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Geosites as Educational Key-Elements For Sustainability: The UNESCO Global Geoparks Model

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Abstract: Geosites, or commonly called places of geological interest, have gained notoriety nowadays, positioning themselves as one of the most important resources in educational strategies for earth and environmental sciences. The possibility of observing the results of the different geological processes, morphologies, or minerals in situ helps us to understand how our planet works and how we, as a society, have taken advantage of its elements to progress in all areas of daily life. Their particularity and, above all, its variability, make them unique places that range from outcrops to mining complexes or spectacular viewpoints where we can learn about the message that the landscape conveys. For this reason, geosites are an outstanding opportunity to learn about geosciences, but also about history, traditions and everything related to the territory in which they are located. The UNESCO Global Geoparks (UGGps) are an international example of how to craft a sustainable development strategy focused on the educational potential of geosites. Complementing them with interpretation centers, information panels, QR codes and specialized guides, these territories have come to be considered as benchmarks within the so-called sustainable tourism, transforming the land into authentic open-air educational museums. Following a personal style and defending the appellation of origin, the UGGps create an exceptional model based on educational foundations that aims to bring the territory closer to the greatest number of people possible.

Keywords: Education; Geoparks; Sustainability; Heritage; Geosites

Citation: Lastname, F.; Lastname, F.; Lastname, F. Title. *Proceedings* **2022**, *69*, x. https://doi.org/10.3390/xxxxx

Academic Editor: Firstname Lastname

Published: date

Figure. 1. Set of some of the most emblematic Geosites of the UNESCO World Geoparks. Starting from left to right, we find the Cabañas Castle in the Villuercas-Ibores-Jara Geopark, the K/Pg limit in the Basque Coast Geopark, the Portela da Anta in the Arouca Geopark, the Zêzere glacier valley in the Geopark of the Serra de Estrela and the Golfo (Charco de los Clicos) in the Geopark of Lanzarote and Chinijo Archipelago.

A "Geosite" is a specific area or a particular place that presents a relevant geological heritage, allowing us to understand, from one or several perspectives, the history of the earth (García Cortés and Carcavilla, 2013).

During the learning process of geology and all its derived disciplines, field work and georoutes are a vital resource to show the results of geological processes and teach how to differentiate each one of them according to the interpretation of the landscape. It is clear that geological sites have turned out to be true open-air laboratories in which to learn about the past, present and future of our planet. Although its main interest is always related to geosciences and its key points are based on their own elements such as rocks, fossils, structures or morphologies, the truth is that there is an undeniable confluence with the surrounding society and what we can learn about it (Martínez Martín and Mariñoso, 2021).

For this reason, the UNESCO Global Geoparks (UGGps) have used geosites as educational axis to transmit everything that surrounds each territory. Its model allows learning, in a sustainable way and thanks to the geology that we find in each geosite, about traditions, history and even gastronomy (Henriques and Sá, 2012).

To complement these places and create a unique educational experience, the UGGps make use of explanatory panels, brochures, interpretation centers and even new technologies, offering a large amount of online content such as audiovisuals, information documents or QR codes that we can use in the own geosites to learn more about them

Figure. 3. In this image, we can find all the 17 Sustainable Development Goals (SDGs) presented in the UNESCO 2030 Agenda. Every UGGps action, plan or activity is focused on education, heritage protection, research, scientific disclosure and the relation that exists between nature, culture and society. This explains why Geoparks contributionsto SGGs are not only directed to natural education. They work everyday to get quality, accesible and sustainable education for all. Even with the particularities and different ways of working of each UGGps, they represent thesame idea, and they adapt themselves to their own natural heritage to offer the best educational environment.

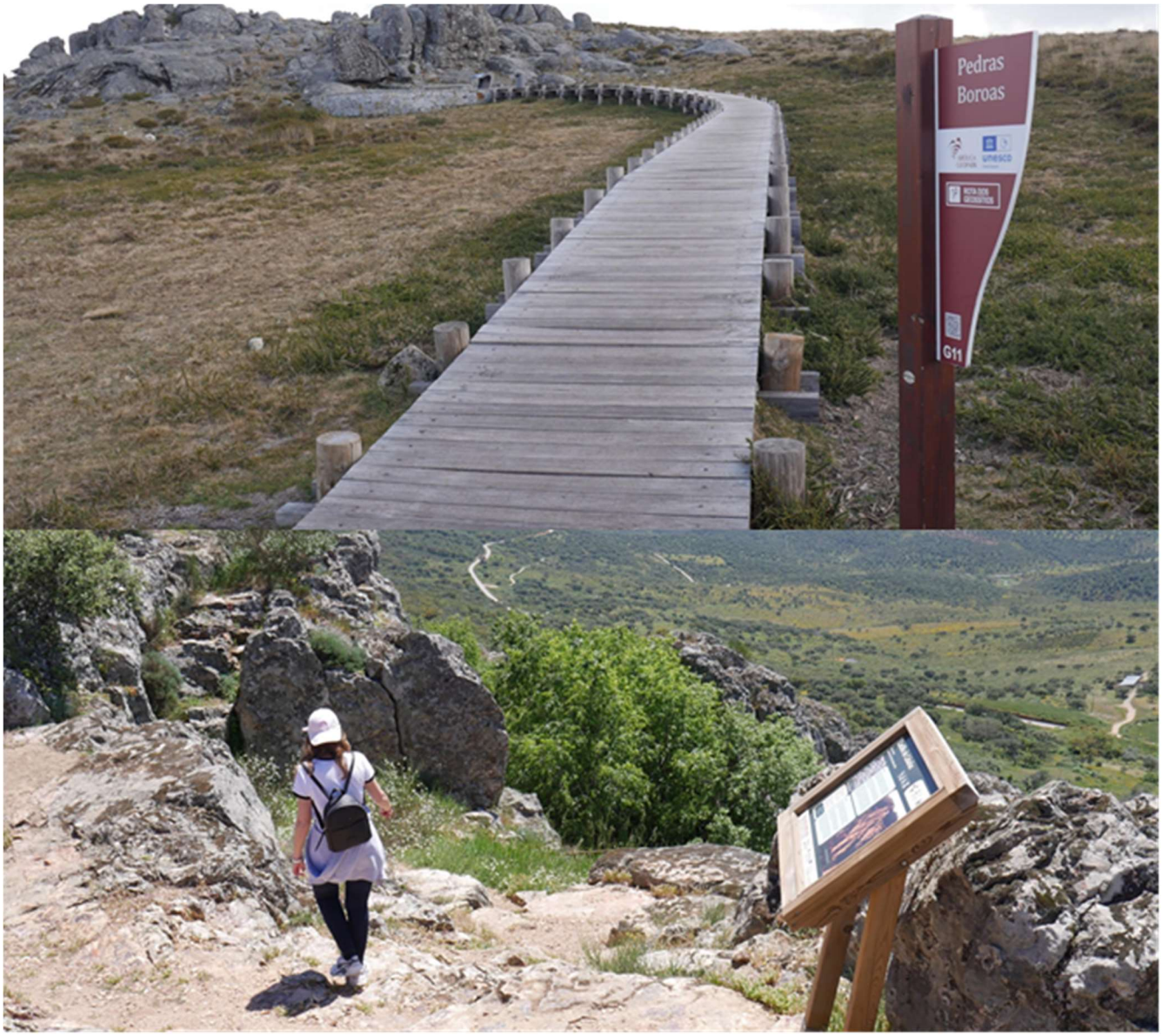

Figure 4. Field representation of educational resources that we can find in the UGGps and that complement the places of geological interest. In this case, indicative signs, functional QR codes and panels with detailed information about each particular geosite.

Each UGGps has unique characteristics, and they are faithful defenders of the denomination of origin, which translates into well-differentiated educational territories that revolve around the same central pillars. Among them, the support for the sustainable development objectives of the 2030 Agenda stands out as oneof the main foundations and, more specifically, the creation of a quality educational system, adaptable and accessible to the entire public.

Thanks to this territorial development strategy, the UGGps have become authentic educational references internationally recognized, allowing a constant expansion that advances each year and that brings geosciences closer to an ever greater number of people.

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