

Naturtejo Geopark school programme Anim'a Rocha: students project developing interpretative tools for the "Travel across the Earth bones"

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Abstract

Anim'a Rocha, a one-year educational programme, combines sustainable development with inexpensive practices. It aims to raise awareness for the local natural heritage by working closely with teachers and students, for developing practical approaches for local people and tourists, to create new "home" designed interpretive tools for the Naturtejo territory and improve the sense of belonging. For the school year 2010/11 the project "Search... what is ours" was developed by four students of Proença-a-Nova high school with the aim of creating a comprehensive guide booklet, panels and an audio-guide for a local geotrail "Travel across the Earth's bones". The school project moved them far beyond the school realm and enabled them to successfully face the real world.

The project "Searching... what is ours" and the educational programme Anim'a Rocha

Under the scope of the annual school programme Anim'a Rocha (Fig. 1; which may be translated as Hearten Rock) for local schools, Naturtejo Geopark works closely with teachers and students promoting activities that meet the specific needs and interests of each school. This educational programme of Naturtejo Geopark was developed in response to changes in modern society which require more conscious and skilled citizens, prepared for new challenges, where sustainable development is a priority. These one-year projects are destined only for schools within Naturtejo Geopark. They lead to an increase in the cooperation between school community, Naturtejo Geopark and local society, namely public institutions, private companies and scientists.

Anim'a Rocha programme is designed specifically for each case, to fulfil specific needs by tailoring strategies and methodologies to a student's age and project goals, and to teachers' needs. Geoparks are



Fig. 1. The Anim'a Rocha logo.

privileged places which integrate natural and cultural values with their conservation and sustainable development. In this respect the Naturtejo Geopark is a "stage" for promote citizenship, connecting with real management and planning issues (Rodrigues and Neto de Carvalho, 2011).

"Searching... what is ours" was a one-year project developed by 4 students from the 12th grade (17-18 years old) from Pedro da Fonseca High School (Proença-a-Nova), during the 2010/2011 school year, which aimed to study the Geology and the area of Portas de Almourão Geomonument. The proposed final product was the interpretation for the existing geotourist trail "Travel across the Earth bones". The choice of the general theme "Searching... what is ours" resulted from student's own curiosity for the

surrounding region, so close to them but still extremely unknown in certain aspects, like natural heritage. All the members of the group live in Proença-a-Nova town and surrounding villages, and for some the chosen area was almost unknown, and for those who knew the trail, they never realized the importance of their natural heritage.

Goals and products

The main objectives of the project (Fig. 2) are:

- to increase students’ knowledge on geology and biology of the region;
- to present to the public the geological and biological richness of the region;
- to raise public awareness for Biology, Geology and Nature conservation.

The major priority was to foster this geotourist trail, included in one of the most visited geomonuments of Naturtejo Geopark.

Goals

With this project the group intended to develop interpretation for visitors and to raise public awareness for Nature Conservation. To achieve these goals students decided to produce different interpretation tools for the geotourist trail, consisting of a student’s guide booklet, 5 thematic panels, an interpretative leaflet and an audio-guide available online for download at the Naturtejo Geopark’s webpage (www.naturtejo.com). The project presentation included a guided visit for the general public. Students chose 10 key-words to define their project: knowledge, natural landscape, discovery, perspective, nature, geology, biology, beauty, curiosity and conservation.

The “Travel across the Earth’s bones” geotourist trail

The “Travel across the Earth bones”, at Sobral Fernando (Proença-a-Nova; Fig. 3) is one of the geopark’s geotourist trails (Rodrigues and Neto de Carvalho, 2009). The trail has 18 km of medium difficulty, and crosses the geomonument Portas de Almourão, several geosites, viewpoints, ancient mines, the small villages of Sobral Fernando,

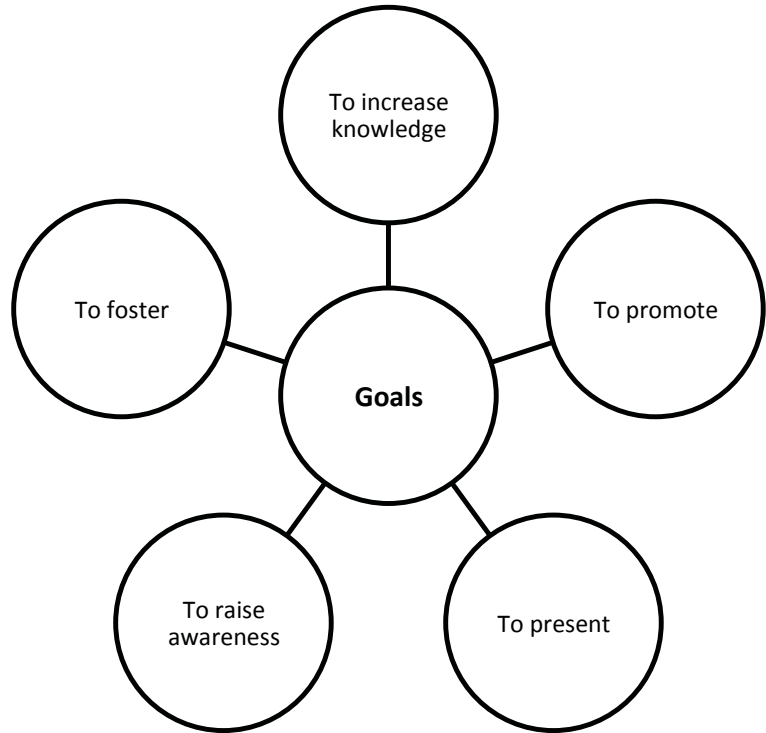


Fig. 2. The five goals of the students’ project expressed as verbs.

Carregais and Chão do Galego, and the Important Bird Area Portas: de Rodao-Portas de Ródão. The main geological interests of the geotrail are Lower Ordovician trace fossils and sand flat-related sedimentary structures (Neto de Carvalho and Baucon, 2010), Variscan folds and faulting (Metodiev et al. 2009), ancient Roman gold and legendary iron mines, the Ocreza River gorge, and the geomorphological viewpoints of Galego and Poço do Inferno. The flora and fauna include *Ulex* (gorse), *Cistus ladanifer* (Gum Rockrose), *Arbutus unedo* (Strawberry Tree), *Paeonia broteroi* (Broteroi peony), the carnivorous plant *Drosophyllum lusitanicum*, *Juniperus* (junipers), and other very specialized quartzite-related flora; the traditional schist architecture, and the olive tree staircases; Griffon Vultures, the Bonelli Eagle, the Black Stork, bats and otters. There is no better way than from this trail for appreciating the deep Almourão Gorge and the Portas do Almourão Geomonument where a hard quartzite, part of an ancient mountain range has been eroded by the Ocreza River.

Portas de Almourão geomonument is of great scientific and educational interest, proving important insights into the development stages of the national geological history. The tourist potential has been increasing significantly by the natural beauty and the attractiveness and legibility of the landscape (Neto



Fig. 3. “Travel across the Earth bones”, at Sobral Fernando (Proença-a-Nova) - Naturtejo European and Global Geopark.

de Carvalho et al., 2009; Lobarinhas et al. 2010). The geomonument itself can be visited through 3 geotourist trails: Secrets from Almourão Valley, Travel across the Earth’s bones, and the Schist’s Path “Vultures Flight”.

The main subjects of geological interest are evidence for the ancient Rheic Ocean, Formation of the Pangea supercontinent and tectonic features (folds and faults), Ródão Syncline, Ocreza River gorge, rock weathering and erosion, Iron Age and Roman gold mines. All these topics are included in Portuguese national teaching curricula and were familiar to the students who integrated them in their projects.

Methodologies

The project involved the school community, the Naturtejo Geopark, the Proença-a-Nova Municipality and Tourism Office, and the Polytechnics Institute of Castelo Branco (researcher Silvia Ribeiro). The role of the Geopark was to provide scientific support, bibliographic information, maps, field assistance, to provide logistic support and to validate the results to be included in the newly created interpretation tools.

During the school year the students had two weekly classes (90 minutes each) to develop the project, where they planned, researched, attended meetings, made contacts with institutions and

scientists, prepared texts, and distributed information for each stop along the geotrails, each panel and each audio guide file.

The first step was to decipher the natural wonders of Talhadas mountain range involving thematic fieldworks, accompanied by Naturtejo Geopark staff and local researchers. This was followed by documented research in order to select a panel’s location, audio guide subjects and leaflet information.

The students engaged in fieldwork (Fig. 4) by themselves, with geologists from Naturtejo Geopark and with an expert in the subject of bioclimate, Silvia Ribeiro. These expeditions were extremely important because, for instance, the occurrence of the insectivorous plant species *Drosophyllum lusitanicum* (an endemic species in Portugal) was recorded in this area for the first time.

Concerning the creation of the interpretative tools, the student’s main difficulty was to “translate” scientific information into accessible and interesting language. This was overcome with the help of their teacher Bruno Henriques and the experts. When they studied the geological history of these regions, they were studying the main stages of the Naturtejo Geopark and Portuguese geological history, and working with concepts studied in classes. Another difficulty was to decide how many panels and audio



Fig. 4. Field work: a) recognition of the local geology; b) analysing interpretative tools already existing along the trail.

guide stops they should create. It was important, given the length of the trail, not to provide too much information.

The group had several meetings not only with scientists, but also with Proença-a-Nova municipality to prepare the guided visit for inclusion in the annual calendar of Proença-a-Nova hikes and the Landscape Festival – European Geoparks Week. The group also had to consider logistical issues such as the need for a backup car and food provision during trekking, public registration and accident insurance for participants. These necessary skills are not taught in the classroom, thus the project provided the members of the student group with practical lessons in skills required for active citizenship.

Results

During the project the group of students produced the student's guide "Guide for Geology and Biology in the Travel across the Earth bones", five interpretative panels (with Geology and a Biology sections), an audio-guide and a leaflet (Fig. 5).

The student's guide was developed to support the group as monitors for the guided visit; it is not dedicated to the public and includes the most important information along the trail. Five panels were designed by the students, including the wooden frame, with interpretation especially for sites where models and schemes are necessary to understand the geological history, for the Geodiversity section and with images of plants during flowering period (not always visible), for the Biodiversity section.

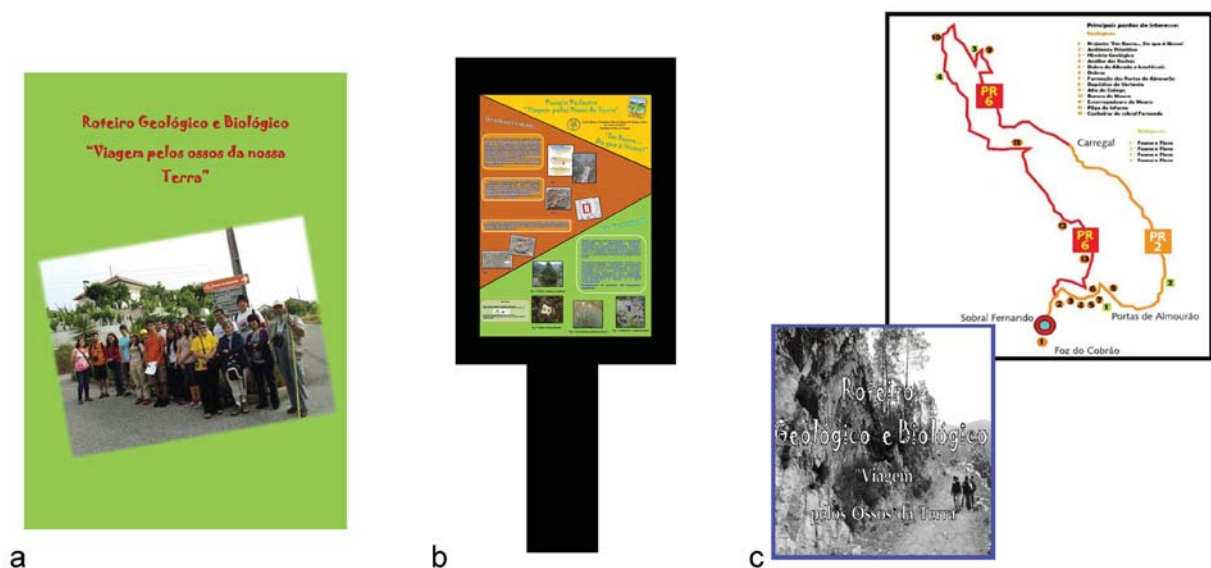


Fig. 5. Examples of products design by the group of students: a) cover page of Guide for Geology and Biology in the "Travel across the Earth bones", b) prototype of an interpretative panel ("Ancient life"), c) leaflet cover, and the trail map with the distribution of audio files.



Fig. 6. Public initiatives: a-c) a full-day guided visit by the students for the general public, d) final presentation of the project at the school, open to the school community and public.

The downloadable audio-guide developed by the students contains 17 stops, providing interpretation for independent geotourists who walk the trail in their own time. The visitor arrives at an interesting site and can listen to more detailed and comprehensive information. The duration of the hike, the walking speed, and the time spent at each stop is controlled by the visitor. In the leaflet, besides general information about the project and the trail, there is a map indicating the number of the audio guide file at each site. The audio-guide is available for download at the Geopark's website (www.naturtejo.com). This is a powerful tool for non-formal education; the visitor comes relaxed without formal impositions, to a motivational environment which provides an opportunity for significant learning, during holidays, weekends or vacations (Rodrigues and Neto de Carvalho, 2009).

Public initiatives

The presentation of the project resulted in a guided visit by the students, included in the European Geoparks Week of Naturtejo Geopark and in the Proença-a-Nova monthly hikes (Fig. 6

a-c), for testing the developed products aimed at the general public and schools colleagues. The four students acted as guides, helped by their student's guide booklet and panels, with the logistic support from the staff of the geopark and the municipality. In addition to the presentation of the project to their classmates, there was a final presentation, for the Pedro da Fonseca school community, and open to the public (Fig. 6 d).

Conclusions

Anim'a Rocha one-year educational programme combines sustainable development practices, raising awareness for the local natural heritage by working closely with teachers and students for developing practical approaches for local people and tourists, to create new and "home" designed interpretive tools for Naturtejo territory, and for improving a sense of belonging.

With the project "Searching...what is ours" in addition to achieving all its proposed aims the students saw Geology as a career prospect. They also learned to take responsibility for setting, planning and developing a project, engaging with all the

logistical phases and experiencing contact with a broader audience beyond the school realm.

The educational programme Anim'a Rocha, as an annual project, must involve students and teachers, increasing their knowledge, applying theories learnt in class and developing skills that are necessary for working in teams and for interacting with communities and public institutions. The team faced real constraints concerning budgets, social and political interests and tourism planning difficulties.

For Naturtejo Geopark the audio-guides are the most useful tool produced by these four students, as an innovative instrument, already used in Portugal for urban circuits but a new innovation for use in geotourist walking trails. Visitors can download the files on their mobile phones or mp3 players and

obtain an autonomous guided visit along the "Travel across the Earth bones" trail.

For the group of students it is highly important and motivating to see that their annual work does not stay inside their school but is also used by the public and by visitors to Naturtejo Geopark.

Acknowledgements

The Group 1 of the 12th grade Project Area is composed by Jéssica Rodrigues, André Dias, Bruno Cristóvão and Pedro Ribeiro, under the supervision of the Prof. Bruno Henriques. We would like to thank all the support of the Pedro da Fonseca school from Proenca-a-Nova, Naturtejo Geopark, the municipality of Proenca-a-Nova and in particular to Dr. Silvia Ribeiro.

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