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Specifics of Geography Teacher Training at the Faculty of Natural Sciences Constantine the Philosopher University in Nitra

Abstract

The Slovak education is currently experiencing a turbulent period associated with ongoing efforts to reform the education system, under-funding of education with low teacher salaries, overworked and feminized teaching staff, low social status of a teacher in society, problems in the creation and distribution of current textbooks, insufficient interest in studying natural sciences, leaving of young people to study abroad, etc. This situation is also reflected in the training of future teachers including the geography teachers (in combination with other subjects). The aim of this study is to provide basic information on the development of future geography teacher education in Nitra, which has almost a 60-year tradition. Moreover, it characterizes the current state of this education in the context of the subject field didactics and pedagogical practice and identifies the challenges of their future preparation. Methods of text analysis, information comparison, and statistical processing of quantitative information were used in this study. Key findings include the dynamics of the number of graduates from geography teaching study programs, responding to the situation in education system and demographic decline in the population, and reduction of contact lessons at the university leading to a reduction in the professional and didactic extent of knowledge and skills of future teachers. The most important conclusions or recommendations as well as scientific contribution concern the necessity to change the attitude of teachers towards the practically oriented teaching with stronger emphasis on training students' creativity not only through ICT, but also using creative and critical thinking strategies.

Key words: Geography teacher training; Changes in preparation; Pedagogical practice; Practically oriented teaching; Slovakia

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Introduction

Education has had an irreplaceable role in the history of cultural signs of nations and it can be said that its importance is constantly increasing over time (Lauko et al., 2011). Nevertheless, the current Slovak education system has long been experiencing a turbulent period which is related to the ongoing efforts to its reform which is still not implemented mainly because of the politicalization of these efforts and the lack of financing. This situation is also reflected in the training of future teachers including geography teachers (in combination with other subjects).

The aim of this study is to provide basic information on the development of future geography teacher education in Nitra, which has almost a 60-year tradition. Furthermore, it aims to characterize the current state of this education in the context of the subject field didactics and pedagogical practice and to identify the challenges of their future preparation.

Theoretical-methodical background

The process of training future teachers has been devoted a rich attention not only in domestic, but also in foreign literature. E.g. Bednarz et al. (2004) dealt in their article with the problems in the preparation of geography teachers in the United States. Pacheco et al. (2015), analyse study plans at seven universities in Portugal, which preparing future geography teachers.

The common post-war historical development of Czechoslovakia in one state led also to the creation of a common education system which has, basically, lasted until today in both republics that became separated after 1993. Due to very similar education system, in this section we pay primary attention to the Czech and Slovak information sources on future teacher education focusing on the education of future geography teachers.

Czech didactics of geography is very inspirational for Slovak didactics in many ways. The development of Czech didactics of geography, its present formal and pragmatic identity as an outlook for the future was elaborated by Rezníčková (2015). Baarová (2016) dealt with the profile of graduated geography teachers in the Czech Republic. Current topics of Czech, Slovak, and Polish geographic education were analyzed by Karvánková et al., eds. (2017). In addition to the characteristics of educational system and teaching of geography, they also focused on innovative methods and use of ICT in geography teaching or some contemporary topics of political, regional, and social geography in their didactic application.

Geography of education in Slovakia in the context of regional disparities was elaborated by Lauko et al. (2011). They paid attention to the school education system, education in Slovakia within the OECD, selected aspects of the population educational structure, elementary, secondary, higher education institutions with a

specific focus on the regions of commutation to universities and their catchment areas. The attention of other authors is also devoted to other aspects e.g. migration decision-making of university graduates (e.g. Reháč, Dudová, 2018) or analyses of the unemployment of higher education graduates (Líšková et al., 2015).

The development of geography teaching at elementary and grammar schools in Slovakia after 1989 and the proposal of basic conceptual elements of the new model of geographic education were provided by Karolčík et al. (2015). The basic document for the geography teaching is the state educational program which is specified in individual schools by the school educational program. The current university textbook of didactics of geography was elaborated by Madziková and Kancír (2017).

As for the Constantine the Philosopher University in Nitra (CPU in Nitra), all future teachers use a specific publication (sort of a workbook) (Kramáreková et al., 2016) in their pedagogical practice during the three years of study, in which they make records about all the observations and findings from the cognitive, output, and continuous pedagogical practice.

In the training of future geography teachers at the Department of Geography and Regional Development, a number of university textbooks, created at the department, is used e.g. focusing on microgeography - complex geography of municipality (Dubcová et al., 2012), didactics of geography in the field (Dubcová et al., 2013a) or work with talented youth in geography (Dubcová et al., 2013b). Moreover, the studies of other authors (e.g. Oremusová et. al, 1999; Fillerová, Oremusová, 2011; Škodová, Čižmárová, 2012; Oláhová et. al., 2013) provide specific examples of applying microgeographic knowledge which can be used by future geography teachers.

The publication which is devoted to the strategies of creative and critical thinking in the training of future teachers of natural sciences, mathematics, and computer science (Čerťková et al., 2017) includes also specific examples of these strategies in geography teaching.

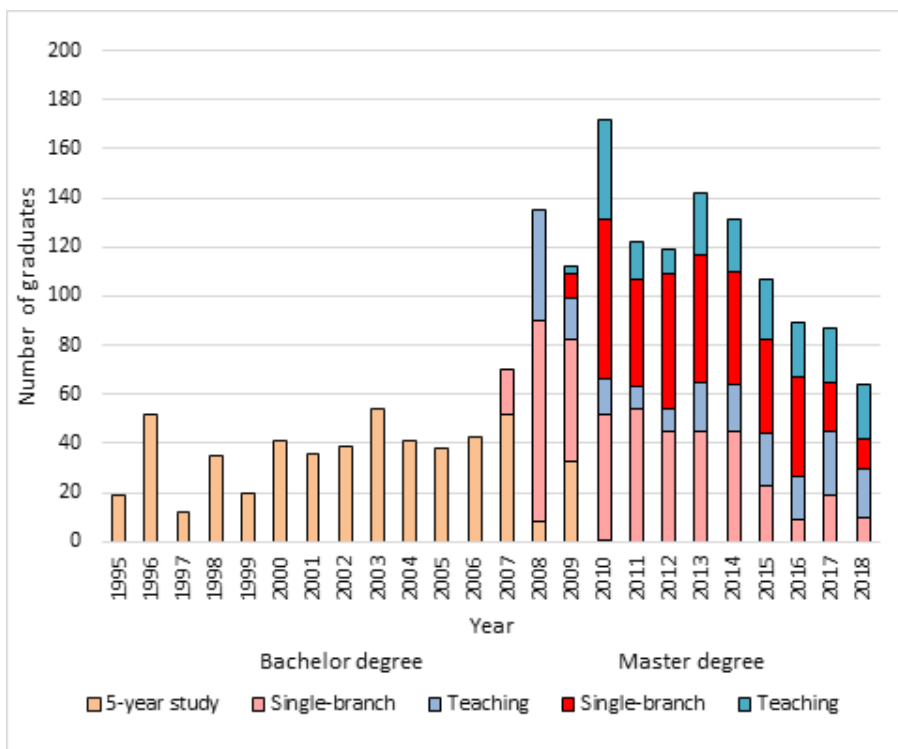
The methods of text analysis, information comparison, and statistical processing of quantitative information provided by the Academic Information System of the CPU in Nitra were used in this study.

From the history of geography teacher training

Geography as a separate subject of study was lectured at the Department of Natural Sciences since the establishment of the Pedagogical Institute in Nitra in 1959. In 1960, the former Department of Natural Sciences transformed into the Department of Mathematics, Physics, and Geography while separate Department of Geography was established in 1962. After this year, there was a period in which the name of the whole institution (the current name of Constantine the Philosopher University in Nitra since 1996), faculty (Faculty of Natural Sciences since 1993), and department (Department of Geography since 1991, Department of Geography and Regional Development since 2004) gradually changed. The study of teaching programs was originally continuous (4 years) in the combination of three subjects while since 1962, it was the combination of two subjects. Since 1977, the continuous 4-year study of teaching programs became the 5-year study.

The offer of study programs gradually expanded as well as the number of students gradually increased. The first single-branch bachelor degree study programs at the Faculty of Natural Sciences were established in the academic year 1997/98 while the first single-branch master degree study programs in the academic year 1998/99. A qualitative change in the development of the faculty was the start of the ECTS credit system which took place in the academic year 2001/02. Its basic idea was to create the possibility for students to study at foreign universities.

The development of the number of graduated geography teachers from 1995 to 2018 is shown in Graph 1. It shows that the highest number of graduates from the department was in 2010 including the highest number of graduated geography teachers (56). Overall, the number of graduates declined, but since 2016, the ratio between single-branch and teacher training study is again in favor of future teacher education. This is a response to the overall situation in education system, demographic decline in the population, and leaving of young people to study abroad.



Graph 1 Development of the number of graduated geography teachers in 1995–2018

Source: Zelenický, ed., 2013 and Academic Information System of the CPU in Nitra

To compare the changes in the structure of geography teaching study plans, we provide tab. 1 which compares two academic years: 1993/94 when the Faculty of Natural Sciences (FNS) was established and the current academic year 2018/19.

Tab. 1 Comparison of geography teaching study plans in academic years 1993/94 and 2018/19

Year of study	Academic year							
	1993/1994				2018/2019			
	General basis number of subjects and number of lessons per week		Geography number of subjects and number of lessons per week		General basis number of subjects and number of lessons per week		Geography number of subjects and number of lessons per week	
	WS	SS	WS	SS	WS	SS	WS	SS
1.	4 subjects 7 lessons	4 subjects 8 lessons	5 subjects 11 lessons	6 subjects 13 lessons + 1x field practice 6 days	1 subject 4 lessons	1 subject 4 lessons	3 subjects 10 lessons	2 subjects 8 lessons
2.	6 subjects 6 lessons	6 subjects 6 lessons	4 subjects, of which 1 COS 11 lessons	6 subjects, of which 1 COS 11 lessons + 2x field practice 5 days	1 subject 2 lessons + 3 COS 6 lessons	1 subject 2 lessons + 3 COS 6 lessons	3 subjects, of which 1 COS 10 lessons	4 subjects, of which 1 COS 8 lessons
3.	2 subjects 2 lessons	3 subjects 4 lessons + Pedagogical practice cognitive at elementary and secondary school	5 subjects, of which 1 COS 11 lessons	6 subjects, of which 1 COS 11 lessons + 1x field practice 10 days	1 subject 4 lessons + Pedagogical practice I. cognitive-assistance	-	6 subjects, of which 1 COS 13 lessons	3 subjects, of which 1 COS 10 lessons
		Without state exam					State exam – 1 subject	
4./ 1. master	3 subjects 5 lessons + Pedagogical practice output at elementary and secondary school	2 subjects 3 lessons + Pedagogical practice output at elementary and secondary school	5 subjects, of which 1 COS 11 lessons	6 subjects, of which 1 COS 11 lessons + 1x field practice 10 days	1 subject 4 lessons + Pedagogical practice II. output secondary school	2 subjects 4 lessons + Pedagogical practice III. output elementary school	4 subjects, of which 1 COS 16 lessons	2 subjects, of which 1 COS 4 lessons
5./ 2. master	-	Continuous pedagogical practice	5 subjects, of which 1 COS 8 lessons		1 subject 2 lessons	Pedagogical practice IV. continuous	3 subjects, of which 1 COS 10 lessons	1 PV subject 2 lessons
	State exam – 3 subjects					State exam – 3 subjects		

Legend: WS – winter semester, SS – summer semester, COS – compulsory optional subject

Source: Internal materials of the CPU in Nitra and Academic Information System of the CPU in Nitra

Table 1 shows the reduction of contact lessons as well as the number of subjects. It is a consequence of the university management decision coupled with the idea that students will spend the time on self-study through ICT at the expense of this reduction. Unfortunately, this concept has not been fulfilled, as evidenced by the pedagogical activity or testing the results of the study after each semester. There has been a decrease in the professional and didactic extent of students' knowledge and skills and students show uncritical glorification of information from the Internet. Although the pedagogical activity is becoming increasingly demanding, teachers need to look for new forms of student motivation and new forms of working with them.

Current conception of undergraduate teacher training in geography

At present, undergraduate training of geography teachers is being carried out at six geographic (university type) departments in Slovakia (Bratislava, Nitra, Ružomberok, Banská Bystrica, Prešov, and Košice). The students are trained for the 2nd level of elementary schools (5th-9th grade) and secondary schools (either 4-grade or 8-grade grammar schools). Because the currently valid "Description of the study program of teaching academic subjects" (<https://www.portalvs.sk/sk/studijne-odbory/zobrazit/10101?historia=2017-02-19>) is set quite broadly, there are differences in the conception of undergraduate geography teacher training at individual departments.

The geography teacher study is realized in two successive degrees (bachelor and master) and in two forms (full-time and part-time). The standard length of the bachelor degree study is 3 years while the master study takes 2 years. The study ends with passing the state exam and subsequent graduation ceremony and awarding of the Bc. or Mgr. degree. A graduate of the bachelor degree study is eligible to be an assistant teacher or an assistant of one of the teachers. A graduate of the master degree study is capable of being a full-time geography teacher at lower and upper secondary level. Regarding the credit system, the bachelor degree study requires to obtain 180 credits minimum while in the master degree study, it is 120 credits minimum. The credit system allows the students to create their own study plan.

Department of Geography and Regional Development of the FNS CPU in Nitra offers students a particular study plan considering the continuity of subjects although it represents only a recommendation. The study program "Teaching of Geography" can be studied in combination with another subject. Currently, there are 25 subjects available at three faculties. It is, for example, history or languages (offered by the Faculty of Arts), physical education or pedagogy (offered by the Faculty of Education), and mathematics, physics, chemistry, informatics, biology, ecology and environmental science or economic subjects (offered by the Faculty of Natural Sciences).

In the academic year 2017/2018, the Department of Geography and Regional Development registered 99 students with the combined teaching study program at the bachelor study (1st-3rd year) representing 12% out of the total number of students of teaching academic subjects at the Faculty of Natural Sciences. The greatest interest is in the combination of geography with physical education (24 students), biology (15), history (9), Slovak language (9), English language (5), ecology (5), ethical education (5), computer science (5), economic subjects (4), and mathematics

(3). Other study fields in combination with geography, which are represented by one or two students, are psychology, pedagogy, Russian, German, and Spanish language, chemistry, physics, education for citizenship, music education, and art education. Out of the total number of geography students in the bachelor degree study, 44% of students were from grammar schools while the rest are graduates from various secondary schools. The study program Teaching of Geography at the bachelor study is studied by 51% of men.

At the master degree study (1st-2nd year) in the academic year 2017/2018, 43 students studied geography in combination with other subject representing 5% out of the total number of faculty students (teachers) in the master degree study. The highest interest is in studying geography in combination with ecology (5 students) and history (4). Other study fields such as biology, English, German, and Slovak language, chemistry, computer science, and mathematics are represented by 1 to 2 students. The study program Teaching of Geography at the master degree study is studied by 70% of women.

In addition to the full-time form of study, graduates from the teaching study programs have also interest in the 3-year extension study during which they can extend their qualification prerequisites in the third subject (i.e. geography). Other forms of education offered by the department are continuous education, attestation and rigorous education. After a successful defense of the rigorous thesis, the applicants receive the PaedDr. – Doctor of Pedagogy degree (<https://www.fpv.ukf.sk/sk/>).

Subjects within the study plans for bachelor and master degree study can be divided into three groups according to the valid description of the study program of teaching academic subjects: socio-scientific context of the study field, pedagogical and psychological context of the study field, subject and didactic context of the study field. According to Baarová (2016), it would be appropriate to specify also the fourth separate group – pedagogical practice.

At the bachelor degree of geography teaching study program, the share of individual groups of subjects out of the total number of credits is as follows: subjects of social-scientific background 3.4%, pedagogical and psychological subjects 15.7%, pedagogical practice 1.1%, bachelor thesis and seminars 9.0%, geography and subject field didactics 35.4%, second subject in combination 35.4%. When the student elaborates the bachelor thesis in geography, more than 44% of subjects in the study plan are of geographic character (including subject field didactics). At the master degree study program, the minimum share of individual groups of subjects out of the total number of credits is the following: subjects of social-scientific background 1.6%, pedagogical and psychological subjects 11.7%, pedagogical practice 8.3%, diploma thesis and seminars 21.7%, geography and subject field didactics 28.35%, second subject in combination 28.35%. When the student elaborates the diploma thesis in geography, up to 50% of subjects from the study plan are of geographic character (including subject field didactics).

In the study plan for the Teaching of Geography study program, there are four specialized didactic subjects which are primarily intended for training of geography teachers.

Introduction to Didactics of Geography – it finishes with a mark within the so-called continuous evaluation in the 5th semester having the range of 2 lectures per week. In this subject, students get familiar with binding documents which define

general objectives and key competences in education. The emphasis is placed on familiarizing students with the content of geographic education in lower and upper secondary education (ISCED 2 and 3). Part of the semester is dedicated to working with the talented youth and students are actively involved in organizing the subject competition "Geographic Olympiad".

Selective Seminar on Didactics of Geography – it is taught in the 6th semester having the range of 2 lessons per week. The content is mainly focused on field lessons where students can also try their own activities in order to develop critical and creative thinking.

Didactics of Geography – it is a subject with the range of 2 lessons of lectures and 2 lessons of exercises per week. It finishes by exam in the 1st year of the master study in the 1st semester. Students learn about the theoretical and methodological fundamentals of the subject field didactics and about the development of the subject of geography in Slovakia. Increased attention is paid in particular to the methods, forms, and principles that will be needed in the pedagogical practice of future geography teachers. During the exercises, students prepare activities, aids, and games on individual topics within the content of the state educational program for the 5th-9th grade of the elementary school, grades of the 8-year grammar school, and 1st-4th year of the secondary schools.

Selective Seminar on Touch Technologies in Geography Education - it is studied in the 2nd year of the master study in the 3rd semester having the range of 2 lessons per week. Using touch technologies and existing applications, students propose activities related to the physical and human geography of the Nitra City which are carried out in the field.

In addition to developing professional competencies, the emphasis is also placed on the development of psycho-didactic competencies of future geography teachers. Students learn during the didactic training mainly about the strategies aimed at the development of critical and creative thinking which can be practically verified during their pedagogical practice as a part of the study.

Pedagogical practice is an integral part of the comprehensive preparation of students of teaching study programs. It encompasses a set of practical activities that stimulate the development of the students' personality and provide them with the possibility of interconnecting the theory and practice and professional skills needed in their future profession. Consistent practical training of future teachers is an essential part of improving the quality of the education system. Students have the opportunity not only to verify the acquired theoretical information in practical life, but also to map their own potential in teaching profession.

During the pedagogical practice, students learn to observe and analyze the educational process, apply the theoretical knowledge gained during the course of their study, and gradually acquire pedagogical skills required in common teaching practice. Pedagogical practice will gradually teach them to pedagogically think and combine the theoretical knowledge with practical. Thus, pedagogical practice becomes also a criterion for assessing the level of theoretical preparation of students for their future teaching profession.

The system of pedagogical practice takes place in several stages at the CPU in Nitra during which the student has three types of practice.

First, the student has a 20-lesson cognitive (continuous) practice from each subject at elementary or secondary school. Using observation techniques and taking notes, students acquire the idea and first experience about specific aspects of lessons, personality characteristics of teachers and pupils, their expressions, etc. Here, they learn to observe selected aspects of the educational process and to record observed phenomena in the form of records. At the same time, students begin to learn to discuss the problems of the educational process with the teaching staff. During the cognitive practice, students focus on 12 aspects of the teaching process of the lesson which they record into the observation sheets (1. Objectives of the lesson and their fulfillment, 2. Methods and forms of work, 3. Presentation of the new curriculum, 4. Control and evaluation of pupils, 5. Work with the textbook, 6. Work with teaching aids and didactic techniques, 7. Teacher personal characteristics, 8. Teacher's performance in class and communication with pupils, 9. Teacher's professional skills, 10. Social relations of pupils in class, 11. Activity of pupils, 12. Climate in class).

The second type of pedagogical practice is the output (block) practice. Students have 10 lessons from each subject during the winter semester at the secondary school and in the summer semester at the elementary school (i.e. 20 lessons in the relevant academic year). They attend this practice in 3-5 student training groups during which the students, besides the cognitive lessons with the training teacher and fellow trainees, begin to teach their first lessons. Students deepen not only their abilities to observe and analyze the lesson, but learn to plan it properly (to elaborate the preparation for teaching) and to successfully implement it.

The final stage is the output (continuous) pedagogical practice. During the 4th semester of the master degree study, students complete the continuous output pedagogical practice in the range of 30 lessons i.e. 15 lessons at primary school and 15 lessons at secondary school. As a part of it, the student becomes (sort of) a member of the school's teaching staff for the first time. Although, students still work under the guidance of the training pedagogue, their work becomes much more systematic, multilateral, responsible, and independent.

An important role in the whole process of pedagogical practice is played by the students' self-reflection about the teaching process, individual perception and evaluation, and retrospection on the type of attended practice.

The records from all three types of pedagogical practice taken by the student can be examined at any time thanks to the unique handbook (mentioned above) which is a permanent record of all activities in the process of acquiring and enhancing pedagogical knowledge, skills, and experience (Figure 1). Throughout the whole study, pedagogues and students continuously use other book titles written by the department staff that have a direct relationship to didactics of geography representing a collection of concrete examples of the connection between didactic theory and practice (Figures 2, 3, 4).

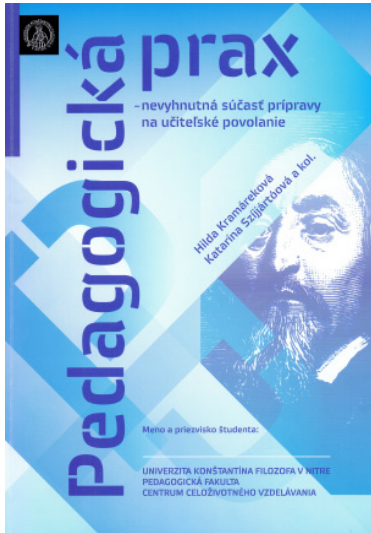


Fig. 1 Pedagogical practice
Source: Kramárková et al. (2016)

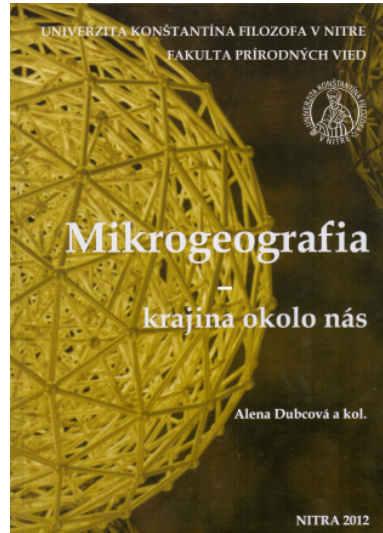


Fig. 2 Microgeography – Landscape around us
Source: Dubcová et al. (2012)



Fig. 3 Didactics of geography in the field
Source: Dubcová et al. (2013a)



Fig. 4 Work with talented youth
Source: Dubcová et al. (2013b)

Conclusion

The declared priority of every government not only in Slovakia, but also in the world, is education as well as science and research in wider context. Despite the fact that the political representatives see education as a tool for long-term economic growth and reduction of social inequalities, the reality is different (Lauko et al., 2011). Support

for education is not a real priority of the government and insufficient funding of education puts pressure on the Ministry of Education, Science, Research and Sport of the Slovak Republic from the side of teachers' union organizations. Low salaries of teachers are currently being solved by their gradual, though minimalist, increase. Moreover, changes in overworked and feminized teaching staff, low social status of the teacher in society, lack of interest in studying natural sciences, and leaving of young people to study abroad are long-standing challenges. The situation in the geography teacher training is worse since geography is not one of the main subjects in schools and relatively often it is taught unprofessionally (statistics are absent in this respect). Geography graduates in combination with another subject, therefore, often undergo extension study to acquire the ability to teach at least one other subject.

It is now essential for geography teachers themselves to change the attitude to student education in order to expand their knowledge and skills through practically oriented learning and, in particular, creative and critical thinking strategies. Unfortunately, in Slovakia, geography has still a persistent image of the descriptive science and students come to study an "easy" geography e.g. due to the expected travelling possibilities. The personnel managers are not familiar with the job positions for geographers and "geographic" job positions are assigned to engineering graduates. At elementary and secondary schools, it is still "normal" if the subject of geography is a part of the teacher's tasks whose primary subject combination is different. Considerable reserves are also in insufficient marketing of geography as a science.

It should be noted, however, that the image of geography as a science, applicable also for a particular practice (whether teaching or non-teaching), should be created by geography teachers at elementary and secondary schools, but, paradoxically, the state educational program as well as textbooks at elementary and secondary schools deal with it only marginally. However, a completely different situation in this regard is abroad. Although the inspiration is possible, in Slovakia, it is still a long-distance run...

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