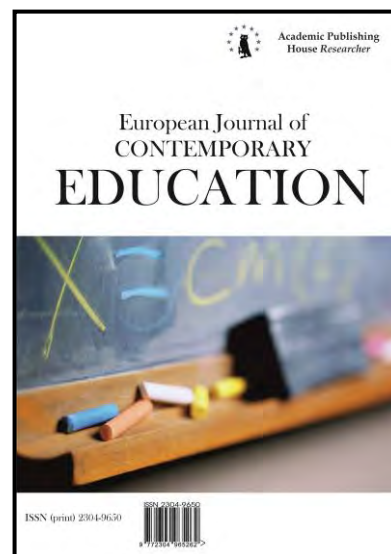




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Methodology of Working with a Textbook Versus Field Activities of Teaching Geography during the Corona Crisis

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Abstract

As part of the educational process, it is currently difficult for a teacher to engage students for the amount of information that is available all around us today. Therefore, it is necessary to choose appropriate methods and actively prepare various teaching aids that can motivate students, arouse interest in self-study and thus educate them. The paper focuses on teaching geography in primary and secondary schools by using innovative methods also during Corona crisis. The results of the paper are beneficial in the educational process of regional landscape geography with a focus on physical geography. The central theme of individual activities is biogeography, focused on specific species of fauna, respectively ichthyofauna and flora of the studied area. The studied area represents the area of the river Rajčianka and Kuneradský brook, which flow through the district of Žilina in Slovakia. The paper also includes a memory game and a folder Fish of our waters, which can also be used as a bilingual brochure for tourists.

Keywords: regional landscape geography, biogeography, Slovakia, Rajčianka, Kunerad.

1. Introduction

The teaching process is not just a one-sided effect of the teacher to students. Students in their approach to teaching, learning and the level of knowledge significantly affect the operation of the teacher. The teaching process is also influenced by other factors: teaching methods, teaching principles, organizational forms of teaching, teaching aids, didactic techniques and others. The term teaching process is meant as a planned, purposeful and deliberate action of the subject of teaching (teacher) on the subject of training and education (student) to be systematically educated and brought up. During the teaching process, it is possible to observe several phases: motivational (preparation of students for active learning), exposure (initial acquaintance of students with the new curriculum), fixation (initial repetition and confirmation of the curriculum) and diagnostic

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(testing of acquired knowledge, skills, skills and habits) (Petlák, 2004; Pushkarev, Pushkareva, 2020; Bírová, Eliášová, 2014). The aim of the paper is to create several innovative activities that can be used in different stages of the teaching process of geography and during the Corona crisis. The issue of the impact Covide-19 teaching also addressed by Haskova, Havettova, Vogelova (2020), Kobylarek, Alaverdov, Jabubowska (2020) and Cobo, Martin, Bianco (2020). The subject of geography develops students' knowledge of the Earth. Students learn to understand the importance of knowing the laws of the Earth, which are very important for life. In this course, they will realize that a thorough understanding of the principles of the existence of the Earth will help them to use and protect it. The knowledge that students learn when studying geography allows them to get to know the country, the laws of its organization, the possibility of appropriate use and protection of the landscape. Every place on Earth is different, it differs by its individual components (for example: climate, flora, fauna). Knowledge of these components leads to an understanding of the interrelationships in the country (Statny Pedagogický Ustav, 2010, Boltžiar, Chrastina, 2018; Grežo, Petrovič, 2019, Darulová et al., 2018; Murgaš, Petrovič, 2020; Khonamri, Pavlíková, 2020; Azizi et al., 2020; Azizi et al., 2020; Žalec, Pavlikova, 2019). According to Čižmárová (2000), Kalimullin et al. (2020), Gaufurov (2020), the role of the teacher is to teach and the role of the student to actively participate in the learning of everything new, to get to know and discover the unknown. The teacher can significantly support this role of the student by a suitable choice of methods and activities used in the lesson. In the teaching process, the use of new teaching methods is essential, leading to higher motivation of students, their active acceptance of knowledge and the development of creative and critical thinking.

The term teaching method means a way of deliberately organizing the activities of teachers and students to achieve the set educational goals of geography. The method is therefore a specific didactic intervention by which we can guide the development of personality in terms of the goals of geographical education. The aim of the teaching method is to achieve maximum efficiency in teaching and permanent required changes in the student's personality (Stracar, 1977; Cobo et al., 2020; Zhafyarov, 2020; Bírová et al., 2016; Baghana et al., 2020). Within the teaching of geography, the method of field research is more beneficial for the effectiveness of teaching and due to the corona crisis, which, however, requires appropriate natural conditions (weather). Students are better able to fix the facts about the country by staying in it, for example on an excursion, than by classical classroom instruction during a pandemic. For some types of students (according to learning), written or visual learning material may be more appropriate. Higher efficiency in teaching is achieved mainly by the right choice of methods used and arousing the interest of students in studying or self-study.

2. Methodology

One suitable method is to approach from near to far, that is, to move from the local (topical) level to the regional (choral) or national level. Students using activities created in the familiar field, e.g. around the school or their place of residence, it will be easier for them to understand the individual contexts. In this paper, we propose specific activities in teaching the geography of the local country, which are applicable to various localities in Slovakia, but also in the world and usable in interdisciplinary relationships, such as biology, history, or aesthetic and civic education.

The local landscape (microregion) is an area of validity of the daily routine rhythm of a person in the environment at the interface of the local and regional dimension. It represents that part of the human environment which is located at the junction of the zone of immediate and continuous sensory cognition, e.g. house, local neighborhood and village with a higher complex of amenities, with a zone perceived periodically. It is dealt with in the subject of microgeography.

Education of microgeography – in the didactic system, microgeography is referred to by several terms, e.g. local country geography, small area geography, small region or small area geography. In primary schools and grammar schools, microgeography is part of the subject Regional Geography of the Slovak Republic (Kandráčová, Michaeli, 1996; Dubcová et al., 2012; Souckova, 2020).

In the teaching of geography local landscape important role to play and walk respectively. excursion. We can organize the walk within the teaching process, but also within the use of free time. The aim is to know the results of work effort, the natural conditions of the country as a result of expanding knowledge. Walks are planned to the surrounding area and excursions to more

distant cities, walks are more natural, patriotic or physical education, on the contrary, we emphasize the creation of material values during excursions (Masarik et al., 2003; Petrikovičová et al., 2020; Petrikovičová, Wittlinger, 2020).

Biogeography is a scientific discipline that studies the areas of plants and animals, plant and animal communities as well as biogeographic regionalization (Hornik et al., 1986). Ichthyofauna is a fish fauna. It is the subject of the study of ichthyology (gr. *Ichtyos* = fish, *logos* = science). Ichthyology is an independent scientific discipline within zoology (Kosco et al., 2015). The essence of these scientific disciplines is the basis for the elaboration of our contribution.

At present, according to the State Education Program (ISCED 1), pupils get to know the local country practically from the first stage of primary school on the subject *Vlastiveda*. Homeland studies – motivational cognition begins in the 1st and 2nd year (first grade) with knowledge of the school and residence and attitudes to society, continues in the 3rd year (My village) and ends in the 4th year (Discovery trips around Slovakia) (Statny Pedagogický Ustav, 2010). In the second stage of primary schools (ISCED 2) in the subject Geography, the country Slovakia is taught theoretically in the 8th grade, when students according to the performance standard should be able to justify the layout of vegetation stages in Slovakia, five typical plant and animal species living in individual vegetation stages and to delimit large-scale protected areas in Slovakia in the thematic map. Frančovič's research (2014) confirmed that positive attitudes towards plants are supported by garden work, planting, similar to that reported by Lohr, Pearson-Mims (2005). Living near gardens has been a significant predictor of interest in adult plants. It has been confirmed that children from families with a garden improve their attitude towards plants, just as the presence of an animal has an effect on improving attitudes towards animals. Early contact with nature and its components is an effective factor influencing a positive attitude not only to animals but also to plants. Plant-specific educational programs are essential – they make a significant contribution to realizing the value of plants (Lindemann-Matthies, 2005). Every teacher can attract and motivate students. Many studies confirm that students are much more interested in the lesson taught by an avid teacher (Nováková et al., 2018; Horvathova, 2020). A teacher with a positive attitude towards the subject will affect the student much more than a teacher with a negative attitude. Students acquire much better knowledge in group work, practical activities, focusing on various topics related mainly to real life. The right choice of methods influences better memory (Čižmarová, 2000; Petrikovičová et al., 2020).

Part of the research was a questionnaire, by which we monitored attitudes to new teaching methods, whether they lead to motivation and active acceptance of knowledge in a sample of 97 primary and secondary school students.

Definition of territory

The studied area is located in the Slovak Republic, in the Žilina Region and the Žilina District. The Rajčianka River springs on the south-eastern slope of Strážov Hill (1,213 m above sea level) in Strážovské vrchy, southwest of the village of Čičmany at an altitude of 956 m above sea level. It flows mainly in a northerly and northeastern direction. The total length of the stream is 47.5 km and the catchment area is 359.059 km². Together with its tributaries, it drains the adjacent slopes of the Strážovské vrchy and Malá Fatra. From the right side, the watercourses Žilinská, Ráztoka, Suchý potok, Bročkov potok, Rybná, Lesnianka, Kamenný potok, Kľače, Porubský potok, Kuneradský potok, Stránsky potok, Medzihorský potok, Turiansky potok and Bytčický potok flow into Rajčianka. The left tributaries are the Čierňanka, Jasenovský potok, Medník, Svinianka, Lietavka, Bitarovský potok and Bradová watercourses. Rajčianka stretches from the Čičmianská valley to the city part of Žilina, to Strážov, where it flows into Váh under a railway bridge at an altitude of 325 meters. It is its left tributary. The Kuneradský brook watercourse springs in the Malá Fatra mountains on the southern slope of the Veľká lúka hill at an altitude of 1426 m above sea level. From the spring it stretches to the west and southwest, and in the section Nad majerom it turns to the northwest and continues west. Near the Kuneradský manor, its left tributary Bystrička flows into the Kuneradský stream. From this place Kuneradský stream continues to the northwest and passes through the village Kunerad. From the urban area of the village of Kunerad, it passes in a northwestern direction to the urban area of the village Rajecké Teplice, where it flows into Rajčianka by the lake in the Rajecké Teplice Park (Figure 1).

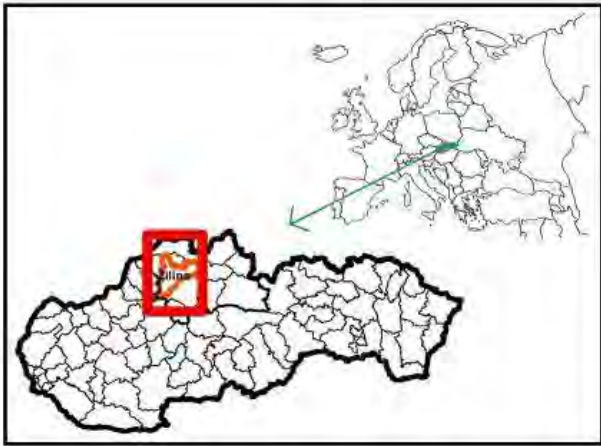


Fig. 1. Definition of territory

3. Results

To teach the physical geography of the local country, we have created several activities for primary and secondary schools. We created several activities in the field of morphography, pedogeography, biogeography, climate geography and hydrogeography. The aim of this research is to find out how students evaluate our method of teaching using an interactive teaching tool to support the teaching of the geography at primary and secondary school. In addition, we wanted to get their opinion, whether the procedure and method of use remains.

At the end of the experiment already carried out, we asked the primary and secondary school's students to complete a questionnaire, supplemented comment what they lacked and which according to them was too much. Students were divided into groups according to their field skills. Total participated in testing was 97 students (70 students of primary school and 27 students of secondary school). Types of groups were inhomogeneous, such as by age and gender.

3.1. Walk to the village Rajecké Teplice with a fisherman (primary school, second grade)

Tools for teacher: camera, book publication on freshwater fish (the text part of the proposed folder "Fish of our waters" can be used). Tools for students: boards for writing, pens, sturdy shoes.

The basis of the activity is to provide a professional fisherman who has a valid fishing permit and fishing license. It is important that the walk is planned during the fishing trout season t. j. from 16 April to 30 September. The months of May and September are recommended, when the weather temperature is reasonable without precipitation.

The essence is to catch different species of fish, which students have to identify and describe the body characteristics of the captured species. The teacher will then give the students a short expert explanation, from which the students will write down the most important information. Upon arrival at the school, the teacher divides the students into groups as needed (number of species caught = number of groups). Each group will be given the task of processing a text part about one caught species, which is given to them by the teacher, from their own notes together with the use of a professional publication. During one week, the teacher prepares photographs of individual species, prints them and sticks them on a drawing of the required size. Under each photo omits place for text section of each group to complement students. The poster created in this way can be hung in the classroom or at school and can thus be used for education as a teaching aid.

3.2. "Leporelo" (primary school, second grade)

Leporelo is a folding textbook that contains knowledge about the ichthyofauna of the local landscape. This book can be used as a tourist brochure, owing to the content page in two languages (English and Slovak) (Figure 2). It deals with ten species from the ichthyofauna of Rajčianka and Kuneradský brook.



Fig. 2. Leporelo

3.3. “Pexeso” – memory game (primary school, second grade)

The images of the created memory game (Figure 3) contain photographs of selected species of fauna and flora of the local landscape. The teacher can use this method of teaching at the beginning of the lesson in the motivational phase. The memory game contains 32 pairs of pictures. The teacher can divide the memory game into several parts in advance and also divide the students into several groups so that the other phases of the lesson can be completed in time. The pictures contain both Slovak and Latin names of the species. As part of the use of memory game in primary school, the education of Latin names is not required. For high school students, respectively can require some Latin names after considering the teacher.



Fig. 3. Memory game

3.4. Water analysis/monitoring (high school)

Tools: 3 water samples from different places, pH indicator, indicator for measuring water hardness, school chemical case for measuring the content of various chemicals in the water (ammonia, nitrites, nitrates).

The main step in the preparation of this activity is the collection of 3 water samples, which will come from a mountain stream (mountain spring in the village Kunerad), from the river **Rajčianka** and from a water tap. Students are divided into 3 groups. Each group will receive one sample. In the next step, the measurement of the chemical content in the water, the water hardness and the pH value will take place. Each group analyzes the water sample with the help of the teacher, describes the causes and consequences of the color of the sample, the content of chemicals, or contamination of the sample.

3.5. Soil permeability (primary school, second grade)

Tools: tool for digging into the ground (eg spade), containers for soil types, 3 samples of soil types – clay-aluminum, aluminum, sandy-aluminum (samples of clay-aluminum soil type can be taken in the locality Žilina-Závodie, aluminum soil type in the village of Kunerad and the sandy-aluminum soil type in the village of Lietavská Lúčka, water, filter paper (3 x), filter funnel (3 x), time measuring device (watch, stopwatch).

The aim of the activity is to determine the permeability of individual soil types and to assign the characteristics of individual soil species to their names.

First, we dig samples of three different soil types. Put filter papers and the same amount of soil in the filter funnels. We irrigate soil samples with the same amount of water and observe the permeability of individual soil types, the rate of filtrate formation, the time for which the filtrate is formed and the quality of the filtrate. Based on the results of the observation, students try to assign **individual soil types together with their characteristics in terms of Fulajtar (2006), Lukniš (1972)** and the Research Institute of Soil Science and Soil Protection, 2015.

The preparation of the assignment will take place in the students' home environment. Students prepare a weather report (range: approx. A4). The essence of the task is to present the weather report in the same way as the weather announcer on television, using the staging method **of teaching used in the assignment. The weather must apply to the area from the Žilina Region** (however, this can be applied to any location in the world) and must include information on air temperature, clouds, total precipitation, air pressure, wind speed and direction. Students should have sufficient time (at least 1 week) to complete the assignment. Students will also prepare a presentation (by using the computer program Microsoft PowerPoint), which will contain maps, respectively images suitable for presentation and fellow students a better idea for the weather reports. Students can work in pairs or groups (depending on the number of students in the class), but during the presentation, all students in the group must take turns so that everyone can try out the role of weather announcer. It is also possible to divide task presentations into several lessons as needed. After the presentation of their work will vote for "best tree frog class" that can be rewarded. For this project in Slovakia can be used www.shmu.sk, www.pocasio.sk within the world, e.g. www.imeteo.com, www.meteoblue.com pod.

3.6. Keyword filter (high school)

Čapek (2015) describes this type of teaching activity as a method of working with a text, which leads to the ability to better understand a professional text and take important facts from it, to select the important from the less important. The activity begins with the distribution of the professional text by the teacher in pairs. The task of the students is to choose from the text 3-5 keywords that they consider the most important (words that best describe the meaning and content of the text). The teacher draws a funnel on the board and a bank below it. When students have their keywords ready, they gradually come to the board and write the words to the bank (always write only the word that has not yet been used). Subsequently, the students will vote for the 5 best keywords (or there will be a discussion). Filtered keywords that help students better understand the subject matter are written in the notebooks. For example, we present curriculum activities suitable for morphogeography teaching of local landscape:

In the Rajčanka river basin, which also includes the Kuneradský stream, the highlands and mountains are the most pronounced in Malá Fatra and the mountainous type of relief also appears on the ridge. The relief of erosive furrows is also typical in the highest parts of the Rajčianka basin. In the Strážovské vrchy, the mountainous relief completely predominates. In Rajecká and Žilina Basin prevails surface of small scale surface river plains, which is especially visible at the bottom of the Rajčianka valley. The low and medium terraces along Rajčianka form mostly continuous strips. On the slopes of Lúčanská Malá Fatra rises several streams that form a ribbed system of deep valleys, which are usually the place where lie the individual municipalities. One such major streams is also Kuneradský stream which forms the eastern border of cadastral municipality Stránske. Erosion and erosion-accumulation processes contributed to a large extent to the geomorphological development of the Rajčianka and Kuneradský streams.

From this text are these 5 best keywords (for example): Rajčianka and Kuneradský streams, Strážovské vrchy (Mts.), Malá Fatra (Mts.), erosion, basin.

Through survey we focused on the influence and support of field teaching, because currently prevailing trend of Corona crisis and related restrictions and so their implementation in different parts of the learning process.

Individual items of the questionnaire, which characterized the field teaching method by students were measured on a scale (negative, neutral, positive). Overall, in the evaluation involved 97 students. The highest recorded age was 18 and the lowest 11. The testing was attended by 30 boys and 67 girls. From the questionnaire we wanted to see if there are significant differences in the assessments of field method of teaching as among all respondents (students), as well as among students of the primary and secondary groups separately. And to verify that the proposed methods of teaching geography in the field meet with a positive response. The first part of the questionnaire focused on motivation (Table 1). Three of the respondents (4.3 % of primary school) and only one from secondary school's student stated a negative relationship of this method, 12 of students of primary school (17.1 %) and 5 of students of secondary school (18.6) had neutral attitude. The most of them had positive attitude 55 students of primary school (78.6 %) and 21 students of secondary school (77.7 %). No significant differences between primary school's students and secondary school's students were found ($\chi^2(2) = 0.04, p > 0.05$).

Table 1. Student's attitudes (motivation)

	Attitudes to new teaching methods, leading to higher motivation of students, % (frequency)		
	Negative	Neutral	Positive
Primary school's students	4.3 (3)	17.1 (12)	78.6 (55)
Secondary school's students	3.7 (1)	18.6 (5)	77.7 (21)

The second part of the questionnaire research was focused on attitudes to new teaching methods, leading to active acceptance of knowledge (Table 2). Four of the respondents from primary school (5.7 %) and again only one from secondary school's student stated a negative acceptance of knowledge, 13 of students of primary school (18.6 %) and 8 of students of secondary school (29.7) had neutral attitude. The most of them had positive attitude, so 53 students of primary school (75.7 %) and 18 students of secondary school (66.6 %). No significant differences between primary school's students and secondary school's students were found ($\chi^2(2) = 1.47, p > 0.05$).

Table 2. Student's attitudes (active acceptance of knowledge)

	Attitudes to new teaching methods, leading to active acceptance of knowledge, % (frequency)		
	Negative	Neutral	Positive
Primary school's students	5.7 (4)	18.6 (13)	75.7 (53)
Secondary school's students	3.7 (1)	29.7 (8)	66.6 (18)

In the survey, we are most focused on whether it would be appropriate this field method for students only as a supplement or as a substitute for a full education. At the same time we focused on teachers, because they can determine the direction and progress of the education process. The proposed methods can be used by teachers as one of the possible tools.

4. Conclusion

Teaching students in a teacher's life should not only be his job, but above all his mission. In teaching, there is sometimes a stereotypical approach of teachers to the teaching process. The required change in the teaching system in primary and secondary schools can be implemented

by teachers who use different methods and different innovative activities within different phases of the lesson, which can motivate students to further their studies. In the education of geography, the content of the curriculum is to lead mainly to the development of students, and therefore we have created several innovative activities within the results that can be beneficial for primary and secondary school students in teaching geography of the local landscape with a focus on physical geography. The first, second and third activities are devoted to the biogeography of the local landscape. Walking in the countryside to fish students will learn the best information about the country in which they live and learn new knowledge about the local ichthyofauna, thus the fish species that live in the water flow. This textbook publication entitled "Fishes of Our Waters" about the ichthyofauna of the Rajčianka and Kuneradský streams also serves as information for students and can also serve as promotional material for the Žilina Region for tourists from abroad due to its bilingual content. "Pexeso" – memory game is suitable for use especially in the motivational or fixation phase of the lesson. The species it contains are typical for the surroundings of Rajčianka and Kuneradský stream and thus for the local area. The fourth and fifth activities teach students to distinguish individual phenomena in nature. Through the sixth activity, students learn to present their own projects and also appear in front of an audience. The seventh activity is suitable for a better understanding of a professional text and students learn to distinguish important elements from less important ones.

In the survey, we have chosen a questionnaire method, since this way is possible to get a lot of information in a relatively short time. At the same time the respondent has the opportunity to rethink and consider their responses. Based on a questionnaire survey, we can state that the proposed teaching methods in the field are interesting for students of both levels and lead to their motivation. The knowledge gained from these creative methods certainly leads to active acceptance of knowledge. Geography as a science has a great importance in solving many current problems of the world. Through these methods can students learn by fun way and acquire new skills.

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