MOŽNOSTI VYUŽITIA POTENCIÁLU HORSKEJ KRAJINY V TERÉNNOM VYUČOVANÍ NA PRÍKLADE ŠPANEJ DOLINY

OPTIONS OF USING THE MOUNTAINOUS LANDSCAPE'S POTENTIAL IN FIELD TEACHING ON THE EXAMPLE OF THE ŠPANIA DOLINA

Martina Škodová¹

¹ Katedra geografie a geológie, Univerzita Mateja Bela, Tajovského 40, Banská Bystrica, Slovensko, e-mail: martina.skodova@umb.sk

DOI: https://doi.org/10.24040/GR.2022.18.1.4-19

Abstract: One of the many options of geographical education is field teaching. Thanks to the direct contact of pupils with the country and specific examples of human activity in it, pupils have the opportunity to understand better the interconnectedness of various phenomena and components in the country and build a positive relationship to its natural and social values. Another reason for using field teaching is the possibility of applying interdisciplinary relationships, while on the example of a mining country, it is possible to integrate information, topics and procedures from geography, geology, history and other subjects. The importance of field teaching also lies in the practical use of knowledge and skills pupils have acquired at school. It also gives more space for group work, communication, strengthens social relations. Field teaching of geography at primary and secondary schools has its place also within the current school curriculum. Nevertheless, teachers include this method in the teaching only to a limited extent. The paper presents the mining village of Špania Dolina near Banská Bystrica, its potential in science and social education, and the design and experience with the implementation of field teaching in this village.

Key words: Špania Dolina, Field teaching, Local countryside, ISCED2

Introduction

In today’s increasingly globalized and virtual world, we observe that pupils have an excellent overview of current affairs and trends in the virtual world of games, series and You-Tubers, which often has little to do with real life and the real world. Some authors also refer to this phenomenon as "experience extinction" (e.g., Soga & Gaston, 2016; Shuttler et al., 2018).
Even in geography, attention is paid mainly to more or less remote regions, whose research is relatively abstract and not very motivating for pupils. It is mostly influenced by the fact that geographical education - the curriculum and available textbooks are unified for use throughout the whole Slovak Republic and do not contribute to reaching a better understanding of the region's specifics in which pupils live. At the same time, the teacher has a wide range of options for making even more general learning content available through specific examples in the local region. One of the many possibilities of regional education is field teaching. Thanks to the direct contact of pupils with the country and specific examples of human activity in it, pupils have the opportunity to understand better the interconnectedness of various phenomena and components in the country and build a positive relationship to its natural and social values. Another reason for using field teaching is the possibility of applying interdisciplinary relationships, while on the example of a mining country, it is possible to integrate information, topics and procedures from geography, geology, history and other subjects. The importance of field teaching also lies in the practical use of knowledge and skills pupils have acquired at school. It also offers more space for group work, communication, strengthens social relationships (Rickinson et al., 2004). For these reasons, field teaching should have a more significant application in school practice. The reason is not the fact that field teaching requires a relatively high level of expertise, preparation and improvisation skills of the teacher, not to mention the time aspect (Preston, 2015) and low teachers' belief in their professional and didactic skills to master this form of teaching (Remington & Legge, 2016). From this point of view, this paper can be an inspiration and a specific process of field teaching in the mining village of Špania Dolina, which is very suitable for understanding the relationship between the natural potential of the landscape and its intensive human use in the past and present, with all positive and negative consequences.

Theoretical and methodological background

Field teaching in real school practice

Field teaching is a form that has been considered for many years as a very effective teaching strategy for understanding the processes and relationships in the country (Foskett, 1997) and also for shaping attitudes to protect its values – through students' and pupils' direct contact with nature (Soga & Gaston, 2016).
E. Hofmann et al. define field teaching as "a comprehensive teaching form that includes progressive teaching methods (experiment, laboratory activities, short-term and long-term observation, project method, cooperative methods, experiential pedagogy methods) and various organizational forms of teaching (walking, field practice, excursion, thematic school trips, expeditions). The focus of this form of teaching lies in fieldwork." (Hofmann et al., 2003, p. 7). According to Brodin (2009), field teaching is used as a supplement to regular teaching in the school classroom. Review studies of research in this area of education are, e.g., A review of Research on Outdoor Learning (Rickinson et al., 2004) and also, e.g., Field teaching in formal education (Činčera & Holec, 2016). These studies present research that analyzes field education programs' impact on pupils' and students' knowledge, skills, attitudes, and behavior. They point to the dominance of work documenting the benefits of field programs compared to classroom teaching. More extended programs with an adequately addressed relationship between goal and activities, linked to the school curriculum, combining previous and subsequent work at school, are more successful. The importance of field teaching also lies in the practical use of knowledge and skills pupils have acquired at school. The influence on pupils' motivation should not be neglected, e.g., according to a study by Hoffman and Korvas (2008), pupils find field education to be fun and attractive.

Field teaching has a long tradition in geographical education. However, it was mainly related to outdoor orientation training, walks or excursions (Hoffmann et al., 2016; Tolmáči et al., 2008). In recent decades, however, field learning educational strategies have shifted from traditional field trips and transmissions with a transmissive teacher interpretation to inquiry-based learning, more focused on practical activities and revealing natural habitats in the country to the pupils by their activities (Oost et al., 2011; Dostál, 2015). Field teaching offers a space for acquiring skills in working with the map, orientation in the field, solving problem tasks, etc. A frequently used field teaching method is the method of cooperation, where pupils work in small groups, solve tasks, reveal connections and perform various practical activities. The use of various activating methods supports cognitive and noncognitive functions, focused on experience, living the emotions, expression of feelings and cooperation. The performance standards of geography within the innovative educational programs at primary schools and gymnasiums are also defined within the thematic unit.
Geographical excursions and outings educational goals focused on the active work with a map, compass and GPS (ŠPÚ, 2015a, b). Field teaching can take several forms, which more or less differ depending on the practical aspects. These aspects can be educational goals, pupils' predominant activity, the topic, the chosen teaching methods, the location of teaching, time allocation, etc. The educational goals predetermine the choice of all other didactic categories (Řezničková et al., 2008). In all its forms, field teaching has three primary phases – preparatory, implementation and final. The preparatory phase consists of teacher training (site selection, goal setting, curriculum preparation, aids, organizational support), pupils' preparation (teacher motivation, presentation of goals, outputs, organization, provision of aids). The implementation phase is the one's activity in the field, in which the teacher is the organizer, advisor and guide of the learning process, not the provider of information. The final phase of field teaching is the processing of outputs, presentation, reflection and evaluation.

The local landscape as a lab of options for field teaching

Field teaching of geography is best implemented in the local landscape - the village's broader surroundings and especially in localities representing the characteristics and specifics of the region. Pupils can identify, relate to their current life or the life of their ancestors. Also, Dubcová et al. (2013) emphasize that the local landscape provides the teacher with a unique opportunity to take pupils directly into the field and observe how the interrelationships between the elements of the country work. When defining the local landscape in professional works, the diversity of interpretation of this term is pointed out (Kancír & Madziková, 2003; Kandráčová & Michaeli, 1997; Kancír, 2007; Tomčíková, 2010). In the geographical curriculum, it first appears in the subject of science, where it is characterized as a municipality or part of the municipality, and its surroundings (the background of the municipality) where the school is located, or the territory of other municipalities from which children commute to this school (Kancír & Madziková, 2003). Gradually, the researched region is getting bigger while considering the wider surroundings of the village, often without a precise definition, sometimes with administrative or natural boundaries. The connection to the local landscape is manifested by a particular emotional (mental) connection, a feeling of home, security and intimacy (Tomčíková, 2010) however, under the condition that pupils are aware of what shaped the settlement...
of the surrounding country, which in the past subsisted and engaged traditions and traditional products have been preserved to this day, how their way of life has changed today, what their problems are, what is the natural and cultural-historical potential of their region (Čižmárová & Škodová, 2012).

The didactic aspect of the local landscape is of great importance in teaching geography. More in-depth knowledge of the local country is a goal and a means of geographical education. Directly in a specific location, pupils can analyze different types of landscape, natural environment, or different types of impacts of human activities. Specific geographical phenomena and their relationships in the local country serve as a model for understanding generally applicable contexts and regularities. A more detailed observation of the local landscape develops pupils’ interest, making it easier to understand the landscape’s dynamic changes, the peculiarities and relationships between man and the landscape. Based on this experience, pupils develop the ability to observe, analyze, evaluate and generalize. By gaining experience in solving problems in a simpler, well-known local landscape (e.g., a rural community), they can more efficiently and successfully solve problems in a more complicated, lesser-known urban community or larger region (Tomčíková, 2010). Field teaching in the local country provides the teacher with the opportunity to use a variety of teaching strategies while applying elements of constructivism and inductive approaches, such as problem-based teaching, case study, research-oriented teaching (Škodová, 2018) as well as many activating, experiential, creative and cooperative methods and forms of teaching while developing many of the pupils’ competences and skills.

**The local landscape as a lab of options for field teaching**

The mountainous landscape of small mining villages and settlements with preserved historical elements of the landscape structure is from a didactic point of view, very suitable for understanding the importance of mineral wealth for the whole region. Several authors in Slovakia have dealt with mapping and evaluating the possibilities of using historical mining sites (Rakytová, 2008; Rakytová, 2013; Rybár et al., 2017; Gregorová et al., 2020; Hronček et al., 2020). The methodology and practical possibilities of making historical mining localities accessible using stationary boards (information panels), including their didactic use, are dealt with in the work of K. Weis et al. (2019). One of the very suitable localities is the village of Špania...
Dolina (Fig. 1) because even though the mining activity in its surrounding area was stopped many decades ago, its historical significance and impacts on the landscape structure are significant and still visible in the landscape. The village of Špania Dolina (Herengrund) is located 11 km north of Banská Bystrica (at an altitude of 728 m). Together with other villages such as Piesky (Sandberg), Richtárova (Richtergrund), Staré Hory (Altenberg) and Polkanová (Ratzenberg), it lies in the ore mountain massif of the Starohorské mountains, where copper has been mined since prehistoric times. The beginnings of mining in this locality can only be dated to the 11th to 12th centuries. However, archaeological findings confirm ore mining already in the Eneolithic (Mičková, 2013). The golden era of mining represented the functioning of the Thurz-Fugger mining company (Ungarischer Handel) in the years 1493 to 1546. From the 15th to the 17th century, copper from Špania Dolina became the most essential commodity globally. It was the basis of coin production in Kremnica and was exported not only to Europe but also to North and South America, India and China. At the end of the 18th and the beginning of the 19th century, copper mining decreased even under foreign competition. In the middle of the 19th century, 50-70 tons of copper were mined annually in Špania Dolina and around 800 people were employed there. Gradually, however, mining declined until the mines were finally closed in 1888 (Sombathy et al., 2005). The local population started to earn by logging and processing wood; women also crocheted the famous and unique lace of Špania Dolina. In historical landscape structures, many mountainous forms of relief (heaps, shafts, tunnels, mining roads, sludge ponds, water supply, etc.) are a monument to mining activities well as the specific character of the settlement (Gajdoš, 2005). The set of mining houses built of wood and stone represents since 1979 Pamiatkovú rezerváciu říčnej architektúry (Folk Architecture Reservation) (Klasová, 2013). The landscape of this particular area is a unique example of the relationship between natural and cultural artifacts.

In the didactic application, Špania Dolina’s location can serve as a model for demonstrating the functioning and importance of mining activities in the Banská Bystrica region. Here, in a relatively small area, pupils can actively learn about the history of mining, individual mining objects and anthropogenic forms of relief, understand the impact of mining on the landscape and the way of life of people in the past.
Methods

The mountainous Field teaching in the Špania Dolina locality was designed for pupils in the 5th or 8th grade of primary schools in the Banská Bystrica region, within the thematic units Geographical Excursions and Walks and Slovakia. The goals of the proposed field teaching are:

• to actively obtain and present information on mineral wealth and its impact on the way of life of the population in a broader geographical and historical context;

• develop and deepen skills in working with maps, GPS, communication and presentation skills.

The field teaching design was implemented and verified by one class (26 pupils of the 5th grade of the elementary school in Banská Bystrica). The experience gained from the implementation of field teaching was used to optimize its design.
Results – design and implementation of field teaching in the Špania Dolina locality

The preparatory phase of field teaching consisted of providing transport and entrances to the Múzeum medi (Museum of Copper) and the J. Mistrík Historical School, preparation of the schedule, route and aids (maps of Špania Dolina were downloaded as a Print Screen from the ZBGIS website (https://zbgis.skgeodesy.sk), compasses, GPS coordinates, writing pads and worksheets in groups). Pupils were familiarized in advance with the goals, the field teaching program, the necessary aids (GPS navigation in the mobile phone), food, fees; they had filled in Informed Consent and were instructed on safety.

The implementation phase of field teaching is represented by the course of activities and tasks described below in individual localities of Špania Dolina. Individual sites and objects are described using the work of Sombathy et al. (2005) and Klásová (2013):

- **Museum of Copper** (60 min.) – the museum is in the municipal office building. It was established by the mining fraternity Herrengrund. It preserves monuments to mining activities in the region, such as various archaeological finds, mining tools, maps, miners' clothing, collections of minerals and rocks. The museum presented a short film about the Ludovika shaft's activities in the past and a model of the Medený hámor smelter in Banská Bystrica. Pupils had the opportunity to create a copper coin. The pupils' task was to answer the questions in the worksheet: "What was the mining fraternity Herrengrund named after? In which city was the Turzo-Fugger company based? Create the right pairs of terms (tunnel, hámor, dump, farrow, shaft and ingot) and their definitions. Write the correct name of the copper minerals (in the pictures), which were mined in Špania Dolina in the past."

- **Klopačka and Mining musical astronomical clock** (20 min.) – in the past, in addition to mining administrative buildings, there were also craft workshops, a school, a butcher, a doctor, etc., on the square. Mining guard - the "klopačka " was the seat of the mining inspector. There were also rooms for mining supervisors and a room where mining maps were made. There was a tilting device in the turret, which called the miners to work. At present, the flap building serves as a restaurant. The work of miners is reminiscent of a carved, moving and sounding astronomical clock. After a refreshment break, the pupils were divided into groups, given a compass and a map of Špania Dolina. The pupils' task was to correctly orient the map according to
the navigation to draw individual historical buildings on the square and create a legend.

• **Jozef Mistrík historical folk school** (45 min.) – on the square in the building of the mining administrative building, since 2015 once can visit Jozef Mistrík historical folk school (Fig. 2). Pupils traveled back in time to experience what was taught more than 100 years ago. They sat in historic wooden desks with a table, ink bowl and writing pen. They had the opportunity to try, as their ancestors learned, to experience corporal punishment firsthand, such as "hit the pear" or "kneeling on a log." After a short instruction, pupils are given the task of finding another task (hidden at the entrance to the Cisárská štôlňa – Imperial Shaft) while using GPS coordinates (84.80734, 19.13522).

Figure 2: Pupils in the Jozef Mistrík Historical Folk School

Source: Škodová, 2016

• **The Imperial shaft** (15 min.) is one of the oldest mining buildings in the village. It was one of the entrance tunnels to the mining district. In the morning, the miners prayed in front of it and then worked in individual shafts. In July 1764, the sons of Empress Maria Theresa, Crown Prince Joseph and his brother Archduke Leopold and the Duke of Těšín Albert visited Špania Dolina. Accompanied by miners, they entered the underground through this tunnel and went out in the Staré Hory mountains. The
shaft was named after these three. It is only partially accessible to the public, but its overall access with a guide is being considered currently. Pupils’ task in groups (after finding the shaft with the help of GPS coordinates) was to examine the shaft, find out as much information as possible about it, suggest the possibilities of simultaneous use of the shaft if it was made accessible and present it (Fig. 3).

Figure 3: Pupils before the entrance of the Imperial Shaft

![Image: Pupils before the entrance of the Imperial Shaft](Source: Škodová, 2016)

- **The Small educational mining trail** (60 min.) — educational trail has been accessible since 2006. In addition to the Imperial Shaft, it includes mining houses, 200-year-old linden trees bordering the mining district, Mann – Fajtlová tunnel, Maximilián shaft heap, Maximilián shaft, Ludovika shaft, stamp mill of Ludovika shaft, tajch Hurtica under the heap of the Maximilian shaft and the chapel of the Holy Grave from 1594. Educational boards are installed on the trail, which can be used to clearly explain to pupils the operation of mines and mining equipment in the
past. The elevation of the trail is 72 m, length approximately 4 km. The pupils' task was to draw the route of the educational trail and the visited sites on the map. On the heap of the Maximilián shaft, the pupils' task was to draw a view of the natural and cultural landscape elements that can be seen from the heap.

- **The Ludovik shaft and stamp mill of the shaft (60 min.)** – in the 17th and 18th centuries, new tunnels and shafts were excavated in Špania Dolina, the deepest of which is Ludovika shaft (440 meters deep). Horse wheels for driving mining tractors were slowly replaced by water wheels powered by water from a unique mining water supply. On the remains of the stamp mill at the Ludovika shaft (Fig. 4), an information board shows the work of mining towing equipment. The pupils' task is to prepare short dramatizations with nature props in groups after lunch, using the words "miner", "shaft", "king Ľudovít", "Špania Dolina", "permoník – dwarf", "klopačka – mining astronomical clock", "copper and silver".

Figure 4: Pupils nearby Ludovika shaft

Source: Škodová, 2016

- **The Roman catholic church of the holy Lord (60 min.)** was another locality that pupils found with the help of GPS coordinates (48.808260, 19.132808). The church stands on a natural platform above
the square, from which a covered wooden staircase with a shingled roof leads to the church. In the area of the church, there is a rectory and a bastion with a sundial. Initially, the bastion’s ground floor was used as a warehouse for combat equipment and ammunition, and later for various mining materials.

- **The Špania Dolina square** (30 min.) – pupils on the stage in the square presented in advance prepared short dramatizations using designated words with mining themes and natural props.

**The final phase of field teaching** (15 min.) consisted of evaluating individual activities, the teacher checked the worksheets of individual groups and provided pupils with a space for self-reflection and evaluation of classmates.

**Conclusion**

Field teaching of the local region's geography represents a well-developed form of education with many pros. It represents a way to create a holistic educational environment connecting several subjects. Design of field teaching, in which the whole spectrum of teaching methods was used (motivational interview, didactic game, dramatization, problem-solving, explanation, heuristic interview, work with the worksheet, model observation, natural history, work with cartographic material, compass, observation of landscape elements etc.) we prepared and realized with the pupils of the 5th grade of Elementary school in the mining village of Špania Dolina. Pupils learned to perceive the connection between the country’s history and potential in a natural, authentic environment, noticing the details and contexts they could miss in the abstract understanding of the classroom's relevant issues. Pupils were amazed by the prepared activities and strengthened some competencies through solving the tasks. There is an assumption that the knowledge gained during the excursion was naturally transformed into more permanent knowledge. Our experience is also that this form of teaching places different teachers' demands than teaching in the classroom in several areas. They are, e.g., differences in the organization of pupils' work, the provision of specific aids, professional requirements related to the topic and interdisciplinary overlap, and time requirements for the preparation and implementation of teaching. We are convinced that research in this area and the preparation of specific applications of field teaching in the geography of the local country can help systematically support this form of teaching in its promotion in our schools and use its potential for developing science literacy pupils.
References


Hronček, P., Gregorová, B., Tometzová, D., Molokáč, M. & Hvizdák, L. (2020). Modeling of vanished his-
toric mining landscape features as a part of digital cultural heritage and possibilities of its use in mining tourism (Case study: Gelnica Town, Slovakia). Resources, 9(4). https://doi.org/10.3390/resources9040043


Tomčíková, I. (2010). Miestna krajina vo vyučovaní vlastivedy a geografie na základnej škole. Geo-
https://doi.org/10.17846/GI.2018.22.1.496-507


Acknowledgment
This work has been supported by the Slovak Research and Development Agency under the Grant No. APVV-18-0185.