is redirected in order to relate the identified elements and sensations to the landscapes in which these elements may be found.

Who with
Pupils from 6 to 12 years old. Pupils work on their own or in pairs. The discussion is in groups and the

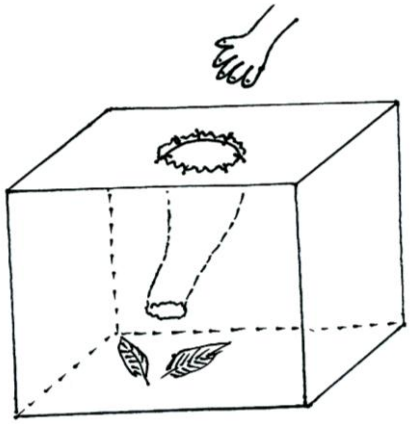
‘feely boxes’ may also be made in groups.

Length
From 25 to 60 minutes, depending on age, and whether the activity takes place in the classroom or outside. It may also be started outside and then completed in the classroom with the identification boxes and the elements that the pupils have collected from outside. They can collect things in groups of 5 for the other pupils to identify in the boxes.

What do you need?
Opaque boxes which pupils can put their hands into to identify objects. They may be prepared by the pupils. Outside: scarves to blindfold the pupils. Opaque bags to collect samples. A field notebook to take notes.

Key concepts

Touch is one of the most basic senses and requires physical contact. It allows us to acquire information about a landscape by identifying atmospheric conditions (damp, we get wet, we get hot...) and different elements. Sharp leaves or thorns allow us to identify plants peculiar to dry landscapes, while in humid areas, the elements present softer and more slippery surfaces (moss, water, slime...).



R. Pena Vila

3.2.5 It smells like

An activity to identify elements through smell. Section: *Explore.*

Objectives
To discover information about landscapes through the sense of smell.

Subjects
Language, Art, Science and Geography and History.

Where
In the landscapes themselves. It is more complicated in the classroom. However, the final conclusions may be made in the classroom altogether.

When
If carried out outside, it should include a route in which different landscapes can be identified according to the different smells. The time of day may be very important to get more range and/or intensity of smells.

How

A route is followed on which different smells may be distinguished. Some will be easy to identify and detect due to their intensity (manure, chemical industrial products, rubbish, food in restaurant areas, fish on the coast...); we need to get closer to other elements to catch their smell (flowers, earth, stones, man-made materials...). In the latter, we approach with our noses to catch the smells as do pets (dogs and cats), which have a more developed sense of smell. The children try to describe the smell, saying whether they like it or not and in general compare it with a familiar smell. They can also ascertain that we sometimes smell something in a landscape that has nothing to do with the place where the smell originally comes from: for example, we could be in a forest and smell the pollution from industry. We often smell, but do not see, where the smell comes from in as much as we catch it from the volatile compounds. For this reason, when we heat up food, we can smell it more as heat volatilises certain substances which are what we smell and when it is hot, smells are also stronger. If we do not like a smell, it will influence our perception of the landscape. The olfactory memory is important and in general we associate a smell with a landscape or situation. In the classroom you may like to discuss which smells we would like to change and if it would be possible to change them or not. If the landscape would change would we like it more or less. You could also see how landscapes which are aesthetically pleasing become less attractive when our sense of smell detects unpleasant smells. You can mark on the route which places in the landscape the pupils like the smell best or worst.

Who with

Pupils from 6 to 11 years old. Pupils work individually. Later on, in the classroom, you may discuss the collective experience altogether and try to find solutions to the landscapes whose smells we like least.

Length

From 30 to 60 minutes, depending on age and route.

What do you need?

Outside: a plan of the route with well chosen 'smelling points'. Pen and paper to note down the smells and the sensations they bring out in us. In the classroom: crayons and a plan of the route to be followed which can be completed with coloured markings according to the area of the influence of smell.

Key concepts

Smell provides us with information about landscapes. Sometimes, however, due to atmospheric conditions we may detect smells in a landscape which come from elsewhere. Smell will favourably, or unfavourably, influence our perception of a landscape.

R. Pena Vila

3.2.6 Tasting, tasting...

An activity to identify elements which are characteristic of a certain landscape through the sense of taste. Section: *Explore*

Oobjectives
To discover information about certain elements of landscapes through the sense of taste. To get to know gastronomy as an expression of a culture which uses products which are characteristic of specific landscapes.

Subjects
Geography and History, Science, Language.

Where
In the classroom. It may also be carried out in the landscapes themselves.

When
At any time of day in the classroom. If outside, preferably in the morning.

How
They will try food from local landscapes, either nearby or far away. The food item may be a natural product (an apple, a carrot, a medicinal plant as an herbal tea...) or prepared food (cooked dishes made with certain products). If there are children from different backgrounds and cultures in the class, they can bring in a typical dish and explain how it is made and in which landscape the ingredients of this type of meal are found. They may also describe food from a place they have been to, on holiday for example or simply local food and relate vegetables to market gardens or green houses, fish to the sea, red fruits to more mountainous regions, meat to stabled or organic farms, fruit to fruit farming, bread and pasta to cereal fields, etc. In this way they define different nearby and far-off landscapes. They can also prepare food with very different flavours. The children try the different foods with their eyes blindfolded and they should try and identify them. For this game, it is better to try raw foods or to put chunks of food that does not drip on sticks (nuts, a piece of apple, banana or other fruits, a piece of cheese, some bread, pasta...) Then they should associate the food with a kind of landscape. If the latter is unknown, prepare some pictures that correspond to the food being identified. At certain times of year, you can set up a route which includes different landscapes which produce food. They try a different kind of food at each point on the route (fruit from an orchard, cereal from the fields, vegetables from a market garden and a product made in urban areas...). They can link the taste with the landscape. It may happen that they really like the food, but not the place where if comes from, or vice versa. They will appreciate how important it is to maintain landscapes which produce food.

Who with
Pupils from 6 to 11 years old. Pupils work individually; each child should try the different flavours. However, if dishes are prepared, this may be done in groups and the final comments may be made altogether.

Length
From 20 to 60 minutes, depending on age and whether the activity is done in the classroom or outside.

What do you need?
In the classroom: different foods laid out on trays. Blindfolds to cover the eyes. Pictures of landscapes related to the food being tried.

Key concepts

Taste is a sense that requires direct contact, it is a chemical sense.
The perception of taste is very personal. One item of food may appeal to some people but not others.
Linking the foods tasted with the landscapes that produce them, not only creates a bond between them, but also an interest in them.
The preparation of dishes made of local products is one of the cultural results of anthropic territorial work and is also part of cultural and landscape heritage. The production of wine, oil, smoked salmon, pasta and all kinds of more elaborate dishes and typical dishes of certain places and cultures is linked to specific landscapes which have characteristics which result from this production of food.



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3.2.7 I feel...

An activity to discover the feeling that a landscape creates. Section: *Exploring.*

Objectives
To discover the feeling or feelings created by a landscape and how this perception is very personal.

Subjects
Language and Art.

Where
In the classroom or outside.

When
At any time of day in the classroom. Outside: it should include a route on which different landscapes which bring out a variety of feelings may be identified. The time of day may influence the perception of the landscape and for that reason this should be taken into account depending on the type of route that is organised.

How
In the classroom: show a series of pictures of different nearby or far-off landscapes (projected on a screen). While looking at the landscape, each pupil tries to identify the feeling it evokes in them. They can then discuss altogether to see that the same landscape does not bring out the same feeling in everyone. The children have to try to explain why this feeling has been brought out in them. Number the landscapes to be projected on a piece of paper (8-15 depending on the age) and the pupils can draw a symbol representing their feeling next to each number. You can give them the symbols or the pupils may design one for each emotion, in the style of emoticons. At these ages, the following emotions are put forward: peace, fear, boredom, sadness, happiness, indifference. Outside: the pupils, on a simple map of the tour including stops, mark the symbol corresponding to the emotion felt towards this landscape. The immersion is more complete during the tour and all the senses will play a big role

(smell, hearing ...). It is possible that if the images of these break-points are shown previously, the feeling may different from when they identify them on-site. It is important that this activity is conducted in silence so that individual perception may be concentrated on.

Who with
Pupils from 6 to 12 years old. Pupils work individually although the discussion will be in one group and the creation of the symbols for the feelings, if carried, may also be done in a group.

Length
From 20 to 45 minutes, depending on age and whether the activity is done in the classroom or outside. It may also take place outside and then be completed with the discussion in the classroom.

What do you need?
Photographic images of landscapes or a real route through different landscapes which may be nearby (it could be the street where the school is located or different streets, the park, a square, the river bank etc.). A pencil and a piece of paper.

Key concepts

Perceiving the emotions which individual landscapes bring out, gives us guidelines for analysis beginning with selection and comparison.

Tranquillity *Fear* *Sadness* *Boredom* *Happiness* *Indifference*

3.3 Classify activities

Classify activities allow the process to pass from observation to classification. They are based on a type of classification of the elements and fluxes by dominance and facilitate to capture the diversity of the landscapes and their functioning. Activities from the simplest to the most complex are:
- What's what?
- Is it what it seems to be?
- The same but different.
- Even more difficult.
- Near or far.

3.3.1 Contents, objectives and didactic orientations

Contents
- Use of indirect observation in the reading and analysis of the landscape: presence and distribution of the elements that compose it.
- Distinguishing components of the physical environment and human interventions in the landscape.
- Elaboration of interpretative synthesis about the structure and dynamics of natural and humanised landscapes.
- Estimation of heterogeneity and diversity of natural landscapes and the forms of occupation of

rural and urban land.
- Use of neat and logical sequences in the observation of the landscape and application of criteria of classification.
- Use of symbols to express the results of the classification: proportionality and combinatory of geometric representations.

Objectives
- Identify the elements that make up a landscape and their interrelations.
- Define the location and extension of the elements in a limited landscape.
- Exercise the estimation of proportions and combinations in a represented space.
- Understanding the value of the scale in the space representations.
- Use recognised criteria for the management and classification of landscapes.
- Describe the structure and operation of the landscapes, comparing similarities and differences.
- Value the local, the European and the world landscape diversity and the impact of human activity on the natural environment.

Didactic orientations
Playing to classify landscapes, according to the dominance of groups of elements, means to enhance the observation of landscape in a methodical way in order to look at those aspects which provide us with meaningful information. In relation to activities we recommend:
- Do the activities according to the order they are presented, since they contain a progressive complexity in terms of concepts. First of all, pupils have to know to distinguish abiotic, biotic and anthropic elements. Then deal with fluxes of functioning and finally to introduce the idea of the scale of observation used.
- Although the activities are simple and pupils can play with them without difficulty, teachers should help presenting landscapes in a logical order, first with a group of clear dominant elements (desert, forest, city), later combining two dominance groups and finally different levels of combinations.
- It must be kept in mind that certain abiotic elements (lithologic and soil) may not dominate visually but always exist in the landscape. Initially one can speak of what we see and what is hidden, since the game is based on learning to read what every landscape shows us.
- Given that the intrinsic complexity of each landscape is evident in its appearance, some landscapes will be easier to interpret than others. Sometimes local landscapes of the pupils can be the "difficult" ones to interpret. In any case, the work group is basic in this block of activities to enrich the conclusions.

3.3.2 What's what?

An individual or group activity to classify the elements of a landscape. Section: *Classify*

Objectives
To learn how to differentiate and identify the different elements (abiotic, biotic and anthropic) that make up a landscape.

Subjects
Science, Language, Mathematics and Art.

Where
In the classroom or outside.

When
At any time of day in the classroom. If outside, preferably in the morning and during seasons when the widest range of elements may be identified.

How

In the classroom: show a picture of a landscape in which the greatest number of different elements are visible, and if possible, which represent the three different groups of abiotic, biotic and anthropic elements. Divide the pupils into three or six groups. Each group, or every two groups, focus on one group of elements. They identify them and draw them on plastic film (acetate) more or less where they are in the picture. They then make a list of the different elements, taking note of if they are repeated, and if so, how often. Then put the plastic film (acetate) of the three groups on top of each other to get the full landscape. This allows you to set up a discussion about which group comes up with most elements, if the elements are well classified, which ones take up most space, if a new element has been discovered and so on. Outside: it is more difficult to mark the boundaries of the landscape and spatially position the elements. For this reason, you can draw a complete landscape and colour in the elements of each group with set colours, or make a list of the elements that are identified in each group. In this case, it is better done individually. The discussion can then be done altogether.

Who with

Pupils from 6 to 12 years old. In groups, although it may also be organised as an individual activity.

Length

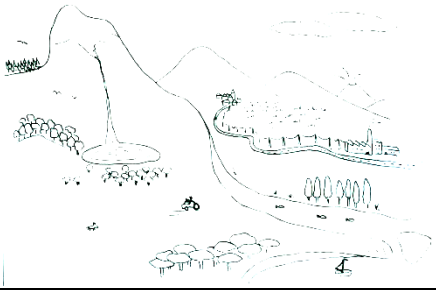
From 20-30 minutes, depending on the complexity of the proposed landscape and the age of the pupils, which may produce lengthier comments.

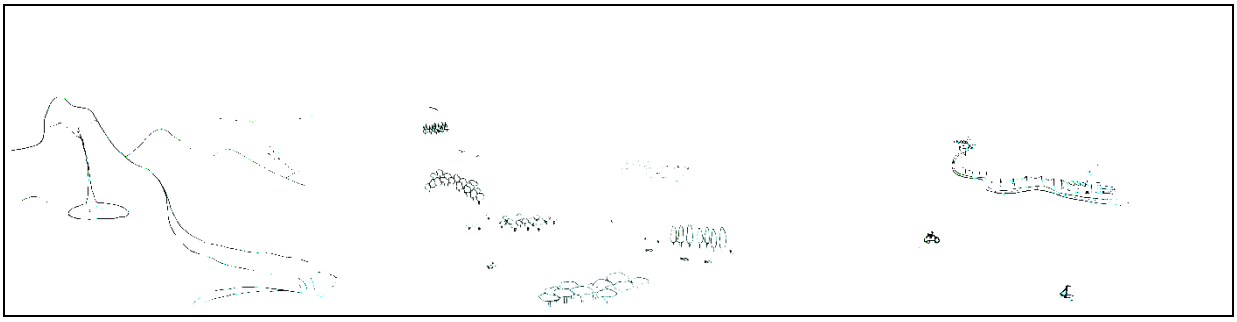
What do you need?

A picture (virtual or real, photographic, painting...) of a landscape. Greaseproof paper or plastic film (acetate), suitable coloured felt-tip pens. A pencil and paper or a computer.

Key concepts

Abiotic elements: natural, inert, without life
Biotic elements: natural, alive
Anthropic elements: man-made
The different elements with their interrelationships make up the landscape.
Depending on the dominance of one type or another, we get rural, urban, dessert, forest landscapes, etc.





R. Pena Vila

3.3.3 Is it what it seems to be?

An activity to learn how to classify landscapes taking into account their fluxes. Section: *Classify*

Objectives
To discover how landscapes that feature a dominance of elements belonging to the same group may be classified in another group on account of the cause of its dynamic fluxes.

Subjects
Science, Geography and History, Mathematics and Art.

Where
Preferably in the classroom. It may also take place outside.

When
It is preferable to organise the excursions in the morning. Outside: the route should include landscapes in which the change in classification of its operational fluxes are noticeable. At any time of day in the classroom.

How
Outside: find a route on which different kinds of landscapes with just one dominant element can be distinguished and whose input of fluxes changes its classification. Simple examples of this are gardens, vineyards, orchards, abandoned housing developments... In the classroom: it is easier to find pictures of landscapes (local or distant) where these contrasts are shown in a striking and motivating way. The presence of an element which the pupils describe and which gives them clues to the dominant energy that will change the classification, makes the activity more motivating as it turns it into a game in which you discover what, or who, makes this landscape work. An irrigation channel amongst fruit trees, or a fence at a zoo which sets it apart from the savannah where animals are free etc. The teacher can provide the pictures or the pupils themselves can find 'trick' landscapes in magazines, on the internet or bring in photos for classifying. If the latter, one group can find pictures to exchange with another group so they classify landscapes which they do not know. If working in groups, the pictures should be on paper or they can be shown on a computer screen if there is one available in the classroom. If the pictures are shown to the whole group, they should also be projected on a screen and it is best if each pupil classifies them individually. Then the pictures can be shown again and each pupil self-corrects the classification.

Who with
Pupils from 8 to 11 years old. Individually, although it may also be done in groups.

Length
From 20-30 minutes, depending on the age of the pupils. Depending on the route if done outside.

What do you need?
Outside: a plan of the route containing the observation points that will be studied. In the classroom: a set of pictures of landscapes that can be seen on paper or projected onto a screen. Pencil and paper to note down the classifications.

Key concepts
A landscape may feature one kind of a range of dominant elements, but its classification will also depend on the fluxes responsible for its performance.
A field of fruit displays biotic elements as dominant in extent, but the flux which helps the field of fruit function, as we see it, is anthropic (manual, mechanical...) as well as solar, just as in a garden for example.

M. T. Bovet Pla; J. Ribas Vilàs

3.3.4 The same but different

An activity to classify landscapes according to the dominance of elements and fluxes. Section: *Classify.*

Objectives
To learn how to classify landscapes according to the dominance of elements and fluxes and to observe how landscapes with the same dominance may show a different appearance.

Subjects
Language, Art, Science, History and Geography

Where
In the classroom or outside. In the classroom it is easier to find contrasting landscapes with the same dominating features and local, European and exotic landscapes may be compared. Outside: follow a route on which they can discover landscapes with the same dominance but with a different appearance.

When
At any time of day in the classroom. If outside, preferably in the morning so that the characteristics of the landscapes to be classified on the route may be well defined.

How
If you follow a route, this should include landscapes with one main group dominance but with a different appearance. For example, a forest and a meadow, a river and rocky ground, a city and a mine. Number the observation points on the route to classify the landscapes. Use classification symbols (square, circle and triangle). If there is more than one element, include a symbolically subordinate degree. Later in class, discuss the group experience and check that the classifications are correct, discussing the reasons why. In the classroom: the pupils can look for pictures of local, neighbouring or far-off landscapes and compare how a jungle, a deciduous Mediterranean forest or scrubland are biotical dominant even though they look different. Also how different cities around the world look

different as a result of culture and the place in which they are located, although they all function as cities as a totally anthropic landscape. Just the same as human beings who have a different external appearance, but we are all people albeit with our own appearance due to genetics, surroundings or culture. The pupils can find the pictures at home, in the library, on the internet... or the teacher can prepare a selection of pictures which are well contrasted and have an impact, and which include different degrees of difficulty when being classified.

Who with
Pupils from 8 to 11 years old. Individually or in groups. The final comments should be made altogether.

Length
From 30 to 120 minutes. It depends on whether a route is followed or not, and how long it takes. Comments in class are included.

What do you need?
Pictures of landscapes or a route with the observation points well marked. Pencil and paper to note down the classifications of the different landscapes.

Key concepts
The landscapes may be classified according to the dominance of elements and energies.
In our day to day surroundings we can find different types of landscape which we can learn to classify.
There are also many landscapes on the planet which feature just one classification but the initial perception of this seems different due to environmental or cultural issues. However, its function as a landscape is the same.

M. T. Bovet Pla; R. Pena Vila

3.3.5 Even more difficult

An activity to classify complex landscapes according to the dominance of elements and fluxes. Section: *Classify*.

Aims and Objectives
To learn how to classify landscapes according to the dominance of elements and fluxes and to understand that the landscapes may be complex and therefore very dynamic and changeable.

Subjects
Language, Mathematics, Science, History and Geography.

Where
In the classroom. Outside: follow a route on which a wide variety of complex landscapes may be observed.

When
At any time of day in the classroom. If outside, preferably in the morning.

How
If the activity takes place outside, the route should be designed in such a way that pupils can observe landscapes which are made up of a combination of the three groups of elements together with three hierarchical degrees of dominance. Normally, the lesser hierarchical degree, that is to say, the one which is in the smallest degree of dominance, tends to be left over from a previous situation or responds to the appearance of elements of a group that were not present before and which start to appear in the landscape. At each observation point on the route, the classifications are made using the symbols suggested. The pupil can make notes describing the landscapes to remember them later on and to highlight that they have caught their attention. In the classroom: to classify the landscapes, use pictures of complex and dynamic landscapes, local, neighbouring or distant. They show the diversity of the surrounding landscapes and those around the world, as well as the capacity for change which this kind of landscapes display. The pupils can look for the pictures or the teacher can select them so that the aim of the activity is easily accessible from the examples shown.

Who with
Pupils from 9 to 11 years old. Individually on the route, if there is one, and then the follow-up can be done in the classroom. If the activity takes place in the classroom, pupils may work individually or in groups to choose the pictures. It is a good idea if the discussion is held in groups to contrast opinions and observe the complexity of the landscapes.

Length
From 30 to 120 minutes, depending on the route and the follow-up in class.

What do you need?
Pictures of landscapes or a route with the observation points well marked. Pencil and paper to note down the different classifications using the symbols.

Key concepts

Landscapes may feature few elements and function with little diversity of fluxes or they may be complex and feature a great diversity of elements and fluxes that bring them to life.
The classifications of landscapes that have similar dominances between their elements, as they have little variety, are more subject to the subjectivity of the different observers. This may lead to classification results which are different, but at the same time, very similar.
This fact may be used to demonstrate how these landscapes can change easily and what is important is the subjectivity of the assessment of these landscapes.
With more complexity comes more fragility and more possibilities for change.

M. T. Bovet Pla; R. Pena Vila

3.3.6 Near or far

An activity to observe how the classification landscapes vary according to scale. Section: *Classify*

Objectives
To learn how a landscape changes its classification of dominance if we see it close-up or from a distance.

Subjects
Mathematics, Language, Art, Science, History and Geography

Where
Outside. It may also be done in the classroom, but it has less impact and is not so motivating. However if it is done in the classroom, prepare the framework for the activity beforehand. It is a good idea to have a group discussion in class at the end to consolidate concepts and to be able to concentrate harder.

When
At any time of day in the classroom. If outside, we should find an elevated point with good visibility and which encompasses a wide extent of land with diverse landscapes. The time of day may be important to avoid too much contrast of light and shadows. It is always better in the morning, especially at midday so that the intense light allows for good observation.

How
In class, the pupils prepare some frames out of card or any material strong enough to make a frame. The frames should be of different sizes so that they can more or less take in the extent of territory. They can also make different geometrical shapes. Once outside, and ready at the viewpoint, they classify the whole extent of landscape that they can see. Then they stretch out their hands with one of the frames they have prepared and look at the landscape through the frame in question and try to classify the landscape which they see through the frame. In turn they do the same thing with the different frames focussing them on different points in sight. They will get different classifications. Anthropic dominances may be observed if we just frame towns or biotic ones if we only focus on woods, etc. The teacher can also suggest looking for a specific dominance through the frames. If the pupils have cameras with a zoom, they may also see the classification through the camera lens and take photos which can then be analysed in class. The pupils may draw the shape of the frame with the landscape they see through it noting down its dominance. Later in class, they can compare the results and present their conclusions.

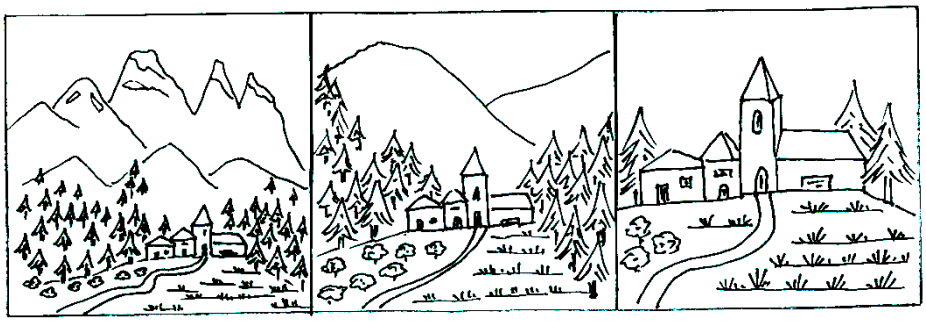
Who with
Pupils from 9 to 11 years old. Pupils work individually. Later in class they work together: they compare the framed landscapes, check the classifications and come to final conclusions as a group.

Length
From 60 to 120 minutes, depending on the route. The time also includes the follow-up in class and the preparation of the frames beforehand.

What do you need?
Stiff material to make the frames, scissors, glue, etc. Crayons, pencils and paper. Something hard to lean on when drawing outside. A viewpoint.

Key Concepts

Setting the scale to be used, that is, spatially defining the landscape, is the first methodological step taken to classify the landscape.
Depending on scale, the classification of a landscape may change; hence it is important to keep the same scale throughout the study process.
It is important to observe that the same landscape may change its classification depending on the scale.
This is evident using different sized frames while keeping the same focus.



R. Pena Vila

3.4 Investigate activities

In this block, activities are carried out generally through field work and they present the bases of any research. Tracks are sought, measurements are carried out and conclusions are made.

The proposal allows knowing and analysing the interrelationships of the various elements of a landscape and their acting fluxes.
- Growing and growing.
- Remains.
- Footprints.
- Who goes there?
- What is first?
- The magic of a landscape.

3.4.1 Contents, objectives and didactic orientations

Contents
- Identification of different plant species, strata of vegetation, growth and expansion.
- Growth and distribution of different plant species in relation to the presence of water and types of

soils.
- Existence of fauna in the landscape, the dominant species and their habitat.
- Recognition of the impacts of human presence on landscapes apparently low colonised and human waste that this presence generates.
- Importance of abiotic elements in the morphology of the landscape and understanding of basic erosion processes involving water.
- The changes in the landscape: the role of natural fluxes in its evolution and the importance of the anthropic action.

Objectives
- Identify on-site plant diversity in the landscape, their distribution, density and stratification by direct observation and data collection.
- Recognise indicators of the presence of fauna and of human activities in the landscape that allow identifying its impact and consequences.
- Understand what erosion is and how water works in modelling the relief, through simple experiments in the real landscape and also in bounded representations.
- Relate the role of the different elements in the studied processes, and define simple interrelationships among climate, vegetation and relief.
- Be aware that the landscape changes and evolves over time, as well as the great transformative power of human action.

Didactic orientations
All the activities include a detective game, which easily motivates pupils to experiment and address the search for information related to the proposed research topic. To properly integrate the knowledge on the landscape obtained from the results, it is recommended:
- First of all perform the activities related to the various elements and their role in the landscape (abiotic elements and erosion, diversity and dynamics of vegetation, fauna, human presence) to then consider activities related to more complex concepts such as fluxes, dynamics and the evolution of the landscape.
- Promote the value of thoroughness and rigour in the field work, which are basic aspects of scientific methodology. Take advantage of the interest which can arise among pupils the scientific work to promote good practices: clear annotations, exact measurements, ranked collection of "evidence"...
- Promote also the importance of teamwork in relation to research and scientific advances. Pupils should see that together they can gather more information, if sharing objectives and tasks are well dealt. In this case teachers will act as coordinators of the research.
- Enhance the theme of waste from research on anthropogenic footprints, linking it to local environmental education projects, which may be integrated in the school as for example the school Agenda 21, and complemented by activities of recycling, reuse and waste reduction.

3.4.2 Growing and growing

An activity to identify the variety in vegetation of a landscape and its dynamics. Section: *Investigate*

Objectives
To investigate the different kinds of vegetation in a landscape and its dynamics. To learn how a landscape changes its dominance ranking depending on whether we see it up close or from a distance.

Subjects
Science, Language, Mathematics, Art, History and Geography

Where
Outside in an area where there is quite a variety of vegetation: woodland, meadow, scrubland, riverside vegetation. In the classroom: carry on with the investigation and come to final conclusions as a group.

When
Outside: it is best in spring or at the end of summer/beginning of autumn. Preferably in the morning.
In the classroom: in the afternoon on the same day as the samples are collected.

How
The activity takes place in a biotical dominant landscape (wood, scrub, meadow, etc.) The class is divided into groups with a maximum of four pupils. Each group stations themselves in a square of 1 meter by 1meter space if in a meadow or in a square of 3 meters by 3 meters if in scrubland or wood.
The plot to be studied should be measured and marked off with string or wool. Pupils note down the plants they find in their patch of land in the field notebook. They count the ones that are the same species. That is to say, they make a note of the variety of species and the density (number of individual examples of the same species). If there are trees, they can measure the thickness of the trunk and see if seedlings of the same species are growing. They should differentiate between trees (one woody trunk), bushes (various woody trunks) and grasses. They can also draw the ones they think are important or which attract the pupil's attention. Depending on the age of the pupils, you can use graph paper to record the exact location of the various species in the patches of land, and finer or different coloured pieces of string to mark out the smallest squares in the area. This allows you to transfer the location of the plants in the piece of land more accurately. Later on in the classroom, each group explains what they have found in their patch, they can conclude together that there is a great variety of species and they can say if they think the plant community is growing, or not, according to the number of young seedlings they have recorded. They can also write down if the plants grow in the shade of larger ones or not. This gives us an idea of the interrelationships between vegetation and other biotic elements and also with other abiotic and anthropic elements, like a path, the presence of moisture, or more rocks on the ground. They can verify that there is probably more vegetation in wet areas and less in rockier areas, or that the vegetation may be somewhat different in one place or another. In class, they will play to investigate why there are differences between one plot and another.

Who with
Pupils from 8 to 11 years old. Pupils work in groups of no more than 4 pupils. Later in class, the groups present the result of their research and then altogether try to explain the differences between the patches of land.

Length
From 40 to 80 minutes, depending on age, the patch of land being studied and the number of pupils. The activity may be repeated in different vegetation landscapes.

What do you need?
String or wool to mark off the patches of land and a measuring tape. A field notebook to write down and draw the plants they find to remember them. Graph paper if you want to plot the exact location of the plants in the patch of land.

Key concepts

Vegetation is an element which is significant to landscapes due to its interrelationship with other biotic elements (the primary product of the ecosystems and habitat of animal species) and due to its influence on the abiotic elements and processes (water, rocks, climate, erosion...).
In landscape it is interesting to consider the species which make up the different strata of the plant community. It is also interesting to take into account the number of young offshoots of the dominant

species which leads us to an idea of the evolution of the community. The parameters such as the diameter of trunks, the height of trees, the number of rings or the bark, give us an idea of the biomass of the community.

R. Pena Vila

3.4.3 Remains...

An activity to discover the presence of fauna in landscapes. Section: *Investigate*

Objectives
To discover the presence of fauna in landscapes through their remains and various distinguishing signs.

Subjects
Science, History, Geography, Mathematics, Art and Language.

Where
Outside: it could be a landscape near the school or further away, a garden, a wood, a river, the beach or even the city itself. Discuss the results in class and pupils can show the presence of the findings graphically on a map which depicts the landscape studied.

When
Outside: the length of time depends on where the activity takes place. It is always better in the morning and depending on the time of year, spring or autumn, which is when the fauna is more active and you are more likely find remains of their presence. More than one outing can be made to different landscapes during the course or at different times of year.

How
Fauna is a biotic element which is present in most landscapes, but due to its mobility, it is difficult to see. However, it is an element which fascinates children. The biophilia which all human beings have is very apparent in children and is acquired when in contact with the environment. Once the landscape in which it is possible to find the remains of fauna has been chosen, go to the location and split the class into groups with no more than 2 or 3 pupils and send them in different directions within a controllable perimeter. The children should learn how to walk carefully and in silence, looking down at the ground and looking up. They look at the foot and trunks of the trees and at the buildings. In the field notebook they make a note of any kind of living creature that they see: ants and other kinds of insects are the most likely ones. They should count the animal species seen. Note down if they hear the sound of a bird, the flight of a botfly, flies or other flying insects, or reptiles which are hiding or sunbathing. They will find fauna especially close to watercourses. They can also draw an animal, some remains or footprints in their field notebook. It is often not possible to observe animals directly, especially mammals, but we can see their remains and footprints which show where they have been. You may find some excrement, bird feathers; nests which have fallen from a tree, footprints on muddy ground... The children measure and count the footprints. They can draw them too and they can keep some pieces of excrement, hair, moults, feathers... It should all be noted down in the field notebook and a record made of where it was found next to other elements of the landscape: under a tree, on a path, on a rock,

etc.

Later in class, discuss the findings, identify the possible fauna detected, together with its frequency and relate it to the surroundings. Also note on which other elements of the landscape fauna depends, where food and shelter can be found and thus its interdependency on other biotic, abiotic and also anthropic elements. Depending on their age, the pupils will make the search and results more, or less, complex.

Who with
Pupils from 6 to 11 years old. Pupils work individually or altogether. Later in class, they can discuss the group experience altogether.

Length
From 40 to 60 minutes, depending on age and the landscape studied.

What do you need?
A field notebook for each pupil and pencils to write down their observations and to draw them if they wish. Disposable gloves, felt-tip pens and paper to make a mural with the remains they have collected and located in the landscape studied. In class, magnifying glass, pens and paper to make a mural with the collected objects that were located in the landscape analysed.

Key concepts

Fauna is one of the biotic elements which make up a landscape, especially in areas which are little influenced by man, but due to their mobility, it is difficult to observe and quantify them. However, they are totally interrelated with the rest of the elements.

In the study of landscape, the most significant species, the density of population and also the most likely endemism are of particular interest.

Getting to know fauna is an incentive for children to learn how to relate it to other elements, making them more sensitive to and later understand how the destruction or modification of any one element in a landscape affects the others.

M. T. Bovet Pla

3.4.4 Footprints

An activity to discover the presence of human beings in landscape. Section: *Investigate*

Objectives
To investigate and discover the traces that man leaves with his footsteps on landscapes that are neither infrastructure nor big artefacts.

Subjects
History, Geography, Science and Mathematics.

Where
Outside: on country paths or paths in gardens or parks. The final group conclusions are made in class.
When
On a day when it has not rained the previous night. After midday so that human footprints can be seen.

How
The class divides into groups of 4 on a path, in a park or in the chosen area. The groups spread out along the path with each group having a few metres to explore. Initially, and before gathering the information about the footprints on the path, the children walk very carefully along the sides of the path to record the different footprints that are already there and try not to cover them up with their own footprints. In the field notebook write down and draw the footprints: feet wearing sports shoes, men's or ladies' shoes. They analyse if they belong to children or adults. They can also take a note of marks made by bicycle, pushchair, motorbike or car wheels. As good detectives, they will pay close attention to all the details and note them down in their notebook. Once the prints in the ground are recorded, they can then walk on the path and look for other kinds of remains or human waste like tissues, sweet papers, cigarette ends and bits of plastic, etc. Everything should be methodically written down in the notebook. They can also take photos of the clues they find or draw them. The footprints may be measured to compare them later and draw conclusions from them. Later in class, each group presents their results and comments on the coincidences and differences they have found along the path. The frequentation of the path, be it more or less intense, will be noted, as well as the abundance or lack of waste, its likely origin, the impact this waste may have on other elements in the landscape, etc.

Who with
Pupils from 8 to 11 years old. Pupils work in groups of 4.

Length
From 40 to 80 minutes, depending on age and the route. The length also includes the conclusions in class.

What do you need?
Choose a path where you will be sure to find anthropic footprints and which is long enough to accommodate all the groups. A field notebook and pencils to make notes and draw. Plastic bags and gloves to collect samples if necessary. A camera.

Key concepts

The human race interacts as a living being more than the rest of the elements of a landscape, but, thanks to technology, it has artefacts which strongly influence other living beings.

Humans have means of locomotion which are different from legs or with the help of shoes, they are able to move from place to place more comfortably, further away and more quickly. Since the industrial revolution, there are few landscapes which are not characterised by human influence in one way or another.

Besides, the production of artificial elements generates a lot of waste which affects the landscape, not only aesthetically, but also functionally.

M. T. Bovet Pla

3.4.5 Who goes there?

An activity in which you can play with the fluxes that have an effect on the landscapes. Section: *Investigate.*

Objectives
To investigate what kind of fluxes are responsible for the dynamic changes in a landscape.

Subjects
Language, Art, History, Geography and Science.

Where
In the classroom.

When
At any time.

How
It is a card game with cards which the pupils have made themselves. The cards show pairs of landscapes which have undergone changes. For example:

- A field of cereal which is just starting to grow and a field of cereal which already has grain. There will be a change both in colour and height.
- A forest and a burnt forest. Change in colour and shape.
- A small town and a town which has grown. The silhouette of the bell tower or a castle remains... Change in form.
- A deciduous forest in summer and in winter. Change in colour and volume.
- Vines in winter and in summer. Change in colour and volume.
- Fields and fields with a motorway running through it. Change in structure.
- A city and the same city after a volcanic eruption.
- Cultivated fields and abandoned fields with scrubland.
- Beach, marina…

The teacher assesses the complexity of the suggested pairs according to the age and knowledge of the pupils. Each pupil can prepare two pairs. They always have to justify the type, or types, of flux that have caused the dynamic change in the landscapes. There are also cards which show the fluxes (natural and anthropic) which bring about changes in landscape. Shuffle and deal out the pair cards to the players. Put down the first card and look for the person who has the pair. Then put down the card with the flux or energies responsible for the changes. Initially, each player may have two kinds of flux cards. The first person, who puts down the card with the flux responsible for the change in the landscape and justifies it, keeps the pair. The winner is the person who gets most pairs. There is a pile with more flux cards. When a player wins a pair, they can get another flux card. The game will prove that two kinds of flux sometimes intervene and it is all about reflecting on how fluxes inputs modifie landscapes with time or changes them seasonally. The sets of pairs of cards can then be exchanged between the groups.

Who with

Pupils from 8 to 11 years old. Pupils work in groups of 5 or 6 players. But first of all there is something to be done individually although it may be discussed or thought about altogether. It consists of drawing cards. Each pupil can prepare two pairs of cards.

Length

This activity may be prepared in more than one session: draw the cards one day and play with them at some other time. The groups can exchange cards. Each session may take about 30 minutes.

What do you need?

Paper, or preferably card, and pencils or felt-tip pens

Key concepts

The changes in landscape may be seasonal, whereupon the change is not a question of the structure of neither the landscape nor its behaviour, but that it is part of its intrinsic dynamics and the change will repeat itself seasonally every year while the landscape stays the same.

However, the introduction or change of specific fluxes may modify the structure and behaviour of the landscape and we thus find ourselves dealing with a new landscape. It is important that children learn that if the change happens every year, the landscape is the same and that it is fully different when the former landscape does not recover.

R. Pena Vila

3.4.6 What is first

An activity to identify the interrelationship among the abiotic elements. Section: *Investigate*.

Objectives
To investigate the role of the abiotic elements in the functioning of the landscape.

Subjects
Natural Science, History and Geography, Mathematics, Physical Education, Language.

Where
Outside: the school playground or in a course of a stream or river with little water flow. In the classroom different types of stones, gravel and sand can be analysed and comment on the results of the experiment which has been carried out.

When
Outside when it is not excessively cold. Preferably around noon. In the classroom: at any time, although it is not advisable too late in the afternoon because of the excitement involved in the practice.

How
The activity takes place in a stream or river with little water flow but with different slope and winding course. The aim of the experiment is to see how an abiotic element, in this case water, models the landscape. Children are distributed by groups along the shore of the river. At one point, where that river shows some slope on its runway, three elements of the surrounding landscape that can float will be thrown on the river (a flower, a leaf, dry bark...). Timing should be noted, counting the seconds the objects go down the river until they stop on a shore. It is very important to detect when and where they stop. At that point there will surely be already an accumulation of other elements washed away by the river. Pebbles of various forms and origins, and therefore composition and hardness can be found in those pools. Some samples will be collected for analysis in class. It will be discussed on-site, after the experiment, what has happened to the floating objects, which object travelled fastest and if all have been grounded in the same place. The strength of water will be highlighted and its role as shaper of the relief, as well as transporter of seeds and other remains and as a means of giving life to any biotic elements, etc. Thus it will influence the interrelationships with the other elements of the landscape. If it is not possible to locate a river with these characteristics, the experiment can also be done in the courtyard of the school. There, a river with slope can also be built, as a small model, and pour water with a bucket or watering can on it. In this case samples of stones must have been collected previously. Some experiments will be carried out in the classroom with the stones samples collected by groups of 4 or 5 pupils. Each group will have 5 different stones. They will describe the stones, draw them and then check their hardness by scratching with metal or simply with the nail. See also if stones are split by other harder stones. It can be checked it when hitting each other the sound is different according to their nature. The teacher can also put one drop of diluted hydrochloric acid on calcareous stones to check as they react and start disintegrating. Some stones are rolled back and others are split. It has to be noted that the rain or the wind may "erode" (wear) the softer stones with which the landscape will also change. Worn stones can also be found in the city in oldest buildings. The explanations and the total or partial realisation of the experiment will be adapted to the age of the pupils.

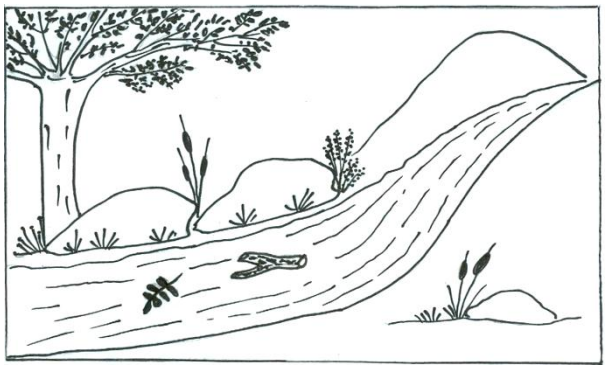
Who with
Pupils from 6 to 11 years old. Pupils work in groups.

Length
From 30 to 80 minutes, depending on age, and if the whole activity takes place in the classroom and/or on the outside.

What do you need?
Location of ideal place for the activity. If it is performed in the courtyard of the school, according to its characteristics, watering can, material to manufacture the river slope. In the classroom, stones of different characteristics. Metal to scratch stones, diluted hydrochloric acid which only the teacher will use.

Key concepts

Water and rocks are the abiotic elements par excellence and they will have a crucial importance in the modelling of the relief. According to the nature of the rock, its resistance, permeability and chemical composition it will generate some types of soil, it will influence the availability of water and therefore the vegetation and finally the forms of relief.
Moreover, water is essential for living beings. It is important its physical state in which is present (snow, ice, water steam, etc.), its quantity, location and quality. Abiotic elements interact intensely with biotic and anthropic elements.



R .Pena Vila

3.4.7 The magic of a landscape

An activity which shows the evolution of landscape. Section: *Investigate.*

Objectives
To investigate how landscape has changed with time and the reason why.

Subjects
History, Geography, Art, Language and Science.

Where
In the classroom and whenever possible and convenient, it can be done in public or private places which have access to documents (photographs, engravings, pictures or old films) about the landscape of the area from years ago. It can also be done during an in situ visit.

When
At any time of day or any time of year.

How
It is about investigating why some elements have disappeared while others have appeared, using an old picture of somewhere in the locality that is familiar to the pupils, for example the main square or the sports centre, etc. Looking for pictures from some decades earlier: grandparents' photos if they still live there, pictures from documentaries, library or town hall archives, or social/commercial

premises... they can see how the landscape in which we live has changed and how, by art of magic, where once carts pulled by horses, mules or donkeys used to be, there are now cars, motorbikes and buses; where there were small fishermen's houses by the beach, there are now large hotels which are more than ten floors high or where lush orchards were set up near the town, today there is a big shopping centre. And so landscape is not static, but dynamic and changes with time, and if the additional anthropic energy is strong, the change is surprising. Once a few old photos have been found, the pupils try to find the same site and compare it. A photo may be taken of the landscape which is now found in the same place that is framed by the old picture. With plastic film (acetate) or greaseproof paper, trace the silhouette of the elements that have disappeared from the old photo and retrace the new elements in the present day photo. At the end, compare where there has been more magic. In some places, the present day landscape has nothing to do with the one from years before: this is the case with the occupation of cultivated areas in the city. In others, buildings and transport may have been changed, traffic lights and roundabouts appear, etc., but the outline of the streets and squares stays the same. Finally, pupils can prepare a mural or a computer presentation, in which they show the changes that the landscape of the town has undergone in the last few decades. In this activity the final discussion is important as is spotting the changes and which areas have been most affected and to express opinions about the evolution of the landscape and about which aspects of their landscape they would not like to change. They can also guess what should be done to achieve this.

Who with

Pupils from 8 to 11 years old. Pupils work individually but also as a group. The final comments are made with the whole group altogether.

Length

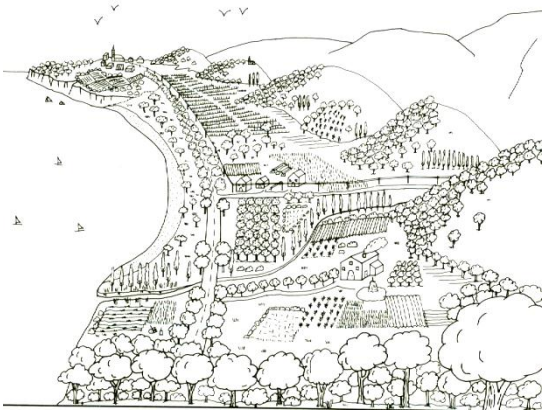
From 30 to 60 minutes, depending on age and the research work done beforehand.

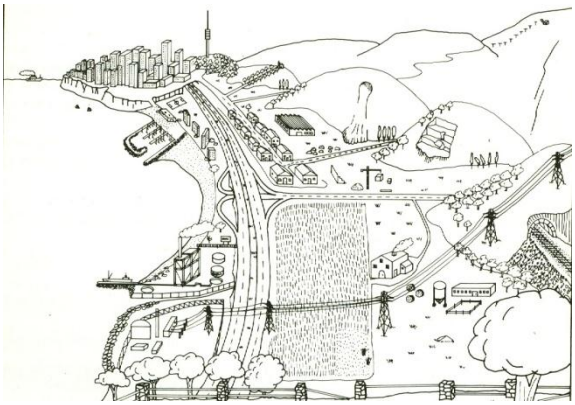
What do you need?

Old pictures of the town, literary descriptions, news from old newspapers in which reference is made to an element of the landscape which has disappeared... Plastic film (acetate) or greaseproof paper and pencils or felt-tip pens. Enough paper for a mural or computers.

Key concepts

Landscape, as the system that it is, is not static but dynamic and therefore varies in time based on natural evolution itself and on socioeconomic aspects liable to modify it.
Anthropic energies tend to provoke relatively quick changes and for this reason, they can be found more easily in urban landscapes.
Knowing how a landscape may be modified, and reflecting on what changes we would or would not like to take place in the landscapes closest to us, are steps towards the concept of prognosis and synteresis or prevention.





3.5 Act activities

The activities in this block summarise all the methodological phases of the study of a landscape, focussing in particular on prediction and also on prevention. They are mostly directed at pupils in the latter stages of primary.

- Take care of your landscape.
- You decide.
- What do you think would happen if...?

3.5.1 Contents, objectives and didactic orientations

Contents

- Appreciation and evaluation as natural resources of the elements that make up the structure of the geoecological landscape (relief, lithology, climate, vegetation...).
- Categorisation of the elements that make up the socio-economic structure of the landscape (economic activities, community services, infrastructure, housing...).
- Incidence of the interrelations between geoecological and socioeconomic structure, in relation to the forms of occupation of the territory.
- Assessment of the spatial and temporal dimension of the human activities in the transformation of the landscape.
- Recognition and assessment of anthropogenic impacts on the landscape (visual pollution, air pollution, depletion of natural resources).
- Consideration of technological progress to improve the quality of life in human societies and the protection of the natural environment.

Objectives

- Understand the importance and complexity of the management and planning of the landscape.
- Distinguish the interrelationships involved in the process of occupation of the territory.
- Predict and detect the evolution of humanised landscapes at different temporal and spatial scales.
- Encourage the approach of questions, problems and assumptions about different types of interventions in the landscape.
- Use different types of spatial representations for reading, interpretation and localisation of human activities and environmental conditions.
- Enhance the realistic and creative personal responses to problems of territorial planning.

Didactic orientations

Activities propose an approach to the management and planning of landscape. Although this is a committed and complex field for primary school pupils, it is interesting to start them playfully and, taking advantage of the motivation for the game. Channel the pupils' innate expressiveness as well as their creative potential. In any case, it is recommended:

- Raising activities after having worked the contents of the previous sections, in a way that pupils have already assimilated a minimum of ideas about the relationships between the various elements of the landscape, the role of energy, changes in the landscape and its evolution.
- The development of activities requires the application of knowledge, so it is important to consider them as collective games so that they are more profitable. Always taking into account the participation of everybody and that each one build their own opinion.
- Given that the games are simulation, which bring us closer to reality, due to their likelihood, it also must be ensured that pupils see their usefulness and understand that in the real landscape is not so easy to do and undo. In this sense, it is convenient to complete with references to actual, upcoming situations, actions or projects.

– The role of the teachers as conductors of the games and debates is essential since their performance will be decisive to adapt their possibilities to the level of their pupils, guide reflections and strategically introducing references to real cases.

3.5.2 Take care of your landscape

An activity which simulates the grading of a landscape. Section: *Act*.

Objectives
To understand the complexity of the performance of a landscape.

Subjects
Natural Science, History and Geography, Mathematics, Art, Language

Where
In the classroom or another suitable place.

When
At any time of day and preferably at the end of the course as an overview activity.

How
It involves play-building a landscape which provides a good quality of life and which is therefore sustainable. That is, the children have to think about the actions they want to carry out on the landscape, within the capability and understanding of the pupils. In the first stages of primary school, the pupils can probably make a mural in which they put the elements they think should be in their landscape and which cover their needs: school, park, shops, houses... they can draw them as they prefer. At this stage, it is enough for them to identify what they need in their landscape and how they believe these elements should be. In the final stages of primary, they can build a simple model in which there is a town. It can be their town or an imaginary one. They can invent its name, the location, the landscapes around it, the names of the woods, neighbourhoods, etc. Its location should be possible and feasible, predicting its likely growth, providing services and resources (market-gardens, fields of crops, animal rearing, mining of dry commodities or other mined resources, fishing, etc.) as well as taking into account communication infrastructures. The model itself can be made defining abiotic elements (relief, rivers, coast...), and then the other elements (abiotic and anthropic) can be prepared, or they can use some elements already made for other games. In this activity it is important to reason out the presence and location of the elements, take into account their interaction and consider their sustainability with time, always on the level of reasoning appropriate for these ages. Once the model is made and planned, the landscape can become a final game in which other pupils of the same level, or stage, come and see the model and raise doubts about it. The class have to defend their grading and either justify it or accept they have made a planning error. In the last stage, if suitable computer software is available, the planning may be done virtually.

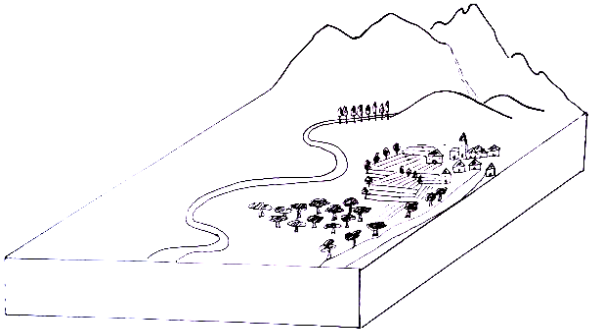
Who with
Pupils from 6 to 11 years old. Pupils work individually and in groups. Individual work can be done when making the model, mural or computer game. Later on, group discussion is important.

Length
From 30 to 60 minutes, depending on age. You can have various sessions over a period of time.

What do you need?
Paper, scissors, glue, plasticine, cork and any material suitable for making abiotic, biotic and anthropic elements to reproduce a landscape (trees, rocks, houses, fields ...) or ready-made elements more or less on the same scale as the model. A support for the three-dimensional model, computer support if the presentation is virtual, or a wall if the picture is two-dimensional.

Key concepts

Landscape is the result of the interaction of different elements that make it up and of the energies that affect it, as well as society that considers it and which it is also part of.
Different cultures may have their very own effect on landscape and this gives rise to the diversity of landscapes on our planet.
Nowadays, anthropic actions, with capacity for change, may have great impact thanks to technology. Hence they should be carried out with precaution knowing that we only have one Earth for everyone.
The planning and good management of landscape is fundamental to attain a good quality of life for everyone.



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3.5.3 You decide

An activity which presents the difficulty of planning a landscape. Section: *Act.*

Objectives
To learn how to make decisions about possible anthropic actions on the landscape.

Subjects
History, Geography, Art, Language, Mathematics and Science.

Where
In the classroom.

When
At any time of day and preferably when the children are not too tired, bearing in mind that it is an activity which requires concentration and thought. It is also better to do it once they have already completed some activities which enable them to know the landscape.

How
This activity requires a certain level of conscious reflection and has data to help them make the right decision. Suggest a series of anthropic actions in the town where the pupils live so that they are more involved, and present some possibilities for each one. They should decide on one option, arguing why they have rejected the others. For example, a hospital is to be built and three possible locations are presented:

- a garden with old trees;
- a field of under-productive crops;
- an abandoned old factory located in the town centre itself.

They think about the pros and cons in each case. They can act it out and defend or reject the proposals. For example, a group of ecologists rejects building in the garden. A society of friends of industrial heritage do not want the old factory to be used as it will destroy their heritage. The association of smallholders defends the fact that the fields, as they are near the town, should be left alone so that the arable area is not lost. The possibilities for proposals are numerous: in each case the teacher makes an assessment depending on the level of interest, or because they have worked on a topic related to the problem presented, which will then be the action, or actions, proposed. It may range from the installation of a commercial centre, the layout of a big motorway, the demolition of some old buildings to make a square, to a large car park at the entrance to the town. Whatever the case, the important thing is to make sure that the design is not too simple and that there are points of interest in the town, but the final decision should take into account which proposal improved quality of life in general, seeking to make sure that the impact on the landscape does not ruin it or change the interaction between the elements too much. The pupils work in groups of 4 or 5 and have access to an ortophoto map or aerial photographs and plans of the town and the areas where the proposed action/s is/are located. During the process, the children can find information on the internet or from local entities to get data which will help them make the right decision.

Who with

Pupils from 9 to 11 years old. Pupils work in groups of a maximum of 4. The follow-up discussion should take place with the whole class.

Length

From 30 to 60 minutes, depending on age and the problems raised.

What do you need?

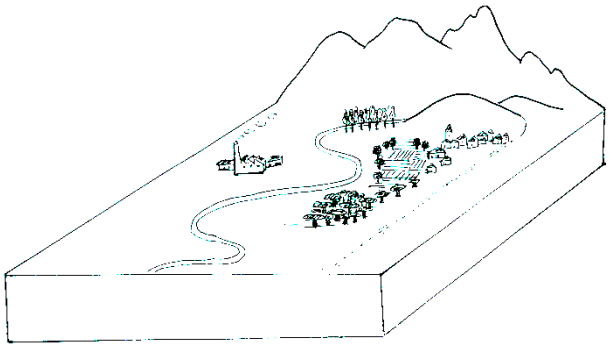
Information about the landscape in which problems are raised. A photograph or an orthophoto map of the landscape in question.

Key concepts

The prognosis and prevention or synteresis of the landscape allow us to foresee the possibility of specific effects on certain anthropic actions. They are an essential stage in the protection, planning and management of the landscape.

If there is a degradation or change in the landscape, the prognosis and synteresis give us an idea of which action will be the most appropriate to avoid or reduce the effect on the landscape

The different social and cultural interests of a town and the diverse possibilities for change and effect make it difficult to take decisions about the actions on a landscape. Whatever the case, an improvement in quality of life, without impairing the value of the landscape, should always prevail.



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3.5.4 What do you think would happen if...?

An activity which shows the impact of the extraordinary input of energies on landscapes and their consequences. Section: *Act.*

Objectives
To learn how to predict the changes that will take place in a landscape beginning with the extraordinary contributions of energy to the landscapes.

Subjects
History, Geography, Art, Language and Science.

Where
In the classroom.

When
At any time of day, preferably after some activities from the first blocks have been completed so that the children have acquired the knowledge necessary to be able to make a prediction.

How
It involves making predictions about change in a specific landscape beginning with certain extraordinary inputs of energy. The teacher will present, at random, a series of effects on a landscape, preferably their own. So that it is random, you can prepare a spinning-top with five sides. Write one kind of effect on each side. The children are put into groups of 4 and they can choose the effects or else the teacher suggests them. They can be different or the same for each group or some can be repeated. It could be interesting to propose possible effects in accordance with the landscape, or one they have recently experienced. They may be feasible or unpredictable. Feasible: a stream in an area with a river, a tsunami in a coastal area, drought, the construction of a new neighbourhood, a housing development, a plague of insects, pollution on the ground or in water, a motorway which crosses a city... They write an effect on each side of the spinning-top, they spin the top and from the effect it lands on, they begin to prepare the prediction. The pupils should think about what would happen to their landscape and what they could do to avoid more damage and redirect the process. They can work on just one or various effects, but always at random. Each group presents their effect and prediction, and at the same time, they can also suggest a way of prevention. The other groups also take part contributing new ideas. And at the end they will reach the conclusion that predictions are important, as is the difficulty that they involve together with the need to be able to foresee.

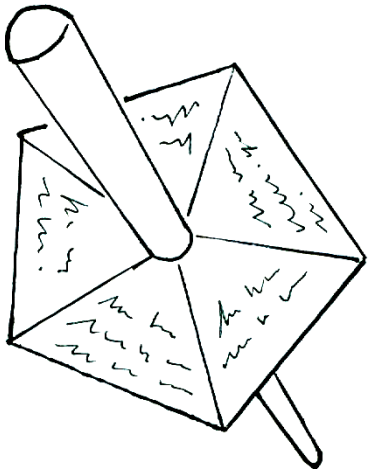
Who with
Pupils from 9 to 11 years old.
Pupils work in groups of 3 or 4. The final discussion will be with the whole class, after each group has explained their prediction.

Length
From 30 to 60 minutes, depending on whether it includes making the spinning-top.

What do you need?
Material to make the spinning-top of effects (wood, paper or stiff plastic). Felt-tip pens. Paper to write down the predictions.

Key concepts

Landscape develops with time depending on the different combinations between natural and anthropic fluxes that may act simultaneously or independently. Hence there are many possibilities and orientations for change.
Starting with the analysis and diagnosis of the landscape, the prognosis involves predicting the changes which will take place in a landscape depending on the extra contributions of fluxes.
Knowing about the changes allows us to orientate anthropic actions, both now and in the future.



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3.6 Report activities

In this last block there are activities which consist of transmitting and exchanging experiences they have had throughout the methodological phases of the study of landscape from perception, analysis and classification to diagnosis, prediction and synteresis or prevention.

- My landscape is like this.
- Routes.
- Our landscape.
- My landscape stickers.

3.6.1 Contents, objectives and didactic orientations

Contents

- Use of the written and graphic-plastic expression in the description of the landscape.
- Elaboration of texts of diverse typology: stories, descriptions, announcements, indications, diagrams...
- Taking and analysing representative images of the landscape by different techniques (drawing, photography...).
- Definition of identifiers and relevant values of local landscape.
- Prospection of opinion of the population in relation to the landscape as cultural heritage.
- Spatial representation of itineraries and landscape routes.
- Use of new technologies of information and communication for the dissemination on-line and for the exchanges.

Objectives
- Develop communicative competence for the significant understanding of the knowledge acquired over the landscape.
- Enhance oral and written interaction as well as the use of the audiovisual language for the exchange of information on the landscape.
- Recognise and appreciate the values of the local landscape as referents of the own identity.
- Recognise the role of the landscape in various traditional cultural and artistic manifestations.
- Promote the landscape as a source of inspiration in the development of artistic creativity.
- Promote the exchange of knowledge and experiences related to landscape.
- Reveal the interest in knowing other landscapes of Europe and the world as well as different ways of life.

Didactic orientations
- Informing others about local landscapes will be the motivation for pupils, facilitating teachers to include different contents related to local heritage. Because of the many possibilities that this section offers, we recommend:
- Check which landscape values the pupils have integrated in relation to local places they propose to publicise. The conception of landscape as heritage can be worked on in primary education, distinguishing what we like and what identifies us.
- Work information gathered among the population to incorporate it into consistency with the knowledge of the pupils. Teachers should guide and if necessary help to select the really significant and clearly related to the landscape, which is capable of disclosing information.
- Link the communication and dissemination activities on the landscape to school projects that facilitate their realisation and public projection, involving wide sectors of teachers and also of the educational community. For example during cultural weeks, school open days, visits from pupils of other schools, local festivities...
- Promote the use of new technologies, according to the pupils' domain of interest and the objectives of the report activities. It is important to balance the combination of communication tools and techniques to enrich the exchange so that the pupils are applying them according to specific purposes.

3.6.2 My landscape is like this

An activity which maximises communication about landscape. Section: *Report*

Objectives
To encourage communication and information exchange about local and European landscapes with the aim of making pupils more aware of their landscapes so that they acquire good personal attitudes and social responsibility.

Subjects
History, Geography, Art and Science.

Where
In the classroom.

When
At any time of day and in various sessions.

How
Once information about nearby landscapes has been gathered, and after the perception, classification, investigation and action activities, it is important that the children learn how to impart this information. It is also important that the information reaches other pupils in the town, or other groups,

to maintain a flow of communication about the landscapes, thus strengthening an increasing sensitivity towards them. They can prepare an exhibition of murals showing the features of the landscapes, photographs or even videos, paintings, poems, written descriptions, songs or music about the landscapes and even do plays or puppet shows, etc. In the first stages of primary, the exhibition could be based more on perceptive or classification and investigation topics. They can focus on the colour and shapes of the landscape, its sounds, elements and even fluxes. They can make murals or use more 3-dimensional materials. At higher levels, as well as more perceptive and descriptive exploration, you can move onto topics which research the landscape and which especially focus on prediction and prevention although they are by way of a first step in these concepts. Through the internet, you can organise exchanges of activities about landscape and even videos and video conferences. The pupils can compare landscapes in different parts of Europe, looking at similarities and differences. For example, landscapes with abiotic, biotic or anthropic dominance. Compare proposals for action on the landscapes, etc. Finally, the exchange will bring faraway landscapes closer to us, showing that they may have the same problems as our landscapes albeit with the individual cultural mark of each country or region.

Who with

Pupils from 6 to 11 years old. Pupils work individually or in a group, depending on the type of activity planned. It can be introduced to the whole of primary at your school. After this, exchange with other local schools or other parts of Europe.

Length

Various sessions of different lengths, depending on the activity planned and the age of the pupils.

What do you need?

It depends on the activity planned, for example drawing or art materials, musical instruments, photographs, maps, videos, computer programs...

Key concepts

The aims of landscape education are to awaken interest in and foster positive attitudes towards the landscapes in our environment as well as to generate responsibility and a sense of citizenship in children and the entire population.

Communication, exposure and exchange of knowledge about landscapes will not only include the most exceptional ones, but also the nearest, most common, being rundown or not, as well.

Getting to know our landscapes and being able to compare them with others helps us to acquire a certain sensitivity towards them all, as well as responsibility when planning and managing them.

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3.6.3 Routes

A synthesis activity which highlights the most characteristic landscapes in our environment. Section: *Report.*

Objectives
To recognise and select our local landscapes including the most common ones.

Subjects
Language, History, Geography, Art and Science.

Where
In the classroom and outside.

When
At any time of day in the classroom. This activity is done after completing a number of other activities aimed at recognising the landscapes in our environment. Later, the cross-check of the designed route will be completed in situ outside.

How
Once you know the landscape in which you live, you can make one or two tourist routes which focus on introducing your landscape as a whole, from the most symbolic aspects to the most ordinary or even rundown ones. You can make general routes or more specialised ones:
- Living our landscape (general route which shows the environment);
- The landscape must improve (a route through the most rundown areas);
- Favourite landscapes (the most symbolic landscapes).

The pupils, according to their age and knowledge, design routes, calculating the time, stops and explanations that will refer to the characteristics of the chosen landscape (elements, fluxes that sustain it and more characteristic elements). They can prepare a leaflet, a guide or a virtual route on the web which they can then present to the town council or the local tourist office. They can exchange leaflets with other schools in the same town or other towns, and follow the virtual routes that other groups propose or a real route if feasible. In this last case, pupils act as guides at the different points along the route. In class, they can work in groups of 4 or 5 and they prepare their own route. Then they pool all their routes and choose either one, all of them, or they put all results together to make a global one. The teacher decides on the most appropriate procedure in each case.

Who with
Pupils from 9 to 11 years old. Pupils work in groups of 4 or 5. Then they make a presentation to the whole class and work altogether on a final route if this is felt to be suitable.

Length
From 30 to 60 minutes. Various sessions depending on the method chosen.

What do you need?
On the route: a plan of the itinerary with the staging points well marked. A plan or map of the town in which they are going to set the routes. Plastic film (acetate) or transparent paper, felt-tip pens, pencils. Photographs. Computer equipment to make virtual routes.

Key concepts

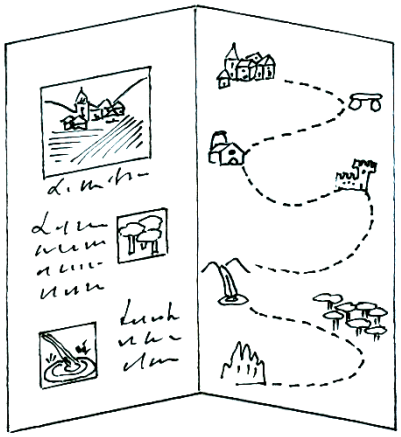
Landscape is not only part of a unique or unusual territory, but also includes natural, rural, suburban and urban areas not just the respectable ones but also the most rundown. In addition, the most ordinary areas are landscape and may not stand out just because they are the space in which we live.

Getting to know the landscape around us makes us go into its character in more depth and thus be

able to explain it better.

The use of new information and communication technology, combined with the direct contact required to physically follow a route, opens a whole range of communicative possibilities to explain our landscapes.

At the same time, it makes it possible for us to get to know other nearer or more distant landscapes with, at times, similar characteristics and some of the same conservation, planning or management problems.



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3.6.4 Our landscape

An activity which describes our local landscape, highlighting its values which come from the exchange of the opinion of local people. Section: *Report.*

Objectives
To assess and introduce the architectural and local folkloric heritage, as well as the natural heritage closest to the town.

Subjects
Language, History, Geography, Art, Mathematics and Science.

Where
In the classroom, in the street, at home, in local and administrative establishments.

When
At any time of day in the classroom over a number of sessions. At convenient times in other places. Sessions during a period in the school calendar which the teachers decide is the most suitable in accordance with the course programme.

How
This activity also involves local people in that it requires their opinion about hereditary elements they consider most significant. Pupils can make a simple survey for older pupils, teachers, relatives and neighbours, including the parents of pupils from the school. First of all, the pupils decide altogether which questions to put into the survey, with the guidance of the teacher, depending on the age and ability of the pupils. They prepare the survey with text, pictures, photographs, drawing, poetry... The questions may be something like this:

- Which area or neighbourhood do you like best?
- Which building or monument do you think is the most important?

- Which square or park do you prefer?
- Would you restore any monument or building?
- Which area or neighbourhood do you like least?
- Do you know any typical song, local dish or dessert, a dance, legend...?

With the teacher's help, they can go to a public or private establishment which can tell them about the hereditary values of the town. Once they have the surveys, each pupil should bring back 3 to 5 completed ones to class. They then transfer the answers from the surveys and explain the results. The pupils will then visit the things that are marked most often. They draw, describe and take photos of them so that they can then upload the information onto the school website or raise people's awareness of it through other telematic or media channels (school or local radio, educational or local magazines...). In the case of songs, music, legends, dances or gastronomy, they learn them and perform them in order to spread them to others too. If other schools in other towns near or far carry out this activity too, it would be very interesting to exchange results and even organise a virtual or face-to-face meeting depending on distance and means. In this activity, it may be interesting to involve local public establishments to make things easier and even broadcast the information.

Who with
Pupils from 6 to 11 years old. Pupils work individually. The final results altogether.

Length
From 30 to 60 minutes, depending on age. Various sessions which the teachers decide on.

What do you need?
A questionnaire with questions or pictures. Pencil and paper to write down the answers. A town map to locate the highlighted elements. In the classroom: crayons and a wall, or computer equipment if this is going to be used to present the results.
Other materials depending on how ambitious you want the activity to be (prepare gastronomic dishes, reproduce songs or dances...).

Key concepts

Landscape is the result of the interaction between all its elements, and in landscapes with anthropic dominance, cultural heritage is the mark of the evolution of this landscape, closely linked to the history of the adjustment of man to one territory. Landscape is the cultural projection of society in a particular space.
Cultural heritage features some tangible elements (buildings, monuments...) and other intangible or tangible assets (legends, songs, local festivals, gastronomy...) and at the same time are parts of the landscapes, thus making them unique.
European landscapes have exhibited a rich and diverse cultural heritage ever since the human occupation of space.
New information and communication technology facilitate their diffusion and transfer creating closer ties and links between the European populations.

3.6.5 My landscape stickers

An activity which collects landscapes, creating a personal sticker (photograph) album resulting from exchanging (pictures) with other pupils. Section: *Report*.

Objectives
To know, compare and exchange landscapes.

Subjects
Language, History and Geography, Art and Science.

Where
In the classroom, at home, in the playground, on the internet.

When
At any time in the classroom over a number of sessions. In other places, when the occasion arises.

How
This activity requires the collaboration of friends, acquaintances, relative, etc. First of all the pupils prepare an album, which may be physical or virtual. Each pupil can personalise it and may decide the order of classification and the cause. They may classify landscape, by the colours, shapes, function (urban, rural, natural, suburban, etc.), by country, province, distance or proximity, culture... The teacher may orientate it according to the subject they wish to reinforce, the age and knowledge of the pupils, the time available, if they want a presentation or exhibition of the albums, etc. The pupils have a number of sheets of paper for their album and some stickers (photographs or pictures) of landscapes for each sheet which they complete through the exchange. Each landscape has some information referring to place, time of year, features of the landscape (elements and fluxes) and who has provided the landscape sticker. They can show some they have got themselves and the others they have got in the exchange.

Who with
Pupils from 8 to 11 years old. Pupils work individually, but they are in constant contact with other pupils for the exchange. The final results can be presented and discussed altogether.

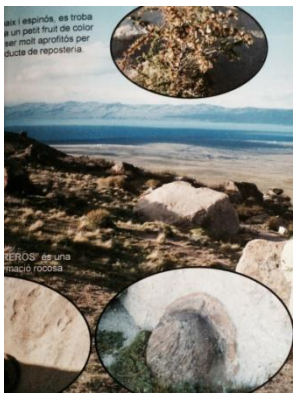
Length
The activity may last the whole year, or one term, depending on the teachers' aims. It can be done by one teacher or year group or in an interdisciplinary way for the whole school. It will require some general sessions to carry out the activity and some follow-up sessions.

What do you need?
Materials to prepare a physical album or software to create virtual albums. A collection of pictures of landscapes with their comments.

Key concepts

The diversity of landscapes, both near and far, and the differences and similarities between landscapes located in different geographical places, are characteristic of the complexity of the landscape.
Collecting different landscapes shows, through play, the scenic richness of our environment and also that of Europe as well as of other parts of the world.
Being able to acquire landscapes from other places facilitates exchange and communication between pupils who live in other physical and culturally different landscapes.





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4 Glossary

Abiotic elements
They are natural elements of the landscape which are inert, without life. The relief is also considered an abiotic element.

Analysis
It is the separation of a complex whole, like landscape, into its various parts. Analysis is a process. It is a method of studying the nature of landscape by separating it into its constituent elements or determining its essential features and their relations. It is the first phase of the study of landscapes.

Anthropocene
It is a Geological era that began approximately 8000 years ago with the emergence and growth of agriculture. Some scientists replace the Holocene (the current time of the Quaternary period in Earth history) by the term Anthropocene era because of the considerable impact that human activities have had on the planet. The term Anthropocene was coined in 2000 by the winner of the Nobel Prize for Chemistry Paul Crutzen, who believes the influence of human behaviour on the Earth in recent centuries has been significant.

Anthropic or anthropogenic elements
They are the elements having an origin in human activity. They can be built artefacts and infrastructures: buildings, dams, net of communications, airports, as well as those related with mining, agriculture, etc.

Anthropic fluxes
They are those caused by human action. They can be distinguished from manual work or mechanical work and the energy made from production processes, as well as resulting from the exploitation of natural resources (hydroelectric power, natural gas, oil, biomass...). The economy and communication are types of fluxes that also influence the dynamics of the landscapes.

Biotic elements
They are natural elements relating to living organisms which are born, grow and die. Vegetation is considered the most biotic element in the study of landscape. Fauna is also taken into account as it indicates the quality of its habitat.

Diagnosis
It is a definition of the state of the landscape. It describes its structure and functioning according to its elements and fluxes. This methodological phase is established with the interpretation of the results of the analysis.

Diagnosis of potentiality
It defines the suitability or capacity of the landscape to host certain possible anthropic activities. It is also the possibility to offer different uses than the present one, maintaining the landscape sustainability.

Descriptive diagnosis
It details the present features of the landscape. It offers information about landscapes from a specific territory defining their structure and present dynamics.

Dynamics
It deals with the motion and equilibrium of systems under the action of forces that produce or change such motion, usually from outside the system.

Environmental impact
The impression, particularly the undesirable or unpleasant impression, made on an environment by the introduction of something alien to it.

Environmental assessment
It is an analysis of the likely impacts that a project may have on ecosystems and human health. The main impacts to be analysed are: soil contamination impacts, air pollution impacts, noise health effects, ecology impacts including endangered species assessment, geological hazards assessment and water pollution impacts.

European Landscape Convention
Convention adopted under the auspices of the Council of Europe (ETS n° 176) promoting the protection, management and planning of European landscapes and organises European co-operation on landscape issues.

Formal education
Education or training received from institutions like schools, colleges, or universities regulated by the Administration.

Geosystem
It is the theoretical model of landscape, an open system constituted by the abiotic, biotic and anthropic subsystems. It deals with the interrelations among the elements and fluxes. The elements that structure the geosystem are interrelated and modifying one of them affects the rest, and therefore the system. The geosystem evolves over time, responding to the entry, increase or liberation of matter and energy.

Habitat
A place that provides a particular set of environmental conditions for the organism or organisms that live there.

Heritage
It is the evidence of the past, such as historical sites, buildings, and the unspoilt natural environment, considered collectively as the inheritance of present-day society. It is also anything that has been transmitted by tradition. The heritage is understood in the broader sense of "any material or non-material vestige of human endeavour and any trace of human activities in the natural environment".

Holistic techniques
They are techniques that face the study of landscape as a whole. The whole being greater than the sum of its parts.

ICT
Abbreviation of Information and Communications Technology.

Infrastructure
The basic structure, the framework, the system which supports the operation of an organization (e.g. the power and water supplies, the transport and communications facilities, the drainage system), which makes human activities or/and economic development possible.

Interdisciplinary
Adjective that means combining or involving two or more academic disciplines or fields of study, professions, technologies, departments, or the like. Interdisciplinarity means considering a topic as the landscape from different disciplines.

Landscape
According to the European Landscape Convention, "landscape means an area, as perceived by people,

whose character is the result of the action and interaction of natural and/or human factors" In other words "an area of the Earth's surface characterised by a certain type of scenery, comprising a distinct association of physical and/or cultural forms.

Landscape classification
Landscapes can be classified under many criteria. Different ways to classify them like: size, functionality, biomes, etc. Another way to classify is according to the dominance of its elements and fluxes.

Landscape grammar
It is a process that consists of learning to read or interpret the landscape, to express, understand and communicate the knowledge on landscape. This process can start during childhood and continue in older stages.

Landscape management
Landscape management can be defined as the process of managing the use and development of land resources. Landscape management means action, from a perspective of sustainable development, to ensure the regular upkeep of a landscape, so as to guide and harmonise changes which are brought about by social, economic and environmental processes.

Landscape planning
Landscape planning is an activity involving both public and private professionals, aimed at the creation, conservation, enhancement and restoration of landscapes at various scales. Landscape planning means strong forward-looking action to enhance, restore or create landscapes in a sustainable way.

Landscape protection
The European Landscape Convention indicates that: "Landscape protection means actions to conserve and maintain the significant or characteristic features of a landscape, justified by its heritage value derived from its natural configuration and/or from human activity.

Landscape structure
Set of elements, fluxes and interrelations whose specific disposition constitutes the landscape.

Natural fluxes
They are those whose source is natural. The most important natural flux is received from the sun, which is assimilated through the photosynthetic process in the vegetation. This solar radiation also influences directly the climate processes. Other natural fluxes are also considered: the gravitational (responsible mainly for erosive processes) and the energy coming from inside of the Earth which is manifest in volcanism and earthquakes leading to new geomorphologic formations.

Natural landscape
The landscape as unaffected or little affected by human activities. However, human activities have been so widely spread that only a few "real natural landscapes" still exist.

Open system
Systems in which occurs an external input stimuli of energy and/or matter that keeps them functioning. They are separated from its surroundings by a boundary that admits a transfer of matter or energy across it.

Perception
It is a function involving the brain that allows people to receive, process and interpret the information that comes from the outside through the senses.

Periurban areas
They are areas that are in some form of transition from strictly rural to urban. These areas often form the immediate urban-rural interface and may eventually evolve into being fully urban.

Prevention
It is the action of anticipating or stopping an event or practice not desirable in the landscape.

Prognosis
It is a forecast or prognostication. This methodological phase presents the evolution and development of the landscape in accordance with its dynamic state and is directly related to the diagnosis since it provides the conditions of departure of the evolution of the landscape. The forecast focuses on the study of the processes and conditions of the changes that are take place in the landscape, allowing us to develop alternatives to evolution laid down according to the structure and dynamics of the landscape.

Rural areas
Rural areas are sparsely settled areas without significant large city or townscapes. They refer to certain forms of landscapes and land uses where agriculture and forest areas play an important part.

Scale
It is the relationship between distance on a map and on the earth's surface. Depending on the size of the landscapes to consider (from a few m^2 to several km^2), different scales may be used and the characteristics of their study can be very different.

Sustainability
This term is considered in Environmental Science. It is the use of resources in a way that they can be kept over time. It also means the quality of not being harmful to the environment or to natural resources.

Soundscape
The sound components of an environment. They may be different if they come from urban, rural or natural landscapes.

Synteresis
It is a preventive or preservative set of measures to enhance the sustainability of a landscape. At this stage, in accordance with the established prognosis, it can be defined which management of landscape apply to avoid undesired potential impacts in the future.

Synthesis
The combining of the constituent elements of separate material, elements or abstract entities into a single or unified entity (opposed to analysis).

System
It is a set of units in mutual interrelationships. Von Bertalanffy presented the general systems theory in the decade of the thirties of the twentieth century.

Urban areas
An area which physically forms part of a town or city and it is characterised by an important share of built-up surfaces, high density of population and employment and significant amounts of transport and other infrastructure (as opposed to rural areas). Urban areas may also comprise non built-up, green areas generally used for recreational purposes by urban dwellers.

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