

# THE ISSUE OF GEO-EDUCATION ON NATURE TRAILS IN THE FIRST SLOVAK GEOPARK BANSKÁ ŠTIAVNICA

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## Abstract

Geopark Banská Štiavnica is the oldest geopark in Slovakia located in an area with remarkable historical and mining values. Within the area, there are several nature trails providing tourists with recreational education. This education focused on geosciences, called geo-education is a significant element of any geopark, as well as Geopark Banská Štiavnica. Geo-education can be carried out also on nature trails, specifically via interpretational panels. Multiple issues may arise, including the matter of information presentation, interpretation, and communication, or in the way of nature trail promotion. This article deals with the issue of geo-education by stating and addressing the obvious issues of wrong chosen interpretation, presentation, and promotion of geopark nature trails and the lack of available information both online and in situ. In addition, a good practice of UNESCO geoparks and practices of geotourism is given in comparison with the current situation of geopark geo-education.

**Key words:** geopark, geo-education, Banská Štiavnica, trail

## Introduction

Geopark Banská Štiavnica is located in central Slovakia in the districts of Banská Štiavnica, Žiar and Hronom and Žarnovica on an area of 374 km<sup>2</sup>. It is situated in the historic mining town of Banská Štiavnica (which with its nearby technical monuments belongs to the UNESCO World Heritage List) and the surrounding 17 municipalities in the region. There are 156 sites divided into 10 categories on the territory of the geopark, where the largest number of sites are independent montanistics sites in the number of 83, while geological or partly geological sites have a total of only 12 sites (Aktualizácia koncepcie geoparkov SR 2015), however with no much of information to what extent are they geological or other due to the lack of information and an absence of the website. No official geopark website makes it also difficult to visit the geopark, the (geo)sites, and thus also the nature trails, and deprives visitors of information based on which they could make a better decision when choosing a site, as well as recreationally educate themselves before the visit itself (Migoń 2018). The recreational form of education is one of the main priorities for geoparks, as it involves interpreting information about geological heritage in a tourism environment in a fun and bearable way (Stolz & Megerle 2022). In addition, each geopark must meet the principles of geotourism, which, among other things, place particular emphasis on education and the dissemination of the environmental message and geoscientific knowledge (e.g., Brocx & Semeniuk 2019).

Environmental education is carried out through effective presentation and interpretation, which can be carried out directly in the natural environment of the territory of the geopark, through educational trails and their information panels.

## Material and methods

To point out the issue of geo-education, several information panels, which are part of the educational trails located on the territory of the geopark were evaluated. For this article, a typical geopark information board was evaluated on the nature trail Farárova Hôrka - Richnava, followed by an information board that wasn't built by geopark but it's located in the area (and also promoted by geopark) on the nature trail Sitno, and finally an information board on the nature trail Lai Chi Wo in the Hong Kong Global Geopark as a member of UGGp for comparison and an example of good practice. The information about nature trails in Geopark Banská Štiavnica and their interpretation was processed from information available on the Internet on the website [naucnechodniky.eu](http://naucnechodniky.eu). Information about nature trails and the information board of Hong Kong geopark was carried out from a geopark's website ([geopark.gov.hk](http://geopark.gov.hk)). The assessment was carried out according to the information on correct interpretation based on 36 questions which were set out and divided into 6 summary categories (recommendations) (Tab. 1).

## Results and discussion

Three information panel in two geoparks were analyzed and compared with a) geopark interpretation recommendations and b) each other (Tab.1).

The main focus is on an information panel provided directly by a geopark situated on the nature trail Farárova hôrka – Richnava (NT FHR). At first glance, the panel looks uninteresting or provocative enough to capture the visitor's attention. Its text is written in a technical/ scientific style, the author addresses the tourist "Dear visitor" and continues in the style of a formal article, divided into sections with paragraphs, a diagram, image labels, scientific jargon, etc. It is very unlikely that a tourist who decides to recreate in nature will be willing to stop or look at such an expert-level panel. The theme of the panel is not summed up in a single phrase or catchy headline. Furthermore, the pictures on the boards represent a geological section of the territory (unreadable for the general-public tourist), a route of the nature trail on a satellite map, and a route of the nature trail on a geological map with explanations. If the panel manages to catch the visitors' attention regardless, they will find the information on the board incomprehensible. The issue is also the lack of interaction, questions, incitement to activity, visual value, and, finally, insufficient support for sustainability and no reference to the features of the territory. By assessment within the recommendations for the correct interpretation of the geological heritage, 33 out of 36 questions were answered. Positive results (yes) were present only in four cases, reflecting that: the board focuses on geosciences; falls under the same concept theme as the other panels; its goal is to educate; is located in a stable location. In five cases, the answer to the questions was "partially" and in as many as 24 cases the answer was negative (no).

The second evaluated panel is a panel that does not fall thematically under the geopark but is located on the nature trail Sitno (NT S) belonging to the territory of the geopark. Paradoxically, this panel provides a better interpretation than the information panel marked with the geopark logo. However, it is important to point out that this is the only geoscience-oriented information panel (out of 7) within the trail. Evaluated within the recommendations for the correct interpretation of the geological heritage, the information panel had 12 positive results, which is approximately 24.2% more than the information board of the Farárova hôrka - Richnava trail. In six cases, the panel met the results "partially" and in 15 cases the results were negative, which, however, represents a 27.3% better result than the panel of the geopark educational trail. All without taking unanswered questions into account.

As the last board, the information board of the UGG Global Geopark in Hong Kong on the Lai Chi Wo nature trail (NT LCW) was evaluated. Compared to the panels in the territory of the Banská Štiavnica Geopark, it has significantly better results. There were 24 positive answers to questions regarding the interpretation of geological heritage out of 34 answered questions, which is 34.24% more than the information panel of NT Sitno and up to 58.48% more than the information panel of the geopark NT Farárova Hôrka – Richnava itself. As part of the negative answers, the NT Lai Chi Wo board only had them in five cases, which is 30.75% less than in the case of NT Sitno and up to 58.03% less than in the case of NT Farárova Hôrka - Richnava. Unanswered questions were again not counted with. In a matter of interactivity, an interesting approach was taken in Hong Kong Geopark – a Hing Chun Alliance Radio Drama which is an audio story with multiple episodes each for a different site, including Lai Chi Wo, however with no reference to it on the information board.

When evaluating both information boards, it is possible to determine which categories require more attention. In the case of the first board of the geopark, change, and improvement are needed in each category, but in the case of the second evaluated board, there is a lack primarily in the interaction with the visitor, the creation of entertainment elements, the promotion of sustainability, protection, the support of the region and other industries.

Tab. 1: Analysis of interpretation panels

Recommendations of the correct interpretation of geological heritage on interpretational panels on nature trails in geoparks				
Main recommendations	Questions leading to meet the recommendations	Nature trails		
		NT FHR	NT S	NT LCW
Be simple and clear without losing scientific significance	Is the panel's primary focus on geosciences? Does it follow its scientific value?	yes	yes	yes
	Does the interpretation avoid technical language / scientific jargon?	no	yes	yes
	Does the panel avoid using more than 200 words, written in blocks, with lowercase letters or burdensome?	no	partly	yes

	<p>Is the text divided into levels with different font size, color or thickness?</p> <p>Is the technical and overall text of the panel simplified to be comprehensible by the 12-year-olds?</p> <p>If the information is translated - is this translation correct and accurate?</p> <p>Does the panel contain timelines, maps of the mountain range/area, stratigraphic parts, or cross-sections of the territory that are comprehensible to the lay public?</p> <p>Does the panel fall under the same concept/theme as the other panels of the trail/geopark?</p>	no	partly	yes
		no	yes	yes
				yes
		no	yes	yes
		yes	yes	yes
Provide education in creative and memorable way	Is the panel aimed at the lay public?	no	yes	yes
	Does the panel also provide information for more demanding visitors, or does it offer them the possibility to access this information (e.g., via QR codes)?	partly	no	no
	Do the pictures explain activities, phenomena, processes associated with the creation of heritage? Are these images comprehensible to the lay public?	no	yes	yes
	Is the goal of the interpreted information on the panel to educate and/or to spread a certain message?	yes	yes	yes
	Can the visitor access information about the educational trail and its topic, route, educational materials, or the panels themselves on the geopark website?	no	no	yes
	Do the fun and entertaining elements of the panel lead to learning?	no	partly	yes
Provoke a reaction and arouse an interest	Does the panel identify with the principles of Freeman Tilden (1957), which can be summarized as: provoking a reaction, connecting to visitors' experiences, revealing new contexts?	no	no	partly
	Is the main idea of the information panel expressed as a theme in a short strong visible sentence or phrase?	partly	yes	yes
	Does the panel contain pictures?	partly	yes	yes
	Is there an outdoor exhibition, an exhibit, a specific rock related to the theme of the board, a geological garden, a panorama, etc. near the panel?	no	no	no
	Is the panel focused both on the scientific and the visual value of the interpreted heritage?	no	partly	yes
	Does the panel use modern methods of interpretation? - technologies, QR codes, links to multimedia and audiovisual presentations of information?	no	no	no
Be based on relations with everyday life, or other fields	Does the panel explain the information? - so the information is not just provided without much of a context	partly	yes	yes
	Does it consist of knowledge from several fields (such as ecology, mining, history, etc.)?	no	no	
	Does the panel use a reference to people, our culture, comparison with people's lives or our abilities?	no	no	partly
	Is the panel connected to art, culture, emotions, or another element typical for the region?	no	partly	yes
Incite to questions and activities to increase the enjoyment	Does the panel contain interactive questions and/or prompts for activity?	no	no	yes
	Are the questions on the panel open?	no	no	no
	Does the panel include stimulating phrases such as: Look at me! Pick me up! Try me!, etc.?	no	no	partly
	Does the panel contain physical interactive elements (folding panels, etc.)?	no	no	no
	Does the natural trail have a leaflet about its content, route and viewpoints?	no		yes
	Is the panel part of an activity such as quest games, quizzes, geocaching, treasure hunting, etc.?	no	no	partly

Refer to sustainability and protection	Does the board refer to the protection of the territory and sustainability (e.g. for visitors to not to take home what they found in nature)?	no	no	yes
	Does the panel offer options and ways to protect the territory, a link to local volunteers, how to support the territory, a link to social networks of the territory, etc.?	partly	no	partly
	Does the panel encourage compliance with safety and prohibitions? (e.g. in case of bans on swimming in some lakes, providing information about possible water defects and risks for people)	no	no	yes
	Are the panels in a stable place? Are they resistant to weathering or vandalism?	yes	yes	yes
	Was the information presented on the panel evaluated beforehand so the possible issues that could be avoided were identified and taken into account?			
	Does anything on panel refer to local businesses, products, or other tourist attractions to support the region?	no	partly	yes

## Conclusion

Successful geo-interpretation requires more than just providing information on an information board. It is a form of communication between the mediated information and the visitor, which is carried out by an appropriately chosen presentation and interpretation of the geological heritage (Macadam 2018). Within geoparks, one of the main goals of which is education in geoscience fields and passing on the environmental message, the way knowledge is interpreted is crucial. A suitable interpretation is intended to impress, evoke a certain emotion, change in attitude and thinking, arouse curiosity, and reveal new knowledge, which not only educates the tourist but also entertains and satisfies his mental needs (Al-Jarf, 2021; Farsani et al. 2018). Considering the results of the evaluation of two selected panels of educational trails of the Banská Štiavnica Geopark, it is possible to claim that the interpretation of the geological heritage is not communicated based on the recommendations of experts, the principles of geotourism, or the requirements of the UNESCO Global Network of Geoparks (UGGP), based on which the acquisition of new knowledge by tourists is considerably more difficult. Especially with the information board of the Farárova hórka - Richnava educational trail, it is clear that the information panel is not intended for the general public, which, however, contradicts the definition of a geopark and its understanding by the UGGP network, as well as the principles of geotourism as such. Education through these information panels can be thus suitable only for university students and other professionals, who, however, form a minority group of tourists, which might very probably not lead to the sustainability and development of the region. In addition, it is important to mention that for a complete and unequivocal assessment and drawing of conclusions, complete research involving the collection of data in the field and their complete analysis would be necessary.

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## Souhrn

Environmentální vzdělávání je uskutečňováno efektivní prezentací a výkladem, kterou lze realizovat přímo v přírodním prostředí na území geoparku, prostřednictvím naučných stezek a jejich informačních panelů. Pro tento článek byla vyhodnocena typická informační tabule geoparku Banská Štiavnica na naučné stezce Farárova Hôrka - Richnava a na naučné stezce Sitno. Pro srovnání a příklad dobré praxe byl analyzován panel z naučné stezky Lai Chi Wo v Globálním geoparku Hong Kong. S ohledem na výsledky hodnocení dvou vybraných panelů naučných stezek geoparku Banská Štiavnica lze tvrdit, že výklad geologického dědictví není komunikován na základě doporučení odborníků, zásad geoturismu, ani požadavků Globální sítě geoparků UNESCO (UGGP), na jejímž základě je získávání nových znalostí turisty podstatně obtížnější. Vzdělávání prostřednictvím těchto informačních tabulí tak může být vhodné pouze pro vysokoškolské studenty a další odborníky, kteří však tvoří menšinovou skupinu turistů, což není v souladu s udržitelností rozvoje regionu.

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