Hana Svobodová

OUTDOOR EDUCATION IN GEOGRAPHY: A SPECIFIC EDUCATIONAL STRATEGY

MASARYK UNIVERSITY PRESS

HANA SVOBODOVÁ

OUTDOOR EDUCATION IN GEOGRAPHY: A SPECIFIC EDUCATIONAL STRATEGY

HANA SVOBODOVÁ

OUTDOOR EDUCATION IN GEOGRAPHY: A SPECIFIC EDUCATIONAL STRATEGY

MASARYK UNIVERSITY PRESS
BRNO 2019

KATALOGIZACE V KNIZE - NÁRODNÍ KNIHOVNA ČR

Svobodová, Hana, 1982-
Outdoor education in geography: a specific educational strategy / Hana Svobodová. -- First edition. -- Brno: Masaryk University Press, 2019. -- 1 online zdroj
České resumé
Obsahuje bibliografii, bibliografické odkazy a rejstřík

ISBN 978-80-210-9522-9 (online ; pdf)

* 37.091.33/.39 * 37.091.214 * 91 * 796.012.6 * 37.012 * 373.3 * (437.3) * (048.8)
– 2016-2018
– terénní vyučování
– vzdělávací programy -- Česko
– zeměpis
– pohybová aktivita
– pedagogický výzkum -- Česko -- 2011-2020
– základní školy -- Česko
– monografie

37.09 - Organizace výuky a vzdělávání [22]

Reviewers:

assoc. prof. dr. Dagmar Popjaková, Ph.D., Matej Bel University, Banská Bystrica, Faculty of Natural Sciences, Department of Geography and Geology

dr. Mojca Ilc Klun, University of Ljubljana, Faculty of Arts, Department of Geography

Acknowledgement

This work was supported by a Czech Science Foundation, project 16-00695S Fieldwork as a powerful learning strategy. Partial materials from the projects supported by a Faculty of Education Grant (MUNI/A/0946/2015 The Use of Outdoor Education at Elementary Schools as Specific Learning Strategy), the Fund for the Development of Masaryk University (MUNI/FR/0881/2016 Topics for Outdoor Education) and Technology Agency of the Czech Republic (TJ01000127 Fieldwork Education System for Elementary Schools) where the author of the book was a member of the team were used as well. The translation and proofreading of the work were supported from the project No. CZ.02.3.68/0.0/0.0/16_038/0006952 Rozvoj procesu pregraduálního vzdělávání na PdF MU: důkladnou přípravou k dobré praxi (3P).

ISBN 978-80-210-9522-9
ISBN 978-80-210-9521-2 (brož. vazba)

https://doi.org/10.5817/CZ.MUNI.M210-9522-2019

CONTENT

I would like to thank Eduard Hofmann, a colleague from the Department of Geography, Faculty of Educacion, Masaryk University that he has brought me to the topic of outdoor education. Thanks also to other members of the Department of Geography who address the theme of outdoor education, whether, concerning theory or practice, namely, it is Radek Durna, Darina Mísařová, Petr Knecht and Tereza Češková.

At the same time as this monograph, the Concept of Outdoor Education for the Elementary School (Svobodová, Mísařová, Durna, Češková, & Hofmann, 2019) was developed, in which a number of pieces of knowledge from this book were used.

INTRODUCTION

Using the real world is the way learning has happened for 99.9% of human existence, only in the last hundred years have we put it in a little box called a classroom.

Will Nixon, Letting Nature Shape Childhood

Outdoor education refers to a learning format that has long been seen as a very powerful learning strategy for understanding today's world. Its objective is to give a practical and usable dimension to the matter being taught. It is specific to a variety of natural and social science disciplines. In the Czech school curriculum, the format is well established in teaching geography and biology and in physical education.

As irreplaceable as it may be seen to be within the educational system, the attempts at comprehensively incorporating outdoor education in tuition at all levels and all types of schools have so far failed in certain states (such as Czechia, Slovakia, Slovenia… – see, for example, Vlček et al., 2016). Indeed, outdoor education places great demands not only on teachers and pupils but also on school management and parents. For teachers who are accustomed to their dominant classroom role, outdoor education represents a significant obstacle as they can no longer assess their pupils on their achievement only, but rather on the overall course of the outdoor education activity as the tuition is of an open-ended type.

The publication presented is based on the findings obtained from the project 16-00695S *Fieldwork as a powerful learning strategy*, which was supported by the Czech Science Foundation. The project aimed to analyse the benefits of outdoor education in teaching geography and developing the motoric competencies of pupils at elementary[1] schools. The same aim is pursued in this book and is based on two key assumptions: (1) Outdoor education contributes to the development of all the key competencies of pupils listed in the Framework Educational Programme

1 The term "elementary education" is used as a superior term of primary and lower secondary education as ISCED, 2011 defines it. Sometimes the term "elementary" is translated from the Czech language also as "basic" education; however, the author does not use this term.

for Elementary Education in the Czech Republic and to the linking of theoretical and practical knowledge. (2) Outdoor education contributes to the development of natural motoric activity and a healthier lifestyle of pupils.

Although the book approaches outdoor education as a learning format that may be implemented in the tuition of all subjects, some of **its parts are focused explicitly on outdoor education in geography education**, which deals mainly with the interaction of humans and nature. In other words, geography integrates knowledge from both natural and social sciences. It is also characteristic for geography that it deals with space and spatiality, i.e. the landscape that surrounds us, its history, its presence and the prognosis of its further development. While a chemist or a physicist needs a real laboratory for his work, for a geographer, the landscape itself is both a laboratory and a living textbook. As Marada (2006, p. 2) notes: "If we intend to use the landscape without destroying it, we should actively try to get to know it."

The publication aims to promote outdoor education as a strong teaching strategy, to describe its links to the school curriculum, and to offer teachers a helping hand in developing the concept of outdoor education. All of this is based on exploring the benefits of outdoor education in teaching and promoting physical activity, which is a natural part of it, from the point of view of pupils, and finding out about the attitudes of teachers and parents to outdoor education.

The publication is divided into two sections. The first section deals with outdoor education as a specific educational strategy. It analyses how outdoor education is established in the Czech school curriculum, outlining the steps necessary for outdoor education to be implemented, in terms of preparation of both the teachers and pupils. At the same time, the section describes the transformations of outdoor education and compares the current state of outdoor education abroad and in the Czech Republic, including a description of the most common forms of outdoor education applied currently in Czech schools. In the conclusion, this section provides specific recommendations for the development of an outdoor education concept for elementary schools. This part, among others, presents a model preparation for outdoor education. It provides specific guidelines for how to implement outdoor education for supporting both problem-solving tasks and pupils' physical activity.

The second part of the publication is devoted to outdoor education research as a strong educational strategy. First, the research needs and the research aim are described, including the methods used. Then, the results of the research, conducted in cooperation with elementary school teachers, pupils of a model elementary school and their parents, are presented in detail.

In addition to addressing the professional objectives, the publication also aims to contribute to the discussion on the current state of implementation of outdoor education in the Czech setting. It is well known – and it will be pointed out on multiple occasions in the publication – that although outdoor education is a powerful educational strategy, it often seems difficult to show its power in the Czech school setting.

The publication is intended for both professionals and the teachers' community, who may be inspired in preparing their own outdoor education projects and in incorporating outdoor education in the comprehensive system of elementary school education. The author of book hopes all readers consider the book as a valuable source of information and ideas to ponder not only in the context of outdoor education but in the context of education in general.

1 THE CONCEPT OF OUTDOOR EDUCATION AND ITS RELATIONSHIP WITH THE SCHOOL CURRICULUM

You can discover more in an hour of play than you can in a lifetime of conversation.
Unknown author

1.1 THE TERM "OUTDOOR EDUCATION"

In professional literature the term "**outdoor education**[2]" is often combined with outdoor **learning/teaching or fieldwork** (see for example Biddulph, Lambert, & Balderstone, 2015; Kent, Gilbertson, & Hunt, 1997; Lambert & Reiss, 2014; Ofsted, 2011; Oost, De Vries, & van der Schee, 2011, or Rickinson et al., 2004). Lambert and Reiss (2014) state that fieldwork can be understood as any other part of the curriculum, including both leaving the space of the classical school classroom and activities leading towards accomplishment of the educational and upbringing goals through first-hand experiences, and hand-on experience (Nicol, 2007), using the phenomenon of education in the open air (outdoors). We agree with the opinion of the above-quoted authors who consider outdoor education in the "real world" as an essential part of science education, as it develops the skills needed for grasping the very essence of this area of human/student/pupil inquiry. Outdoor education is similarly seen as an integral part of science education for example by Kent et al. (1997), who believe that outdoor education is not only effective but also a very pleasant part of education for all participants to the educational process. The role of outdoor education in the sense of a strong teaching strategy is also pointed out by

2 *Outdoor education* consists of "outdoor learning" on the pupil´s side, and "outdoor teaching" on the teacher´s side. *Fieldwork* is a particular field activity included in the superior category of "outdoor education".

Dutch authors (Oost, De Vries, & van der Schee, 2011), who define outdoor education as an implementation of educational activities in the outdoor setting, connected with particular curriculum contents. Oost, De Vries and van der Schee (2011) identify themselves with the opinions of Rickinson et al. (2004), who say that well thought-out and sensibly implemented outdoor education, included after (or before) the relevant classroom theme, provides pupils with many new opportunities for development of their knowledge and skills, as well as adding value to their everyday classroom experience. All of the above-mentioned reasons support the idea of frequent incorporation of outdoor education into the curricula.

In Czech literature, outdoor education is described in Řezníčková (2008, p. 10), who points out the lack of clarity regarding the very term and offers other concepts: education organised in the (urban/rural) environment, field education, fieldwork, field exercises, excursions, educational walks or geographic laboratories. Činčera and Holec (2016) presented a comprehensive overview of outdoor education in formal education, drawing upon an analysis of over 70 studies dealing with the impact of outdoor education programmes in formal education on pupil knowledge, attitudes, skills, convictions and behaviour.

In Slovakia, which was formerly a part of a common country with the Czechia and thus had a common educational system, a study into the effectiveness of outdoor education was undertaken, for example, by Kvasničák, Prokop and Pištová (2005) and Kvasničák (2013), who refer to the concept as **experiential field education** and classify the activity under informal education. Basic outdoor education activity – observation – was described in detail by another Slovak author (Mazúrek, 1984).

Although the Czech educational system includes outdoor education, see e.g, the educational areas of the Framework Educational Programme for Elementary Education (hereinafter FEP EE) relating to Biology (Empirical exploration of nature) and Geography (Field geographic education, practice and application), the concept has yet to be defined in precise terms in Czech literature. Therefore, we define it based on the definition of Hofmann (2003) as:

> Outdoor education is an 'umbrella' concept for multiple forms of teaching, with the common feature of being undertaken outdoors, outside of school buildings. Outdoor education can take on a variety of organisational forms, from didactic walks, excursions and field exercises to field research. If outdoor education should have any benefits for pupils, they must be actively performing activities such as collecting and processing information from primary and secondary sources, using the research methods and aids of individual scientific disciplines. (p. 7)

We support the idea that if any form of outdoor education is to be beneficial for the pupils, they have to be active during the whole session (i.e. perform an activity such as observation, measurement etc.) and not to be a mere passive recipient of information conveyed by the teacher. It further needs to be noted that some authors (Oláhová & Nemčíková, 2009; Turčová, Martin, & Neuman, 2005) include in outdoor education also teaching in an educational institution other than school (for example the municipal council, a museum, a gallery, an industrial or agricultural plant, etc.). In this case, we would like to point out that in addition to the distinction between classroom and outdoor education there is also a possible distinction between teaching in the "real" and "artificial" environment outside the school building. According to Škoda and Doulík (2011, p. 39) in the real-life environment the pupils can observe or study real phenomena (natural, anthropogenic) on real object examples or real processes (deforestation, landslides, water pollution, suburbanisation, etc.). On the other hand, in the artificial environment they often only come across figures or models more or less effectively representing the above-mentioned phenomena.

The concept of "indoor" learning in a real environment (a manufacturing plant, an office, a library) seems to be closer to *fieldwork* than learning in the artificial (school) environment because it offers the option of direct observation of selected phenomena (see above).

Outdoor education denotes not only an organisational form of education (from the point of view of the setting in which the education takes place, see for instance Průcha, Walterová, & Mareš, 2013), but also a **powerful teaching strategy** (Lambert, & Balderstone, 2010; Gilbertson et al., 2006), which conveys a more comprehensive understanding of the real world. Gilbertson et al. (2006) also notes that when undergoing outdoor education, pupils must **step out of the comfort zone** they are accustomed to from classroom education, which gives the educational process a new dimension.

1.2 AIMS OF OUTDOOR EDUCATION IN THE SCHOOL CURRICULUM

The aims of outdoor education must, first and foremost, be based on the general educational aims of each specific subject. For geography, one of the most important aims is to convey to pupils a real understanding of the world, nature and society, including the evolution patterns in nature and society at a particular point in time and in a particular place, an understanding of the relationships and ties existing in nature and society. The mission of cognitive education is to cast light upon the principles

of geographical analysis and synthesis and generalisation and the study of small and large areas. Education should help develop the pupil's geographic and logical reasoning. Moral education shapes the morality and volition and attitudes of pupils during geography classes and, along with education for patriotism, humanism and international cooperation, it presents to the pupils the world that immediately surrounds them, their homeland and cooperation with other countries of the world. In work education, pupils are taught to use and control maps, magnetic compasses, GPS and other devices, etc. Affective and aesthetic education teaches pupils to explore nature and the creative work of people. As a particular objective of geography, there is environmental education, which, in this case, involves a comprehensive use of the interactions between nature and society. Geography teaches pupils to understand the world around them and orientate themselves in it (Šupka, Hofmann, & Rux, 1993, adapted). Many of these aims are reflected in the aims and tuition of other subjects, not only those related to natural sciences.

According to Lambert and Balderstone (2010, p. 281), the main purpose of outdoor education is to drag pupils directly into the educational process, increasing their motivation for learning. However, the aim is not to teach new knowledge to the pupils. Outdoor education should **deepen the knowledge already acquired and convey to pupils a clearer understanding of the phenomena and events occurring around them**. Scott, Fuller and Gaskin (2006) add that the inclusion of outdoor education in the curriculum should help contextualise the subject theory and develop subject-specific skills in a real-life setting.

These general objectives are elaborated upon by the specific objectives of outdoor education laid out for individual subjects, which, according to Řezníčková (2008), involve the following in particular:

- Practising the skills related to the collection, sorting and use of information.
- Drawing experience from actual research and acquiring basic habits necessary for independent work, problem solving and organisation of one's research.
- Applying the knowledge acquired from theoretical tuition to solve practical problems.

These objectives should also include the formulation of conclusions based on pupils' own research.

However, outdoor education also elaborates upon many specific educational objectives that lead to the gradual advancement of geographic thinking (see Table 1).

TABLE 1
KNOWLEDGE, SKILLS AND ATTITUDES THAT CAN BE PRACTISED IN OUTDOOR EDUCATION

KNOWLEDGE	relationships (people – the environment);
	systems (interactions between different components of the environment);
	environmental protection (the need to protect the environment);
	place (each place has undergone specific development and has an unmistakable character);
	change (the present state has its roots in the past);
	conflict (we live in a world full of conflicts that people try to solve in various ways);
	planning (the impact of the changes we intended to make on the environment must also be taken into account);
	inequality – class-related, racial (present all over the world along with the uneven distribution of power and wealth);
	political power (individuals and groups of people can influence the situation at home and in the world);
	relative position (this may refer, for example, to distance and direction from another known place);
	migration (people move between states and even within individual countries);
	concentration/dispersion (each area has its own attractions);
	networks, nodes (for example, a transport link between locations within a specific area);
	behaviour (attitudes, values, and behaviour of the people that make certain decisions);
	scale/distance (different situations can be viewed from different angles);
	similarity/differences (there are many differences between people, for example, ethnic, social, cultural, and, on the other hand, people are similar in that they need love, friendship);
	prediction (it is possible and even necessary to anticipate certain spatial changes and processes);
	economic development (there are apparent differences in the state of economic development everywhere);
SKILLS	collection of information (collecting data from field research, collecting data from secondary sources – books, magazines, statistical yearbooks, the Internet, etc.);
	information processing (transforming the data acquired into charts, sketches, maps, plans, working with text, creative writing, artistic and design work, spatial design…);
	interpretation of information (data interpretation using charts, diagrams, cartograms, sketches, maps, atlases, plans, photographs, aerial and satellite images, etc.);
	assessment (getting a feel for certain life roles, using games, inducing various situations, making decisions, group and pair discussions);
	synthesis (research and its application to plausible situations, conclusions and recommendations);

ATTITUDES	to inequality within society; to the quality of life of an individual; to justice and law; to the quality of the environment; to the need for change; to the impact of global changes on the life of individuals; to the accountability of the contemporary society to future generations; to listening to the opinions of others;

Source: Greasley et al. (1987), own adjustment.

1.3 ANCHORING OF OUTDOOR EDUCATION IN LEARNING STRATEGIES

From the point of view of the learning theories promoted today, outdoor education can rely upon **situated learning theories** (cf. Lave & Wenger, 1991). At the end of the 1980s, these theories were at the very heart of the shift in dominant paradigms in educational psychology, which saw a shift from cognitivism towards weak constructivism, especially situated cognition. The reason for the paradigm shift was that school education often contributed to deepening the issue of inert knowledge (this term refers to the knowledge the pupil has already acquired but is unable to apply in challenging situations). Numerous pieces of research have shown that knowledge is most efficiently formed in modelling authentic life situations as it results from an individual's activity, the context and the culture in which it is developed and used (Brown, Collins, & Duguid, 1989).

Situated learning theories prefer learning that is theoretically robust on the one hand and applied to practical settings or to settings that are close to practice on the other. The aim is for the pupils not only to have contextually delimited knowledge but also to be able to use the knowledge in situations outside the school setting (see Minaříková, 2011, pp. 47–48).

The situated learning theory was elaborated upon, for methodological purposes, among others, in the **anchored instruction theory** (for details see CTGV, 1990; Bransford, Brown, & Cocking, 1999; Love, 2005 and others). The aim is to make pupils more familiar with the conditions in which the knowledge acquired at school can be used. Years of experimental verification showed that anchored instruction makes pupils more able to address problem-solving tasks autonomously, and to think and to develop their knowledge and skills (CTGV, 1990). The "anchor" in anchored instruction represents an environment that is close to everyday authentic life situations. In this way, anchored instruction activates the pupils' attention and their previous knowledge.

Taking the aims of natural science education into account, it seems beneficial for pupils to experience authentic problem-oriented situations in the form of authentic outdoor education situated in and around the school. This is why the term **place-based teaching/learning** is used in this context. This concept has been introduced in the Czech setting roughly over the last 10–15 years, primarily thanks to the initiative of centres for environmental education. As noted by Činčera and Holec (2016), in terms of methodology, it mainly relies upon project teaching/learning and service learning – activities geared towards specific assistance to a given locality. As a result, pupils learn to independently explore the local community and, where appropriate, take action to address its problems. Outdoor education may be applied to all stages of tuition – for example, during the initial joint mapping of local issues, data collection and the final presentation of community project outcomes (Duffin, Powers, & Tremblay, 2004; Smith, 2007; Gruenewald, 2008). Locally anchored instruction programmes typically target a wide range of pupil competencies and are specifically designed to strengthen their relationship to the locality.

Generally speaking, the issue of outdoor education, its methodology and anchoring in learning theories is gradually evolving and is very broad, and any attempt to describe it will necessarily be somewhat reductionist.

1.4 INTEGRATION OF OUTDOOR EDUCATION IN THE CURRENT CZECH CURRICULUM

1.4.1 EDUCATIONAL SYSTEM IN THE CZECH REPUBLIC

The system of education in the Czech Republic stems from the Education Act which has designed a multi-level system of educational programmes that are created at state and school level since 2004.

The main document which defines the principles of curriculum policy is the National Education Development Programme in the Czech Republic, the White Paper (Kotásek et al., 2001). It is a system project shaping the starting point of ideas, general plans and development programmes which are to be decisive for the development of the system of education in the medium-term horizon. In the National Education Development Programme, educational objectives have been elaborated as proposed by the Education Act No. 561/2004 Coll., which defines the main areas of education, the content of education and the means necessary to achieve these objectives (Framework Educational Programmes, 2005). The state level further consists of Framework Educational Programmes (FEPs), which were created by the Research Institute of Pedagogy and approved by the Ministry of Education, Youth and Sports. The FEPs are created for individual fields of education and define the compulsory contents, scope and conditions of education (Hofmann, Svobodová, & Knecht, 2017).

A two-level system of curriculum documents in which the state level and the school level were distinguished was introduced (see figure 1). While the state-level curriculum was represented by the Framework Educational Programmes (FEPs), the school-level curriculum was formulated in the School Educational Programmes (SEPs). The implementation of the state curriculum at school level is represented by the development of School Educational Programmes (SEPs).

The education process takes place in educational facilities which, based on the international standard classification of education, is classified under the following levels:

International Standard Classification of Education – ISCED 2011 (the levels the book deals with are highlighted in **bold**):

0 – Early childhood education (early childhood educational development; Programmes designed for children below the age of 3);

0 – Early childhood Education (pre-primary education; from age 3 to the start of primary education)

1 – Primary education (level 1 of primary education; grade 1–5; usual age in the Czechia 6–10);

2 – Lower secondary education (grade 6–9[3]; age 11–14);

3 – Upper secondary education (grade 10–13 of Secondary School such as Grammar school or other types of school; age 15–18);

4 – Post-secondary non-tertiary education (marginally used in the Czechia);

5 – Short-cycle tertiary education (marginally used in the Czechia);

6 – Bachelor or equivalent;

7 – Master or equivalent;

8 – Doctoral or equivalent.

3 An elementary education in the Czechia has two levels – in the English language called primary and lower secondary education. With respect to specifics of the Czech educational system, the author uses these terms: "lower stage of elementary school" for grades 1–5 and "upper stage of elementary school" for grades 6–9.

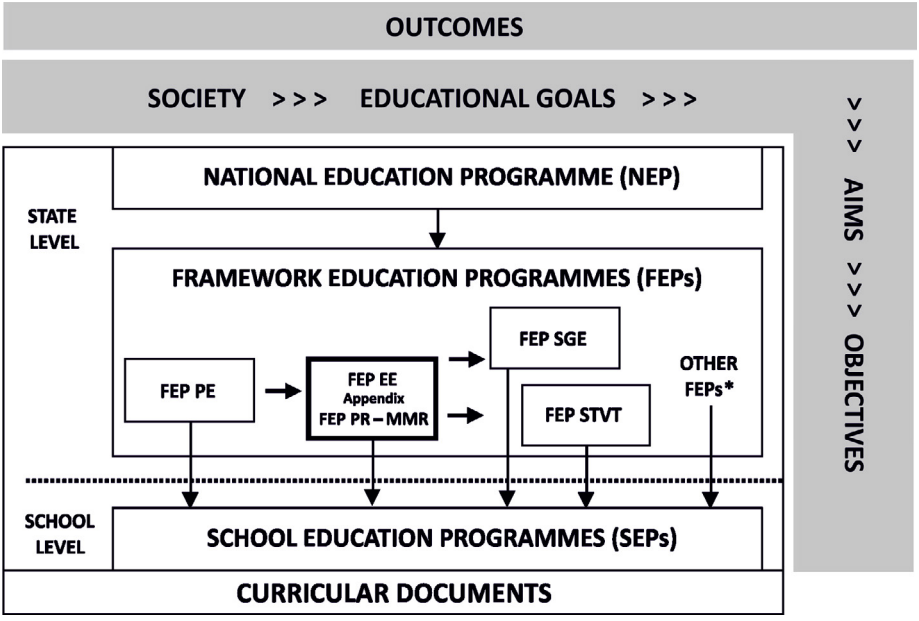

FIGURE 1. THE SYSTEM OF CURRICULAR DOCUMENTS IN THE CZECH REPUBLIC (WHITE BOX) IN RELATION TO THE DIMENSION OF LEARNING OUTCOMES (GREY BOX).

Source: based on the Framework Educational Programme for Preschool Education, 2016 (adjusted by the author, 2018).

Diagram: FEP PE – Framework Educational Programme for Preschool Education, FEP EE – Framework Educational Programme for Elementary Education and Appendix to the Framework Education Programme for Elementary Education Regulating the Education of Pupils with Mild Mental Retardation (FEP – EE MMR); FEP SGE – Framework Educational Programme for Secondary General Education (Grammar Schools); FEP STVT – Framework Educational Programmes for Secondary Technical and Vocational Training. * The other FEPs – other framework educational programmes which are also delimited by the Education Act – Framework Educational Programme for Basic Art Education, Framework Educational Programme for Language Education, and others.

The FEP for elementary education defines the educational contents which are divided into nine educational areas. Each area consists of subjects which are interlinked.

The **educational areas** in the FEP for elementary education are the following:

1. Language and Language Communication (educational fields Czech language and literature, Foreign languages).
2. Mathematics and its Application.
3. Information and Communications Technology.

4. People and their World[4].

5. People and Society (educational fields History, Civics).

6. People and Nature (educational fields Physics, Chemistry, Biology, Geography).

7. Art and Culture (educational fields Music Education, Art Education).

8. People and Health (educational fields Health Education, Physical Education).

9. People and the World of Work.

Elementary education is divided into level 1 (lower stage of elementary education) and level 2 (upper stage of elementary education). Level one lasts for five years (grade 1–5), and is attended by pupils at elementary schools. Level one is directly followed by level two which completes the compulsory school attendance. It lasts for four years (grade 6–9) and can take place at an elementary school, grammar school or a conservatory. In this book, we use the term lower and upper stage of elementary school.

1.4.2 OUTDOOR EDUCATION IN THE CZECH CURRICULUM

Outdoor education is already taken account for in the Framework Educational Programme designed for lower elementary education, especially with regard to the "People and their World" educational area (Table 2), which aims to lay the foundations of life and social sciences. In this, it is recommended that as much use as possible be made of the location where children go to school (the school neighbourhood). This, for example, involves geographic topics associated with finding one's way in the landscape. Both the life and social science bases then include other elements such as practical observations and simple measurements done outdoors, such as weather monitoring and phenological observations. Pupils are also taught to record them in field diaries, sketches, herbals, etc. Pupils also experience outdoor education during their physical education and health education lessons, which may involve staying outdoors, for example during outdoor games or various types of summer and winter tourism activities. Long-term forms of these activities also offer vast opportunities for applying outdoor education, such as the school in the countryside. It depends on the teachers as to how they incorporate all these activities into the School Educational Programme.

4 The only educational area designed only for the lower stage of elementary education.

TABLE 2

ANCHORING OF OUTDOOR EDUCATION IN FRAMEWORK EDUCATIONAL PROGRAMME FOR ELEMENTARY EDUCATION FOR THE LOWER STAGE OF ELEMENTARY EDUCATION – SPECIFIC PARTS OF THE EDUCATIONAL AREA "PEOPLE AND THEIR WORLD"

PLACE WHERE WE LIVE Expected outcomes the pupil shall: • Cycle 1: distinguish natural and man-made elements in the surrounding area and express their aesthetic values and diversity in various ways. • Cycle 2: identify the cardinal points in nature as well as use a map, be able to navigate him/her way around using them and observe the rules for safety of activity and sleeping in the open. • Cycle 2: find the typical regional characteristics of nature, settlement, economy and culture; make a simple assessment of their importance in terms of nature, history, politics, administration and ownership.
DIVERSITY OF NATURE Expected outcomes the pupil shall: • Cycle 1: observe, describe and compare visible changes in nature in the individual seasons of the year. • Cycle 2: study basic communities in selected localities of regions, explain the principal mutual relations between organisms, and identify shared and different features in the adaptation of organisms to the environment.
PEOPLE AND THEIR HEALTH Expected outcomes the pupil shall: • Cycle 1: manage to apply the basic safety rules applicable to road users and act in such a way as not to threaten their own health and the health of others. • Cycle 2: manage to employ effective modes of behaviour in situations that pose a threat to health and in model situations simulating emergencies; be capable of perceiving the traffic situation, correctly evaluating it and drawing appropriate conclusions for their own behaviour as a pedestrian and a cyclist.

Source: Framework Educational Programme for Elementary Education (2016, pp. 44–50).

Outdoor education is also quite well established within the individual educational areas set out in the FEP EE for the upper stage of elementary education and in the FEP for grammar schools. In the "People and Society" educational area, the teacher may, for example, include visits to museums, castles and châteaus as part of history education, and they may organise various surveys, at the school location, as part of civic education. The specific educational fields that relate directly to outdoor education are anchored in the FEP EE, namely in the "People and Nature" educational area for two subjects – Biology and Geography and in the "People and Health" educational area for Physical Education (see tables 3, 4, 5).

TABLE 3
ANCHORING OF OUTDOOR EDUCATION IN THE FRAMEWORK EDUCATIONAL PROGRAMME FOR ELEMENTARY EDUCATION FOR BIOLOGY EDUCATION

EMPIRICAL EXPLORATION OF NATURE Expected outcomes the pupil shall: • apply empirical methods of exploring nature; • observe the basic safety rules of work and conduct when becoming acquainted with animate and inanimate nature.

Source: Framework Educational Programme for Elementary Education (2016, pp. 70–75).

TABLE 4
ANCHORING OF OUTDOOR EDUCATION IN THE FRAMEWORK EDUCATIONAL PROGRAMME FOR ELEMENTARY EDUCATION FOR GEOGRAPHY EDUCATION

FIELD GEOGRAPHIC EDUCATION, PRACTICE AND APPLICATION Expected outcomes the pupil shall: • master the basics of practical topography and orientation in the field; • apply practical methods in the field when observing, depicting and assessing the landscape; • apply the principles of safe movement and stay outdoors in practice, apply the principles of safe conduct and emergency behaviour in model situations.

Source: Framework Educational Programme for Elementary Education (2016, pp. 75–80).

TABLE 5
ANCHORING OF OUTDOOR EDUCATION IN THE FRAMEWORK EDUCATIONAL PROGRAMME FOR ELEMENTARY EDUCATION FOR PHYSICAL EDUCATION

ACTIVITIES AFFECTING HEALTH Expected outcomes the pupil shall: • behave appropriately and safely even in less familiar environments of sports grounds, nature, traffic; anticipate possible sources of injury and adapt his/her activities accordingly.
ACTIVITIES ENCOURAGING THE LEARNING OF EXERCISE ACTIVITIES • fulfil basic Olympic ideals in the school environment – fair competition, assistance to the handicapped, respecting the opposite sex, nature preservation during sports; • organise simple tournaments, contests and hiking events on the school level on his/her own and as part of a team; co-referee the games and competitions being learnt.

Source: Framework Educational Programme for Elementary Education (2016, pp. 96–100).

In the FEP for grammar schools[5], where natural sciences enjoy a prominent position, outdoor biology education is not assigned any educational areas or expected outcome. The expected outcomes for outdoor geography education are indicated in Table 6, while for some of them, outdoor education is not explicitly expressed but is rather implied in specific outcomes.

TABLE 6

ANCHORING OF OUTDOOR EDUCATION IN THE FRAMEWORK EDUCATIONAL PROGRAMME FOR SECONDARY GENERAL EDUCATION (GRAMMAR SCHOOLS) FOR GEOGRAPHY EDUCATION

GEOGRAPHIC INFORMATION AND OUTDOOR EDUCATION Expected outcomes the pupil shall: • use the available cartographic products and other geographic data and information sources in printed and electronic form to address geographical issues; • find their way in the outdoor environment using maps; • use geographical, topographic and cartographic terminology in an informed manner; • create and use their own mental schemes and mental maps to find their way in a particular territory • read, interpret and compile simple charts and tables, analyse and interpret numerical geographic data.

Source: Framework Educational Programme for Secondary General Education (Grammar Schools; 2007, pp. 34–39).

Also, outdoor education may find a wide range of applications in physical education and health education. As part of physical education (see Table 7) this mainly involves outdoor stays, camps, and summer and winter training courses. During all these activities the pupils either consciously or inadvertently/"automatically" use large portions of the knowledge obtained from other subjects, such as map reading, identifying poisonous plants or fungi, protecting themselves from weather changes. Attention is paid to effective and safe behaviour while outdoor and in an unfamiliar environment.

TABLE 7

ANCHORING OF OUTDOOR EDUCATION IN THE FRAMEWORK EDUCATIONAL PROGRAMME FOR SECONDARY GENERAL EDUCATION (GRAMMAR SCHOOLS) FOR PHYSICAL EDUCATION

ACTIVITIES PROMOTING PHYSICAL LEARNING Expected outcomes the pupil shall: • be capable of organising (in cooperation with other pupils) class- or school-wide tournaments, competitions, tourist events and contribute to their implementation.

Source: Framework Educational Programme for Secondary General Education (Grammar Schools; 2007, p. 62).

5 At other secondary schools, natural science (biology and geography) lessons are represented less than at grammar schools, which makes the possibilities for organising outdoor education relatively small.

One of the inherent shortcomings in Framework Educational Programmes may be perceived in their being created in an isolated manner in terms of specific subjects as well as specific educational levels. In fact, each educational area is created by a team of experts in the given field, but the function of a "horizontal and vertical integrator" for the educational areas is missing. It is negatively reflected in the continuity of the anticipated outcomes in all educational areas the Framework Educational Programmes cover. This becomes clear if Tables 4 and 6 are compared. Outdoor geography education is assigned under a different thematic area heading. While in the FEP EE the heading is "Field Geographic Education, Practice and Application", in the FEP SGE, it is "Geographic Information and Outdoor Education". For physical education, the educational area heading for primary and secondary grammar schools is the same. In both cases, however, unlike for biology, which is not represented here at all, certain progress may be observed in the curriculum for specific activities.

In conclusion, it should be stressed once again that the FEP EE and FEP SGE only form a framework for the creation of the school curriculum. It is left entirely to the teachers how they will transform the FEP into the SEP and actual classroom activity, e.g., how many lessons will be allocated to short-term outdoor education, how many days will be devoted to medium- and long-term outdoor education, what the specific content is and what activities will be conducted with pupils.

1.4.3 LINKS BETWEEN OUTDOOR EDUCATION AND KEY COMPETENCIES

In addition to the above, outdoor education inherently contributes to the fulfilment of pupils' key competencies. Assuming, as the starting point, the categories defined by the FEP EE and further specified in the manual published by the Educational Research Institute (Bělecký et al., 2007), it can be argued that outdoor education has the potential to develop key competencies, which means the following in particular in education:

- knowledge acquisition (pupils look for and sort information and use it effectively in practical life);
- conceptualisation (pupils work with signs and symbols which they combine into larger units, creating more complex views of natural, social and cultural phenomena);
- pupil exploration (pupils autonomously observe and experiment and compare the results, critically assessing and drawing conclusions which they may use in the future from them);
- metacognition, learning management and motivation.

Outdoor education also provides pupils with sufficient space **to develop problem-solving competencies**, which also form the basis for the development of learning competencies and especially enhance the principles of **critical thinking**. During outdoor education, pupils are left to choose the proper ways of solving problems. To solve a problem, they employ logical, mathematical and empirical approaches. Pupils have an opportunity to verify in practice the correctness of the solution they have come up with and, if proven true, use the solution to address other problem situations (Musilová, 2016, p. 26).

For geography, the principles of critical thinking may be narrowed down to thinking specific for geography referred to as geographic thinking (Hynek & Hynek, 2004; Jackson, 2006; Karkdijk, van der Schee, & Admiraal, 2013 and others). The power of geographic thinking is described in A different view... (2009, p. 9): "Thinking geographically is a uniquely powerful way of seeing the world. While it does not provide a blueprint (...) that is why we should focus on geography's grammar as well as on its endless vocabulary. That is the power of thinking geographically."

Similarly, the principles of critical thinking can be applied to the teaching of other natural science subjects. The links between individual natural science subjects are shown in Figure 2. The figure shows that even in a broader sense, geography is a complex subject which deals with the whole landscape sphere and uses the knowledge obtained from other scientific disciplines of biology, physics and chemistry in exploring the landscape.

It is precisely for its complexity that geography is often accused of "stealing" from other scientific disciplines. We believe that this is not the case and that today the contrary is true. Geography may be regarded as an **integrator** of the individual subjects. Above all, geographers have to know what to look for in other disciplines and what extent of knowledge and skills they need to borrow from them in order to come up with optimal solutions to problems that exist in the actual landscape.

Geography also has an irreplaceable place for understanding the present and the future world. Thus, it must be complemented by knowledge from social sciences. Educational subjects or mother tongue and literature, film or theory, can all show the way in forming pupils' attitudes. Equally important is the interconnection of knowledge and skills in various forms of outdoor education carried out to strengthen natural science knowledge and skills and in coordination with physical, health-related and social activities.

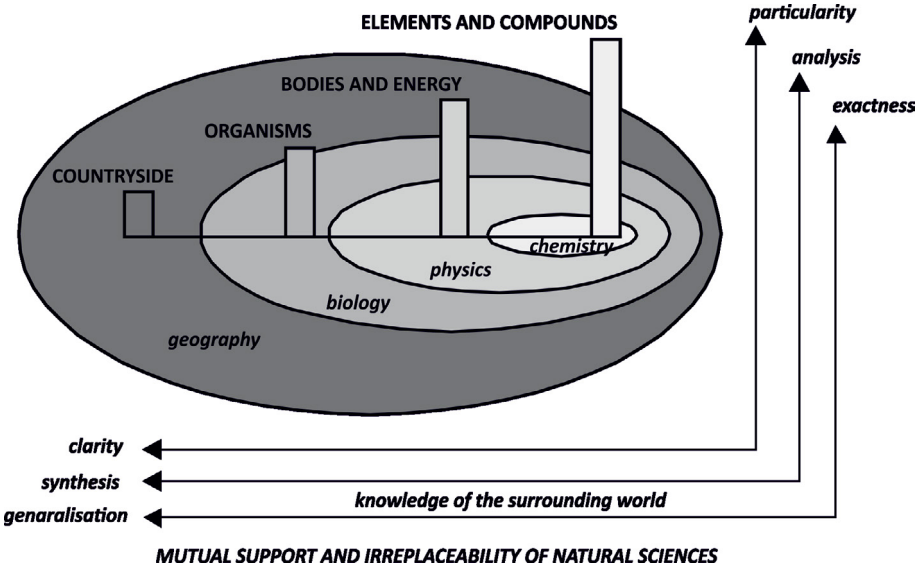

FIGURE 2. THE POSITION OF GEOGRAPHY IN THE NATURAL SCIENCE SYSTEM.
Source: Kolejka (2008), translated.

An even wider view of the interdisciplinarity and complexity of outdoor education is proposed by Priest's model of outdoor education (Priest, 1986 as cited in Gilbertson et al., 2006, p. 5). The model shows outdoor education as "a method of teaching and learning that reinforces a direct, multisensory experience unfolding in an outdoor setting and uses an integrated approach to learning that encompasses the natural environment, the community and the individual implanted in them. Through outdoor stays, outdoor education seeks to increase the physical, affective, cognitive, social and spiritual level of an individual. (...) To feel the sun, the wind and the rain or to watch wildlife (...) amounts, for many people in today's urban environment, to a new experience. (...) Seeing a bison at the zoo will evoke feelings different from those evoked by seeing a herd of buffaloes grazing on the prairie..."

Critical thinking is also at the heart of the advancement of specific skills that are developed through outdoor education. According to Řezníčková (2008), these skills can be divided into five categories (see Figure 3): (1) asking questions, (2) obtaining information, (3) organising information, (4) analysing information, (5) answering questions.

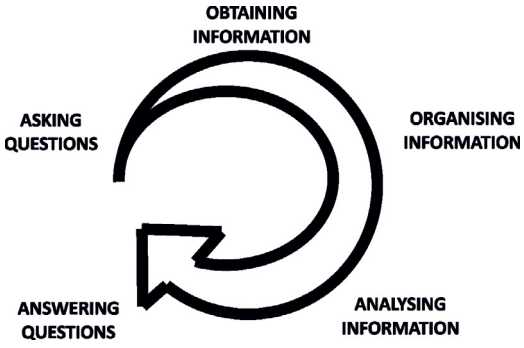

FIGURE 3. (GEOGRAPHIC) EXPLORATION MODEL.
Source: Malone, Palmer, & Voigt (2002).

The aim of outdoor education based on critical thinking is to teach pupils to apply their knowledge in practice with the understanding that the world is constantly changing. This mode of thinking allows pupils to organise information on the contemporary world that facilitates understanding of the world.

Marada (2006) mentions another benefit of outdoor education: "Outdoors, pupils come into direct contact with the phenomena, concepts and processes they are being taught, which is not only illustrative, "genuine", but also highly motivating. This greatly enhances the effectiveness of learning – pupils' experiences from "real" research improve the retention of knowledge and skills.

The problem- and research-based concept of outdoor education usually confronts pupils with educational aims that involve higher intellectual demands: the aims is not only to memorise "ready-made" knowledge, but rather to identify problems, propose solutions to problems and assess various solution scenarios. If pupils educated outdoors are prompted to pursue an independent activity, the learning efficiency is further enhanced because, as J. A. Komenský says, we remember better what we do ourselves."

The development of other key competencies through outdoor education is very well described in the School Educational Programme of Dr. Mareš Elementary School in Znojmo, the full text of which is as follows:

> **Learning competency:** The teacher assigns topics of essays to pupils and the latter are supposed to identify, collect, process, sort and assess geographical information data in relevant information sources – on the Internet, on the radio, on TV, in specialised encyclopaedias and magazines. They link the items of information obtained to knowledge acquired in other educational fields, so that the pupils may create a more wholesome picture of the links between the natural and social environment,

between nature and human activity. The teacher demonstrates how to handle various orientation and topographical aids (magnetic compass, compass), the globe, plans, maps, atlases, timetables, charts, and statistical data.

Problem-solving competency: With their pupils, the teacher endeavours to identify and name identical, similar and different features of geographic objects, phenomena and processes, and they jointly draw relevant conclusions. They single out major local, regional and global issues of the natural and social environments, discuss them and endeavour to find appropriate solutions to the problems.

Communication competency: The teacher asks the pupils to formulate hypotheses, name problems or express their own opinions on specific topics related to the natural and social environments, pupils indicate the facts coming from their assessments, come up with their own opinions, use available information and communication tools. The teacher analyses the opinions of the pupils, leads them to formulate their arguments appropriately, and they collaborate to solve problems and tasks. The teacher executes and facilitates a controlled dialogue with the pupils; the pupils express their views and opinions in successive logical steps.

Social and personal competency: The teacher assigns work tasks within the group, the pupils assume their roles and identify with them; they work together as a group, cultivating a positive relationship to work, a responsible approach to their work and others, accountability for the outcomes of their activities, and they accept, discuss and rectify the opinions of others. They evaluate the results of the group and individual activities, induce self-criticism, and pupils understand the need for effective cooperation.

Civic competency: The teacher explains, clarifies and justifies to pupils the need for natural and environmental protection, and the pupils take an interest in the environment that surrounds them, appreciate the beauty of nature and historical and cultural landmarks, feel civic responsibility for preserving the environment and sustainable life for future generations. The teacher teaches the pupils how to find their way and move in an outdoor setting and urbanised landscape and how to act safely and protect themselves in emergencies. The teacher presents facts and arguments in favour of forming attitudes and values that respect the equality of all people, demonstrate democratic approaches to solving social problems; pupils explore the traditions, customs and cultures of people in different continents and areas.

Professional competency: The teacher supervises pupils to make sure they work safely with aids, tools, devices and materials while using them both in the classroom and outdoors, and that they adhere to the stipulated rules of work activities. The teacher informs their pupils on the existence and spreading of modern communications, transport and production technologies that are closely related to orientation, movement and staying outdoors, to travel, to the distribution of production and other operations in the environment, to the protection of the natural and living environment, and these are all discussed with the pupils. The teacher evaluates positively the systematic work of the pupils.

Enhancing the learning process, communication and cooperation through outdoor education from the students´ and teachers´ point of view is also documented by the below-mentioned statements from geography and physical education teachers from the Czech Republic, Slovenia and Denmark (for details see Vlček, Resnik-Planinc et al., 2016). At the same time, their positive impact on real life has been confirmed.

Learning process:

"By being outdoors, students can feel the nature, smell it, touch it, and not only see it from the classroom."

"As a teacher you can describe landscape from a different point of view."

"Working in a more holistic way such as projects within school work."

"Be being active. Students can observe the landscape in a different, more active way."

"Students work outside and study at the same time."

"Fieldwork = reasons and consequences."

"To stimulate learning."

"Learning by doing."

"Learn to work in an interdisciplinary way."

"Active approach to teaching (both students and teachers)."

"Learning through other means than usual."

"Better explanation and understanding of a problem."

"Movement promotes learning."

"Education in a real environment."

"Convert theoretical knowledge into practice."

"Learning with (all) senses."

Real life:

"Understanding the world we live in."

"Complex development of students."

"Linking knowledge and skills from different subjects and their application in practice."

"Care for an open, clean, less polluted environment in the future."

"The combination might give a better picture of why, how and what to do in nature in a more sustainable way."

Communication and cooperation:

"Better communication and cooperation between students."

"Enhancing team work."

"More fun."

1.4.4 RELATION OF OUTDOOR EDUCATION TO CROSS-CURRICULAR SUBJECTS

Outdoor education is closely linked to interdisciplinary cooperation. In Framework Educational Programmes, this is addressed in two ways. The first combines individual subjects into **educational areas,** while the further strengthening of interdisciplinary cooperation is represented by **cross-curricular subjects,** which include the following, with the indication of their links to outdoor education:

Environmental education: "Environmental education" is a link between the different forms of outdoor education. Environmental education is characterised as an educational activity that leads individuals to understand the complexity of the relationship between people and the environment, i.e. to understand the need for a gradual transition to sustainable development of society, and to recognise the meaning of accountability for the actions of a society as well as an individual. It leads individuals to take an active part in the preservation and formation of the environment and influences the lifestyle and values of pupils in the interest of sustainability of development of the human civilisation. (Metodika..., n. d.)

Education towards thinking in European and global contexts: The connection between outdoor education and this cross-curricular subject may be seen in the interlinking of solutions to local and global development issues. Giddens (2013) notes in this context that "the concurrence of the globalisation processes and local contexts often leads to empowerment rather than to the decline of local and regional cultures." The pupils should be aware of those consequences as well.

Moral, character and social education: Outdoor education helps develop the skills needed for teamwork, develops organisational skills, work planning, timing and the habits that are necessary for autonomous work performance and independent living, promotes and develops pupils' social integration, develops pupil-teacher interaction, stimulates and encourages enthusiasm for learning in concordance with the principles of lifelong learning. (Marada, 2006)

Civic education for democracy: Actively identifying the problems existing at the place where pupils live positively shapes their attitudes and respect for the environment. Thus, outdoor education has a significant educational aspect. (Marada, 2006)

Multicultural education: Outdoor education carried out through foreign trips contributes to understanding the diversity of individual cultures.

Media education: Outdoor education is capable of developing communication and expressive skills through an increased need for communication. When working on specific natural science tasks, such as sound mapping (noise, birds singing), outdoor education may also contribute to the handling of more complex interdisciplinary tasks related to media education or information and communication technologies.

1.4.5 THE BENEFITS OF OUTDOOR EDUCATION TO PHYSICAL ACTIVITY DEVELOPMENT

Movement is an integral part of human life and one of the important needs of each child (pupil). Neumann (2000, p. 24) notes that "we live at a time when physical fitness of the population is decreasing, and motoric activity is replaced by passive ways of entertainment" (for example playing computer games, watching TV, or taking children to school by car). An international study conducted by HBSC comparing the physical activity of schoolchildren aged 11, 13 and 15 in Czechia, Slovakia, Poland, Hungary and Ukraine (Madarasová Gecková et al., 2016) showed that more and more European pupils suffered from a lack of movement, and similarly it has been proved that the prevalence of childhood obesity has increased in the UK (Lobstein, James, & Cole, 2003) and the USA (Lee, Stodden, & Gao, 2016; Lobstein & Jackson-Leach, 2007). Since a hypokinetic lifestyle prevails among children (and in society as a whole), teachers should do more to promote the pupils' healthy development (Mužík & Krejčí, 1997). Lack of movement, or hypokinesia, is observed among both children and adults and its manifestations are not only physical but also psychological. These include impulsiveness, irritability, low concentration, increased restlessness and aggression. Due to the current lifestyle of many children and adults, the need to promote a positive attitude towards movement and a healthy lifestyle in pupils is more pressing than ever before. Physical activity helps maintain physical and mental balance, leads to increased fitness and performance, causes mental and emotional relaxation, reduces tension and eliminates anxiety or depression and also affects the intellectual performance of an individual (Horká & Hromádka, 2010).

Mužík and Krejčí (1997) recommend 30 minutes of low intensity movement activity a day, to which 30 minutes of medium intensity movement should be added at least three times a week. As compared to Mužík and Krejčí, the demands of Sigmund and Sigmundová (2011) for the daily movement activity of early school age children are significantly higher. In their opinion, the medium intensity daily movement activity of children should be three times longer, i.e. 90 minutes. Strong and Malina et al. (2005) recommend at least 60 minutes per day of moderate to vigorous intensity physical activity.

There are several strategies to promote higher physical activity intensity. Steele et al. (2009) speaks about promoting physical activity during weekdays after school and weekends. We focus on increasing physical activity during school time, as this time can take up 1/6 to 1/3 of the day of the pupil (not including sleeping). Wareham, van Sluijs and Ekelund (2005) claim that when "examining the most effective school-based interventions, it appears that such interventions are indeed limited to structured activity through predominantly physical education classes". However, physical activity can to a large extent be incorporated into the teaching of most subjects as well as the school's overall operations. Sitting at the school desk for a long

time is considered inconsistent with the natural development of a child's organism. Some schools compensate for this by allowing pupils to move around during breaks, and some teachers combine their tuition with physical activity. However, all teachers need to be encouraged to combine their tuition with physical activity and their ability to implement this idea must be cultivated (Mužík & Krejčí, 1997).

If we pass over the physical education itself, which is a compulsory subject, physical activity may first and foremost be incorporated into tuition through outdoor education, since movement is a natural part of it. This was confirmed by the authors' own measurements (see chapter 5.6), on the basis of which it can be stated that **outdoor education may contribute to the development of natural physical activity and, by inference, to a healthier lifestyle for pupils**. Compared to physical education, another indisputable advantage of outdoor education involves the transfer of discipline-oriented content of education to pupils.

1.5 ORGANISATION OF OUTDOOR EDUCATION

1.5.1 PHASES OF OUTDOOR EDUCATION

As stated above, outdoor education is challenging both in terms of the work of the teacher and the work of pupils. Organising any outdoor education requires a wide range of planning skills. For teachers and pupils, this process, in essence, involves a **preparatory, implementation and final stage**. A similar division can be found with other authors who deal with outdoor education (Carbaugh & Hastings, 1992; Laws, 1989; Schwartz-Barcott, Patterson, Lusardi, & Farmer, 2002 and others).

Teacher's work

> **The preparatory stage** includes preparation of the content of the particular outdoor education event, but also the incorporation of outdoor education and individual forms into the school educational programme and subsequently into the thematic plan[6]. This also involves setting out objectives for the outdoor education event so that they match the anticipated outcomes of the FEP and SEP. As far as short-term forms of outdoor education are concerned, this mainly involves preparing aids or worksheets. For long-term forms of outdoor education, and especially for research-oriented education (e.g. case studies or problem-solving tasks), the preparation is much longer. It includes terrain reconnaissance and the creation of more complex work material for individual stages of the tuition. This may take several days of the teachers' spare time because

6 A thematic plan is an organisational tool for the teacher, in which a time plan is compiled for the subject concerned. It contains, in particular, the name of the subject, the name of the teacher, the time allocation, a timetable for the school half-year or year, the evaluation rules, the required textbooks or other teaching aids. Subject matter based on superior curricular materials is compiled for specific lessons (Malach, 2003, p. 94).

not everything can be done sitting at a desk. A very important part of this stage is also the correct timing of the outdoor education activity due to the level of maturity and experience of the pupils in these forms of education and an appropriate approach to motivation.

In short, in the preparatory phase the teacher should think about:

- What will the focus of outdoor education be?
- What are the learning objectives?
- Where will the outdoor education take place?
- How many students will be involved?
- What will the students do?
- How long will it take?
- What will the preparatory work be?
- What will the follow-up work be?
- What will the learning outcomes be?

From the teacher's perspective, the preparatory stage also includes informing the school head teacher and the parents (a letter to the parents containing information on the purpose of the outdoor education, costs, equipment, duration of the event and the places and times of departure and arrival). It must ensure the safety of tuition and the number of accompanying teachers. Some forms of outdoor education involve the transport of pupils to the place where the educational event is to take place and the provision of catering.

The implementation stage should in most cases include supervision and counselling regarding the preparatory, implementation and final stages for the pupils in the school and outdoors depending on the selected form of outdoor education.

The final stage should in particular include, on the teacher's part, a reflection on the tuition carried out. The evaluation may take the form of a discussion with the pupils or a short questionnaire survey (to find out what the pupils liked/disliked, what they had problems with, whether they would like to repeat this method of instruction, or not).

Pupils' work

The preparatory stage mainly includes theoretical preparation for outdoor education, and it takes place directly at school. It is usually introduced by the teacher's motivational speech, followed by familiarisation with the places to be visited and the goals of the outdoor education event. It includes the preparation of documents for the actual activities and involvement in the organisation of the tuition. Pupils acquire the skills they will need when working outdoors. A short form of outdoor education may be incorporated here, taking place in the vicinity of the school or on the school grounds, involving primarily training and automating skills related, for example, to cartography (distance estimation, map orientation using various aids, familiarisation with GPS work, creation of a topographic sketch etc.).

The implementation stage consists of the actual fieldwork, where pupils address the tasks assigned to them, either on their own or in groups. Specific results are recorded in prepared worksheets. This stage may also include the processing of results from the data obtained, which will also continue in the school.

Final evaluation stage. At this stage, pupils should present their results using various forms, such as posters, PowerPoint or other presentations, films or final reports, all with a commentary. After the overall completion of the outdoor education activity, pupils should provide feedback to the teacher.

1.5.2 OUTDOOR EDUCATION AIDS

Quality delivery of outdoor education will require specific equipment being used in tuition. The equipment includes various gadgets, aids, but also methodology sheets and consumables.

For geography outdoor education, basic maps, thematic maps of various scales (soil, geological maps), aerial photographs, orienteering maps, magnetic compasses, GPS stations and dustpans are essential for the pupils' work. In addition, soil drills or probes, portable weather stations or various measuring instruments (conductivity meter, hydrological propeller, sound level meter... – this depends on the equipment of the school concerned) may also come in handy.

For biology outdoor education, equipment for the collection and determination of plants and animals should be available – i.e. test tubes (small plastic vessels) and identification keys, binoculars, tweezers, pipettes, inspect collection vessels, exhaustors, strainers, suction pumps, nets, binocular magnifiers, microscopes, formaldehyde...

Chemistry aids include boxes with chemical materials that contain components for the assembly of a mobile lab.

For outdoor physics education, a pedometer, a rope, a band, a map or a distance gauge may be used, and, where so agreed, astronomical binoculars or other more complex equipment may be presented.

For all subjects, methodological materials prepared in advance must be available – worksheets, maps covering the area where the outdoor education is to take place, and basic literature. For spare time activities during long-term forms of outdoor education, it is advisable to have equipment for sports and leisure (sports aids, games) ready.

The list of material equipment may seem mundane, yet, for example, the processing and updating of a learning map will require a lot of work and substantial financial resources, and some aids are relatively costly. Outdoor education equipment also needs to be replenished on an ongoing basis and updated for methodological materials and maps.

With the advancement of mobile technologies (phones, tablets), new ways have been created to improve fieldwork, also thanks to the fact that these technologies are currently accessible to (almost) all pupils. Modern technologies provide significant benefits for fieldwork in terms of collecting and processing data. While until recently the only available technology for many was the single-serving GPS (Global Positioning System), which, as noted by Martin (2006, pp. 141–142), enhances the understanding of the real world, current mobile technologies significantly broaden the range of applications used in outdoor education. Data obtained from GPS can be used to spatially present and analyse geographic information using Google Earth or another map server. However, current applications are capable of much more. All modern mobile devices have a video recorder, a camera, and a variety of applications to obtain the necessary information. Digital and electronic devices can be used to collect environmental data such as light, temperature and humidity measurements when examining the microclimate at a specific location, noise intensity and slope may be measured, and plant identification keys may be used.

Mobile devices and available software applications can also be used during the final stage of outdoor education to work with data and facilitate its effective presentation and analysis. Another advantage involves the facilitation of multiple access for data opening and sharing (Holmes & Walker, 2006, p. 203), both among pupils and teachers.

1.5.3 HEALTH AND SAFETY CONDITIONS OF OUTDOOR EDUCATION

When implementing outdoor education, the teacher assumes a great deal of responsibility, and the safety risks inherent in this form of education are much higher than those present in the classroom setting. This is one of the reasons why teachers often refuse to organise their lessons outside school. This is understandable given the increased risk of accidents and other unpredictable situations (Musilová, 2016, p. 16). However, outdoor education is an educational requirement formulated in the FEP EE and an inherent part of natural sciences education, so the aforementioned risks need to be introduced in school education. However, the positive fact is that during outdoor education pupils assume a certain responsibility for their actions and their work.

From the legal point of view, outdoor education denotes any educational event where the pupils are educated outside the establishment listed in the register of schools and school establishments.[7] Therefore, **specific legal regulations**[8] apply to each event organised outside a school establishment. Hofmann, Korvas and Poláček (2009) also stress the need to adhere to the strict safety criteria set out in the **school's**

7 See Section 144/1 of Act No. 561/2004 Coll., on preschool, primary, secondary and higher vocational and other education (Education Act).

8 For a list of applicable legal regulations, see Svobodová, H., Mísařová, D., Durna, R., Češková, T., & Hofmann, E. (2019). *Koncepce terénní výuky pro základní školy na příkladu námětů pro krátkodobou a střednědobou terenní výuku předmětů Člověk a jeho svět a Zeměpis*. Brno: Munipress.

internal regulations. These internal school regulations may include various directives or guidelines promulgated by the principal and governing the realisation of outdoor education.

The legal responsibility and obligations from a teacher's point of view in relation to health and safety require that outdoor education is managed and organised at the highest possible level. Preparation must not be underestimated, and time distribution needs to be considered. A necessary step to ensure the safety of pupils is the teacher's duty to inform their pupils of work and health safety and the rules of outdoor education. Some of the issues that need to be addressed when planning outdoor education include:

- the timing of outdoor education events – in relation to the school-wide calendar of duties and the place where the education is to take place;
- risk assessment (resulting from the place where the outdoor education event takes place and the activities to be carried out by pupils);
- providing other necessary assurances to parents by a specified deadline.
- ensuring transport;
- planning, preparation and development of the learning process;
- assign team positions (selecting the cooperating teachers);
- deciding how the group of pupils will be organised and how pupils with special needs will be taken care of.

While planning outdoor education nowadays, teachers should keep in mind also the "emerging issue" of the pupils' decreasing physical condition. In addition, increased incidence of allergies and the hazards present in the outdoor environment, such as ticks or other insects, must be taken into account.

The aim of the risk assessment is to predict, minimise and manage the potential risks for all involved (Holmes & Walker, 2006; Little & Wyver, 2008). Once the estimates and assessment of potential risks are complete, measures to eliminate or control such risks follow. Hazard is anything that can reasonably be expected to cause damage or harm, while risk is the likelihood, however low or high, that anyone involved in the outdoor education activity will suffer any harm as a result of such hazards. The following must be taken into account as part of the risk assessment (according to Bland, Chambers, Donert, & Thomas, 1996):

- specific hazards present at the site concerned;
- weather conditions;
- age and experience of the group;
- the presence of pupils with specific needs.

When assessing the risks present at the outdoor education site, it is necessary to assess whether the risks are acceptable and whether they can be reduced.

However, the purpose of safety instructions and work with risks is not to prevent the pupils from doing anything or from moving freely. Outdoor education calls for certain moral and social maturity in pupils. The pupils must fully adhere to the teacher's instructions and should not disturb the instruction by behaving or acting inappropriately. Pupils must assume a certain amount of responsibility for their movement in the outdoor setting. If they are given a certain amount of freedom and freedom of movement by their teacher, they will be more perceptive to their safety, since they usually spend their spare time outdoors, near slopes, roads or in the city. We also conduct outdoor education to teach pupils how to overcome and manage the risks in real life.

Overwhelmed by the desired success and the requirement for security, which form integral parts of preparation of each outdoor education event, we could easily forget about the role of the teacher. The role is important in terms of the teacher's behaviour, approach and relationship to the pupils. It depends on communication skills, approach to the matter being taught, knowledge and the very understanding of what the teacher should do.

It should be realised that during outdoor education, the teacher spends the entire day with the pupils, sometimes even several days, and becomes their "guide" in a certain sense of that word. For example, the teacher:

- controls the position and movement of the group;
- controls the relationships between the pupils and between the pupils and the teacher;
- retains attention and motivation in challenging situations;
- ensures the pupils are properly dressed and equipped with regard to the prevailing conditions;
- ensures cooperation among the pupils;
- maintains a balance between the pupils' space and their experiences, but also offers support and encouragement.

It should be noted that whenever a teacher organises outdoor education with pupils, he or she is responsible for the decisions and the implications those decisions may have.

2 CHANGES IN OUTDOOR EDUCATION

Challenge is what makes men. It will be the end when men stop looking for new challenges.

Sir Edmund Hillary

2.1 ORIGINS OF OUTDOOR EDUCATION

It is unclear where exactly the true beginnings of outdoor education lie. Already the early hominids were the originators of outdoor education. Homo sapien young spent an inordinate amount of time being "trained" to live in the world. For at least several million years, virtually all of these years of learning and training was conducted in the outdoors. Only recently were permanent walls constructed – dramatically in the last 100 years in Western civilization. Members of modern Western societies have become collectively "shielded" from natural living and challenges, rhythms and observations of nature. There remains an instinctual need to re-kindle our inbuilt sensitivities to nature (Kellert & Wilson, 1995). Thus, outdoor activities, outdoor recreation, and outdoor education serve a psycho-evolutionary need within homo sapiens to collectively maintain some form of psychological and physical contact with natural processes and environments which are relatively untouched by the post-industrial 21st century human lifestyle (Neill, 2007).

Modern outdoor education owes its beginnings to separate initiatives. In the late nineteenth century and early twentieth century, organised camping could be seen in Europe, the UK, the US, Australia, and New Zealand.

Similarly, it is possible to connect the development of interest in staying in natural surroundings with the establishment of scouting. The Scouting movement, established in 1907 by Robert Baden-Powell, employs non-formal education with an emphasis on practical outdoor activities. A further opportunity for outdoor education has been offered by forest nurseries, whose origin can be located in Denmark. [9]

9 Practical Outdoor Skills. Retrieved from http://www2.isu.edu/outdoor/Syllabus_PracticalSkills.html

Key outdoor education pioneers include Kurt Hahn, a German educator who founded schools which emphasise community service, craftsmanship skills, physical skills, and outdoor expeditions. The second half of the twentieth century saw a rapid growth of outdoor education in all sectors (state, voluntary, and commercial) in Anglo-Saxon countries with an ever-widening range of client groups and applications. The outdoor setting was used to train leaders for outdoor programmes and other settings including training every new US astronaut and in the US Naval Academy.[10]

The various themes crystalise the essence of resident outdoor education as practised in the United States from 1930–1980 and highlight the impact of this curriculum innovation on American education. Analysing the impact that resident outdoor education has had on educational philosophy and practice, two aspects of outdoor education are prominent herein. The first is that there is a need for direct contact with the environment, that some learning makes a deeper impact and is retained longer when a concept or an object is discovered, observed, sensed, and interpreted in the natural setting. The second aspect addresses learning to live with our fellow creatures (Hammerman, 1980).

Already in this pioneering time of outdoor education, the first relevant definitions of outdoor education were developed. In the 1950s, one of the definitions of outdoor education was formulated as follows: "outdoor education is education in, about and for the outdoors" (Donaldson & Donaldson, 1958, p. 63). This definition says the place, the topic, and the purpose of outdoor education (Ford 1986, p. 4). Although this definition has been cited a number of times, in practice it was doubtful, particularly because it did not contain everything that outdoor education could contain.

Priest (1986, p. 13) therefore offered a wider definition in the 1980s: "outdoor education is an experiential process of learning by doing, which takes place primarily through exposure to the out-of-doors. In outdoor education, the emphasis on the subject of learning is placed on **relationships**: relationships concerning people and natural resources." Priest based this definition on six main points. Outdoor education:

1. is a method for learning;
2. is experiential;
3. takes place primarily in the outdoors;
4. requires the use of all senses and domains;
5. is based on interdisciplinary curriculum matter;
6. is a matter of relationships involving people and natural resources.

10 Outdoor education. Retrieved from https://en.wikipedia.org/wiki/Outdoor_education

The following definition (Scott, Fuller, & Gaskin, 2006) puts an emphasis on the environment in which outdoor education takes place, as it serves as a source for learning: "Fieldwork as that formal process of study of the environment that takes place outside the classroom and that uses the environment as a learning resource."

These definitions are neither final nor exhaustive; however, an overview of the definitions is available in Neill (2008).

2.2 CURRENT STRATEGY OF OUTDOOR EDUCATION

As mentioned in the introductory part, outdoor education refers to a form of education that has long been seen as a very powerful learning strategy for understanding today's world. It is specific for a number of disciplines of natural science (in particular geography and biology) and social science (e.g. history). Outdoor education is based upon the belief that people are at their most essential level when outdoors. We remember that we are part of a greater ecosystem and are not as bound by social customs and norms (Outdoor Education, 2015).

Its position within the educational system of a number of countries is indispensable. With respect to the implementation of outdoor education, Australia and Scandinavia have the leading position. In the Czech Republic, its application within the educational system of all grades and types of school has not been very successful yet.

Over the past 50 years, the teaching strategies of outdoor education have evolved from traditional field trips, through field research based on hypothesis testing to inquiry-driven learning, which reflects different views on teaching and learning (see Figure 4). This change was inspired by critics of the original outdoor education formats (excursions, field trips) especially due to the fact that these forms had been considered as unsuitable with respect to pedagogical methods (Kent, Gilbertson, & Hunt, 1997). One strategy of outdoor education is in the way that the teacher and student play different roles in it: the teacher's role changes from an omniscient knowledge provider to a manager or coach and the role of the student varies from the traditional consumer of information to an active learning person. Both the roles of teacher and student are mutually balanced, either more focused on teacher leadership, or more focused on student work (In Oost, De Vries, & van der Schee, 2011, p. 311).

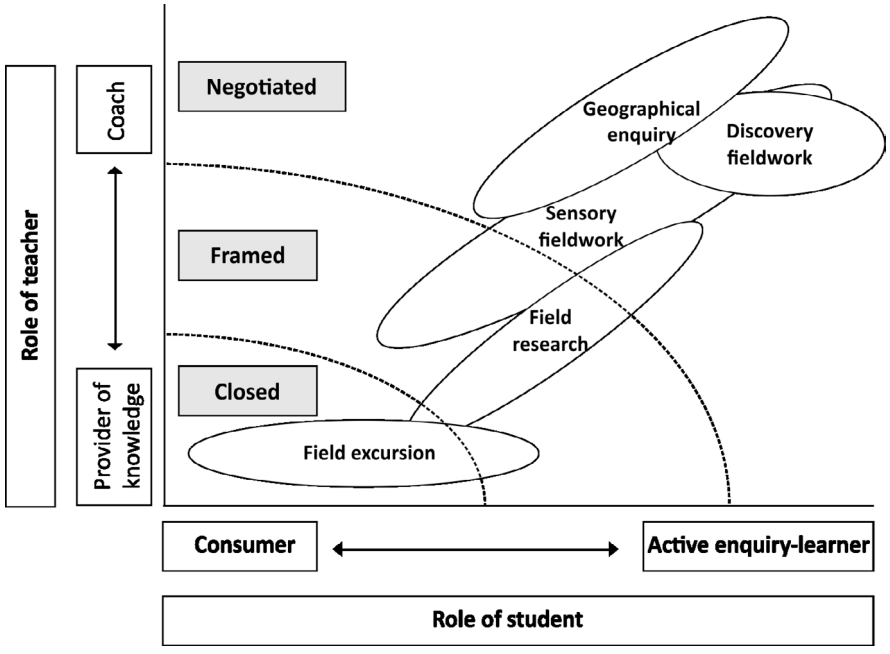

FIGURE 4. TENTATIVE VIEW OF ROLES OF TEACHER AND STUDENT IN DIFFERENT OUTDOOR EDUCATION STRATEGIES.

Source: Oost, De Vries, & van der Schee (2011). The figure is published with the copyright permission of the owner © Taylor & Francis.

Appropriately led outdoor education thus may connect various **activation methods** purposefully with **heuristic and problem-solving methods** as the leading ones. When applying these methods, pupils are put in a certain problematic situation, a problematic task which is to be solved. This teaching by means of independent discovery corresponds fully to the needs of today's society, which emphasises the need to develop creativity, a creative and independent way of thinking and pupils' activities. On the way to awareness, the teacher becomes the pupil's partner and advisor, thus the teacher is put in a position differing from that of traditional education, i.e. the role of "provider of knowledge" is changed to the "role of a partner, coach".

The essence of the problem-solving method is the not providing pupils with knowledge but leading them to help them derive new pieces of knowledge through their own thinking or with the help of their teacher. Problem-solving education connects the pupils' active research (discovering) activity with the adoption of pieces of knowledge, pupils' work is organised considering the set pedagogical and educational goals and the problem-solving principle." (Machmutov, 1975). Ford (1986, p. 8) adds that outdoor education: "teaches people how to make choices based on facts".

Despite the fact that the scheme (Figure 4) is based on research in the field of outdoor education for secondary schools in the Netherlands, it is also very suitable for the use of various outdoor education formats in individual grades of schools in the Czech Republic. If pupils and students go through well-outlined outdoor education at all school grades from the beginning at grade 1 of elementary school where they practise basic activites such as observing or sketching, later do more complex activities such as mapping, during their studies at grammar schools they should be able of independent work and research based on outdoor activities (enquiry, problem solving).

However, outdoor education brings out the necessity to overcome a whole series of organisational, safety or methodical obstacles; it may not come as a surprise that, as mentioned on several occasions, it remains the domain of the most courageous educators (Smrtová, Zadabal, & Kovaříková, 2012). Moreover, the Education Act puts teachers from Czech schools in the role of persons responsible for the creative approach of directing education, and also in the position of curriculum creators. Teachers are put in the situation where they must transform the Framework Educational Programme to the level of the School Educational Programme. This is the task performed in other "developed countries" by pedagogical research institutes. Due to this fact, Czech teachers have even less time to innovate their educational approach.

Despite the aforementioned situation, the Framework Educational Programme concept contributes to the development of outdoor education as one of the FEP priorities comprises the strict usage of **interdisciplinary relationships** and **integration of individual subjects.** Outdoor education, which is the integral part of various subjects, is the most suitable educational form serving to fulfil interdisciplinary relationships. It leads to the cooperation of teachers of various educational disciplines. Therefore, when applying outdoor education in the Czech Republic, the ones who matter particularly with respect to how all activities are transformed in the school educational programme, thematic plan, and "comprehensive concept of outdoor education", which will be reflected in all educational disciplines, are the teachers themselves.

The prerequisites to strengthen the role of outdoor education seem to be sufficient within the Czech educational curriculum. However, outdoor education is based on a "traditional approach" [11] and the character of its application has been overcome in the majority of schools where the main forms are excursions, trips, and other activities, where pupils solely act as observers and information recipients.

11 The main forms of outdoor education in the Czech schools were analysed in Svobodová, Mísařová, & Hofmann (2016); Hofmann, Svobodová, & Mísařová (2016) and are described in chapter 5.1 in this publication.

If some progressive trends are reflected in the school curriculum anyway, these are more or less implemented intuitively by individual teachers, since they lack space to be able to verify these innovations. For a number of teachers, it remains difficult to surpass the educational stereotypes which they are accustomed to, where the pupils are put in a position of passive consumers of textbook pieces of knowledge selected by teachers concerning the world we live in. This fact has not been improved even by implementing the two-grade curriculum. After over a decade, discussions are starting to be held concerning an innovation (revision) of a wider scope with respect to the Framework Educational Programme. The reason for the innovation of the obligatory documents is not only their obvious obsolescence, but also the fact that the extensive research and testing undertaken within the scope of teaching the individual disciplines has shown the failure to accept the idea of a two-grade curriculum by the majority of teachers (for example Straková, 2013).

The aforementioned progressive trends are being manifested very slowly when outlining the SEP of various schools in the Czech Republic – for more details see chapter 5.1, as opposed to some countries where outdoor education has been considered an integral part of the realised and attained curriculum for decades. The changes in the outdoor education approach in Great Britain with respect to activities are summarised by Kent, Gilbertson and Hunt (1997) in the following table.

TABLE 8

CHANGING APPROACHES TO OUTDOOR EDUCATION IN THE UK FROM 1950 TO 1985

Period	Approach
1950	**TRADITIONAL "LOOK-SEE" OR "COOK´S TOUR" FIELD COURSES** • observation and descriptive (thematic guided walks); • "landscape"-based or centred "sight-seeing" visits to specific sites of interest;
1960	• passive student participation.
1970	**"NEW" GEOGRAPHY – 1960s "REVOLUTION"** **Problem-orientated, problem-based fieldwork** • inductive and deductive approaches (positivist) hypothesis generation and testing, data collection and statistical analysis, interpretation and report writing; • detailed scales, often carried out in a small area;
1980	• active student participation although often staff-led.
1985	**TRANSFERABLE SKILLS** **Problem-orientated fieldwork still dominant but introduction of transferable skill element** • project design skills; • organisational skills; • leadership skills; • group skills; • active student participation but emphasis switches from staff-led to student-led projects.

Source: Kent, Gilbertson and Hunt (1997), adjusted by author.

With respect to Czech elementary schools, the current state or the contents of outdoor education are approximately equivalent to the development in Great Britain in the 60s and 70s. The "traditional" format of outdoor education, where the pupils acted solely as recipients, was then changed to the format offering the pupils active participation in education. There might be a variety of reasons for this state – from the barrier formed by the political system up to 1989, to the teachers' insufficient qualification to implement the outdoor education, administrative, and safety matters to the monetary costs. Individual barriers to outdoor education implementation in the Czech Republic are described in more detail in chapter 5.2.2.

2.3 DEFINITIONS OF PARTIAL FORMS OF OUTDOOR EDUCATION IN CONTEXT OF CZECH EDUCATION

If we connect the idea of outdoor education development with the development of interest in staying outdoors, in the Czech Republic it goes back to the beginning of the 19th century. As a date of historical significance may be considered the year 1888, when the Czech Tourist Club was established. There were various reasons for the establishment of the Club – from the expansion of a nationalist idea and efforts to strengthen tourism across the borders to the organisation of fundamental tourism activities, trip and lecture organisation and inspiring interest in travelling (according to Vystoupil, Šauer et al. 2011).

As the partial predecessor of Czech outdoor education may be considered **civil defence education** (more likely meaning "adventure outdoor education" as defined by Uhls, et al., 2014; or Kraft & Sakofs, 1985, for instance). Miroslav Tyrš, who elaborated a plan of national civil defence education already in the 1870s, is considered to be its founder. However, civil defence education was not implemented in schools as an independent discipline. Its elements were manifested most significantly in school physical education, e.g. by adapting order-maintenance exercises of a military character and, as regards geography, by incorporating topics associated with topography, survival skills, and first aid. During World War I, physical education at secondary schools also included military training. Upon the establishment of Czechoslovakia, there were votes for implementing compulsory civil defence education of the population resulting in a reference in the Conscription Act 193/1920 on Physical Education of the Youth before Conscription. In the 1930s, the conscription matter was becoming more urgent, and by the proceeds of the Ministry of Education and National Awareness of 1 February 1934, civil defence education was implemented in secondary schools and pedagogical institutes. In 1937, Act No. 184 on Civil Defence Education of all Citizens was adopted, concerning pupils of all schools. Upon the establishment of the Protectorate of Bohemia and Moravia, civil defence education was annulled. After the year 1948, as a reaction to the political situation those days, compulsory civil defence education at schools was regulated by Act No. 92 of 2 November 1951, on Civil Defence Education, and later on by Act No. 73 of 23 June 1973, on Civil Defence Education. After the year 1989, civil defence education disappeared from schools.

Thus, the **term outdoor education cannot be found** in specialised Czech literature published in the past. Apart from civil defence education, more specific terms are used, such as **excursion** (Turkota, 1980; Wahla, 1973, 1983), **walk** (Turkota, 1980; Machyček, Kuhnlová, & Papík, 1985; Tichý, 1965) or **package tour** (Tichý, 1965).

Even in today's Czech literature (meaning as of the beginning of the 90s and the turn of the millennium), there is no **unified definition** of outdoor education[12] or its individual formats. Thus, the following text brings a summary of usable definitions concerning the individual formats of outdoor education applied primarily in Czech schools.[13] Because the definitions below describe the concept of individual forms of outdoor education in the Czech Republic, they are based primarily on available Czech literature. Critical comments are added.

2.3.1 EXCURSION

The definition of excursion appears in various dictionaries and outdoor-focused teaching publications. We would like to mention Mojžíšek's definition (1959, p. 5): "Excursion is an organisational form of learning of the educational and pedagogical process where we leave the classroom or study room and take pupils outdoors, to an enterprise, museum, and so on. Its organisation differs from a common lesson", as this definition is generally applicable to all disciplines up to the present. The term excursion is also briefly defined by Kujal (1965, pp. 20–23): "Excursion is a means of connecting school with life". Průcha, Walterová and Mareš (2013) defines the term as follows: "Group visit to a significant or interesting place or facility of a recognisable target. It is an organisational form of education taking place outside the school environment, it has a direct relation to the education contents: it illustrates, supplements, expands the pupil's experience." As regards the newer definitions reflecting the connection of teaching and today's world problems, we may state Dvořan's definition (2008, p. 21), who claims that excursions "put students face to face with real problems and help them connect global problems with the problems of the location they live in or observe." Miller (2001) provides a very detailed specification of excursion, out of which it arises that an excursion is a form of education taking place as supervised observation under the original operational conditions of such environment, which would be onerous to present otherwise to pupils or which the teacher wishes to present to pupils in order to improve their theoretical knowledge and confront them with the practical experience. For instance, we may recommend an excursion to a professional weather station, laboratory or testing stations, research institutes, agricultural or industrial enterprises, etc.

12 Hofmann's definition (1999, 2003), which serves as the basis of this publication as well, may be considered as one of the first definitions of outdoor education.

13 Within the project of the Czech Science Foundation called "Fieldwork as a powerful learning strategy", an analysis of applied forms of outdoor education in selected Czech schools was performed and incorporated in this publication in Chapter 2.3.

The definitions above are generally applicable for any discipline, and it is evident from them that with individual authors the term "excursion" differs significantly. Wahla (1983, p. 38) defines the term excursion already focused on the geography discipline as "organisational form of education the aim of which is a study walk, visit of significant places, cultural institutions, production enterprises, locations, tour, travelling with more thorough awareness of the countryside, estates, roads, manufactures, culture". Wahla (1973) divides geographical excursions according to the environment, contents, and classification in the teaching process. He provides various natures of geographical excursions, such as a **geographic walk** (short excursion lasting up to 1–2 hours in a natural environment close to the school facilities) and **geographic observation**, which is considered to be a short-term study of selected products of nature or operations taking place in the field, in museums, at exhibitions, etc. Wahla (1973, p. 81) further provides another type of excursion, such as geographic trips, which are considered as "half-day, all-day or multiday trips in the countryside where pupils observe individual geographical phenomena and actions and take various measurements", and geographic tours, which consist in multiday excursions of a complex character.

Another view of excursion division is provided by Grác (1967), who defines **complex excursions**, which connect various educational fields by their contents. Above all, in the text, the author mentions the connection of biology with geography and history.

Therefore, generally, the aforementioned authors consider excursions to be learning outside the classroom. The difference between the individual definitions may be explained by means of Řehák's definition of excursion (1965, p. 232), when he accurately emphasises that excursions "are not trips", but "systematically prepared lessons of methodological sophistication, fitting into the syllabus, taking place in the countryside or at enterprises or museums. They are practical exercises taking place in the outdoors". This interconnection and usefulness is missed out by a number of definitions – mainly Wahla (1973, 1983 – see above), who interchanges the meaning of excursion for the meaning of a walk or trip. In order to distinguish between excursions and other forms of outdoor education, we will not use the excursion link to nature. Instead, we work with outdoor exercise or trips (see below).

2.3.2 (DIDACTIC) WALK

In outdoor-focused teaching publications dedicated to teaching at the lower stage of elementary school the terms **excursion**, **walk** or **themed walk** appear to be parallell. For instance, Musilová, Hradil, & Šupka (1979) and Podroužek (2003) distinguish between the terms excursion and (themed) walk. They consider walk as teaching outdoors, outside the school facilities, led by the teacher. According to them, an excursion then means a visit to a specific facility, such as a planetarium, museum, the zoo or botanical garden where teaching is taken over by an expert of

the given facility. Other authors, such as Navrátilová (1983) or Fabiánková (1996) do not strictly distinguish between these terms. Fabiánková (1996) defines a walk as short-term teaching outside the classroom which takes place most frequently within one teaching unit, i.e. within 45 minutes, or longer when various disciplines are interconnected appropriately (e.g. with physical education or art classes). A more detailed distinction is only defined by Podroužek (2003), who distinguishes between mono-themed walks (following a certain phenomenon or object) and phenological walks focused on getting to know the outdoors in a given season. At the same time, this author uses the term "complex walks" similarly to Fabiánková (1996), as they fulfil educational targets of multiple disciplines. As opposed to that, Musilová, Hradil, & Šupka (1979) denotes complex walks as the opposite to a mono-themed walk, i.e. focused on observing several phenomena or products of nature concurrently.

As it is obvious, the majority of authors named do not distinguish much between the terms excursion and walk. If there is some distinguishing, it concerns the time perspective, where the term walk is used for short-term events taking 1–2 hours, while excursions may take up to several days, which is incorrect. An excursion can also take 1–2 hours.

According to Wahla (1983, p. 169), a **walk** is "an organisational form of geography teaching stipulated by curricula. As regards walks, a regional principle is applied. In a given location (countryside), pupils perceive, observe, analyse, describe, characterise, and evaluate geographical objects and phenomena. They perform practical tasks, elaborate simple graphic works (sketches), perceive spatial elements of the countryside (shape, size, plasticity…)". According to Machyček, Kuhnlová, Papík (1985, p. 122), walks "enable the awareness of natural, social, and production environment. Pupils receive pieces of knowledge concerning the countryside, they learn to understand the connection, relation, and rules of the geographic sphere. Walks also fulfil the role of teaching aesthetics". Turkota (1980, p. 117), similarly to Wahla (1983), defines walks as an organisational form of teaching, organised in the outdoors in short periods (1.5–3 hours)". Tichý (1965, p. 88) uses the terms walk as well as the term tour, interchanging these terms frequently. He defines in more detail the term "walk" as "teaching geography close to the school facilities in the period of one up to a few hours".

A very simple distinguishing of walks and excursions is presented by Dvořan (2008, p. 20) who claims that whereas an excursion is mainly focused on learning, a walk may be more relaxing in nature. The difference between these terms is depicted in Figure 5.

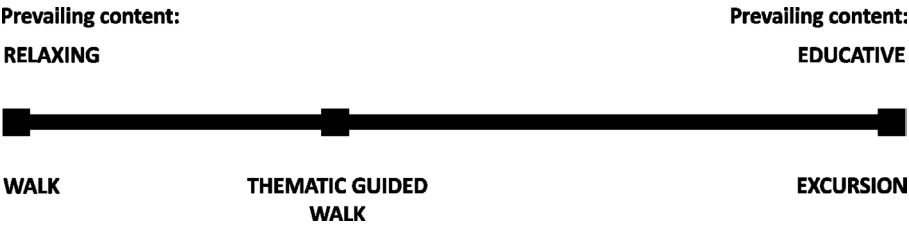

FIGURE 5. DISTINGUISHING BETWEEN THE TERMS "WALK" AND "EXCURSION" ACCORDING TO PREVAILING CONTENT.

Source: Dvořan (2008, s. 20), adjusted by author.

The definition of walk by Hublová (2014) explains that (didactic) walks take place in the countryside or following cultural and historical objects and sights. The description also defines that the issue of walks is their low attractiveness concerning what children can see, get to know or experience during the walks compared to what they acquire from the media, TV, and videos in a more attractive way. That is why it is necessary to improve the attractiveness of the activities and methods offered with respect to the topic. From the didactic perspective, the classic way where during the walks the teacher adds information concerning interesting facts is not considered to be greatly efficient. Efficiency is not granted even when children draw objects outdoors.

It is added afterwards that an elaborated and well-prepared didactic walk has a big chance to raise a child's interest and improve his or her perception and awareness. By means of walks, lessons may be supplemented by specific live information that helps raise interest in information potentially subsequent – general and theoretical. Raising interest in watching the world around us and in perceiving may be also gained by usage of cameras (not a traditional way), paper view finders, GPS devices, field-glasses or binoculars, and magnifying glasses, devices recording sounds, or interesting natural history tools.

Hublová also claims that during walks a teacher should especially enliven associations already memorised by children with respect to the theme of the walk and connect more senses. If a teacher manages to connect activities of an informal character with tasks requiring the connection of more than one sense, he or she may manage to lodge the pieces of knowledge associated with the walk in the long-term memory more easily and more permanently.

With respect to their length, according to Hublová, a typical walk should not last more than 1 or 2 teaching units, except for walks following significant elements of the nature and history of regional or trans-regional significance and such walks should be realised only sporadically. Concerning interdisciplinary relationships, walks and art overlap nearly every time. The discipline of national history and geography

includes walking guided by a map, elaboration of plans, maps, and records. At the same time, sometimes it is suitable to include physical activities and games. Activities which are interesting, yet hardly practised, include the ones connected to sound perception subsequently applicable in music and art lessons. It is also not hard to imagine the connection of walks with taking the fundamentals for compositions, such as interviews, news reports, geographical sketches, and other connections to the Czech language.

The aforementioned definitions of walk emphasise the pupil's activity more than the definition of excursion. However, neither of them states that a walk may take place in a municipality and not only in the countryside/nature. As opposed to that, the focus on history, culture, and sights is slightly overestimated. Outdoor education offers countless other topics which may be discussed. At the same time, neither of the definitions connects the activities with physical activity.

With all definitions of the walk, the purpose of the walk should be mainly to practise basic activities in the field especially for the lower stage (from grade 1 onwards) pupils, such as observation and description of natural and social phenomena, landscape orientation and recording of observed phenomena. Due to the nature of the walk, we understand it rather as a short-term organisational form of teaching in the neighbourhood of the school.

2.3.3 OUTDOOR EXERCISE

In order to provide another organisational form of teaching geography connected with outdoor education, Wahla (1973, p. 82) uses the term **practical outdoor work**, where "pupils perform various practical tasks geographical in nature under the supervision of the teacher".

Another perspective and terminology can be found in the works of Dvořák (1982), who use the term **exercise in nature**. This may be divided into three types: (1) observing the countryside (short walks or walks of a large group of pupils focused on observation, concerning investigative, descriptive or revealing observation); (2) determination of products of nature (based on revealing observation where indications are provided in order to determine the products of nature, a record is made continuously, and observed facts are drawn); (3) ecological exercise in the nature (the most demanding type of at least half-day duration where pupils should fulfil as many separate tasks as possible).

Compared to a walk or excursion, the active work of the pupils should be paramount, and the teacher goes into the role of coordinator of activities. The focus of his work lies in selecting a site and thoroughly preparing the content of fieldwork, including setting educational aims and sub-activities of pupils that lead to these aims.

2.3.4 (SCHOOL) TRIP

A trip is defined in a very simple manner by Dvořan (2008, p. 20): "Walks that last for several days are **trips**."

Švec (1995) describes a trip as an organisational form of education, which is mainly relaxing and recreational. It is undertaken at the end of the school year. It mainly fulfils educational targets. Its preparation consists of the teacher's preparation, pupils' preparation, and thorough organisational security measures. Even pupils themselves may contribute to the trip preparation.

Although we agree that trips have a relaxing character in many schools, we believe that a school trip is also a good opportunity to include activities for strengthening social relationships, develop discipline knowledge and skills. During a school trip, it is possible for pupils to perform similar activities as during walks, excursions or field training.

2.3.5 SCHOOL IN THE COUNTRYSIDE

Traditionally, the definition of school in nature was perceived in two ways – "the facility" or "the education".

Originally, schools in the countryside were organised in the Czech Republic as rehabilitation events with the aim of pupils living in territories with aggravated environmental conditions recovering. Schools in the countryside were significant for children with respect to their medical and educational character. Medical and recreational significance consists in the fact that pupils spend a substantial part of the day in a healthy natural environment and they become hardy. Sufficiency of physical activity in the fresh air improves their fitness level. Through the selection and wide range of activities, this form of outdoor education contributes to the satisfaction of social needs, it develops creativity, and supports the pupils' independence; pupils learn to help and tolerate each other. The educational and pedagogical significance consists in the fact that pupils get to know a new environment, they become aware of it, get to know new places, natural ecosystems and organisms living there. The sensory perception of nature is improved, an appropriate relationship between the pupils and the environment is developed, including the perception of aesthetics and ethics (according to Hublová 2014; MEYS Act No. 395/1991 Coll. on School Recovery Facilities – currently no longer applicable with no adequate substitution). Štoček (2011, p. 147) adds that "the term school in the countryside is associated with the term **recovery event**, which was an organised stay of children up to the age of 15 for a period longer than 5 days, the purpose of which is to improve the children's health, their fitness level or to acquire specific knowledge or skills."

The third, current perception of school in the countryside is no longer solely associated with recovery stays for pupils living in territories with aggravated environmental conditions. Schools from all Czech regions typically attend schools in the countryside; these may concern stays during the whole school year. The contribution of schools in the countryside to the educational process is unequivocally the fact that pupils spend longer periods outside the school facility and without their families. Therefore, more time can be spent on concentrated outdoor education, interdisciplinary cooperation and the development of the pupils' natural physical activities.

2.3.6 COURSE

According to their contents, courses may be divided as follows:

- adaptation courses;
- sports training courses;
- professional courses.

An adaptation course is a very sophisticated course combining elements of adventure and experiential education. The programme realisation is typically ensured by instructors.

An adaptation course serves to weld a group of individuals together in order to make the team stronger; it is a targeted and sophisticated elimination of specific undesirable expressions within such a team, where it is not necessary for the majority of the team members to know each other from the past.

In the school environment, adaptation courses are applied to a group of pupils (a class), for instance, when transferring from the lower to the upper stage of elementary school or when transferring from elementary to secondary school. An adaptation course should always be run outside the familiar environment, pupils should be pulled out of everyday situations of their everyday behaviour in order to enable that even details of their conduct are shown. These details should be monitored by their pedagogical supervisor.

The contents of **sports training courses** consist in acquisition and perfection of physical skills in nature, education concerning the significance of physical activities such as prevention of lifestyle diseases and on the regenerative effects of physical activities in the outdoors. Sports training may be organised in winter (such as downhill or cross-country skiing, snowboarding) as well as in the warmer seasons (walking courses, water sports, cycling, skiing, and other courses).

Professional courses may be organised with a focus on any professional knowledge and skills. When focusing on education, these courses may include, for instance, professional courses for teachers – in our case for teachers of geography focused on outdoor education, case study processing, etc.

With respect to all courses, the application of interdisciplinary cooperation should be automatic. For instance, during the adaptation courses and sports training course pupils use their geographical skills (location recognition, map-reading, finding their way around…); as opposed to which, during professional-focused courses pupils use their physical skills. These links, however, have entered neither into the definitions of courses nor the other forms of outdoor education mentioned above.

2.3.7 (SCHOOL) PACKAGE TOUR

The general meaning of a package tour is the organised participation of a group of people travelling over a certain route, following a programme elaborated in advance with a specific aim concerning awareness, recreation or education. Depending on the focus, trips can be divided into cognitive, residential and theme-oriented (e.g. with a foreign language). The precise definition of the package tour is defined in Section 2522 (1) of the Civil Code[14] , as follows. "A package tour is a set of tourist services if it is organised for more than twenty-four hours or if it includes an overnight stay and contains at least two of the following: (a) accommodation, (b) transport, (c) other tourist services not ancillary to transport or accommodation and accounting for a significant proportion of the package of the services offered."

The publication of the Ministry of Regional Development (NE x Opravněné podnikání v cestovním ruchu, n.d.) states that a package tour is considered as such if repeatedly organised and offered for purchase (more places are sold to third parties for a price exceeding the direct costs per person). Furthermore, on page 11 it is provided that: "A package tour is not considered a package tour if a school organises the stays of their pupils for a price covering the direct costs related to it (i.e. excluding the overhead costs and wages of the teachers/tutors within their standard workload)."

From this perspective, package tours may only be considered as school package tours if the school does not organise them on its own, where at least some activities related thereto (transportation, programme, accommodation) are performed by external entities.

2.3.8 EDUCATION ON SCHOOL GROUNDS

School grounds are plots of land owned by the educational institution, or the municipality where the institution is located. These may include a garden, playground, outdoor classroom, geopark or any area for teaching pupils. School grounds may be used for teaching topics which could also be taught in a standard classroom, but the pupils' outdoor stay offers possibilities to acquire new incentives to think about as well as the pupils' real experience.

14 See https://www.zakonyprolidi.cz/cs/2012-89

In teaching geography, special significance is given to a **geographical plot**. It has a multi-purpose usage. It can be used for the performance of various practical exercises concerning mathematical geography and cartography, such as distance measurement and measuring scale calculation, orientation and map/plan-reading, measurement of meteorological or other characteristics. A plot is a place where pupils are explained more complex parts of geography, where they practise these, and gain necessary habits and skills in handling various devices. When the weather is good, a well-situated plot of land may serve as a classroom (Turkota, 1980).

2.3.9 INQUIRY-BASED FORMS OF OUTDOOR EDUCATION

Apart from the aforementioned forms of outdoor education which are commonly practised in the Czech Republic, there are also other forms of outdoor education not as common in the Czech environment, mainly due to certain historical deep-rooted customs of the Czech school system. These include outdoor education based on the pupils' own "research". As Scott, Fuller and Gaskin (2006) claim, the common factor of these forms of outdoor education is "seeing what things actually look like in the flesh". Definitions of these forms are provided according to Job et al. (1999) as cited in Caton (2006).

Field research based on hypothesis testing entered the geography education in the 1970s and emerged from the application of field (e.g. geographical, biological) theory or the generalised model of a real situation in a small area. During this type of outdoor education, pupils create hypotheses which they verify through their own data collection.

Similarly, **geographical inquiry** engages students in the process of identifying, formulating and asking questions. Students are then supported in the gathering of appropriate data (quantitative or qualitative) to answer key questions. Geographical questions, issues or problems are identified, ideally from students' own experience in the field. Findings are evaluated, and the implications applied to the wider world and personal decisions where appropriate.

Discovery fieldwork allows students to discover their own interests in a landscape as well as to develop their own focus of study and methods of investigation. It encourages self-confidence and self-motivation by putting students in control of their learning. The teacher assumes the role of animator, allowing students to follow their own route through a landscape. When students ask questions, these are countered with further questions to encourage deeper thinking. A discussion then identifies themes for further investigation in small groups.

Job at al. (1999, p. 65) adds the benefits of these forms of outdoor education: "By learning first hand in the field, students will benefit in a wide variety of ways, but the choice of the fieldwork approach will undoubtedly channel learning in a particular

direction. For example, if field research is used, it can be expected that the main outcomes will include learning how to use research procedures and developing skills of data collection and analysis. Similarly, inquiry fieldwork is likely to develop decision-making skills and help students to form geographical questions."

In comparison with some of the aforementioned forms of outdoor education which are implemented in Czech schools, it is evident that inquiry or discovery fieldwork enables pupils to get more involved in outdoor education. They support the pupils' own activity (asking questions, seeking answers through their own primary data collection, through targeted observation, measurements, investigation) and encourage pupils to solve problems. It constitutes a challenge for Czech schools and teachers aiming to apply these outdoor education forms more frequently.

An example of complex preparation for inquiry-oriented outdoor education is provided in the chapter 3.2.

2.4 APPROACHES TO OUTDOOR EDUCATION REALISATION

Approaches to outdoor education depend on various factors. The key factor is the **content** of outdoor education – i.e. which part of the curriculum is practised and deepened by means of outdoor education. Furthermore, according to the content, it is necessary to set the **duration** of outdoor education as well as the **location** where it is to take place. Last but not least, the teacher must set the **organisation** of the outdoor education with respect to the involvement of the pupils. All this must be planned for each **stage of outdoor education**. Even though the individual aspects are described separately in the following text, they do not exist separately – they always create a complex whole.

2.4.1 CONTENT ASPECT

Similarly to Machyček, Kühnlová and Papík (1985) many authors engaged in the didactics of geography divide the types of outdoor education according to the content into themed and complex/integrated outdoor education.

Themed outdoor education is generally associated with one topic monitoring, whether it is geographical, biological or historical. With respect to geography or biology, this may concern, for instance, a walk, excursion or outdoor exercise, within the scope of which pupils collect primary data (by making sketches, taking photographs, measurements…), learn to read a map, locate the position of posts, etc.

Complex outdoor education includes acquiring pieces of knowledge of several parts of the given discipline. Most frequently, complex outdoor education concerns

pieces of knowledge from multiple disciplines of human activity, and at school this concerns interdisciplinary cooperation. A complex topic connecting these fields includes environmental themes, or decision-making processes in the countryside implemented through projects or case studies. Overall, complex outdoor education usually lasts for more than one or two hours.

Complex outdoor education may also include **sport training courses (summer and winter ones)**. This involves physical activities connected to staying in the outdoors. As Trávníček (2007) claims, pupils, as well as teachers, should realise the importance of arousing children's permanent interest in physical activities not only in the school grounds, but also in their leisure time, and to motivate them to integrate physical activities into their daily routine. They are aware of the fact that geography teaching combined with physical activities contributes to a healthy lifestyle. That is why the courses involve mainly activities which correspond to these aims. For instance, the fundamentals of tourism and staying outdoors (including awareness of safety measures, monitoring the weather or selection of a suitable place for camping), games and physical activities in the countryside, the fundamentals of cycle-touring, watermanship, camping, orientation outdoors, etc. These activities, as well as any other outdoor activities, are interdisciplinary, such as walking, cycle-touring, and orientation in the countryside by means of maps for orienteering. When hiking or cycle-touring pupils learn how to plan their routes, use maps, and develop various topographic skills, including the usage of modern technology. Geographical characteristics of a visited location provide answers to questions, such as: Where is it? What is it like in there? Visiting local historical places is also associated with interdisciplinary connections to history. Playing in the meadows, in the forest or by the water is related to biology. During outdoor education, physical activities therefore use the aforementioned disciplines.

Activities creating the contents of a winter training course not only bear the character of a ski training course, but all that is also connected to orientation and physical activity in the winter. Students become familiarised with the specific mountain environment. Above all, physical activities in these locations are connected to downhill skiing, although cross-country skiing or snowshoe usage is also practised. Once again, the course takes place in a specific location which has been developed historically and has specific conditions. Geographical or biological characteristics may be used during this type of education by means of evening activities (quizzing, games, presentation-making concerning specific topics, etc.). Also, physics has its place there – the elements and various water phases, atmospheric physics, etc. With respect to the environment, this concerns, for instance, winter tourism in a specific location. Winter courses thus attempt to offer their pupils a complex set of activities primarily associated with physical activities and emphasising interdisciplinary connections.

Integrated outdoor education is the most specific form of outdoor education. The term "integrated outdoor education" is defined by Průcha, Walterová and Mareš in the Dictionary of Pedagogy (2013) as education implementing interdisciplinary relations and connections of theoretical activities with practical ones in the following forms: (1) integrated disciplines or courses, (2) modules or topics classified as part of multiple disciplines, (3) projects connecting pieces of knowledge from multiple disciplines with practical experience and productive activities, (4) integration days where the entire school focuses on one common topic. Another definition of integrated education is provided by Humphrey, Post and Ellis (1981), in whose opinion it is a means of education where children look into their knowledge of various disciplines associated with their environment in a certain way. They learn to find out about connections, relationships, complex views of various issues, phenomena. Peterssen (In Korvas & Cacek, 2009) defines integrated education as a concentrated, theme-oriented joint form of education where multiple disciplines take part equally. Individual topics integrate their contributions with respect to central topics and a superior aim.

As it emerges from the aforementioned, integrated outdoor education is demanding with respect to its contents as well as with respect to staffing, since it involves teachers of geography, biology, chemistry, physics, history, physical education, possibly supplemented also by art teachers and teachers of other disciplines. We must note that integrated education approached by all involved persons should supplement the normal curriculum, it should not eliminate it or replace it. We perceive integrated education as an interconnection of curriculum contents of various subjects in a single thematic educational unit aiming to provide comprehensive knowledge useful for practical life (adjusted according to Podroužek 2002). Integrated outdoor education also involves various physical activities. It is a non-structured as well as structured movement performed for the purposes of various forms of outdoor research. It is applied, for instance, in data gathering (e.g. taking water samples). When performing this activity, neither pupils nor students realise that they need to walk somewhere, take their shoes off, take samples from various places, and bring them to the laboratory for analysis.

For the purposes of the project "Outdoor Education as a Strong Teaching Strategy" another classification of outdoor education was created **according to the focus** – see Figure 6. According to this classification, outdoor education may be focused on **discipline skills** (focus on the curriculum of individual disciplines), **locomotion skills** (sports training course), and **interpersonal relationships** (adaptation and teambuilding courses). For definitions of partial forms of outdoor education see chapter 2.3.

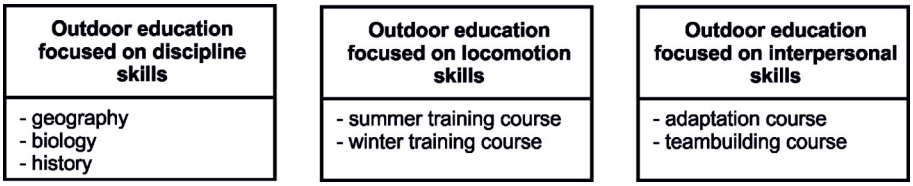

FIGURE 6. DIVISION OF OUTDOOR EDUCATION ACCORDING TO ITS FOCUS.
Source: author.

Another classification of (outdoor) education arises from the theoretical concept of Slavík, Janík, Najvar and Knecht (2017), where we can describe outdoor education as an independent discipline; however, its content is interdisciplinary if the cooperation of two disciplines is considered, or transdisciplinary if outdoor education exceeds the interdisciplinary dimensions (see table 7).

FIGURE 7. CLASSIFICATION OF EDUCATION FROM DISCIPLINARY TO INTERDISCIPLINARY AND TRANSDISCIPLINARY.
Source: author.

Dyment and Potter (2015), Potter and Dyment (2016) ask the following questions: "Is outdoor education a discipline? Can 'nature' alone be enough of a worldview or paradigm to warrant outdoor education being a stand-alone discipline?" According to these authors, outdoor education as a prospective discipline is the role, power and potential of the natural environment and the relationships between humans and nature that stand to be formed. Nature does underpin and define the learning area of outdoor education, and it carries enough weight in research and practices to warrant being the "worldview/paradigm", so nature needs to be situated far more centrally in the pedagogy and outcomes of outdoor practices. The authors see signs of this happening with calls for more place-responsive pedagogies and sustainability to infiltrate and underpin the outdoor education arena. They also encourage practitioners to embrace this worldview and to frame nature and its powerful role more centrally in the curriculum and pedagogy of outdoor learning.

Outdoor education may be thus approached as an independent discipline with regard to its methodology. Its contents, however, exceed the boundaries of a separate discipline, so we speak about an interdisciplinary concept of outdoor education.

Interdisciplinarity or interdisciplinary cooperation emerged as a serious challenge to disciplinarity in the 1980s and is one of the main discussion topics for professionals in pedagogical and didactic fields today. Jacobs (1989, p. 8) describes it as "a knowledge view and curriculum approach that consciously applies methodology and language from more than one discipline to combine a central theme, topic, issue, problem, or work". Similarly, Klein and Newell (1996, p. 3) see interdisciplinarity as the "process of answering a question, solving a problem, or addressing a topic that is too broad or complex to be dealt with adequately by a single discipline or profession' and that, whatever the context, 'interdisciplinary studies draw on disciplinary perspectives and integrate their insights through the construction of a more comprehensive perspective".

This concept of interdisciplinarity can be applied to outdoor education with a dominant focus on one school subject (in this case geography) with the support of physical activity, which as an unstructured form is always part of outdoor education.

Transdisciplinarity connotes a research strategy that crosses many disciplinary boundaries to create a holistic approach. It applies to research efforts focused on problems that cross the boundaries of two or more disciplines. The transdisciplinary concept of outdoor education can be identified with the concept of integrated outdoor education, which constitutes an "interconnected" model, ideally linked to disciplinary and interdisciplinary activities. Integrated outdoor education may be perceived within the meaning of interconnection of curricula of various disciplines in one themed teaching complex aiming to acquire complex knowledge useful in practical life (adjusted according to Podroužek, 2002).

The strength of the interdisciplinary and transdisciplinary approach may be viewed especially in the support of pupil thinking in connections as well as the geography role as integrator of partial disciplines – as stated in a quotation from students of pedagogy: "life is not monodisciplinary" (...) "interdisciplinary cooperation is extremely important (...) pupils receive information in context and are able to connect knowledge from multiple fields" (...) "in co-operation is power".

2.4.2 TIME ASPECT

From the time perspective, outdoor education may be divided into **short-term, medium-term,** and **long-term**.

Short-term outdoor education takes place in the immediate surroundings of the school, e.g. on school grounds, which should be modified in order to accommodate outdoor education. It may partially include a weather station, designated local meridian, sandpit for relief modelling, arboretum, geopark, and so on. The teaching in these grounds may take **1–2 teaching units**. Within this meaning, Wilczyńska-Wołoszyn (2003) does not define school grounds or geographical grounds, but she calls this environment a geographical laboratory defined as a territory less than

500 m away from the school building, reachable within a 7-minute walk and used for geographical task assignments. The distance is defined deliberately in order to enable the elaboration of assigned tasks within one teaching unit.

Medium-term outdoor education involves education typically lasting **one school day.** This may include, for instance, themed walks to the school neighbourhood serving especially as an introduction to other forms of outdoor education, such as outdoor exercise, outdoor research with the focus on problem-solving, etc. One-day forms frequently involve excursions to various enterprises, museums, historical sights, exhibitions, etc.

Long-term outdoor education may last for **two or more days** and may include school trips, schools in the countryside as well as specialised forms of outdoor education with a focus on natural science, social science, physical or adaptation courses.

2.4.3 LOCALISATION ASPECT

With respect to localisation (place of realisation), outdoor education may take place:

- in school grounds (school garden, school playground, school outdoor laboratory, outdoor workroom in the school grounds, outdoor classroom, gazebo, geographical field);
- in the rural environment (environment of rural municipalities, castles, chateaux, forests, meadows…);
- in the urban environment (most frequently, for instance, museums offering teaching programmes, planetarium, the zoo or an environment of the city/municipality/city quarter);
- in the countryside close to the countryside (e.g. conservation areas);
- in the modified countryside (e.g. extracted quarries).

It is evident that certain activities may take place similarly in the urban or rural environment if an imprecisely called "urban" environment is in fact any municipality where there is a certain type of housing development, transportation infrastructure or production or non-production activities.

At the same time, many environmental centres and training facilities have their seats in towns[15] where educational activities are organised for schools; however, branches are located in the rural or in the suburban environment. Castles, chateaux, museums, biotopes may be situated in the urban as well as in the rural environment.

15 In the Czech Republic e.g. Lipka – School Facility for Environmental Education, Rezekvítek and many others.

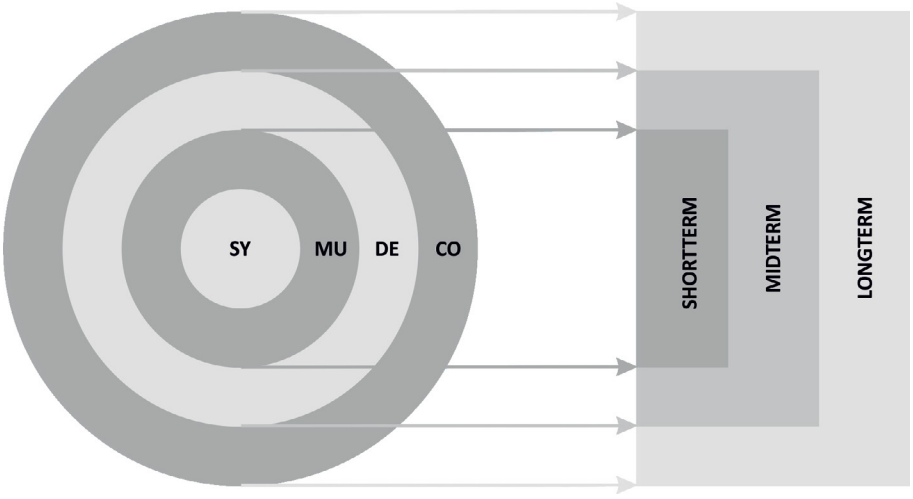

FIGURE 8. THE FOUR-ZONE OUTDOOR EDUCATION MODEL.

Source: Svobodová et al. (2019), adopted from Beames, Higgins and Nicol (2012, s. 6).

Note. The model depicts the increasing distance of the work area of outdoor education from the school (which constitutes the imaginary centre of the circles) in various forms of outdoor education (SY – schoolyard, MU – municipality and surroundings, DE – a day-long excursion, CO – longterm outdoor course). On the right, the model is linked to the concept of the different duration of outdoor education, depending on the chosen location and form of education.

In general, one of the decisive factors in choosing the place where outdoor education is to be carried out is time. Shorter forms of outdoor education usually take place near school, as opposed to long-term forms which take place in more distant localities, as shown in figure 8.

2.4.4 ORGANISATIONAL ASPECT

With respect to organisational aspect and strategy selection, outdoor education may be divided as follows:

Prepared and led by the teacher – this includes, for instance, walks where the route is determined and proposed by the teacher, who provides commentaries during the course of the walks concerning the surrounding countryside; however, this may also concern themed walks where pupils perform certain tasks upon instructions of the teacher, or it concerns excursions or visits to museums or natural parks etc. It typically involves young pupils of the lower stage of elementary school.

Prepared and led by the pupils together with the teacher – this case may involve outdoor research within the scope of outdoor exercise prepared by the pupils together with the teacher, who only supervises the whole activity and possibly assists the pupils.

It mainly concerns older pupils from lower secondary school or grammar school students, who already know the principles of work and movement outdoors from previous outdoor education.

Prepared and led by the pupils supported by their teacher – this may involve agreed, inquiry-based outdoor education where pupils are presented with a problem and they have to determine how and by means of which aids the given problem should be solved. Pupils may also select the problem themselves. This mainly involves pupils who have long-term experience with outdoor education, i.e. lower secondary schools or grammar schools. However, inquiry-based forms of outdoor education are more and more frequently included in the curriculum of primary schools.

3 SUGGESTIONS FOR OUTDOOR EDUCATION FOR ELEMENTARY SCHOOLS

Tell me and I forget. Teach me and I remember. Involve me and I learn.

Benjamin Franklin

Generally, educational concept is a concept which approaches formal and procedural aspects of education, in the pedagogical situation reflecting the selection of educational aims, contents, conditions, principles, organisational forms, means, and methods, and with respect to the relationship between a teacher and a student reflecting in education (Petty, 1996; Průcha, 1992; Kratochvíl, Solfronk, & Urbánek, 2002).

The aim of outdoor education is to find answers to questions in the real environment. This takes place by working with primary and secondary data sources. During the preparation stage of outdoor education, which typically takes place in the classroom, pupils work with secondary data sources – they analyse available information (data, schemes, graphs, maps…). During the realisation stage, which takes place outdoors, pupils usually collect their own primary data (notes from observation, measurements of various quantities, results from interviews or surveys, etc.), which they process, analyse, interpret, and evaluate in the final stage (either outdoors or in the classroom) – they perform a synthesis of primary and secondary data (see table 9).

The cross-sectional activity of geography outdoor education usually involves **cartographic skills,** where at the preparation stage the pupil uses existing maps to acquire the necessary data of the model territory where, subsequently, the realisation stage of the outdoor education takes place. At this stage, not only the pupils know how to get directions from a map, but they are also capable of creating their own map or at least designating a route in an existing map, designating the recorded quantities or mapping the ground usage.

TABLE 9
KEY ASPECTS OF INDIVIDUAL STAGES OF OUTDOOR EDUCATION

	Preparation stage	Realisation stage	Final stage
Setting	classroom	outdoor	classroom/outdoor
Data	secondary	primary	secondary + primary
Activity	analysis	collection	synthesis
Cartographic skills	existing map reading, analysis and interpretation	existing map reading, analysis, interpretation / own map creation	own map creation and interpretation

Source: author.

To prevent the ordering of outdoor education among other forms of education from being random (with only minimum links to other forms of education or none of them), it is desirable that the following **principles** are adhered to when creating the concept.

- **Outdoor education links to the curriculum of previous school grades and the curriculum progress.**

The individual forms of outdoor education (see Table 10) should be included in the syllabus of the individual grades of elementary education according to the learning progress scheme (Bruner, 1960; or on an example of cartography skills Mrázková, 2013), for continuous improvement of the pupils´ skills and competencies, both in **horizontal and vertical terms**.

Horizontal classification expresses the difficulty progress of individual activities, i.e. as of the beginning of the school year the teacher includes forms of outdoor education which help the pupils carry out simple activities and gradually includes activities which are more difficult and complex. With respect to vertical classification, we have in mind the curriculum links between individual grades and practising of activities learned before. In the lower grades, the outdoor education activities should be simple, defined by the teacher. Later, these activities should require the use of knowledge acquired in the previous course of education and increased independence of the pupil. In the final stage, the pupil should be able to work independently outdoors, and the teacher´s role should be rather to check and advise. The pupil´s role is thus transformed from the traditional consumer of information to an actively learning individual. Both roles, of the teacher and the student, must be balanced, hence either the leading role of the teacher prevails, or the activity is more student-work-oriented. (In Oost, De Vries, & van der Schee, 2011, p. 311)

TABLE 10

ACTIVITIES DEFINING BASIC FORMS OF OUTDOOR EDUCATION AND THEIR DIFFICULTY PROGRESSION

Difficulty level	Level 1: observation approach	Level 2: observation + elementary exploration approach	Level 3: exploration approach
Form of outdoor education	**walk/excursion**	**outdoor exercise**	**inquiry-based outdoor education**
Pupil´s activity	limited	medium	extensive
Teacher´s activity	extensive	medium	limited
Activities:	**observation;** **asking targeted questions;** **field log keeping (recording);** **photo (video) documentation;**	**observation;** **asking targeted questions;** **field log keeping (recording);** **photo (video) documentation;** orientation; description; drawing (sketching);	**observation;** **asking targeted questions;** **field log keeping (recording);** **photo (video) documentation;** orientation; description; drawing (sketching); collection of data/material; measurement; analysis; mapping; inquiry (questionnaire); evaluation.

Source: author.

Note 1. Bold lettering marks cross-sectional activities shared by all forms of outdoor education.

Note 2: More complex and longer-term forms of outdoor education may include thematically narrower and shorter-term forms of outdoor education. E.g. part of outdoor exercise can be a walk. It is important that all forms of outdoor education have set learning aims so that someone does not consider, for example, a walk just as relaxation.

- **Links of outdoor education to knowledge acquired in the course of previous years of education and to learning progress.**

The connection of outdoor education and class work can achieve more effective knowledge fixation, for more details see for example Činčera and Holec (2016); Kvasničák (2013); Rickinson et al. (2004). The connection of outdoor education and class work also follows from the overall organisation of outdoor education, comprising three basic stages: **preparation** – in the classroom as part of the standard teaching process; **realisation** – outdoor stage, and **final** – can be done outdoors and followed by a classroom discussion and subsequent teaching process.

- **Connections of various forms of outdoor education from the temporal point of view.**

The author worked with her own classification of outdoor education with regard to its duration: **short-term** forms of outdoor education are held in the immediate surroundings of the school, usually on the school plot/garden or in an outdoor classroom/laboratory and do not exceed the time of two successive lessons.

Medium-term forms of outdoor education are usually implemented in the surroundings of the school or within the territory of the municipality the school is situated in. This category includes excursions to factories and visits to educational institutions. Their duration may exceed the time reserved for school lessons as there is the additional time of travel to the place of the activity and back. These activities usually cover one school day.

Long-term forms of outdoor education cover two and more days and often include spending a night or more out of home. Thus, the teaching process can cover more days in a concentrated form (intensive course) or stages, if the subject of interest is, for example, long-term observation or measurement of a particular phenomenon. In the case of long-term outdoor education, the concept requires from its preparation and implementation to make use of skills, habits and experience obtained from the practice of the individual activities within short- and medium-term forms of outdoor education. The focus of the pupils´ activities performed in the course of long-term outdoor education should be above all on *inquiry-based education,* see for example Karvánková, Popjaková, Vančura and Mládek (2017) or Samková, Hošpesová, Roubíček and Tichá (2015) implemented through independent or group work.

Complex and long-term forms of outdoor education may include thematically narrowed and shorter forms of outdoor education. For example, field exercise may include a walk or excursion. The most important thing is that all forms of outdoor education must have defined learning objectives so that the pupils do not consider an excursion a mere relaxation.

- **Interconnection of current topics with outdoor education in various types of landscape.**

Another classification criterion of outdoor education is through the characteristics of the area/territory where the education is provided. The most general classification distinguishes between outdoor education in **rural** or **urban** landscapes (Řezníčková, 2008).

Rural landscape is further divided into (Jelínek & Kysučan, 2014) **close to nature** (deciduous/mixed forest, meadow, pasture) and more or less cultural (spruce monoculture, agricultural field). The strongly anthropogenic urban landscape is

represented for the purpose of outdoor education either by the whole territory of the settlement or by its selected part (for example a city quarter, industrial premises, brownfields, a park).

- **Interconnection of outdoor education implemented in individual school subjects.**

Outdoor education has great potential with respect to interdisciplinary education. In order to implement it with the greatest impact on the pupil, it should be cross-linked among individual school subjects that should supplement each other. Teachers should, therefore, cooperate on the outdoor education preparation already when outlining the SEP and themed plans. The uutdoor education concept must emerge then from a thorough analysis of the potential of an internal and external school environment, from its material and personnel capacity and focus/specialisation of the school.

In order to enable efficient and conceptual implementation of outdoor education in individual grades, school subjects, and during the school year, the role of an **outdoor education coordinator** should be established at the school (similarly to the existing role of environmental education coordinator or educational visits coordinator).

> The outdoor education coordinator should be a well-trained expert in the integration of outdoor education at elementary schools. The coordinator's work consists of organisation, coordination, and contents guarantee of individual forms of outdoor education at the school where he or she is working.

The outdoor education coordinator should ensure that the planned outdoor education meets the aforementioned five points as follows:

- communicates and cooperates with individual teachers at school when preparing the individual forms of outdoor education and their incorporation in the SEP and the themed plan;
- coordinates and records the terms and the framework contents of the forms of outdoor education implemented;
- provides consultations and professional as well as administrative support to teachers during the preparation and implementation of outdoor education (e.g. ensuring safety, parental awareness, notification of the school management and other teachers etc.);
- ensures that the outdoor education concept complies with other school documentation (e.g. school programme of environmental education),
- seeks options and opportunities for a reasonable outdoor education close to the school facility as well as in remote areas;

– contacts organisations which could externally provide some forms of outdoor education;

– ensures and makes evidence of aids for outdoor education;

– informs the parents and cooperates with them;

– presents the course and outcomes of outdoor education to the public (e.g. through a website, Facebook, notice board), cooperates with the municipality.

For the activity of the outdoor education coordinator, it is necessary that other school workers cooperate and especially that the school management provides support. Therefore, it is important for the coordinator to be officially appointed by the head teacher. In order to implement successful and conceptual outdoor education, a "workgroup" for outdoor education may be created at the school if necessary.

3.1 TYPE TASKS FOR GEOGRAPHICAL OUTDOOR EDUCATION

While according to Papáček (2010) the methods and various teaching tasks in the outdoor education of natural sciences have already been relatively well elaborated abroad (see, for example, Abell, 2000), in Czech education, as has been stated several times, the methods are still fairly new (Papáček, 2010, Petr, 2010 etc.) and they have not yet been analysed in detail, not even in terms of individual subjects, let alone their links to other subjects (in this case, integration with PE).

In foreign geography, the concept of outdoor education has already been elaborated on by Hindle (1993), Healey and Roberts (2004), Healey (2005), and others. Outdoor education that allows pupils to work in a real setting with properly selected curriculum items leads to a more effective understanding of the subject matter (*deep learning* – Drummer et al., 2008; Hill & Woodland 2002; Hope 2009; Kent, Gilbertson, & Hunt 1997) and harbours considerable potential as regards making natural sciences more attractive to pupils (Papáček, 2010; Stuchlíková, 2010, etc.). In the various forms of its internal management by the teacher, (Eastwell, 2009; Stuchlíková, 2010), outdoor education is also linked to the use of modern scientific processes, autonomous identification of environmental issues, handling of data and literary sources directly in the field, advancement of the pupils' communication skills, etc., i.e. those competencies that Czech pupils are lacking the most according to PISA surveys (Czesaná et al., 2009; Bičík, 2009). Practically oriented outdoor education may also help tackle the issue of a lack of practical demonstrations and experiments in lessons, or insufficient development of the pupils' instrumental skills ("**hands-on activities**"), as well as the issue of the tuition not being sufficiently

focused on problems facing the pupils in their everyday lives. Therefore, a modern educational school of thought is being presented, the application of which will allow for an increase in pupils' motivation and engagement as well as an advance in their critical thinking, creativity and problem-solving abilities.

In Czech education, the concept of practical outdoor geography lessons combined with the use of activating methods of problem learning has been present for quite some time now, but it did not have sufficient methodological underpinnings, which may lead teachers to persevere with more traditional and less demanding forms of outdoor education. This trend is further enhanced by the poor formulation of expected outcomes for Field Geography Education, Practice and Applications thematic unit; see Table 4[16]. The concept generically conceived in the FEP EE leaves teachers with but few suggestions for designing their own outdoor lessons. In addition, there has been a lack of relevant research on geography education in the Czech Republic, confirming the contribution of practical outdoor education to geography, both for geography itself and for the pupils' healthy lifestyle (connection with PE).

In order to come up with a functional concept of outdoor education, the teacher should have a **portfolio of activities** prepared, ranging from basic activities related to the training of skills and techniques combined with outdoor data collection up to projects or case studies. Depending on the nature of the activities, they must also select a place, which may include variously adapted plots within the school's premises, or a place remote from the school. The planning of activities for outdoor education does not have to be difficult if teachers include a column in their class lesson plans where they indicate notes on outdoor education (see Table 12 – item "Suggestions for outdoor education"), i.e., where they put down notes on the relationship between the subject matter discussed and outdoor education. All activities then have a direct link to classroom-based lessons. After a certain period, for example, after a quarter of a year, they review the activities eligible for being practised outdoors and plan a specific form of outdoor lessons for these activities. These activities must respect the following principles:

16 Subject matter:

(1) field exercises in and observations of the local landscape, geographical field trips – orientation points, phenomena, tools and aids; location, determining primary and secondary cardinal directions, navigation using maps and the azimuth, estimating distance and height of objects in the field; simple panoramic sketches of the landscape, location diagrams, diagrammatic sketch of route, evaluation of natural phenomena and indicators;

(2) human safety in case of threats to life and health – natural disasters; measures, conduct during natural disasters using example situations

– Determine the year to which the given outdoor education form is suited.
– Set specific objectives and outcomes of the lessons, i.e. plan all the outdoor and classroom-based activities associated with the tuition.
– Specify the necessary aids required for the given outdoor education form (see Table 12).

In this way, teachers can gradually implement all forms of outdoor education into the SEP and the thematic plan.

Table 11 presents proposed typified activities that show, using the selected subject matter of traffic, how outdoor activities may be both vertically and horizontally integrated into tuition. Horizontal integration expresses the various levels of difficulty for individual activities, i.e. less experienced pupils can begin with lower-difficulty activities before they gradually move to the more complex, or the more complex activities may be assigned to more talented pupils. The vertical division expresses the continuity of the curriculum between lower and upper elementary school stages and between individual grades.

TABLE 11

EXAMPLE OF TYPES OF ACTIVITIES FOR OUTDOOR EDUCATION ON THE EXAMPLE OF THE TOPIC "TRAFFIC" AND THEIR HORIZONTAL AND VERTICAL PROGRESS

Approach	Level 1: Observation approach	Level 2: Observation + elementary exploration approach	Level 3: Exploration approach
Grade:	Lower grade of elementary school		
Educational area/unit:	PEOPLE AND THEIR WORLD / PEOPLE AND HEALTH – Cycle 1		
Form/topic:	Fieldwork on a traffic playground	Fieldwork evaluating road safety around the school	–
Partial aims:	The pupil demonstrates the knowledge of traffic regulations and the principles of safe movement on the road.	The pupil and the teacher walk over the nearest pedestrian crossings around the school and consider their pros and cons.	–
Outcomes:	Worksheet with traced traffic signs and rules.	Assessment of risks and safety features at pedestrian crossings in the vicinity of the school.	–
Aids:	Worksheet.	Map of the school surroundings with marked pros and cons (risks).	–

Grade:	Upper grade of elementary school		
Educational area/unit:	GEOGRAPHY / THE CZECH REPUBLIC		
Form/topic:	–	Field research "Traffic Census"	Field research "Traffic Census"
Partial aims:	–	The pupil collects primary data – the number of different types of vehicles at a defined location in the surroundings of the school. The pupil adheres to the principles of safe movement during data collection. The pupil chooses a suitable method of representing all the collected primary data in the map (pupils in groups make a synthesis of the collected data from individual sites into a complex map). The pupil assesses transport safety in the locality from different views of users (pedestrian, bicycle rider, car driver) including a SWOT analysis of the site.	The pupil collects primary data – the number of different types of vehicles at a defined location in the surroundings of the school. The pupil adheres to the principles of safe movement during data collection. The pupil chooses a suitable method of representing all collected primary data on the map (pupils in groups make the synthesis of the collected data from individual sites into a complex map). The pupil assesses transport safety in the locality from different views of users (pedestrian, bicycle rider, car driver) including the SWOT analysis of the site. In the case of a negative safety assessment, the pupil proposes measures to eliminate the risk. The pupil assesses the impact of transport on the environment and suggests ways to reduce the negative impact of transport on the environment in the community.
Outcomes:	–	Map with collected data, SWOT analysis.	Map with collected data, SWOT analysis. List of measures to eliminate the risk.
Aids:	–	Map of the school surroundings, crayons.	Map of the school surroundings, writing accessories, crayons.

Source: author, published in Svobodová et al. (2019, p. 56, 68).

3.2 THE CASE STUDY – COMPLEX TASK FOR OUTDOOR EDUCATION

The **case study** concerns a complex form of outdoor education comprising all partial activities performed during simpler (partial) forms of outdoor education (see Table 10), which leads the pupils towards their own research activity. Given its complexity and low frequency, its implementation in Czech schools (see chapter 5.1) will be described in detail from the theoretical and practical perspectives in the form of preparation for lessons.

The creation of the case study is a highly specific form of short- to medium-term interdisciplinary outdoor education focused on field research. In social sciences, a case study is defined as "a detailed study of single or several cases" with a collection of "a large amount of data on one or several individuals" (Hendl, 2012, p. 102). A case study is a qualitative research method mainly because it examines certain phenomena in depth within the actual context, which is convenient especially if the border between the phenomenon and its context is not very clear. In general, we can say that a case study examines two types of phenomena. It is either the most frequently occurring phenomenon or, conversely, an extraordinary phenomenon, which deviates from the standard. Since focusing on a case study makes it possible for scholars to compile a nuanced, holistic, and detailed analysis of a selected place, group, or process, it is especially useful for doing qualitative, theoretical research (Hardwick, 2009). For the teaching of geography, we can define a case study, which presents real situations for research in much greater detail, in the following way:

> In the teaching of geography, a case study is a special case of problem-oriented education, which is a complex method interconnecting all activities of the partial forms of outdoor education (collection, sorting, interpretation and evaluation of information from various sources directly in the field). It can interconnect partial geographical disciplines (physical and socio-economical geography with the support of cartography and GIS) while using the knowledge in the other discipines (concretely, according to the task of the study), thus leading to a synthesis of the detected findings.

As regards the concept of geography, we can regard this approach as **complex (complex geography)** (see figure 9), as it connects all the geographical and related disciplines including cartography and GIS concerning school education. Kolejka (2014) argues that geography as a discipline must also respond to the current events in the world and be useful in everyday life. Then it can be referred to as **useful geography**.

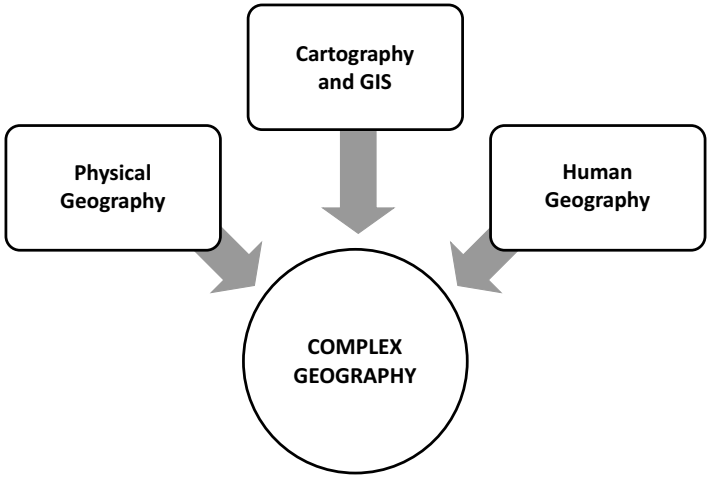

FIGURE 9. GEOGRAPHY AS A COMPLEX.
Source: Svobodová, Durna, Pernica and Hofmann (2018), translated.

We believe that outdoor education supports the concept of useful geography and complex geography including the development of all key competencies and at the same time incorporates an added value in the form of enhanced physical activity of the pupils.

At present, when a lot of information is openly available, it is not necessary that the pupils should remember many facts. They should be able to find the relevant sources and work with them. However, this is not so easy. The process of school teaching in the Czech Republic still frequently cannot ensure that the pupils learn to work with information, not only define it or enumerate it. An important factor in this sense is the pupils processing the information and developing the pupils' analytical and synthetic thinking. The implementation of case studies or other problem-oriented tasks should guide the pupils in deciding which tools from one or more objects they should use in their solution. The teacher can offer less experienced pupils a glossary of terms (and methods) related to the resolved issue. However, case studies in the teaching of geography may not have a single correct solution; they have an open end. This can lead to problems with the assessment of individual pupils' involvement in the solution of case studies. In the Czech Republic, the teachers tend to assess the result, being focused on the performance, not the process leading to its achievement. This can be one of the barriers in the development of this teaching form.

3.2.1 PREPARATION OF A MODEL GEOGRAPHICAL CASE STUDY

A case study is a suitable teaching form and method of mediating the solution of a particular situation to the pupils in the environment in which they are living. It is "strongly anchored teaching" that helps the pupils cope with the pitfalls of everyday life by means of geographical education. The foreign equivalents are the terms "powerful knowledge" or "powerful teaching" (Hopkins, 2000; Tejeda & Santamaría, 2010).

Introduction of case studies into school education entails certain risks, but many of them can be prevented by the pupils' education. Solutions of case studies, mainly from the local environment, require certain experience connected with short-term outdoor education. Another significant moment is its implementation into the milieu of the school curriculum, in the case of the Czech Republic, its inclusion into the school syllabi. This requires the teacher's experience in the planning and preparation of the lesson. Another important aspect for its implementation is the specification of measurable objectives of the teaching so that the teacher can defend this form of teaching. This skill is particularly important in the milieu of the geographical curriculum at elementary and secondary schools because of its excessive contextual dimensionality. To sum it up, a case study requires teachers' grasp not only of the methodology of outdoor education in data collection and data collection from other sources but also their realisation of what will be achieved by dealing with a particular situation in the pupils' further knowledge, skills and attitudes. The case study is in fact only a tool in thematic education. It concerns solution of a particular topic largely by application of geographical tools, the use of which the pupils practice in context. Through their examples, pupils can do a large amount of geographical schoolwork in a context, which they do not manage in the standard approach.

The following text will introduce a case study on the potential reopening of a ski slope in Brno. This case study can be applied not only in Brno but in any other area (with potential modification to the local conditions). In addition to the particular situations arising from the environment, the pupils will learn to ask geographical questions and look for appropriate answers, using the existing knowledge and skills acquired during the study of geography. The pupils/students thus have an opportunity to apply knowledge acquired during the study directly in a particular field case, without which the teaching of geography resembles chemistry teaching without laboratory experiments.

When planning a case study (like the planning of any other lesson), the teacher must bear in mind that a case study has several phases, as they were described in chapter 1.5.1.

The implementation of a case study comes at the end of the year when the pupils have gone through other partial forms of outdoor education and are able to use the methods of field research from previous outdoor education. After implementation, the pupils should be able to:

1. Ask geographic questions from disciplines that relate to the actual task.
2. Search for answers in various sources of information.
3. Work with various research methods including field research.
4. Process the results and draw conclusions.

TABLE 12

PREPARATION AND SCENARIO OF THE CASE STUDY

<table>
<tr><td rowspan="2">Grade:
8, 9</td><td rowspan="2">Thematic area of the FEP EE:
Geographic information, data sources, cartography and topography;
A natural image of the Earth;
The social and economic environment;
The natural environment;
The Czech Republic;
Geographical fieldwork, practice and application.</td><td>Topic:
Restoration of the ski slope in the Wilson forest</td></tr>
<tr><td>Time:
At least 5 lessons divided as follows:
Preparation phase – 1 lesson, introduction to the task, preparation of aids.
Fieldwork – 2 lessons, reconnaissance of the terrain, processing of assigned tasks in the field, creation of photo documentation.
Processing of final outcomes, discussion – 2 lessons (it is necessary to count with the time for moving to the site, see the scenario).</td></tr>
<tr><td colspan="3">Expected outcomes (FEP EE, 2016, p. 75–80):
Student, pupil:
• organise and properly assess geographic information and sources of data from available cartographic products and guides, graphs, diagrams, statistics and other information sources;
• knowledgeably apply geographic, topographic and cartographic terminology;
• properly assess geographic objects, phenomena and processes in the landscape…;
• identify and compare natural phenomena, their interrelations and conditionality…;
• compare the prerequisites and main factors for the territorial distribution of economic activities;
• using selected examples, identify important impacts and risks of natural and social impacts on the environment;
• assess, at the appropriate level, natural, economic and cultural relations within the local region, possibilities for further development;
• define and locate the region in which they live…;
• master the basics of practical topography and orientation in the field;
• apply practical approaches in the field for the observation, depiction and assessment of the landscape;
• observe fundamental safety rules for being in the open nature….</td></tr>
</table>

Skills: • collecting information, sorting, processing and evaluating information; • comparison of different information sources; • interpretation of their own observations, presentation of the results of observation; • creation of a questionnaire for a structured interview; • creating conclusions based on their own observations and geographic questions; • reading, analysing, interpreting and creating a map; • practical use of mathematical operations; • drawing a slope profile; • photographic documentation, sketching.	**Suggestion for outdoor education:** This activity is applied to a specific location, but it is possible to use similar sites (the need for slopes) in another region or to use the methodology to develop an opinion on another phenomenon. It is suitable for realisation in both urban and rural landscapes; it can be used in different seasons.

The main aim:
Drafting an opinion on restoring the slopes in the Wilson Forest. The opinion will be supported by analytical and mapping data obtained from fieldwork. Drawing up an opinion should show how to use geographic knowledge and skills in the decision-making process.

Partial aims (through the preparation of a report for the city council, supported by the elaborated documents and subsequent interpretation, the pupils will learn):
- to ask geographic questions in relation to the locality;
- to distinguish/recognise the basic shapes of the relief;
- to mark the area of interest on a map (slope area, slope top and heel, landscaping, ski lift, snow cannons, parking, access roads, etc.);
- to defend the placement of drawn elements on a map;
- to calculate the area (of the ski slope, forest);
- measure the slope, orientation and approximate time of slope sinking;
- assess the climatic conditions of the site;
- to create a chart for recording meteorological indicators;
- draw a slope profile;
- to describe in their own words the positive and negative aspects of human intervention in the landscape (building of the slope);
- to describe in their own words the natural and human impacts in the landscape (restoration of the slopes);
- to describe in their own words the natural and societal impacts of human intervention in the landscape (rehabilitation of the slopes);
- to present the results of their own work in front of the group;
- to formulate the conclusions of their own work.

Syllabus of topic/inclusion in a wider context: It interconnects the thematic areas mentioned in the introduction of the table. The activity is suitable for pupils of the higher grade of elementary school (there is an opportunity for cross-curricular links) and for the students of high school and grammar school.	**Cross-curricular links:** Mathematics, Czech language, history, art, physical education, information and communication technologies, foreign language, civic education.

Aids:	**Classroom preparation:**
Paper A4 format or bigger on a hard pad, ruler, protractor, pencil, crayons, camera, GPS, compass, clear note papers, map data, PC with internet connection and printer (not required).	Classroom, computer with Internet access (not necessary), desks that connect up to 2 for group work; terrain – urban/rural landscape with a suitably selected slope.

Individual approach:
It is recommended to work in a group. Partial tasks in the field can be handled individually/by pairs. In the final phase, it is recommended to work again in the group-discussion of the results found in the field, writing conclusions for the final report for the council and creating the resulting map outcomes.
Groups: Differentiated (boys with girls), the group is represented by students with excellent and not so good study results. For pupils with specific requirements, escorts, or appropriate compensatory aids, must be provided.

LESSON SCENARIO

Pupils´ activity	**Time (min)**	**Teacher´s activity**
Lesson 1 – in the classroom Greeting. Listening to the teacher's instructions.	5	Greeting. Administrative (start of class).
Getting to know the project theme. Reading "Getting started information about the ski slope in Wilson Forest" or listening to the teacher's story about the location.	10	The teacher motivates the pupils by reading the "introductory information about the ski slope in Wilson Forest" or briefly talks about the chosen location, justifies its choice / asking the pupils: whether they have already heard and have some information about the location and planned slopes, given location, whether they have ever been there.
Listening to the assignment and goal of the project.	5	Emphasises the goal and outcomes of the project.
Division into groups	5	Choose a suitable method for dividing pupils into groups.
Studying project assignment and map data.	10	He/she distributes task assignment groups and informs pupils of available map material.
Preparing aids for fieldwork.	10	Passes through the class, answering any questions.

Lesson 2 and 3 – fieldwork Pupils move from school to a place of interest under the supervision of a teacher, adhere to rules of safe movement.	10	Before leaving the school building, he/she reminds students of the rules of safe movement in the field and warns of any risks on the transfer route. He/she supervises the safe transfer of pupils from school to the locality of interest.
Pupils listen to the teacher, they look at the site. They prepare aids (papers, pencils, pads, phones...).	10	Upon arriving at the locality, he/she presents the pupils with the territory and esmphasises the extent and boundaries of the territory where the pupils will move. He or she repeats the tasks that are waiting for pupils in a given location – see assignments.
Pupils work independently or in groups under the supervision of the teacher according to instructions given.	45	He or she checks the individual or group work of pupils, helps them solve problems, supervises pupils' safety. Watching time.
Pupils prepare to return to school, pack up aids.	10	He/she briefly reflects on the work on the site and informs pupils about follow-up work at school; invites pupils to prepare for the return to school.
They move back to school, talk to a teacher or to one another.	10	He/she supervises the safe transfer of pupils back to school and analyses their impressions of their activities.
Lesson 4 – in the classroom Pupils divide into working groups. They listen to the teacher's instructions.	5	Greetings, administrative (class entry), introduction to fieldwork (for example, to project a picture).
In groups, they work on the assigned tasks. They use the aids (see above), and work on their data from the terrain, the photos taken from the ground, the computer, the internet, etc.	40	He/she checks the pupils' work and is available to the pupils for any questions. He or she checks the time, alerts in advance to the missing end of processing.

Lesson 5 – in the classroom	5	Greetings, administrative (class entry), introduction to fieldwork (for example, to project a picture).
Together they discuss the information they have found. They resolve individual tasks, use their processed materials and map data for answering the questions.	25	He/she checks the pupils' work and is available to the pupils for any questions. He or she checks the time, alerts in advance to the missing end of processing. He/she acts as a moderator, inviting pupils to discuss the information they have received. The teacher asks questions about the assignment, always inviting a particular group to answer. • Summarise positives and negatives of the construction of the slope. • Specify what landscaping adjustments would have to be made when restoring the slope. • Assess climatic conditions. • Find out what natural and social impacts should the have the slope restoration?
They submit a report to the city council together with maps. They expose the outcomes as described in the classroom or the school corridor.	10	He or she receives from the groups a report for the city council together with the maps. He or she supervises the realisation of the exhibition of works.
They evaluate the actions performed.	5	He/she conducts the discussion with pupils, and they evaluate all the activities carried out together.

Evaluation of the pupil's activities during tuition:
In particular, the active approach to the assigned tasks, the quality of the outcome materials and the level of presentation of the outcomes during the final discussion are evaluated.

Assessment of tuition – self-reflection of the teacher:
After completing the lesson, think about your role in teaching. Evaluate the pros and cons that occurred during the lessons. Record suggestions for possible alterations. Also, evaluate the suitability of the chosen area for the next teaching and behaviour of pupils during work on different parts of the project. Have you encountered specific issues when visiting a new environment? Did some pupils have qualities that you usually do not notice in class?

Source: Svobodová, Durna, Pernica and Hofmann (2018, n.p.), translated.

3.2.2 ASSIGNMENT OF MODEL GEOGRAPHICAL CASE STUDY[17]

The city of Brno is thinking about restoring its ski slope. However, it does not have enough data (geographic, economic, technical) to make a decision.

The aim and outcome of the activities will be processing data for a decision-making process in Brno City with the help of geographic knowledge and skills.

The City gave the following instructions:

The ski slope should be open year-round. In summer you can ski on artificial turf on brushes. In winter, the same surface will have artificial snow. In the morning in winter the ski slope is used for school skiing, afternoon ski groups and the public.

Slope parameters: width 50 m, landscaping of the slope from the base is necessary (necessary to ensure a safe range) up to the top, for beginners it is necessary to build an alternative route to the ski slope with a gentler inclination. A ski lift will be built by the slope.

Task 1 – Evaluation of site suitability in terms of restoring the slopes

- Find out what the requirements are for ensuring the operation of the ski slope in summer and winter.
- Draw a plan of the slope and the necessary landscaping on the map.
- Select and justify the choice of location for the start and finish of the cable car route and its management.
- Predict and justify the selection of sites for parking cars in the lower and upper part of the slope, mark the parking lots on the map including the recommended roads.

Task 2 – Technical and economic renewal requirements of the slope

- Select the best location for the placement of the snow cannons. At the same time work out the possibilities for the supply of drinking water from the Svratka river.
- Calculate the area of the slope, which must be irrigated and on which it is necessary to place brushes.
- Specify what building or other modifications need to be done to create the slope from the top to the base of the slope.

17 Adopted from Hofmann and Svobodová (2017, pp. 115–128).

Task 3 – Natural prerequisites for restoring the slope

- Measure the inclination of the slope, its orientation, duration of insolation.
- Evaluate climatic conditions over the past five years using available data from the Czech Hydrometeorological Institute. Please justify the selection of the indicators and their development.
- On the basis of maps or your own fieldwork, draw a precise profile of the slope in the terrain and propose and justify the deployment of five sensors to monitor the weather on the slopes.
- Prepare the table into which the values of the meteorological parameters will be recorded.

Task 4 – Impact of restoring a slope on ski slope surroundings and the environment

- On the map mark the place in Wilson's Wood where people are most often present.
- Evaluate whether the restoration of the slope will affect the movement of people in the park. On the map, mark any place of conflict and explain the reasons for the conflict.
- Calculate what area of the forest will become a "victim" of the slope.
- Try to assess what impact restoring the slope will have on the activities of the surrounding slopes (especially housing, but also others).

Outcome:

- Create a report for the Brno City Council, where you do (not) recommend reopening the ski slope. Support your recommendation with the processed materials.
- Summarise the positive and negative aspects of building the slope.
- Specify what terrain work would have to be done if the slope was restored.
- Assess the climatic conditions.
- Specify the natural and social impacts of slope restoration.
- Provide all arguments using maps, sketches or other graphics.

3.2.3 SOLUTION AND ASSESSMENT OF A MODEL CASE STUDY

The students first work in the classroom with different sources of information. They study written and map data from the Internet (articles, maps, data, i.e. secondary sources). They prepare suitable materials from these for fieldwork, followed by further fieldwork and data processing. The basis of the fieldwork is their own observations. Important elements are observed and consequently should be marked on the maps – preferably detailed, printed black and white topographic maps, so that the colour substrate does not collide with the marked elements).

The actual proposals of the students follow – e.g. on the surface of the slope, its routing (steeper slope or a milder variant), design of the space for parking, placement of sensors for measuring temperature and so on. It is important that students substantiate their decisions with relevant facts.

An important element which can be created in the processing of case studies is all kinds of sketches.[18] Sketches can be classified as non-verbal elements that can be used in teaching. It is expected that non-verbal elements – among which we can also include views of the countryside – speak for themselves, i.e. an automatic clarity is expected. Therefore, it is important to use non-verbal elements in teaching – pupils should be taught to work with nonverbal elements (according to Janko, 2012, p. 25), not only read but also process and work further with the displayed information. As stated by Maňák (1994, p. 54–55), it is desirable to develop the skills of the students so that they are aware of the links between the display and the displayed object and are able to realise the retroactive transitions between them, which in the perception of the landscape is extremely important.

A wide range of geographic research methods and work with qualitative and quantitative data and cartographic skills are also practised. Assessing the fulfilment of tasks requires a certain amount of experience from the teacher, especially openness. No suggestion based on relevant data, fieldwork, and assessment of the situation is wrong. The pupil must, however, move within predetermined limits – to use the space and research tools and to propose real (technical and technological) solutions. If the pupil exceeds the given limit, the teacher must explain the problem in the design of the solution. A case study helps bring classroom instruction into the real world (Fuller et al., 2006) and helps strengthen students' understanding of geographical terminology and processes (Job et al., 1999): Undertaking case studies has a number of other pros, which, however, the following statement summarises:

> Well, it's the laboratory isn't it? You can't prove things without actually doing some concrete data collection and analysis. It brings everything to life. (Clifford School, geography teacher)

18 Sketches in the teaching of geography were described in more detail in Hofmann and Svobodová (2013) or Bláha and Hátle (2014).

4 RESEARCH INTO OUTDOOR EDUCATION AS A POWERFUL EDUCATIONAL STRATEGY – METHODOLOGY

Do what you can, with what you have, where you are.

Theodore Roosevelt

This part of the book is devoted to presenting the aims of the research carried out, followed by a description of the research methodology. The results of the research are divided into two parts: (a) evaluating the benefits of the outdoor education from the point of view of teachers, pupils and parents; (b) evaluating the benefits of outdoor education for the development of pupils' physical activity. Research within the Czech Science Foundation 16-00695S on Fieldwork as a powerful learning strategy was carried out in the years 2016–2018 at the Department of Geography of the Pedagogical Faculty of Masaryk University.

4.1 RESEARCH NEED

In the Czech Republic, looking for research in the area of outdoor education will be relatively difficult. The focus of this research lies primarily in research in the area of professional didactics. The disadvantage is its border focus on the boundaries of the field itself and pedagogical-psychological disciplines. It has its drawbacks, especially in searching for the results of publications, which focus on the issues of research in didactics. Their contributions are often "hosted" in various professional journals or are published in conference proceedings or as separate works of various types (monographs, chapters in books, methodical publications, textbooks, etc.), see Řezníčková (2015). Research in geography didactics and in the area of curricula was particularly paralysed by the collapse of the Research Institute of Education and consequently also is not developed in the National Institute of Education. Unlike

the situation in many foreign countries, outdoor education is anchored in state documents (see chapter 1.4.2). However, there is not an awareness of the inclusion of outdoor education in school educational programmes and of its actual conception and implementation in elementary schools. This research applies only to the study of Knecht and Hofmann (2013) – The Problem of Placing Geographic Curriculum in School Educational Programmes. Only marginally, its influence on physical activity and a healthy lifestyle was dealt with by Korvas (2009).

A broader interdisciplinary view of outdoor education is provided by a meta-analysis by the authors Činčera and Holec (2016). It summarises the effects of outdoor education on the pupils' knowledge, attitudes, skills, beliefs and behaviours on the basis of a study of more than 70 essays, mostly from abroad. It becomes apparent that while in countries other than the Czech Republic, outdoor education receives proper attention in the actual teaching process as well as the research and publicising activities, in the Czech Republic, there are relatively few authors concerned with this issue.

Research from abroad in the sphere of outdoor education is focused on the following areas:

- identifying the experience of pupils with outdoor education including both the cognitive and affective development of pupils (Crompton & Sellar, 1981; Eaton, 2000; Mygind, 2007);

- the impact of outdoor educational activities for teaching and pupils (Bogner, 2002; Borić & Škugor, 2014; Cachelin, Paisley, & Blanchard, 2009; Fox & Avramidis, 2003);

- identifying the factors that hinder the the implementation of outdoor education (Polley & Pickett, 2003; Remington & Legge, 2017; Waite, 2009; Zink & Boyes, 2006);

- identifying the factors that can facilitate the implementation of outdoor education (Dillon et al., 2006; Orion, 1993);

- identifying the classification of outdoor education to different grades and types of schools (Brookes, 2002; Horwood, 2002; Lugg, 1998);

- identifying the implications of research for future outdoor education in schools (Boss, 1999; Lugg, 2007; Neill, 2002).

Most of these studies took place in the late 1990s and early this century. Studies were conducted with the intention of getting outdoor education into education programmes, such as the full form of compulsory education at elementary and secondary schools. Elsewhere in recent years, outdoor education research has

shifted from the search for sustainable approaches to the site through outdoor and environmental education to active citizenship education (Brown, 2014; Gearon, 2014; Hill, 2012) and to cooperation with positive psychology ("for some, the mere experience of being in the outdoor environment may be a big leap out of their "comfort zone" (...) thus they may change some behaviours in order to cope and better conform" – Berman & Davis-Berman, 2005, p. 8).

As already mentioned in chapter 1.4, the conditions for application of outdoor education are sufficient at present in the Czech educational curriculum, and outdoor education is implemented at some schools in various forms. However, we cannot ignore the fact that for the teacher, outdoor education entails overcoming many professional, organizational, safety, but also methodological obstacles (Waite, 2009; Yang, Wang, Xu, & Deng, 2014).

The measurement and assessment of the contribution of outdoor education to the pupils' development of natural physical activity face similar problems as the research on outdoor education in the Czech Republic. This issue has been described in the Czech Republic only partially in papers by Korvas (2005) and Hofmann and Korvas (2008), which, however, did not deal with measurements in various types of activities typical for integrated geographical outdoor education as did our research. A positive effect of outdoor education on the pupils' physical activity in comparison with classroom education has not been proved so far. The absence of sophisticated (i.e. more indicators than used in Korvas (2005), using more advanced measuring instruments) measurement of pupils' physical activity and its comparison in various types of education requires more research.

This issue has not even been addressed in other countries. Although papers evaluating, for example, the physical activity of children have been processed (e.g. Steele et al., 2009; Wareham, van Sluijs, & Ekelund, 2005), even in the school environment (Fairclough, Beighle, Erwin, & Ridgers, 2012; Strong, Malina et al., 2005), no essay has been found that evaluates contributions of outdoor education in relation to the development of attitudes to physical activity and a healthy lifestyle.

At the time when the physical fitness of pupils is decreasing from an early age compared to previous years, and the share of obese children is rising, it is necessary to reflect on the incorporation of physical activity even to the time spent in school. The solution to this issue will probably become increasingly important and necessary in the future. One of the possibilities where the school can partially contribute to the development of physical activity is more frequent incorporation of short-term, medium-term and long-term outdoor education. During well-considered outdoor education, the pupils perform natural non-structured physical activity (walking, running, cycling), simultaneously deepening their knowledge, skills and attitudes to the various subjects and using the inter-subject relations to a great extent.

4.2 THE AIM OF THE RESEARCH

With regard to the above-mentioned need for research, the aim of the project is to **analyse the benefits of outdoor education for teaching geography and the development of motor skills of elementary school pupils**.
This aim is achieved by the partial aims:

Partial aim 1: Analyse the anchoring of outdoor education (with a focus on teaching the subject of geography) in selected school educational programmes (SEPs) in the lower and upper stages of elementary schools.

Partial aim 2: Find out the extent to which outdoor education is implemented at elementary schools.

Partial aim 3: Find out the attitudes of teachers, pupils and their parents to the implementation of outdoor education at elementary school.

Partial aim 4: Measure the benefits of outdoor education to the development of the pupils' physical activity in the model elementary school.

The specified partial aims are based on the following assumptions:

1. The outdoor education is conceived non-conceptionally in elementary schools; the individual forms of outdoor education do not follow up on each with other or supplement each other as regards the formal and process perspectives.
2. Anchoring of outdoor education in the school curriculum does not correspond to the real implementation of outdoor education.
3. The pupils and the parents perceive outdoor education more positively than education in the classroom as regards the development of key competencies.
4. Implementation of outdoor education contributes to higher physical activity than habitual teaching, including physical education.

4.3 RESEARCH DESIGN

The research proceeded was divided into three main phases, which differed in the nature of the research activity and the applied research procedures.

The first (preparatory) phase was devoted to the formation of the theoretical background of the project and the description of formal and processual aspects of outdoor education. The second phase (realisation) was comprised of four partial

activities – (1) content analysis of the school educational programmes and "on-site" research (2) with the teachers (3), pupils and (4) their parents. When working with the pupils, their physical activity was measured during a teaching day in the classroom, a teaching day in the classroom with the inclusion of physical education and during a day-long outdoor educational day. Each of the below-mentioned parts underwent pilot testing before the "sharp" implementation. The final phase of the research consisted of triangulation of the achieved results and a draft concept of outdoor education for elementary schools. A detailed research design is shown in the figure 10.

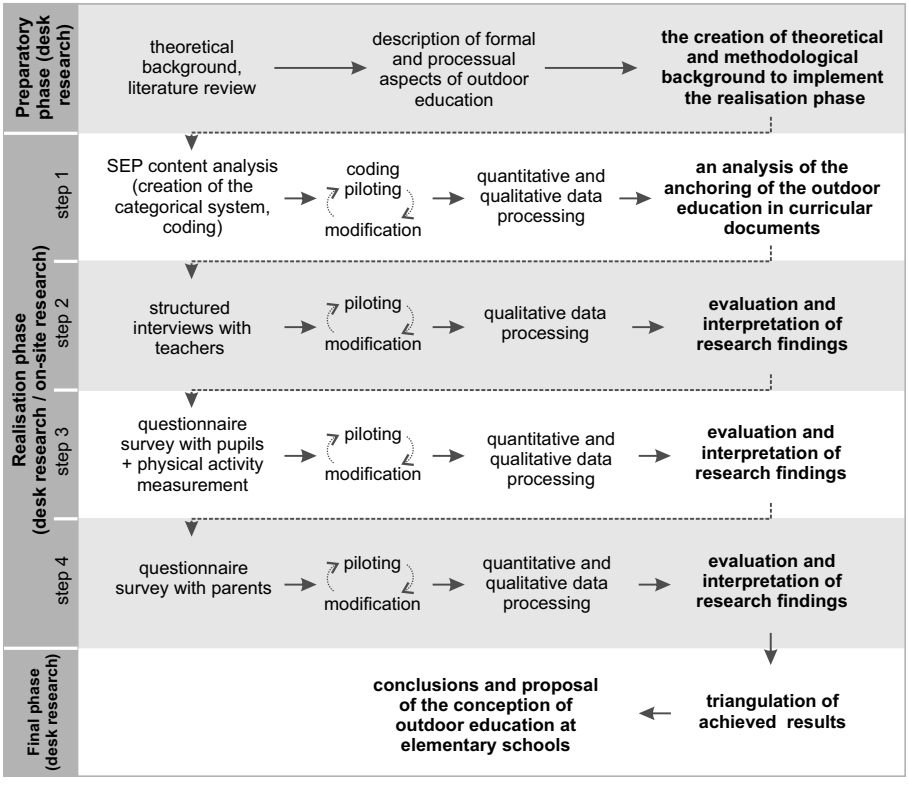

FIGURE 10. RESEARCH DESIGN.

Source: author.

4.3.1 CONTENT ANALYSIS OF THE SCHOOL EDUCATIONAL PROGRAMMES

The first part of the research focused on the anchorage of outdoor education in the school curricula using the method of **content analysis**. By this method, the observed facts were assigned to a smaller number of categories. The aggregation of all categories used within certain research creates a categorical system. This chapter describes the applied categorical system in detail and specifies certain limitations of the applied method.

The content analysis was implemented for **50 intentionally selected school curricula** of complete elementary schools (grades 1 to 9) and the lower grades of eight-year grammar schools (grades 1 to 4 at these are parallel to grades 6 to 9 at an elementary school) in the South-Moravian and South-Bohemian Regions.

The intentional selection was carried out with regard to the fact that the research project included two research sites – from the South-Moravian and the South-Bohemian Regions. The first criterion was thus selection of schools from these two regions in the Czech Republic. Given the number of research team members[19], the number of schools was chosen as follows: 40 schools from the South-Moravian Region (i.e. according to the Register of Schools and Educational Facilities[20], 8.2 % from the total of 486 elementary schools in the region) and 10 from the South-Bohemian Region (i.e. 3.8% from the total of 261 elementary schools in the region); in total, the researched sample concerned 50 school educational programmes[21]. The choice of schools from the two regions was also to find out if the curricula differ in various regions. The Czech School Inspectorate declares in its Thematic Report (2012, p. 9)[22] that "some schools approached the creation of the SEP as a formality, literarily copying entire passages from the FEP EE. Such a procedure documents a misunderstanding of the principles of two-stage curricula and the sense of creating their own SEP. The Czech School Inspectorate also witnessed copying of parts of other SEPs, which may have disrupted compliance with the principles of their creation and approval. For many reasons (e.g. personal, financial or qualification), many schools chose this way as a simpler solution to problems connected with an excessive administrative load, which was a characteristic feature of the given phase of the curricular reform."

19 Four members of the research project 16-00695S Fieldwork as a powerful learning strategy on which this book is based were from the South-Moravian region and one from the South-Bohemian region.

20 *Register of schools and educational facilities*. (n. d.) Retrieved from https://profa.uiv.cz/rejskol/

21 Note The scope of the individual school curricula is always several hundred pages; 500 or more pages of text is not unusual.

22 *Thematic report. Analysis of school curricula for basic education for the period of 2007–2011.* (2012). Prague: Czech School Inspectorate. Retrieved from http://www.csicr.cz/getattachment/81ecf1bd-9e36-4298-817a-3fc2ecc6198c

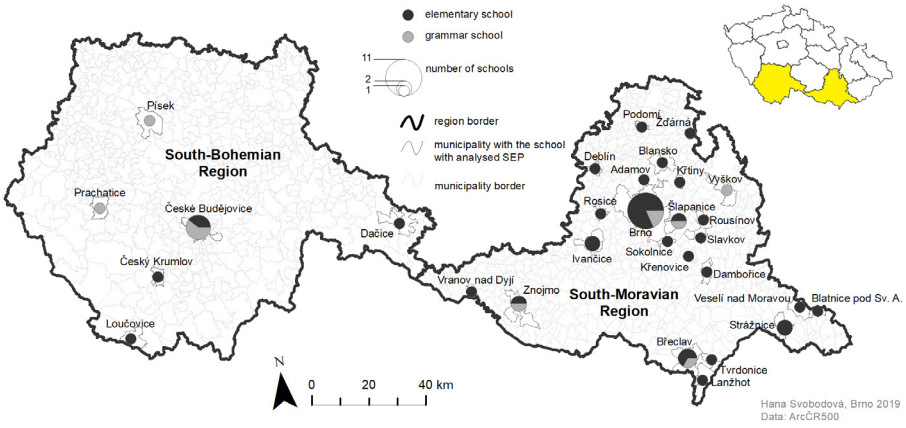

FIGURE 11. SCHOOLS IN THE SOUTH-MORAVIAN AND SOUTH-BOHEMIAN REGIONS IN WHICH SEPS WERE ANALYSED.

Source: author, ArcČR 500.

The second selection criterion involved the balanced distribution of selected schools within the individual districts in both regions – see Figure 11. The third parameter concerned representation of urban and "rural" schools (39x town, 3x small town, 8x village). The intentional selection reflected the fact that the schools implemented outdoor education in some form[23]. In these schools, the research team detected whether they had a freely available school curriculum on the school website. If the school curriculum was available, the school was included in the selection and the subsequent analysis. If the school curriculum was not available, another school was found based on the specified parameters. The selection comprised complete elementary schools with grades 1 to 9 (39 schools) and the lower grades of eight-year grammar schools (11 schools) to allow comparison of the subject matter, conceptuality and difficulty of the outdoor education. Also, the size of the school, i.e. the number of classes in the individual years, was taken into account (see Table 13).

The content analysis of the SEPs included 32 criteria of which 13 were identification criteria: (1) name of the school, (2) region of the school, (3) district of the school, (4) address of the school, (5) school website, (6) head teacher, (7) contact teacher, (8) type of the school, (9) number of classes in the lower stage, (10) number of classes in the upper stage, (11) total number of pupils, (12) availability of the curriculum on the school website, (13) website link to the SEP.

23 Given the necessary subsequent cooperation, it concerned Faculty of Education training schools or schools cooperating with a Faculty or a Department of Geography.

TABLE 13
NUMBER OF CLASSES IN THE LOWER AND UPPER STAGES OF THE ANALYSED ELEMENTARY SCHOOLS

Number of classes	Number of classes	
	Lower grade (1–5) of elementary school	Upper grade (6–9) of elementary school / lower grade of grammar school
3	1	0
4	0	17
5 and more	38	33
Not relavant (8-year grammar school)	11	–
Total sum	50	50

Source: content analysis of SEPs.

The number of classes differs in the individual schools. In the lower stage, there were three or fewer classes only in one case (a small rural school) and in the upper stage, there was only one class per year in 17 schools. These schools can thus be regarded as rather small. There were five or more classes per year in 38 schools in the lower stage and 33 in the upper stage.

The next four criteria examined whether and to what extent outdoor education was mentioned in the SEP in the general perspective and whether and how it was anchored in the curriculum. In syllabi, the questions were focused on implementation of outdoor education as regards the form, time, space, integration of the subjects and implementation of outdoor education in the cross-curricular subjects and projects of the school. The questions in the questionnaire were partially closed (YES/NO answers), semi-closed (choice of an option with a supplementing comment) and open where it was necessary to write the person's own comment.

The assessed parameters were selected according to the contextual, chronological, localisation and organisational perspectives. The level of the analysis, i.e. the individual concepts (categories), was specified and between them, the words, phrases and themes were included. This was followed by a proposal of the coding, i.e. specification of the units in the partial categories with clarification of the scope of the individual concepts. The existence and frequency of the words or phrases were recorded. For example, if the subject in the SEP was described as "the education proceeds with the application of various forms and methods depending on the nature of the subject matter – frontal teaching, group work, projects, papers, geographical field trips" and subsequently an outcome for the given subject defined as "pupils are capable of basic orientation in the terrain using a compass and a map", the following codes were assigned: inclusion in the SEP – yes, as regards the subject – subject-oriented outdoor education, as regards the time – short-term outdoor education, as regards the space – an environment of a municipality or school plot (which stems

from the short-term nature of the activity and the knowledge of this context by the coding person), as regards the organization (form) – an outdoor exercise/a walk (here it cannot be clearly defined; the orientation is more the content of a walk or an outdoor exercise). In this way, the entire SEP of the given school was coded and finally evaluated to find out if the outdoor education in the school SEP was presented as a comprehensive concept both in the YES/NO evaluation and in the brief comment.

4.3.2 STRUCTURED INTERVIEWS WITH TEACHERS

The second phase of the research validated the results obtained in the first phase (content analysis of the SEP) by means of structured interviews with the teachers of the lower and upper stages of elementary school and the lower stage of one grammar school. The formal content of the SEP does not always reflect the reality in the given school, so they resorted to triangulation (Creswell & Clark, 2011; Hendl, 2012).

Because of the time required for the interviews and their qualitative assessment, ten model elementary schools were selected (see Table 14). These schools stated in their SEP (in the first phase of the research) various forms of outdoor education as regards time. The schools were also selected because their SEP indicated that outdoor education was represented to a different extent. Either "little" (mentioned minimally and very generally – e.g. "the school arranges domestic and foreign field trips, ski courses, sports courses"), "medium" (hints of outdoor education in almost all subjects taught and the listed activities are more concrete – e.g. observations during the science classes), or "a lot" (outdoor education such as field training courses, ecological stays, projects connected with being in the open, etc.). This selection was to ensure that the given school implemented outdoor education and the "little/medium/much" corresponded with the incorporation of outdoor education into the lessons.

Nine of the selected schools are located in the South-Moravian Region, and one school in the South-Bohemian Region. From the researched schools, nine are complete nine-grade schools and one is an eight-year grammar school, so it does not include the primary stage. Three schools can be referred to as low-capacity schools. These schools have only a single class in the upper stage of each year, the mentioned grammar school also has a single class in the lower years, while the other schools always have a larger number of classes per year, which corresponds to a larger number of teachers.

The largest of the researched schools is a school in the Znojmo district with 816 pupils and 42 teachers. The smallest is an elementary school in the Vyškov district with 203 pupils and 13 teachers. The average number of pupils per class in the lower stage is between 17 and 29. The lowest average number of pupils per class in the upper stage is 16; the largest average number of pupils per class is 33 in case of the grammar school and 28 in the case of the elementary school. The given figures are related to the school year 2015/2016. Detailed information about the schools is given in Table 14.

TABLE 14
IDENTIFICATION OF SCHOOLS WHERE STRUCTURED INTERVIEWS WITH TEACHERS TOOK PLACE

District of the school headquarters	Elementary school – Znojmo district	Elementary school – J. Hradec district	Elementary school – Vyškov district 1*	Elementary school – Vyškov district 2	Elementary school – Hodonín district
Location	urban	urban	rural	rural	urban
Type of school	complete 9-year elem. school	complete 9-year elem. school	complete 9-year elem. school	complete 9-year elem. school	complete 9-year elem. school
Number of classes in lower grades (grade 1–5)	22	8	5	7	10
Number of pupils in lower grades	517	188	96	139	224
The average number of pupils in the class (lower grade)	20	24	19	20	22
Number of teachers in lower grade	20	10	7	5	12
Number of classes in upper grades (grade 6–9)	13	8	4	4	8
Number of pupils in upper grades	299	150	68	64	194
The average number of pupils in the class (upper grade)	23	19	17	16	24
Number of teachers in upper grades	22	11	6	8	16
Is any form of outdoor education mentioned in the SEP?	YES	YES	YES	YES	YES
To what extent is outoor education in SEP mentioned?	much	much	little	medium	medium
Is outdoor education mentioned in the SEP section "Curriculum plan"?	NO	NO	YES	NO	no plan included
Is outdoor education mentioned in the SEP section "Curriculum"?	YES	YES	YES	YES	no curriculum included
Is outdoor education in the SEP presented as a comprehensive concept?	YES	NO	YES	NO	NO

District of the school headquarters	Elementary school – Brno-city district 1	Elementary school – Brno-country district	Elementary school – Brno-city district 2	Elementary school – Blansko district	Grammar school – Brno-country district
Location	urban	urban	urban	semiurban	urban
Type of school	complete 9-year elem. school	complete 9-year elem. school	complete 9-year elem. school	complete 9-year elem. school	8-year grammar school
Number of classes in lower grades (grade 1–5)	14	19	12	6	not relevant
Number of pupils in lower grades	402	422	266	103	–
The average number of pupils in the class (lower grade)	29	22	22	17	–
Number of teachers in lower grades	18	22	13	7	–
Number of classes in upper grade (grade 6–9)	11	13	8	4	4
Number of pupils in upper grades	304	320	196	72	132
The average number of pupils in the class (upper grade)	28	25	25	18	33
Number of teachers in upper grades	20	23	15	8	16
Is any form of outdoor education mentioned in SEP?	YES	YES	YES	YES	YES
To what extent is outdoor education in the SEP mentioned?	medium	medium	much	much	much
Is outdoor education mentioned in the SEP section "Curriculum plan"?	NO	NO	NO	NO	NO
Is outdoor education mentioned in the SEP section "Curriculum"?	YES	YES	YES	YES	YES
Is outdoor education in the SEP presented as a comprehensive concept?	NO	NO	NO	NO	NO

Source: structured interviews with teachers.

* data on the elementary school where the questionnaire survey with pupils and parents was carried out, and measurement of pupils' physical activity was done.

The individual schools were contacted by email sent to the headmaster who was acquainted with the objective of the research and asked for the recommendation of suitable lower and upper stage teachers for the interview. Thanks to the preliminary selection, none of the teachers refused the interviews.

The interviews were carried out on the sample of 18 teachers of nine elementary schools in the South-Moravian and South-Bohemian Regions and one teacher of the lower grade of the grammar school (therefore, the total number is 19 teachers and not 20). From the total number of 18 elementary school teachers, nine teach the lower stage (see table 15) and nine the upper stage (table 16).

The average age of the teachers was 42, but it varied from 28 to 58 years of age. The lengths of the interviewed teachers' experience moved from less than one year (a starting teacher who taught the first year) to the longest of 32 years. All the teachers in the lower stage have completed their qualification to teach at the given type of school. In the second stage, the completed qualification corresponded with the subjects taught; five teachers had a qualification for geography, which they taught, three teachers had a combined qualification with biology, and two teachers had a combined qualification for history and another subject. Nine teachers out of the 15 interviewed teachers participated in the creation or revision of the SEP.

TABLE 15
CHARACTERISTICS OF INTERVIEWED LOWER GRADE TEACHERS (GRADES 1–5)

Teacher code	**A1**	**B1**	**C1**	**D1**	**E1**	**F1**	**G1**	**H1**	**I1**
Age	48	47	51	40	29	57	47	56	35
Teaching experience length	25	21	32	15	< 1	32	22	31	10
Teaching qualification	lower grade + social science	lower grade	lower grade	lower grade + English	lower grade + PE	lower grade	lower grade	lower grade	lower grade
Taught subjects	Czech, English, maths, biology, history, arts	all except arts, music, work active.	Czech, maths, biology, music, arts, PE, work active.	all subjects	Czech, maths, music, geogr.	all subjects	all subjects	all subjects	all subjects
Share on SEP creation	No	Yes	Yes	No	No	No	No	No	No

Source: structured interviews with teachers.

TABLE 16
CHARACTERISTICS OF INTERVIEWED UPPER GRADE TEACHERS (GRADES 6–9)

Teacher code	A2	B2	C2	D2	E2	F2	G2	H2	I2	J2
Age	28	35	45	58	31	43	56	37	30	54
Teaching experience length	4	11	21	NA	9	15	32	11	6	30
Teaching qualification	biology-geogr.	civics-geogr.	biology-PE	history-Russian-German	maths-biology	geogr.-biology-geology-ICT	maths-biology	physics-history	geogr.-biology	biology-PE-geogr.
Subjects taught	biology-geogr.-chem.	geogr.	biology-PE-working activ.	history-Russin-geogr.	maths-biology	geogr.-biology-ICT	lower grade, envi. seminar	physics	geogr.-biology	PE-geogr.
Share in the SEP creation	No	Yes	Yes	Yes	No	Yes	Yes *	Yes	No	Yes

Source: structured interviews with teachers.
* SEP coordinator

TABLE 17
TRANSFORMATION OF INTEREST TOPICS RESULTING FROM THE SEP CONTENT ANALYSIS INTO THE QUESTIONNAIRE FOR THE STRUCTURED INTERVIEW

Transformation into the structure of the questionnaire	Area of interest following from the SEP content analysis
Part A: School and teacher identification data	–It serves to identify and correlate the ways of implementing outdoor education with the length of teaching experience of the teacher or their subject orientation.
Part B: Implementation of outdoor education by a teacher, school	– Selection of topics for outdoor education. – Forms of outdoor education undertaken. – Indicative length of time required for the course. – Interdisciplinarity. – Continuity of outdoor education. – Consistency of the outdoor education concept.
Part C: Prerequisites and barriers for the development of outdoor education	– Barriers to outdoor education.
Part D: Promotion of outdoor education	– This was not surveyed in the SEP analysis, but by looking for information on implemented forms of outdoor education on model school websites.
Part E: Assessment of outdoor education – feedback	– Teacher feedback.

Source: structured interviews with teachers.

The questionnaire for the structured interview contained five key A–E sections reflecting topics specified after the SEP content analysis – see Table 17.

At some schools, the interview proceeded separately for the lower and upper stage teachers; at some schools all the teachers were interviewed together, always with regard to the time they had available; at some schools, up to four people participated in the interview (the lower and upper stage teachers together and other teachers of various subjects). If more than one teacher attended the interview, the format could be considered as a "group discussion", where physical barriers were eliminated (the school colleagues know each other well and often regard the interview as an opportunity to discuss the teaching with each other) and the participants revealed their attitudes, opinions, thoughts and experience more readily in front of the unknown interviewer (Hendl 2012, p. 182).

The interviews proceeded in offices of the model schools and were recorded by a voice recorder after the interviewees' consent. At the beginning, the aim of the interview and the term outdoor education were described to the teachers. On average, the interviews lasted for 60 minutes per school. Questions 16a and 16b, where the teachers were to particularise the use of individual forms of outdoor education in the individual years as regards the time, space, objectives, classwork and the length

of the lesson, were sent to the teachers in advance because of the time which they required. Subsequently, the audio recordings were transcribed into text form in literal transcription, coded and analysed. The main objective of the thematic analysis was to ensure that its outcomes were related to the specified partial aim 2 and that these findings were comprehensively provable in the collected data, or that they stemmed from the data (Silverman 2005).

As Hendl (2012, p. 173) argues: "the basic purpose of this type of interview (i.e. structured interview) is the highest possible minimisation of the interviewer's effect on the quality of the interview. (...) This type of interview is suitable if there is no opportunity to repeat it." Each respondent was thus asked the same questions exactly in the same order (Hay, 2010). At the beginning, most of the questions were formulated as closed, where the teachers could give only YES/NO answers and subsequently, they were required to explain this answer and dwell on the theme through an open question. The purpose of the "division" of the questions into closed and open was to ensure quantitative assessment of the first part of the question (the number of YES/NO answers) and subsequent simpler categorisation of the open questions. In two questions in the C section, the respondents were offered two closed questions with a choice of options or an option to give their own answer. One question at the end of the questionnaire contained a scale where the interviewees did an evaluation from 1 to 5 where 1 was the lowest and 5 the highest. This question was assessed by calculation of a weighted arithmetic average (for details, see Chapter 5.5.2).

The structured interviews with 19 teachers allowed deeper penetration into the researched anchorage of outdoor education into the SEP and especially into the educational reality.

4.3.3 QUESTIONNAIRE SURVEY WITH PUPILS

The questionnaire survey concerning pupils' attitudes to outdoor education was taken in the model school on the basis of results of the content analysis of the SEP, which showed that the school had a conceptually conceived outdoor education, which was largely confirmed also by the structured interviews with the lower and upper grade teachers. At the same time, the school was willing to cooperate in measuring the pupils' physical activity.

The questionnaire survey was carried out with pupils of grade 5 (n = 22), grade 6 (n = 8), grade 8 (n = 14) and grade 9 (n = 17) in the school year 2016/2017. The completion of the questionnaire was preceded by a one-day long outdoor education trip with grades 5 and 8 pupils, where physical activity was measured. Pupils from grades 6 and 9 were selected as a control group. The pupils in the specified grades had one lesson to complete the questionnaire, i.e. 45 minutes; however, most of them completed it in 20–30 minutes.

The questionnaire for the grade 5 and 6 pupils contained 37/38 questions (grade 5/6). The questionnaire for grade 8, who had outdoor education immediately before the questionnaire survey, contained 38 questions; for grade 9, who did not have outdoor education, it had 33 questions. The first six identification questions were identical for all classes. The questions examined the pupils' gender, age, class, height, weight and their marks in the subject People and their World (in the case of grade 5) or geography (the other grades) at the end of the first term. Pupils who attended outdoor education also filled in if they wore a measuring sensor of physical activity during the education[24] or not.

While the pupils from grades 5 and 8 filled out the questionnaire immediately after the outdoor education, the pupils from grades 6 and 9 had a delay of one year after this education – they did not have any other day-long outdoor education this school year. The questionnaire for grades 5 and 6 was identical except for three questions on the outdoor education in grade 5; there were two extra questions on the measurement by the accelerometer. The questionnaire for grades 8 and 9 was also similar. The questionnaires contained variously formulated closed questions with a choice of YES/NO options or a choice from a selection of options, through scale questions (yes – rather yes – rather no – no) to open questions, which required the pupils' own formulation. There were three specific questions on the development of cartographic skills, which concerned reading a map and plotting on a map.

18 scale questions at the end of the questionnaire were common to all classes. They aimed at finding the pupils' opinions on physical activity and outdoor education. The survey also aimed to find out whether outdoor education promoted better memory of the subject matter (learning by doing, activity-based learning, deep learning – Biggs, 1999; Entwistle & Ramsden, 1983). These questions were evaluated by a weighted arithmetic average, which allowed comparison of the results with similar answers from the teachers and subsequently the parents. Not all of these 18 questions are evaluated in this book; only those that relate to outdoor education were selected.

4.3.4 QUESTIONNAIRE SURVEY WITH PARENTS

The last phase of the research, the aim of which was to obtain opinions on outdoor education, was a questionnaire survey with the pupils' parents in the classes of the model schools which participated in the questionnaire survey and measurement of physical activity with the pupils. The pupils' parents (n = 114) evaluated, like the teachers and pupils in the previous phases of the research, the benefits of outdoor education on the development of key competencies of their children.

24 The available number of ActiGraph measuring sensors was only 10, while the number of pupils in the class was always higher.

The questionnaire, which was given to the parents by their children, sought to find out the parents' opinions on the effect of outdoor education on their children, the benefits of this form of education and whether this form of education presented a barrier for their children. The questionnaire was brief so that the parents were not discouraged by long completion. The questionnaire had five questions. Two questions were closed, dichotomic (YES/NO), and in case of the YES answer it was possible to add open answer. Two other questions were closed with a choice of answers. The last question offered an evaluation on a five-grade scale. It was identical with one of the questions to the teachers and concerned the benefit of outdoor education in the individual areas of the development.

4.3.5 TRIANGULATION OF RESULTS

The method of triangulation (Creswell & Clark, 2011; Hendl, 2012) was used to validate the results of the methods (content analysis, structured interviews and questionnaire survey) and remove the weaknesses of the individual methods – see figure 12.

Methodological triangulation (Graham, 2005) was applied in order to compare the results of the content analysis of the SEPs and the results of the structural interviews with the teachers – in particular triangulation between the methods which were subsequently applied to compare selected segments of the results of the questionnaire survey with the pupils and parents. It is therefore triangulation based on the collection of data from various groups of persons (Adami & Kiger, 2005).

The triangulation method was used sequentially (Veisová, 2009), so that the results of the content analysis of the SEPs served as a starting point for the formulation of questions for the structured interviews with teachers. Subsequently, the outcomes of the interviews with the teachers served as a starting point for the formulation of questions for the questionnaire survey with the pupils and the parents. The outcomes were then formulated on the basis of a comparison of both types of research. There was an effort to give similar questions to all of the three groups – teachers, pupils and parents, so that they could be evaluated in the same way.

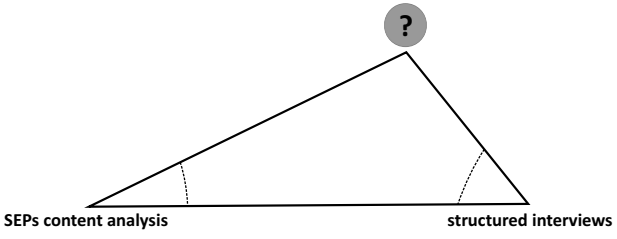

FIGURE 12. SCHEMATIC ILLUSTRATION OF THE TRIANGULATION METHOD.

Note: the applied methods of data collection in the foreground with thinly outlined different angles of perspective to the issue (obtained through the optics of different methods) and in the background the new finding (?), which is constructed by means of triangulation. Source: Svobodová, Durna, Mísařová and Hofmann (2019).

4.3.6 MEASUREMENT OF THE PUPILS' PHYSICAL ACTIVITY

Pupils of grades 5 and 8 of an elementary school where outdoor education is used regularly in the individual grades took part in the measurement of physical activity. The outdoor education proceeded naturally under the leadership of the teacher who the pupils are used to. The attending researcher only ensured the correct adjustment and installation of sensors for the measurement of physical activity. The physical load of the pupils was monitored by wGT3X-BT accelerometers in combination with the Polar chest strap. The outcomes were evaluated by the ActiLife application. The selectable number of pupils for the measurement was limited by the amount of ActiGraph monitoring devices to ten pupils in grade 5. These ten probands were dispersed among the pupils by application of a stratified selection. The group was divided into two groups so that the selected group contained an even distribution of boys and girls, i.e. five boys and five girls. The pupils' ages ranged between 9 and 11.

At the beginning of the research, the pupils provided information on their weight (kg), height (cm) and age. This information was important for correct adjustment of the measuring devices and evaluation of ideal weight by means of the Body Mass Index (BMI).

Ten participants were instructed to wear the monitor on an elastic waistband on their right hips during the session. Activity data was stored at 10-second intervals. During data processing and evaluation, we worked with hourly averages of the measured data.

From the functions that the accelerometer can measure, we concentrated on the energy consumed in kcal and the metabolic outcome in MET, where 1 MET is the ratio of the metabolic work rate to the resting metabolic rate. One MET is defined as 1 kcal/kg/hour and is roughly equivalent to the energy cost of sitting quietly. For example: the energy cost of playing rugby is 8.3 METS, which means you use 8.3 times more energy than if you were to sit quietly and rest (Mackenzie, 2003). Depending on the value of the measured METs, based on Frömel, Novosad and Svozil (1999) we divide physical activity into activity with:

- light intensity: < 3.0 METs;
- moderate intensity: 3.0–6.0 METs;
- vigorous intensity: > 6.0 METs.

For each pupil, the number of kilocalories and the metabolic expenditure were recorded in the MET units for the same time interval, i.e. four hours over three days with different forms of lessons. The measurement during standard lessons in the classroom, which last for 45 minutes, also included breaks (3 × 10 and 1 × 20 minutes).

As we are aware of a certain limitation of the research, i.e. the different level of physical activity on various days and with various types of outdoor education, we carried out control measurement with grade 8 pupils at the same school. The representation of girls (9) and boys (1) in the assessed sample was uneven as there were only two boys in the class.

The measurement was similar for the grade 5 pupils. The evaluation in both grades involved four lessons in the classroom without physical education, four lessons with one (grade 5) or two PE lessons (grade 8) and four lessons of outdoor education; however, the pupils of grades 5 and 8 completed a different route with different tasks.

For all pupils, the mass index (BMI) was calculated on the basis of the data provided. We are aware that the simple value of BMI is not very useful for assessment of weight status of children and youth, so we adapted the method of BMI percentile, which is more suitable for children and adolescents due to fluctuations in height, weight, and body composition that occur in the growth stages. BMI percentile tends to be a more sensitive tool to the change in weight status of growing children and adolescents. (Hoelscher, Kirk, Ritchie, & Cunningham-Sabo, 2013; Price, Cohen, Pribis, & Cerami, 2017) For Czech children, weight status is determined using BMI age and sex norm-referenced values derived from a nation-wide survey. Using the 6th Nation-wide Anthropological Survey (6th NAS) (Kobzová et al., 2006) growth charts, obesity is defined as a BMI ≥ 97th percentile and overweight is BMI ≥ 90th and < 97th percentile and the zone at risk of being overweight[25] is defined as BMI > 75th and < 90th percentile. The proportional zone (normal weight for a specific age) lies between the ≥ 25th and ≤ 75th percentile, and slim is defined as < 25th percentile. Values below the 3rd percentile indicate very severely underweight. The author is aware that BMI percentile limit values may differ among the other authors, so we use these values only in the Czech anthropo-socio-cultural context. We choose the above-described method to inform about the weight status (WS) of the probands. The weight status is based on BMI percentile calculated for each proband as it is in Table 18.

Pupils/probands are labelled by the number of worn ActiGraph devices (first column of the table). The column BMI percentile (BMI P) contains information on whether the BMI value of probands lies directly on the edge of the interval (single number) or if the value lies in the interval of the value range.

25 If BMI percentile is sited in the buffer zone (between proportional and overweight).

TABLE 18
BMI PERCENTILE AND WEIGHT STATUS OF GRADE 5 AND 8 PROBANDS ACCORDING TO THE 6TH NAS METHODOLOGY

Grade 5						Grade 8					
P5	AGE	SEX	BMI	BMI P	WS	P8	AGE	SEX	BMI	BMI P	WS
1	9	M	14.7	10–25	slim	1	13	F	18.0	25–50	proportional
2	10	M	15.8	25	proportional	2	13	F	18.8	25–50	proportional
3	9	M	16.4	50	proportional	3	13	F	17.3	25–50	proportional
4	9	M	15.2	25	proportional	4	13	F	16.5	10–25	slim
5	9	M	21.3	97	overweight	5	13	F	20.8	75	at risk
6	10	F	16.9	25–50	proportional	6	14	F	19.5	50	proportional
7	9	F	21.4	97–99	obese	7	14	M	24.1	90–97	overweight
8	10	F	16.6	25–50	proportional	8	14	F	19.5	50	proportional
9	9	F	18.1	75	prop. /at risk	9	13	F	22.6	90	at risk
10	11	F	19.5	75–90	at risk	10	13	F	18.4	25–50	proportional

Legend: P5, P8 – proband of grade 5 and 8; BMI P – BMI percentile (specific to the age of probands); WS – weight status (according to the 6th NAS).

The actiGraph accelerometer is also capable of processing sedentary analysis. In our case, we focused on the total length of sedentary bouts, i. e. the total sedentary time in minutes detected during four hours of education. Results of the sedentary analysis are, as well as the physical activity measurement, compared for three different forms of education by pupils of grades 5 and 8.

Limitation of physical activity measurement during outdoor education

Besides the above-mentioned limitation caused by the different level of physical activity on various days and the types of outdoor education, we are aware of another limit. The ActiGraph is primarily designed for measuring physical activity of adults. For the school children, we had to manually modify the length of the chest strap. Still, the values were not recorded in all the ten-second intervals. On average, the percentage of the successfully measured data oscillates over 75%. For the groups of the measured data, the level of the significance of the data p was calculated. In all cases, it equals $p > 0.20$, which means that the differences between the measured data are not significant and can be used for further analysis.

5 RESULTS OF THE RESEARCH

The best teachers are those who show you where to look but don´t tell you what to see.

Alexandra K. Trenfor

5.1 ANCHORING OF OUTDOOR EDUCATION IN SCHOOL EDUCATIONAL PROGRAMMES

Each school is obliged to create its own SEP according to the principles of the FEP, which are relatively free. The schools can thus determine what will be taught in the individual grades and to what extent.

The first step in the content analysis of the SEPs[26] was to detect if the individual SEPs were up to date, which varied in the model schools. The oldest SEP was ten years old, while another eight SEPs had not been updated for nine years. 18 schools had created or updated their SEPs three years ago, nine schools two years ago and four schools only one year ago. In five cases, the age of the SEP could not be identified (see figure 13). The average validity of 45 SEPs where the validity was provided was four years.

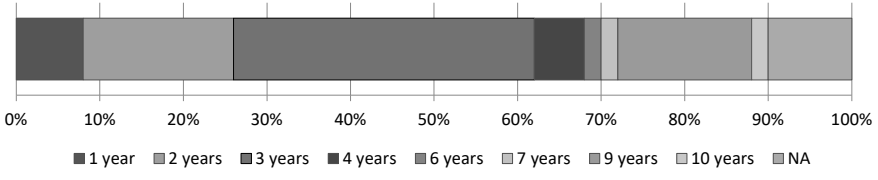

FIGURE 13. THE AGE OF THE ANALYSED 50 SEPS.[27]

Source: SEPs content analysis.

26 The methodology was described in detail in chapter 4.3.

27 The novelty of the analysed SEPs is described to the year 2016.

All of the analysed SEPs mentioned outdoor education directly (for example as landscape observation) or indirectly (for example work with maps). The extent of outdoor education application in SEPs was assessed subjectively. In 12 SEPs outdoor education was widely represented (mentioned in more than one subject and connection with other activities, such as field practice, environmental training, field-activity-related projects, etc.) In 18 SEPs the extent of outdoor education was average, and in 20 SEPs outdoor education was mentioned only marginally.

For coordination of outdoor education and optimisation of its system the following aspects are relevant: whether outdoor education is presented in the SEP as a unified (teaching) concept, i.e. whether the individual forms of outdoor education in the given subject are interconnected and developed systematically, whether there are inter-subject relations or a unified long-term system in outdoor education. The performed analysis shows that outdoor education is not conceived like this in the vast majority of the model schools. In 40 cases outdoor education is not presented as a coherent concept: only nine SEPs seem to grasp outdoor education conceptually, with one case impossible to judge because of lack of information about any forms of outdoor education in the SEP.

A similar proportion of answers also appeared in the next question, which examined if outdoor education was mentioned in the part of curricula referred to as the **syllabus**. Only in 13 cases was outdoor education mentioned in the syllabus, while in 36 cases, there was no mention. In one case, the section "syllabus" was not even identified in the school curriculum.

If outdoor education was mentioned in the syllabus, we subsequently examined in which educational area the outdoor education was specified. The sum of the given answers is 42, not 50, because it was possible to give more than one option at the same time.

In the lower stage of the elementary school, outdoor education is represented 9 times in the educational area People and Their World, which is the sole sphere conceived only for the lower stage of elementary education.

Out of the other educational areas where also particular subjects belonging to the educational area were represented, People and Nature and People and Health were represented 12 times. The educational area People and their World was represented nine times and People and the World of Work was represented three times. In six other cases, outdoor education was represented elsewhere than in the educational area, for example in the form of a project, in after-school care or in courses (see figure 14).

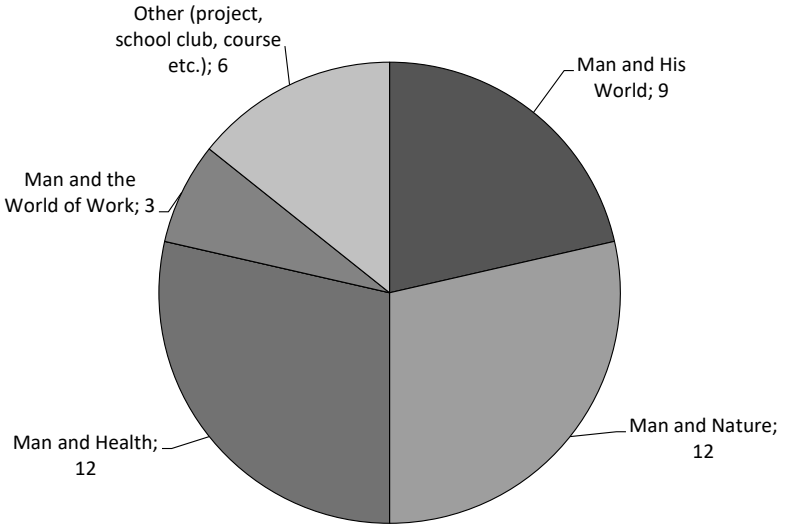

FIGURE 14. THE OCCURRENCE OF OUTDOOR EDUCATION IN EDUCATIONAL AREAS IN THE "SYLLABUS" OF SEPS (N = 42).

Source: SEPs content analysis.

Outdoor education is mentioned much more frequently in the SEP part referred to as the **course of study**. Outdoor education is mentioned in 49 cases out of 50, although in one SEP, the course of study was not found (see figure 15). In the courses of study, outdoor education was most often identified in the educational sphere People and Nature, i.e. geography (46 cases) and biology (41 cases). In the educational area People and Their World, outdoor education was identified in all 39 analysed SEPs of complete elementary schools, i.e. all schools with the lower stage, as this educational area is conceived only for the lower stage.

In the educational area People and Health, which incorporates the subjects of health education and physical education, outdoor education was identified in 27 cases. Here, the outdoor education mostly appears in the form of sports courses, but also rambling and staying in the countryside.

In 21 cases, outdoor education was mentioned in the educational area People and the World of Work (often in the subjects of work activities or practical activities). These forms most frequently involved work in the school plot/garden, a guided tour or staying in the countryside. It was not possible to determine closer in which subjects the outdoor education was directly incorporated, which is why educational areas are given.

Outdoor education further appeared in the subjects of history (32 cases), the Czech language (22 cases), physics (twelve cases), civics (eleven cases) and chemistry (nine cases). Apart from a few exceptions, these cases were most frequently in the form of an excursion (visits to the cinema and theatre, museums, libraries, etc.). Other subjects with identified outdoor education are art (22 cases) and music education (9 cases), which concerned visits to exhibitions and concerts, but also open-air ainting.

However, the analysed courses of study also included other subjects where some form of outdoor education was indicated – most frequently a trip without closer specification. These cases concerned the compulsory subjects: mathematics (four cases) and a foreign language (four cases) and a number of optional subjects (mostly focused on nature or sports activities), which, however, often appeared individually only in a particular SEP (e.g. regional geography, environmental practices, physical activities, sports games, seminar on history, ecological education, natural science practices, regional history etc.).

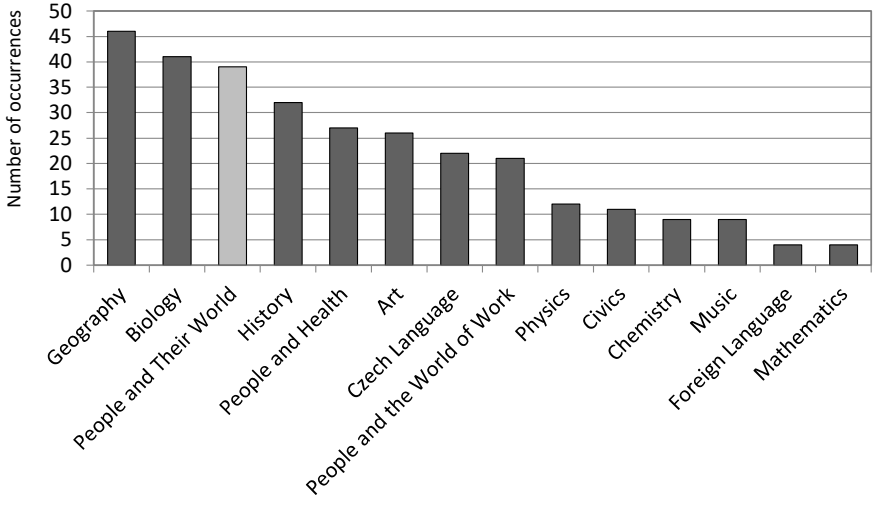

FIGURE 15. THE OCCURRENCE OF OUTDOOR EDUCATION IN EDUCATIONAL AREAS/SUBJECTS IN THE "COURSE OF STUDY" OF SEPS (N = 49).

Source: SEPs content analysis.

Note: light colour indicates a subject taught only in the lower stage of the elementary school.

With regard to the **location**, outdoor education is most often presented in the SEPs (37 cases, see figure 16) as teaching in the urban area where the school is located. In 32 cases the mentioned location of outdoor education was the countryside – rural environment – and the school grounds. In ten cases the location of outdoor education was not precisely specified. If other locations of outdoor education organised by the school were mentioned, they were included in the "other" option. In 17 cases the SEPs mentioned various excursions, courses (including sports) or visits to institutions offering programmes for schoolchildren. In four cases the SEPs mentioned residential outdoor school or environmental stays or a trip abroad, and in two cases sports facilities (swimming pool, playground, etc.).

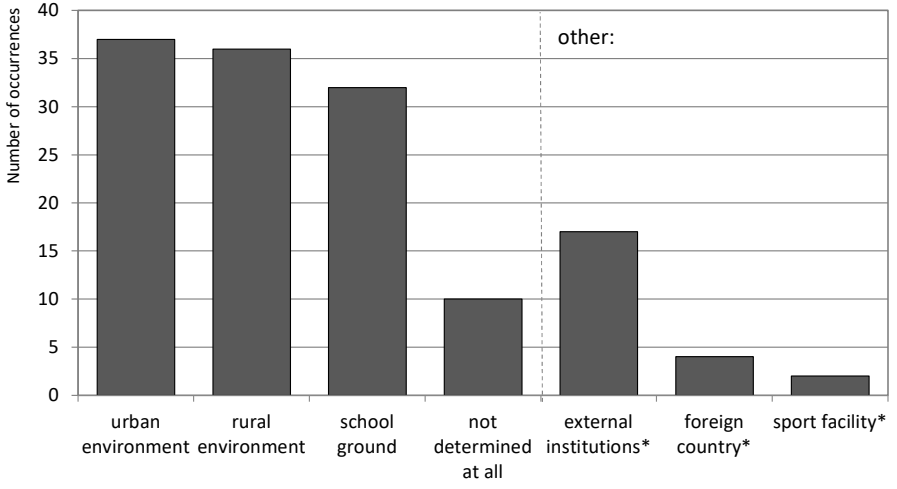

FIGURE 16. PLACE OF IMPLEMENTATION OF OUTDOOR EDUCATION IDENTIFIED IN 50 SEPS.
Source: SEPs content analysis.
* not determined if urban/rural

From the **temporal** point of view, the analysed SEPs mostly identified outdoor education as a short-term activity (35 cases, see figure 17) lasting for 1–2 lessons and including, for example, work on the school ground or visits of exhibitions, museums etc. There were also 32 cases of long-term outdoor education lasting for two and more days, and usually taking the form of sports courses, school trips or stays in learning/environmental centres. The medium-term outdoor education (represented by several hours of outdoor education, but no longer than one day) was mentioned in 24 cases. This shows that nearly half of the model schools succeed in implementing all forms (from the temporal point of view) of outdoor education. The results can also point to the fact that it is quite difficult to allocate a whole school day for one subject or an integrated teaching block of several subjects, as is shown by the relatively low

proportion of medium-term forms of outdoor education. In 16 cases the length of outdoor education events could not be assessed as many SEPs do not specify the time allocated for the individual activities and the time required must be estimated on the basis of the activity type, which may take from several hours to several days, for example in the case of projects, depending on the event organisation.

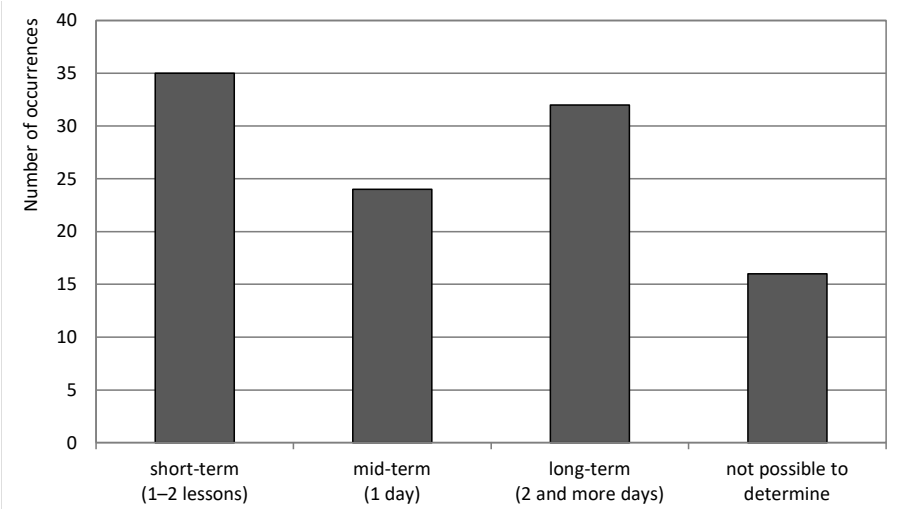

FIGURE 17. LENGTH OF IMPLEMENTATION OF OUTDOOR EDUCATION IDENTIFIED IN 50 SEPS.
Source: SEPs content analysis.

The correlation of the time and space aspects of outdoor education makes it logical that short-term outdoor education takes place in areas close to the school, which are accessible within one to two lessons. Therefore, the short-term outdoor education mostly concerns work on the school plot or outdoor education in the municipal environment. The medium-term forms are applied the least. As regards the place, the municipal (urban/rural) environment prevails (i.e. villages, but also towns or urban districts); short-term one-day trips usually occur in the rural environment (i.e. rural landscape). The environment of a village/open landscape clearly prevails in long-term forms of outdoor education such as various field trips. The indicated facts are illustrated in the time-space matrix – Figure 18.

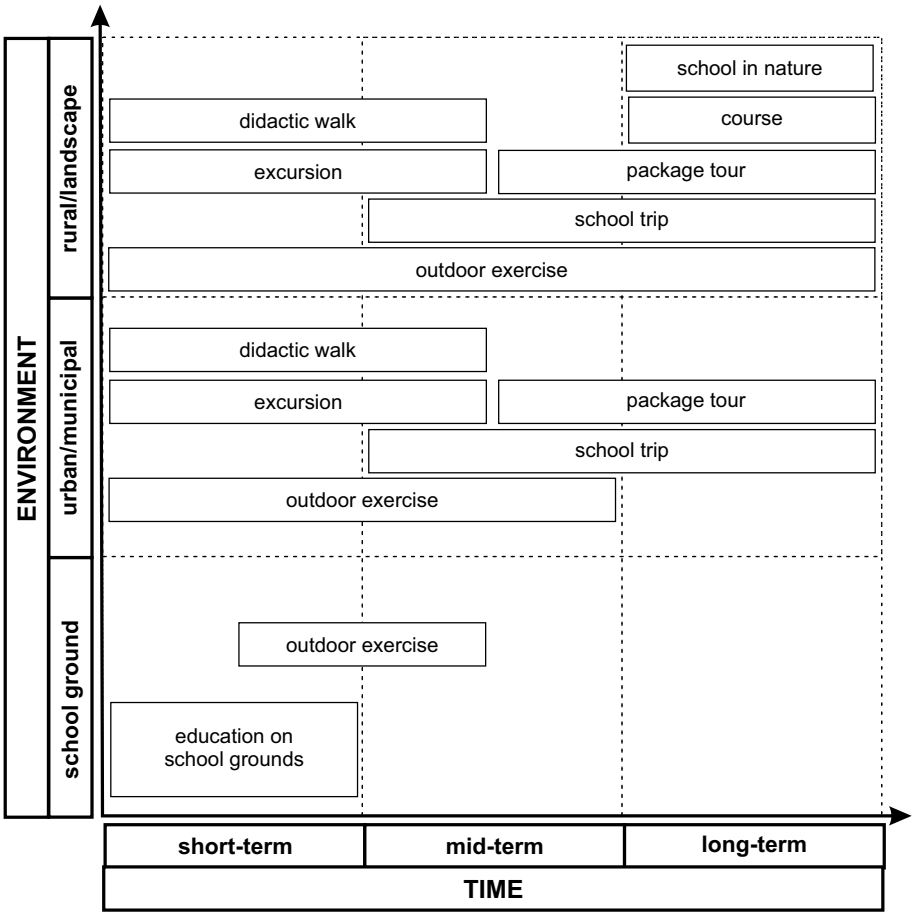

FIGURE 18. A TIME-SPACE MATRIX OF OUTDOOR EDUCATION FORMS.[28]

Source: author.

The previous presumption of subject integration is confirmed by the inclusion of outdoor education from a subject point of view. In 29 cases SEPs included disciplinary[29] as well as integrated forms of outdoor education, whereas in another 20 cases only disciplinary-related outdoor education was mentioned. There was only one case mentioned of fully integrated outdoor education – see figure 19.

28 Forms of outdoor education were defined in chapter 3.3.

29 Outdoor education in this form is exclusively reserved for biology or geography outdoor education.

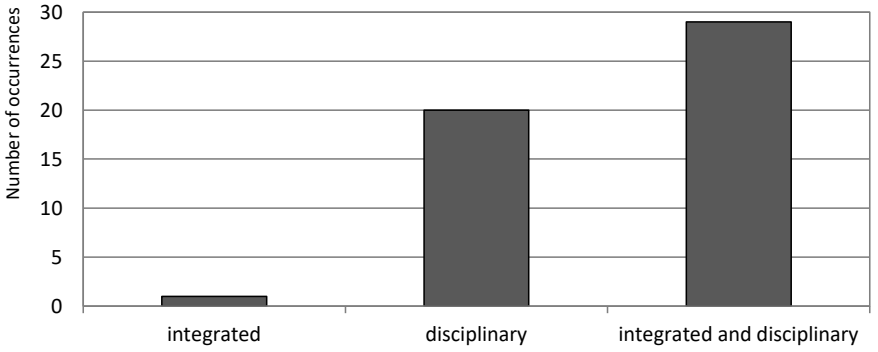

FIGURE 19. INTER/SUBJECT-ORIENTED OUTDOOR EDUCATION IDENTIFIED IN 50 SEPS.
Source: SEPs content analysis.

Outdoor education appeared in the analysed SEPs in various forms (see Figure 20). There are no binding standardised identifications for these forms. Each school uses its own conventional names. The analysed SEPs revealed certain identical names of outdoor education forms or forms showing a certain level of similarity (of name and therefore probably also content). Thus, possible definitions of the below-mentioned forms of outdoor education were given in chapter 2.3.

The most frequent term used in the analysed SEPs was **excursion** (49 of the 50 analysed schools). This term included activities such as visits to museums, libraries, exhibitions, theatre performances or film shows, planetariums, zoos, etc. These forms do not represent outdoor education according to our definition with active participation of pupils, though. Excursion as a teaching form was mentioned in the context of many different subjects (for example Czech language, music education, art education, primary science, etc.) but the SEPs rarely mentioned where the excursion would take place, which theme it was related to and in which form it was prescribed.

The second most frequently mentioned form of outdoor education was a **walk** (45 cases), which occurs in individual SEPs with different names:

- walk with observation;
- walk in the countryside;
- geographical walk with observation;
- field walk;
- natural science walk;
- educational walk.

Another frequent outdoor education activity, like the previous form named differently in different SEPs, was **outdoor/field exercise** (mentioned in 36 cases). In the analysed SEPs these names were found:

- outdoor education;
- practical exercise in field/in the countryside;
- field practice;
- field work;
- field geographical education;
- integrated field education;
- work in a field;
- natural science outdoor education;
- education in field/in nature.

The SEPs further identified relatively clear categories such as **school trip** (34 cases), **school in** the countryside (eight cases), **adaptation/introductory stay/course** (four cases).

Another large group was represented by outdoor sporting activities, where two categories were defined: **sports courses/stays**, with long-term teaching expectations (multiple days of a stay out of home). These sports courses appeared in 23 SEPs and included skiing practice, summer sports practice (water sports, cycling, etc.) or health stays, and **other sports activities** (14 cases), including short-term sporting activities in the following forms: fieldwork, stay in the nature, rambling, marching exercises, games in the open air, swimming practice, skating, sledging etc.

The schools that are focused on language education and support student study exchanges and other forms of cooperation with foreign schools often had in their SEPs a **foreign excursion/study trip** (six cases).

The form of work on the school plot/in the school garden, mostly included in practical activity lessons, was identified in seven schools. For the sake of completeness **traffic education** which was implemented in a traffic playground (three cases) must be mentioned. None of the schools mentioned other learning activities on the school plot, as defined for example already in 1980 by Papík (p. 217) – in geography, which included for example measurement of wind strength and direction, weather observation, distance measurement, etc.

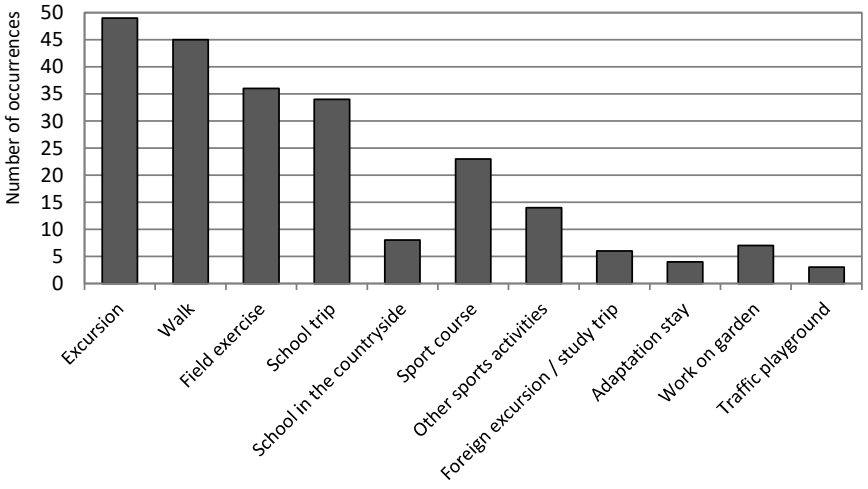

FIGURE 20. IMPLEMENTED FORMS OF OUTDOOR EDUCATION IDENTIFIED IN 50 SEPS.
Source: SEPs content analysis.

Incorporation of outdoor education into **cross-curricular subjects** is relatively interesting (figure 21). Incorporation of outdoor education into cross-curricular subjects was identified in 28 cases. By contrast, in 15 cases, outdoor education was not incorporated into the cross-curricular subjects, and in five cases, incorporation of outdoor education into the cross-curricular subjects could not be judged.

When looking at incorporation of outdoor education into the particular cross-curricular subject, it is clear that outdoor education can be incorporated into all cross-curricular subjects. The most represented topic is Environmental Education – 26 x, then Moral, Character and Social Education – 16 x. The other cross-curricular subjects are represented significantly less frequently.

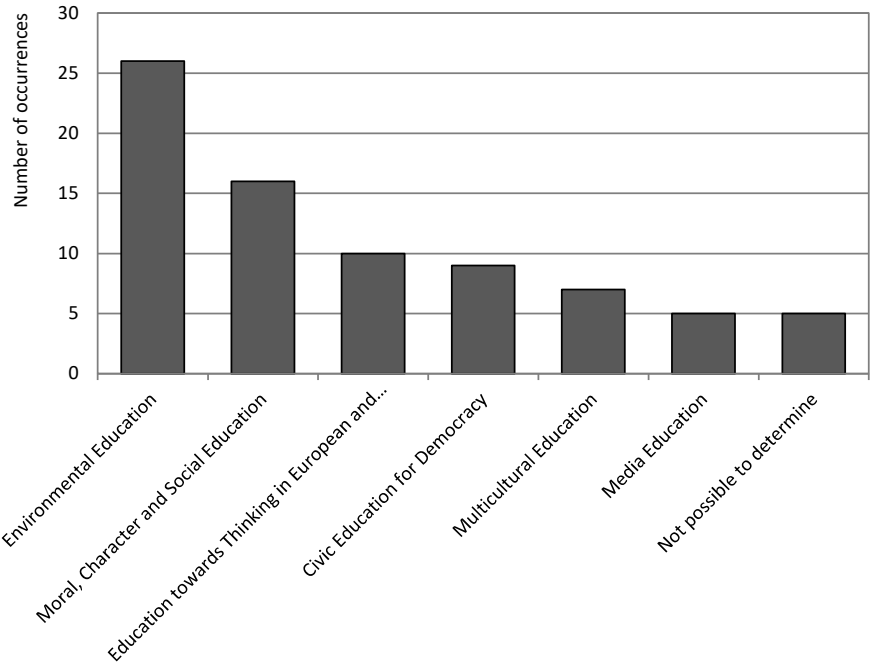

FIGURE 21. INCORPORATION OF OUTDOOR EDUCATION INTO CROSS-CURRICULAR SUBJECTS IDENTIFIED IN THE 50 SEPS.

Source: SEPs content analysis.

Outdoor education was very frequently present in **school projects** – 38 schools (i.e. more than ¾ of the schools) out of the total 50 use outdoor education in the implementation of projects (see figure 22). The projects usually concerned variously focused environmental projects of the schools.

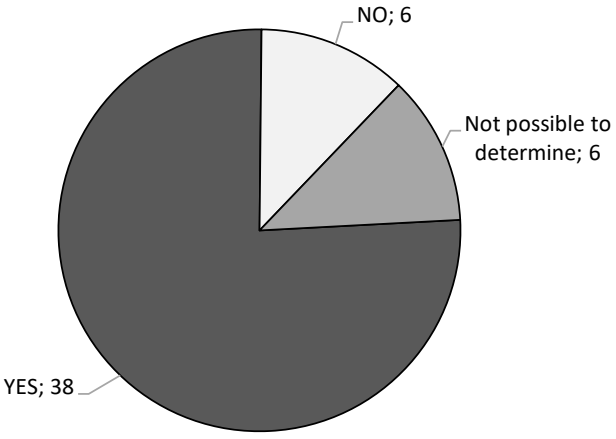

FIGURE 22. THE USE OF OUTDOOR EDUCATION IN SCHOOL PROJECTS IDENTIFIED IN 50 SEPS.
Source: SEPs content analysis.

5.2 OUTDOOR EDUCATION FROM THE PERSPECTIVE OF ELEMENTARY SCHOOL TEACHERS

The first part of the structured interview with the teachers concerned the identification of the school and the interviewed teacher. Before the interviews, "external characteristics" of the schools were created in the model schools, which involved an analysis of the school grounds and their immediate surroundings – see Figure 23. The purpose was to become familiar with the environment of the school as such – its location within the municipality and the ownership and vicinity of grounds for outdoor education. At the same time, the websites of individual schools were analysed to find out whether outdoor education was promoted.

With this partial knowledge of the location and the already known activities regarding outdoor education from the SEP content analysis, the interview could be more focused on particular activities in particular places.

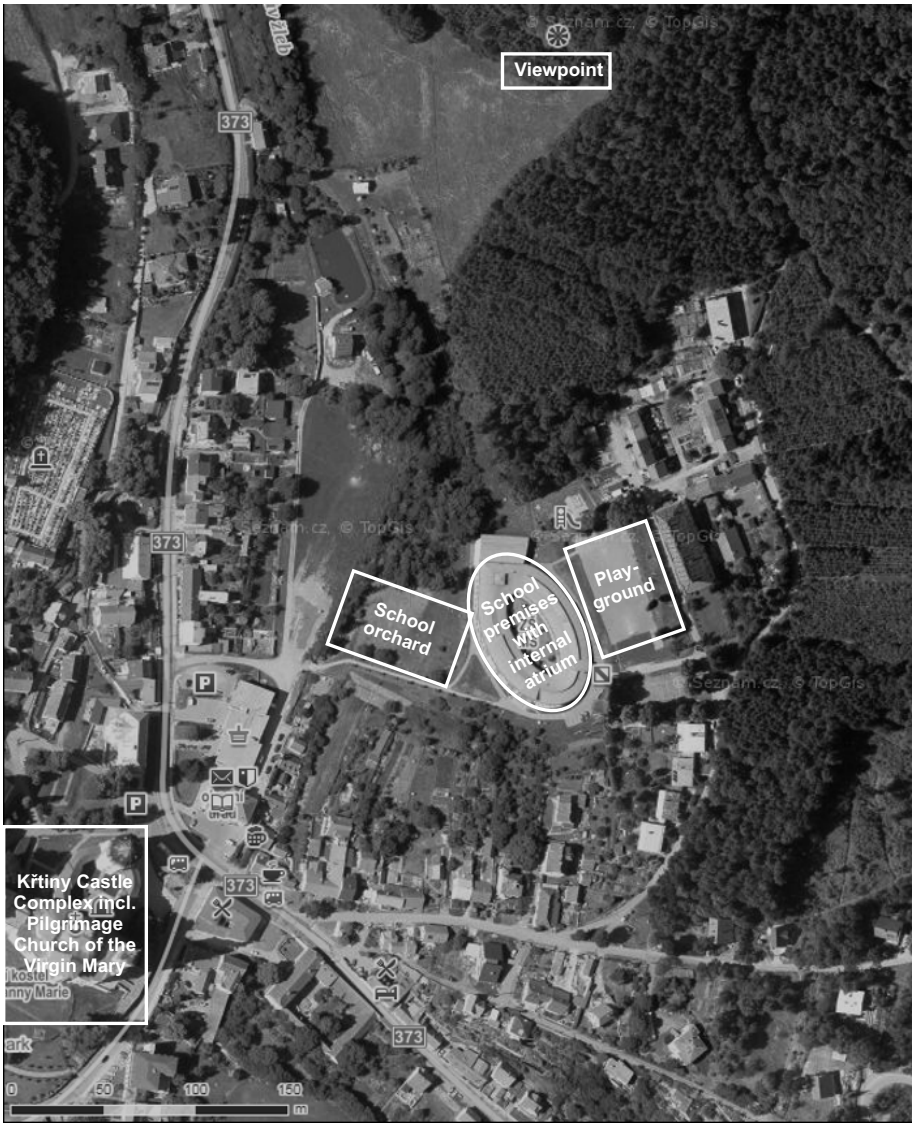

FIGURE 23. THE LOCALISATION OF THE SCHOOL IN THE KŘTINY MUNICIPALITY AND LOCATIONS FOR IMPLEMENTATION OF SHORT-TERM OUTDOOR EDUCATION.

Source: www.mapy.cz/s/catupalamu

5.2.1 IMPLEMENTATION OF OUTDOOR EDUCATION BY THE TEACHER AND THE SCHOOL

The second part of the questionnaire contained 15 questions – always with the opening YES/NO option and then a subsequent comment. The evaluations for the lower and upper stage are provided separately.

The first question concerned the implemented forms of outdoor education. The person with the widest overview of the implemented forms of outdoor education is most frequently the deputy headteacher (two in the lower stage, four in the upper stage) or the headteacher. In three cases, the EEPA coordinator[30] has an overview in the upper stage. According to the teachers' answers, there is also a general overview of the forms of outdoor education in the SEP, or in the course of study (one case in the lower stage, one case in the upper stage). Some schools have a monthly course of study, one school a weekly course of study. In one school, members of the subject commission have an overview of the outdoor education, and in one case, there is a "plan of events"; in one case, all forms of outdoor education were summarised in the school's annual report (however, only after implementation of the events).

As is apparent from the interviews, some teachers regard a comprehensive concept of outdoor education to be what is indicated in the SEP or in the EEPA plan where the annual repetitive school events are listed. However, according to an analysis of the SEPs, the other forms of outdoor education (especially the short-term) are not indicated. This can suggest the fact that although in some cases the teachers indicated that they had a comprehensive concept of outdoor education in the school, it is not entirely true. In certain cases, an annual (weekly) syllabus or an overview of the subject commission are regarded as a comprehensive concept.

In small schools, communication among teachers regarding the implementation of outdoor education can proceed more easily as regards integration of the topics of the lessons or exchange of the lessons for outdoor education. In large schools, it is more difficult to coordinate these issues and have a comprehensive concept. One of the teachers indicated that "there is no general conceptual methodology – recommendations for outdoor education".

Some schools have an "outdoor education concept" arranged with an external body (e.g. Lipka[31]) or choose events based on what is currently on offer from external bodies (e.g. Planetarium).

30 Environmental Education and Public Awareness.

31 Lipka is an educational institution for environmental training.

Most of the schools' subjects for the interview have no formulation of the hourly allowance of the individual forms of outdoor education in the course of the school studies. Seven of the nine lower stage teachers and six of the ten upper stage teachers gave a negative answer. However, the answers suggest that the enumeration concerns hourly or daily allowance for long-term forms of outdoor education, which are annually repeated. When asked a concrete question regarding the hourly allowance of outdoor education, one of the teachers indicated "a week is indicated there, a week-long trip".

One school did not support outdoor education, and if the teachers implement it, they do it voluntarily. One of the teachers said that for a starting teacher (in this case, four years of experience), it may be difficult to incorporate outdoor education into the curriculum.

All of the interviews de facto showed that the teachers speak of long-term outdoor education (courses, trips) and school projects rather than outdoor education incorporated directly into the hourly allowance of the individual subjects.

For the question whether the teachers use various forms of outdoor education in the subject that they teach, all of the interviewed lower and upper stage teachers gave affirmative answers. One of the upper stage teachers indicates that good weather is an important factor. For short-term outdoor education, it is also important that the teacher and the pupils can relocate within 45 minutes. To achieve this, school grounds or municipal parks are used. Within standard lessons, there is no time for longer-term outdoor education with worksheets, for example.

The forms of outdoor education in this question concerning the lower stage included trips, guided tours, excursions, natural scientific and local historical activities in the field (orientation in the landscape, orientation on a map, plotting a simple plan or draft) or exercises in the countryside. The schools are also engaged in programmes in cooperation with external subjects (free-time centres, the town, the fire brigade...). In contrast to the upper stage, the lower stage teachers have the advantage of teaching all subjects, so that they can connect them. The outdoor activities can thus merge with several subjects.

The upper stage teachers indicated the forms of outdoor education as for example projects and walks within geography lessons (determination of an azimuth, work with a map in integration with IT), in history lessons e.g. visits to museums, regional excursion (a cave – prehistory, a church, ossuary, Creek valley), in biology lessons collecting insects in the garden and establishing herbaria (educational walks – collection of leaves, observations of animals and beetles), but also visits to hospitals, long-term care hospitals, rescue teams, first-aid, and collection and analysis of rocks within a marching exercise, photographing within IT lessons and skiing and canoeing where association with physics is mentioned. One of the interviewees indicated that

during language lessons, no forms of outdoor education can be implemented because of lack of time. The interviewer argued that it can be achieved, for example, in the form of a walk in a foreign language. "Well, in the Russian language, I would not do very much, because they are just beginning (...) I am happy if they learn to read and write (...) in two years."

The previous answers indicate that only a few teachers (and schools) have a comprehensive concept of outdoor education. In the first case, four lower stage teachers who indicated that they had a comprehensive concept supplemented their statement by the fact that the concept was determined by thematic plans for the individual grades. In the second case it was indicated that forms of outdoor education which had a concept were those that were annually repeated (guided tours, exhibitions, schools in the countryside, ecological programmes). This is the way we can understand most of the other lower stage teachers who indicated that they had a certain conception. The school in Podomí municipality, where the teachers have really created a comprehensive conception after several meetings and supported it with a jointly created portfolio for outdoor education, is an exception.

Five of the upper stage teachers indicated that they had a comprehensive conception of outdoor education. Nonetheless, the answers suggest, even more than in the lower stage, that it is a conception of long-planned forms of outdoor education. One of the teachers who had answered that he had a comprehensive conception subsequently proved that he had a certain vision: "In grade 6, we start with physical geography. We can go out in front of the school with the children and dig into the ground, but the children arrive inappropriately dressed in January, for example, so we are out in May and June and go through the schoolwork in a gazebo in the internal courtyard and in the rest of the lesson, the pupils verify it in practice..."

One of the teachers who had given a negative answer sees no possibility in the creation of a comprehensive conception although she tries to interconnect the topics and continue in the older curriculum, but "the only time when I can say that it continues is working with a compass in grade 6 when we start, and then we continue in grade 9 in regional geography, where we build upon it".

Cooperation in various forms of outdoor education with teachers of other subjects seems easier in the lower stage (seven answers out of nine). Here, however, the answers can be interpreted in three ways: (1) The lower stage teacher teaches all the subjects in the class. Thus, they follow up themselves and do not need to cooperate with other teachers (in this case, which was indicated three times, however, the teachers gave the answer NO because the question was directed to cooperatation with other teachers). (2) Teachers who cooperate only when ensuring supervision and safety of outdoor education during relocations, for example to an observatory, training course or school in the countryside (here again, only the answer NO was given – one

case). According to one of the interviewees, the problem is agreement among the teachers: "outdoor education within the lessons – we only go individually; it is too difficult to make an arrangement". (3) Teachers cooperate on projects in the lower stage or within the whole school (e.g. Earth Day – three cases). One of the teachers commented on the cooperation as follows: "We plan a week in the countryside, a skiing course or a field trip within the year (...) so we combine the classes or at least arrange it so that all pupils in the year can complete it – we let each other know. (...) The planning is collective, also because of invoicing."

In the upper stage, only four teachers indicated that they cooperated in the implementation of some forms of outdoor education. All the teachers indicated a model case of cooperation. In three cases, the cooperation involved a short-term or medium-term form of outdoor education. In the first case, it was a one-day "field trip" to the Moravian Sahara where a few teachers participated, and each of them professionally covered one part of the trip (history, biology and geography + interconnection with the physical education). In one school, the cooperation of a few teachers on a project was abandoned due to concerns about the safety of pupils. It was an "established" project, which had been repeatedly implemented for more than seven years. Also here, teachers of history, geography and biology participated in the teaching. In the third case, in addition to the relatively common cooperation between the history, geography and biology teachers, other teachers were also indicated – foreign language teachers (a trip to Vienna and Dresden), Czech language teachers (trips to the theatre, visits to the town library), civic education teachers (visits to the town councillors' session), work activities teachers (e.g. a share of children in the creation of a meteorological station, info-panels in the school garden), music teachers (planting of a peace tree accompanied with music) and PE teachers (run through the castle park, Olympic run). In the last case, cooperation is mentioned between teachers in organising a school in the countryside, adaptation stays, tourist events and ski courses where teachers of various qualifications take turns.

All of the interviewed lower and upper stage teachers indicated that they had some method of choosing the topics for outdoor education. An overwhelming majority of teachers of both stages indicated that the topics of outdoor education were related to the currently taught matter, which is anchored in the SEP or thematic plan (eight in the lower stage, and eight in the upper stage). The topics of the outdoor education are of course related to the teachers' qualifications and personal preferences ("everyone does what is close to them") and possibilities of the region (regional customs and traditions, environmental themes). In the other answers, there was a relation to external bodies which offer themes for outdoor education – one case in each stage. In this case, good experience with these subjects is an important factor. One answer indicates that the teacher chooses the topics for outdoor education where he thinks that it will give them (the pupils) more in the field than in the classroom. Another teacher argues that it is important to "engage the pupils in a particular action

strategy". One of the upper stage teachers commented that when choosing the topics for outdoor education, it is particularly important to "try and make it more varied to the pupils and show them that it works in practice, that they do not learn it only to memorise it, but that it can come in useful later, somewhere in their lives". Also here, the importance of the weather is mentioned – field trips are more frequent in the spring and autumn, and less in winter.

All of the interviewed lower stage and upper stage teachers make preparations for outdoor education. In some schools, it is collective work, especially if it concerns "integrated" outdoor education, which passes through several subjects. In the case of subject-oriented outdoor education, the given teacher makes the preparations him- or herself. Some teachers emphasised precise preparation for outdoor education, as "in the classroom I can always improvise but outdoors, if I give them incorrect data in the station, I cannot take it back". Some teachers used worksheets, whose role they described both in relation to the pupils (structured requirements of the teacher) and in relation to themselves (outcome of the teaching process). One of the teachers added that every activity must have a focus and a clear objective, so the pupils do not think that outdoor education is just a walk outside. The lower stage elementary level teachers added that outdoor education should be entertaining for the younger pupils, could have a plotline and could be a game, which is motivating for the pupils.

Some schools had a portfolio of outdoor education, containing a set of worksheets, maps and other aids. The teachers further emphasised that knowledge of the place was necessary for outdoor education planning. If possible, they consider it important to walk through the selected locality beforehand (for example to find out the occurrence of plants for herbarium building or to carry out checks for orienteering). If this is not possible (for example because of the distance), it is necessary to "find out all circumstances of the particular lesson so that it can be fully exploited (...) to eliminate the situation when we return from a trip having missed an interesting place only because I was not aware of it". In the case of all-day outdoor education, a time schedule should be prepared beforehand. Minimum preparation of the teacher is needed in the case of outdoor education organised in cooperation with an external subject. An interesting opinion of an upper stage teacher indicates "I pay no particular attention to it (...) my lessons are based on activities so that it does not matter whether we are indoors or outdoors (...) the preparation is de facto identical." However, he referred to just one lesson of outdoor education in the school grounds.

The lower and upper stage teachers mostly choose the topics from real life for some forms of outdoor education. Only one lower stage teacher and two upper stage teachers do not choose topics from real life for their lessons. The most common topics come from the school surroundings – the town, region. In smaller municipalities, the school is more connected with the life of the municipality, and the pupils

participate in cultural and other events in the municipality. Sometimes pupils are concerned with themes that arise from the life of the municipality – e.g. history versus the present, nature protection, elections or solutions to problems in the municipality, which they can present at the local government, for example. It is important that the pupils should understand the importance of the topic and the regional issues and seek solutions to the problems. A teacher of the Dačice school enumerated what the pupils can do in the town within outdoor education: "For example, cleaning the surroundings of the river or collecting the rubbish around the school, a questionnaire survey among the citizens regarding the cleanliness of our town, measurement of aerosols in the atmosphere in various parts of the town, creation of an educational path around the river, regular measurement of transparency, temperature and pH of the river water, visits to waste disposal sites and wastewater treatment plants, observation of falling leaves and development of buds on the trees in the school garden, measurement of air or soil temperature in various areas of the school garden, outdoor trips with experts to natural monuments, the fauna and flora in the school garden, geocaching in the school surroundings and in the town (or part of school trips), participation in roundtables organised by the town (the current issues and events in the town, potential statements and proposals of the youth)."

The interview further showed that most lower stage elementary teachers (6) and all higher-level teachers (10) felt certain limitations in the outdoor education preparation. These limitations differed between the two elementary school stages. In the lower stage, the limitations seem less significant – parents' reluctance to finance the outdoor education, or socially disadvantaged families. Another statement comments on provision of the pupils' safety where another teacher is necessary for supervision in a standard class, the weather, reluctance of the pupils to go outdoors connected with pupil misbehaviour and low physical condition ("the new-time handicap"; Inchley et al., 2016). Another problem is the class composition with a disabled pupil in a wheelchair, for whom outdoor education is not practicable. The next factor is the greater difficulty of the preparation (which is not assessed by the school management in any way) and certain time limits. In one case, the absence of an outdoor classroom was mentioned.

At the upper elementary stage, the most significant limitation was seen in the 45-minute lesson length. If a teacher wants to allocate more than one lesson for an outdoor activity (where the class needs to travel to the locality of outdoor education and back to school), there is the already mentioned problem of communication with other teachers and difficulties in lesson swaps. Another significant issue is the administrative side and safety of outdoor education. In addition to the assurance of another supervising teacher, long-term forms often also require parental consent. One of the teachers also noted that in the case of an all-day or multi-day outdoor education the break supervision must also be swapped. In the case of medium- and long-term forms of outdoor education replacement of the missed subject lessons must

also be considered. One statement from one of the teachers is considered especially serious as, in the context of his school, he said that "the lessons taught outdoors are not counted as lessons taught (!), and so the teacher then has, for example, to substitute for another teacher for free". Moreover, that even applies in the case when the teacher returns with his/her pupils from an outdoor activity late at night or the activity lasts for several days. In the case of some events, lack of pupils´ interest is another problem (e.g. skiing; this fact may be related to the reluctance of parents to invest money in this course). According to some teachers, the pupils´ unwillingness is rather represented by their unwillingness to move.

Most of the researched schools have basic aids for outdoor education. Interestingly, one lower stage teacher replied that they had no chance to borrow the necessary aids, while the upper stage teacher at the same school said the opposite. In just one school, both teachers replied that they had no chance to borrow the means; one teacher added that he provided the things from his own finances. The other teachers included compasses and maps as the most available aids. Some schools have other things such as magnifying glasses, ecological backpacks, an archive of worksheets (portfolio), sports equipment, a Pasco measuring system (which, however, is not used because of the time requirements), nets, strainers, binoculars, microscopes, laminated maps, first-aid kits, GPS. One school indicated that it cooperates with a centre where this equipment can be rented and that they have asked the Integrated Regional Operating Programme of the EU for equipment for an experimental science classroom, which also includes equipment for outdoor education.

Outdoor education is implemented in most of the schools also within the informal curriculum. In the lower stage, it most frequently involves after-school care or other interest clubs and sports days/games. In the upper stage, it involves interest clubs or occasional excursions. The GLOBE club in the Dačice school focuses on field and research education in the school and town surroundings especially in the area of meteorology, pedology, phenology and hydrology. There is a beekeeping club in the school garden.

Except for one upper stage, all schools make use of the teaching programmes provided by other organisations. In the South-Moravian Region, where nine of the ten researched schools are located, especially Lipka and its centres (Jezírko, Kamenná…) are used, although some schools are abandoning it because the capacity is full long before the courses are run. The Brno Planetarium or the zoo (Brno, Vyškov) appeared several times. The schools also frequently use the local (municipal) and regional institutes because of the availability and low financial requirements for the pupils – e.g. libraries, museums, municipal forests or free-time centres.

Almost all the schools (with two exceptions) also use various forms of outdoor education within school events. It is most frequently the Earth Day (mentioned

six times in this question, but also the previous questions). The individual schools, however, also organise other events such as a Day without Cars, Garden Party, the Grade 5 Pupil's Day, UNESCO Day, Day of Pre-Medical Help, Children's Day, Civil Defence Day, Grade 1 Pupils' Jobs... The other events include adaptation stays, multiple-day trips/excursions – Czech as well as foreign, sports events (ski course). In some cases, these events are organised by pupils from the higher grades for pupils of the lower grades; sometimes the parents are involved.

5.2.2 PREREQUISITES AND BARRIERS TO THE ADVANCEMENT OF OUTDOOR EDUCATION

The third part of the questionnaire focused on prerequisites and barriers to the advancement of outdoor education. Firstly, teachers were asked to choose those from the list of the prerequisites and barriers offered they thought involved motivating or limiting factors in their school environment. They also had the opportunity to add their own views, thus broadening the range of prerequisites and barriers. The other items in this part of the questionnaire were YES/NO questions only, with the possibility to provide any comments.

The prerequisites to outdoor education were divided into six predefined categories (a–f), from which the teachers could choose any number of answers. For teachers who felt like adding anything, there was the seventh option, an open answer.

a) School location

For the first item, the respondents could indicate the advantages provided by the school's location in terms of outdoor education. All teachers in the sample surveyed consider their school's location suitable for outdoor education, naming both local characteristics (garden, proximity to a forest or a river, rural environment, etc.) and regional characteristics (e.g. closeness of the regional capital) among the advantages.

b) School grounds

Schools usually have outdoor spaces suitable for outdoor education. This concerns school gardens, biotope school gardens, outdoor classrooms, natural classrooms, etc. One of the schools had an orchard on its school grounds with a beehive and information boards. However, the perception of these spaces by the teacher in terms of their being suited to outdoor education may be rather subjective, or at least this is our assessment based on a case that actually occurred: despite the fact that there was a garden, a nature trail with models of space formations, respondents from this school indicated "the school ground is not available" for this item.

Some schools that do not have similar facilities are at least discussing the option and planning on establishing them.

c) Programmes or aids offered by non-school external entities

It can be said that schools may benefit from a wide array of programmes or aids offered by non-school external entities.

The teachers are aware of the programmes of regional external establishments, and some of them actively keep abreast with the current possibilities and the programmes proposed by local institutions (Planetarium, zoo, Municipal Woods and others). While at some schools, teachers tend to be better informed by "their superiors", at others they need to actively search for options.

d) Approach by the school management

School management usually supports, or at least tolerates, activities related to outdoor education. There have also been instances where the support provided by the management to teachers is minimal or where such support was suspended with the arrival of a new head teacher. In such cases, the teachers often mentioned in their responses that they were forced to abandon a portion of the activities they formerly engaged in (under the old management).

e) Cooperation with the parents

Teachers have reported good experience in cooperating with parents and the general public on common events organised by the school. It should be noted that the parents' cooperation in relation to this item was especially positively evaluated in terms of social events with the involvement of pupils, teachers, parents and the public. However, for excursions, walks or trips, some teachers still encounter opinions such as: "Where are you going again, you should be learning", although these are rather exceptional now. In certain events, parents themselves take an active part in tuition, "organising natural science walks."

f) Anchoring of the outdoor education in SEP and the thematic plan

The schools to be surveyed were selected following a prior SEP analysis which singled out such schools that had outdoor education included in their SEP. Still, a portion of (lower and upper elementary school) teachers said it was not the case. Therefore, it can be assumed that either the SEP does not correspond to the reality of the teaching process at the given school, or the teachers did not cooperate on the development of the SEP and are therefore not familiar with it.

g) Other

As regards the other outdoor education options, the teachers had the following to say:

> Preparation of the outdoor classroom, trips and exchange stays for pupils, organisational skills of the people in charge, teachers' keenness, I don't know what else, I may have my own opinion on that, but having been here for only two months, I have no idea whether we have a garden. (!)

Trips as an outdoor education opportunity were named multiple times, similarly to the preparation of the outdoor classroom. One teacher said that "he is keen on implementing outdoor education – truly a basic pre-requisite to its existence". Another teacher said: "I really do not know why the teacher should answer this." This shows a relatively negative attitude to outdoor education and hands over the responsibility to the school management.

The purpose of the other question was to establish barriers to outdoor education. Here, the teachers could select an arbitrary number of options out of 16 categories offered, and they could also add their own barriers.

a) No barriers

None of the teachers selected this option. It can, therefore, be assumed that there are some barriers at schools that make it difficult for teachers to implement outdoor education.

b) Uncertainty in the knowledge of and experience in the region

This obstacle was selected by one teacher only (a lower stage teacher). Teachers, therefore, do not feel the problem lies in lack of knowledge about the school's location and its wider neighbourhood, including across different age categories (or lengths of teaching experience).

c) Lack of information resources on the place/region of implementation of outdoor education

Again, one teacher only (an upper elementary school teacher, EEPA coordinator) identified lack of information resources as a barrier to outdoor education. However, the interview revealed that they did not actively look for the resources themselves ("if only they could be distributed, ideally by e-mail…") and expected other workplaces to develop the required activity. Teachers are well familiar with and have access to enough information on the region.

d) Uncertainty and inexperience in implementing outdoor education

Some teachers face uncertainty and inexperience in outdoor education both at the lower stage ("this is certainly the case for the lower elementary school level, because nobody does these kinds of thing there") and at the upper elementary stage ("yes, we would have to be the pioneers…").

e) Lack of support methodology resources for the preparation and implementation of outdoor education

This item was singled out as a barrier by eight out of 19 teachers surveyed (five out of nine lower elementary school teachers and three out of ten upper elementary school teachers). One of the teachers remarked: "Methodology is missing as a whole, not only in terms of individual excursions, a wholesome methodology is needed to tell us where we need to get better…" While the above-mentioned point (c) shows that teachers have sufficient information on their surroundings, point (e) shows that a sizeable portion of them have no idea how they could effectively benefit from these resources while preparing outdoor education and they call for methodology guides: "there is not a single publication…"or "it's everyone for themselves". The last statement highlights another issue, namely the unwillingness of individual teachers to share the results of their work with colleagues (due to concerns related to know-how theft). This implies that the continuous use of even well-executed school outdoor education programmes is often abandoned as it is not passed on to newly arriving teachers on a continuous basis.

f) Lack of motivation

Barring a few exceptions, teachers do not perceive serious problems with their motivation to implement outdoor education. Some of them link the issue of motivation to finances: "The degree of motivation in the education sector is generally low; obviously, it is impossible to incentivise people with money only, but where finances are limited, the other possibilities also become rather scarce". This is well-founded as it appears that teachers are not adequately compensated for (especially long-term) outdoor education (winter sport courses, school in the countryside, etc.). At the same time, society and the law require that teachers assume full responsibility for their pupils – participants. According to one view, we encountered "one must be a little green…", which seems to rather highlight a misconception of the term itself on the part of the teacher, who seems to confuse outdoor education with environmental education.

g) Expecting a poor result

The interviews showed that the teachers tend to view the outcomes of outdoor education rather positively. Out of 18 surveyed, three teachers stated that they expected poor results for outdoor education. This statement offered by specific teachers, however, directly contradicts their responses to other questions of the

questionnaire (as verified in the transcriptions of the interviews). This discrepancy may be due to their subjective assessment of outdoor education and, by inference, caused by their expectation of a "poor result". Most teachers rejected this option.[32]

h) An inappropriate environment for outdoor education

The fact that only one teacher (an elementary school located in a city centre) marked this option seems to imply that teachers are aware of, or at least think about, sites and locations suitable for outdoor education. It should be noted here that under our concept of outdoor education the lessons do not necessarily have to take place in the woods, but they can also be in built-up areas (case studies, urban planning, etc.).

i) Lack of time to prepare for outdoor education

This represents the second most significant obstacle identified by a total of eleven teachers out of 19 (five out of nine lower elementary teachers and six out of ten upper elementary teachers). At the same time, some strong opposition has been expressed to this barrier, see "nonsense" (a lower elementary school teacher). Some teachers who have been practising outdoor education for years do not see this as a pressing issue (they had made their preparations already), in sharp contrast to those who are only at the beginning of their teaching careers, making a decision as to whether or not they should take up outdoor education.

j) Lack of time to carry out outdoor education during the school year

A dominant obstacle to outdoor education (marked by 13 teachers) out of the sample surveyed (19). This barrier is fatal for the upper elementary school stage, where the fast changing of short teaching units only allows for short-term of outdoor education to be conceived, and only if a number of demanding conditions are met (swapping lessons with a colleague, swapping break supervision with a colleague, administration of said changes, resistance of the management, clashes of opinion with parents, etc.). The frequent "lack of anchoring" of outdoor education in reporting the teachers' work amounts to a significant problem. Some have confessed that they face difficulties in having outdoor education recognised as full-fledged lessons and they have to replace the lessons spent outdoors with unpaid substitute lessons. This is a massive deterrent and has a fatal impact on the advance of outdoor education at schools. Teachers at the lower stage of elementary schools welcome the freedom of teaching, which allows them to be their own bosses. This way, they can organise their own lessons to meet their expectations, making flexible use of seasonal phenomena or good weather.

32 At this point, consideration should be given to methodology assistance on the way of approaching the assessment of outdoor education as a wholesome process, rather than as an assessment of the anticipated results, which may vary tremendously despite the enormous investment of the participants in the education programme thus conceived.

k) An unwillingness of colleagues to contribute to the preparation and implementation of outdoor education

This barrier is encountered both at the lower and upper elementary school stages, although in varying forms. As has been described above, at the lower elementary school level, the problem predominantly involves a mutual transfer of know-how and methodology approaches to outdoor education. At the upper elementary school level, the problem instead involves time management of the lessons and coming to an agreement with other colleagues. There is another problem, which has already been hinted at in the previous part (see chapter Suggestions for outdoor education for elementary schools). The outdoor education for the two elementary school stages does not link to each other concept-wise, with teachers failing to keep each other sufficiently informed on the outcomes (if any) generated by the education they have undertaken. To cite but a few of the teachers' views: "time is a factor, especially in terms of the schedule, overtime problems at the workplace", but also "we do not know, we have never tried it…"

l) Lack of financial resources

The third strongest category (ten out of 19 teachers) concerns the financing of outdoor education. Five lower and five upper elementary school teachers marked finances as an obstacle. This points to a relatively one-sided concept of outdoor education on the part of elementary school teachers. Outdoor education continues to be strongly perceived as lessons that the pupils have to travel far to, and that has to be paid for, or as education organised by a third party for a charge (educational programmes offered by external educational centres). Such activities face hardship especially with the parents of certain pupils, whose financial situation is unstable or who confuse outdoor education with mere trips and do not pay attention to the educational and instructive dimension of outdoor work. We found this suggestion by an upper elementary school teacher intriguing: "and fare is not so cheap either, so if the regional authorities came up with a support scheme, it might all be more meaningful, all the things that could be put in place here (meaning a truly substantial fare reduction for organised school outings) (…) it happens ever more frequently that people are on the social – I do not want to say – bottom (…), but even the fare is a problem to them, let alone an entrance fee…" Moreover, our experience tells us that the costs associated with outdoor education may be minimised with the use of the school's own or public grounds in the vicinity of the school (including in towns), the school's own aids which the pupils usually have on them (e.g. smartphones) according to the BYOD principle[33] or using freely distributed outdoor education tips.

33 Bring Your Own Device.

m) Lack of support from the school management

This option has not been marked by any lower elementary school teacher; compared to two upper elementary school teachers who identified with this point. This may point to what has already been noted earlier, namely that lower elementary school teachers enjoy a greater degree of freedom in organising their lessons (in the positive sense of the word) and do not face many of the problems described under point (k). School management generally does not hinder the teachers' outdoor initiatives and tries to promote them within the constraints of their possibilities. In one case, the teacher's view was related to a recent replacement of the school's head teacher, who was not as open to supporting outdoor education as his forerunner.

n) Lack of administrative support by the school management

One lower elementary school teacher only marked this option. The teachers may have failed to entirely understand the meaning of this item.

o) Lack of interest on the part of pupils

This option was singled out by two teachers in each elementary school stage. Confronted with their replies in the part of the questionnaire that sought to evaluate the effects of outdoor education and judging by the responses, this may involve a marginal sample of pupils – trouble makers generally tough to motivate in classes anyway. It may also be due to inadequately selected or poorly assigned tasks, "Motivation is missing once I find out that the pupils are not interested (...) they were asked to take photos of brownfields (...) they brought aerial photographs..."

p) Potential hazards during outdoor education

A relatively significant barrier that was singled out by eight (four for each stage) out of 19 teachers. There were realistic views of teaching practitioners saying that "the hazard is always there, but that is hardly a barrier, the (teacher) can never, in the real world, prevent anything from happening (...) while walking, they are undisciplined, and it is complicated to even pick a route from one place to another..." Potential hazards lurk just about anywhere, and it is not advisable to isolate children from the outdoor environment. The teachers' testimonies also imply that minor concerns should not discourage good intentions, see "in such a case, we could not do anything..." It is taken for granted that safety and health at work rules must be adhered to on a consistent basis.

q) Other, specify

A total of four (two per stage) teachers indicated further potential obstacles to implementing outdoor education. These include:

"Large number of pupils; I would prefer a group of 5–10 pupils for outdoor education" a biology teacher noted that when working with instruments, it is unrealistic to ensure the rotation of all pupils (with a number of 20 or more children in the class) in the given time allowance for the teaching unit (this is the upper stage).

"Children's fitness." The teachers view the trends linked to decreasing physical fitness of children negatively, "some of them cannot even walk that far."

"Allergies." Teachers should make sure they are familiar with details on the children's state of health, which is hardly a novelty.

"Unwillingness to read the SEP."

"Bad manners of pupils."

The next question sought to establish whether the teachers' university courses had prepared them well for leading outdoor lessons with pupils.

Twelve teachers (6+6) responded positively, i.e., that their university studies in some way prepared them for realising outdoor education with pupils. Some teachers could only recollect that they completed "some excursions at the university", while others were more specific, speaking of botanical, zoological and historical excursions (Telč, Brussels, Romania, Slovenia). One teacher added that she "took a distance course, which was more about knowledge and theory, while the practical part was missing..." Then, however, she went on integrated field practice in Jedovnice, which "was the only thing of any value, and it even made me choose the topic of my thesis in this area". The teachers mostly referred to the natural sciences and faculties of education, at which they completed similar excursions; as for the Faculty of Arts, it has been said that "there was nothing even remotely similar to this at the Faculty of Arts" (History – Russian study combination). However, there was no resounding "agree". The teachers admit that "the general idea seems OK, but the deeper methodology is inadequate (...) the assistant took us on an excursion without letting us know what we should plan and how (...) I was, in essence, a trip participant, I knew nothing of the organisation; there was no methodological underpinning to this..."

Seven teachers (3+4) noted that their university studies did not prepare them for outdoor education at all, or that they did not recollect anything of that sort, "I have forgotten about that a long time ago..." The above implies a research need for exploration of the concept of outdoor education at university workplaces where students are being prepared to become teachers.

Since outdoor education is continually evolving as a concept, teachers should be trained regularly. Therefore, the next question was aimed at finding out whether teachers had any support when it came to tips for, and the implementation of, outdoor education under the Further Education of Pedagogical Workers scheme (FEPW). Then, another question was raised as to where the teacher would welcome more knowledge or skills relating to outdoor education in their professional growth.

The distribution of responses to this issue was one of the most balanced for both stages. Nine (4+5) teachers stated they were supported as regards suggestions for, and the implementation of, outdoor education under the FEPW scheme, while ten (5+5) stated that they were not.

> "The FEPW keeps being offered to us (...) I take advantage of the workshops organised by the Tereza association, which have proved themselves and are always outdoor-oriented; I have taken part in zoological and mycological excursions to the Highlands..."
>
> Some teachers experience trouble finding their way through the various programmes on offer; "I looked at them briefly, so, for instance, the centre for services to schools, they offer electronics, digitalisation, inclusion courses, but no outdoor education..."
>
> "Not for state seminars, maybe tips for visits to Lipka..."

Some teachers do not get offered FEPW courses at all, or they do not pay attention to them. "No, no, no, not at all... I cannot remember anything, I think not, because there were no courses like that on offer among the accredited courses." The FEPW has even been suspended by the management at one school: "This has been suspended now, we have no training events to attend; the zoo a have offered us something very nice recently, but because this has been suspended, we cannot go." When asked by the interviewer why this is so, the teacher replied: "we have no travelling money..., I got an offer, but they turned it down due to the travel expenses". This brings us back to finances, this time from the viewpoint of the teacher (formerly, the issue was linked to pupils or their parents).

All teachers surveyed would welcome further knowledge and skills relating to outdoor education in their personal growth ("there can never be too much of this...", "certainly yes, I do not think we have achieved perfection yet..."). One teacher expressed the following opinion: "I would welcome more resources, a course probably not." He is willing to work with a finished source of information, but not willing to go through a training course. Some would, on the contrary, welcome a course, but time is a factor that prevents them from doing that: "Yes, but when will I find the time?", "Yes, the geography department organises trips, but those take place on Fridays and Saturdays, which does not work for me due to my work..." One teacher was somewhat reluctant due to her rich long experience... "My response here would be that I do not know"; "I do not want to brag but I have gathered some experience (I have been a teacher for 30 years), but I am not saying that I could not learn something new, I definitely could, but when you have been in the education sector for so long, and you keep going to training events, all of them start to merge after a while..." Younger teachers welcome such opportunities without hesitations. Again, the issue of "collegiality" among teachers resurfaced: "The problem is that some teachers do not want to leave their positions, share their ideas and experience..."

5.2.3 PROMOTING OUTDOOR EDUCATION

Part four of the questionnaire only contained two questions seeking to establish whether and in what way outdoor education is anchored in the School Rules and how it is promoted (both internally, and in relation to the public). The teachers respond with YES/NO and may add their own comments.

The teachers typically refer to the anchoring of outdoor education in the School Rules in relation to those points of the rules that regulate the pupils' behaviour during those school events that take place outside the class and school grounds. Out of those surveyed, 16 (7 + 9) teachers responded that outdoor education is anchored in their School Rules, namely as follows:

> Of course the School Rules apply both within the school and outside of it (during classes, on trips, etc., author's note), the same rules apply as those applicable within the school's premises, safety instruction, the safety is similar for all school events.

One teacher provided an exhaustive explanation:

> The School Rules contain rules for gathering pupils out of school, teachers' responsibility for the safety and health of the pupils, times, provision of information to parents. They also contain rules for raising financial contributions... the obligation of pupils to follow traffic rules, adhere to the teachers' instructions, to report any injuries, instruction of pupils on safety before each event...

Teachers may, therefore, find provisions in the School Rules that relate to outdoor education, especially as regards the protection of the pupils' health and adherence to the rules in place at the given school.

Three teachers stated that outdoor education was not anchored in their School Rules. One teacher specifically added to this: "I expressly asked the head teacher about this because I experienced a great deal of uncertainty in this and could not find anything. The head teacher told me that the agenda had been pushed into out-of-school activities..." It should be noted that many teachers stated that out-of-school activities are governed by the provisions of the School Rules and based their answers on that.

At all the model schools, outdoor education was presented both internally and to the public. The most frequent forms of promotion today include presentations of school events on the school's website, or on Facebook (articles, galleries, videos); this form was mentioned by all the teachers surveyed (19). Another fairly frequent method involves school presentations in local and municipal newsletters; some schools publish their own school magazine, while others have abandoned this practice: "We do not publish a school magazine at the time being, but in the past, there has been a school magazine, but now, I am not aware if it is being run by anyone..." Further publicity is provided by notice boards, either within the school's premises, or in public spaces: "We operate one more notice board on the street..."; one intriguing form of

publicity at one of the schools involves "public presentations of projects pursued by the eighth, ninth and seventh grades here at the Municipal house" (with members of the general public and municipal representatives in attendance.).

5.2.4 TEACHERS´ ASSESSMENT OF THE OUTDOOR EDUCATION OUTCOMES

Part five of the questionnaire sought to establish how outdoor education is assessed. Seven out of the nine questions in total were YES/NO questions with an option to add a comment. One of the questions was a multiple-choice question, and for another, the teachers were asked to come up with a rating on a scale from 1 to 5, 1 being the lowest and 5 being the highest score. For the evaluation of the scale question see chapter 5.5.2, where the result is compared to the assessment of a similar question asked to pupils and parents.

All the teachers surveyed confirmed they were perceptive to the impacts outdoor education has on the pupils. In 13 instances (out of 19), the teachers stated that the pupils enjoyed outdoor education more than the traditional classroom tuition. The answer that pupils do not enjoy outdoor education appeared in one case. A frequently added answer is that pupils find outdoor education appealing and fun because it is unusual, brings variety, and motivates and stimulates them. In three cases, the teachers said that this was an individual matter – some pupils enjoy outdoor education, but some do not.

With one exception, all teachers also assess their pupils during the actual outdoor lessons. They use a specific evaluation tool. The most commonly used tool is a worksheet (in six cases) or one of the oral methods (discussions, verbal appraisal, interview, etc.). The responses also reveal that the teachers only acknowledge progress or achievement during outdoor lessons in some cases, depending on the circumstances. A reward-based method was reported in one case.

Outdoor education is evaluated again at the close of each lesson (in 18 out of 19 cases). Here again, the responses reveal that oral appraisal methods are mostly preferred – a discussion, a collective oral appraisal or final summary. The additional responses imply that account is taken of what is (or was) the objective of the outdoor education, which also determines its final appraisal. The testing/grading method was also reported (in two cases). One teacher said he integrated the knowledge or skills acquired through outdoor education in other subjects, in verbal assignments, in looking for solutions to problem-solving tasks, etc. It should also be noted that according to the teachers, the appraisal should be uplifting, appreciative of the pupils' outdoor efforts.

Except for one case, all of the teachers surveyed confirmed they used a diagnostic tool to obtain feedback from their pupils. The most frequently used tools include an interview (5), verbal evaluation (3) or test (3). In other cases, a questionnaire,

a report, a poster, a Powerpoint presentation, worksheets, voting, the free writing method, a protocol, self-assessment, anonymous messages, sketches or map outlines were used, with artistic activities, such as painting, used at the lower elementary school level.

In the last two questions, the teachers were asked to assess whether they believe outdoor education promotes a deeper, faster, or more permanent understanding of the subject matter discussed. The responses regarding the depth of understanding are unequivocal. All of the teachers surveyed agreed that outdoor education facilitates a deeper understanding of the topic discussed. To cite from the comments: "Geography is best taught outdoors, as, in the classroom setting, the tuition lacks emotion." Teachers feel that the deeper understanding is due to the perception by more than one sense at once, thanks to learning by experience, the acquisition of practical skills, learning in contexts, experiencing practical application, etc. When it comes to the assessment of the speed or permanence of understanding of the topic, most answers include a comment such as: "I do not know" or "I cannot assess this objectively" (four out of 19 answers). In three cases, the teachers stated that this was a case-by-case matter: i.e. the process of understanding may be faster or more lasting for some while for others, it is not. One answer was negative, with no further comment.

The next question, namely whether the teachers feel that outdoor education contributes to the greater motoric activity of pupils, the answer "agree" was unequivocal again (18 out of 19). The additional answers reveal that the very fact that in outdoor education one has to move from one place to another in itself means greater motoric activity compared to sitting in a classroom. One of the answers was "cannot be objectively assessed".

As for the question of whether the pupils may use the experience obtained in outdoor education in other educational subjects or life situations, the teachers' response was a clear yes. In three cases the answer included a contention that the experience was that of establishing and improving relationships, getting to know fellow pupils, group bonding, etc. Other comments included, "pupils develop their ability to orient themselves outdoors", "they formulate their attitude to nature and the region", and "they acquire the rules of navigation outdoors".

5.3 OUTDOOR EDUCATION FROM THE PERSPECTIVE OF PUPILS

5.3.1 RESULTS OF A QUESTIONNAIRE SURVEY WITH PUPILS OF GRADES 5 AND 6

Part one of the questionnaires for grade 5 and 6 pupils concerned identification data of the pupils. In grade 5, a total of 22 pupils were tested, including 16 girls and six boys. Eighteen of the pupils were 11 years old, three of them were 10 years old and one of them was 12 years old. In grade 6, eight pupils took part in the test, of which four were girls and four were boys, and seven pupils were 12 years old, and one was 11 years old.

The next questions for the grade 5 pupils concerned the actual outdoor education the pupils completed. Grade 6 pupils had completed similar outdoor education a year before. The total length of the route completed by the pupils during the outdoor education was 12.75 km. The first question concerned an estimate of the distance the pupils completed during the outdoor education. The average variance compared to the actual distance was 3.70 km for grade 5 and 3.25 for grade 6. Eight 5th grade pupils managed to estimate the distance within 2 km of the actual length. An extreme variance (7 km and more) was reported for a total of five grade 5 pupils.

Other free questions were scale based (see figures 24 and 25). The purpose of the first question was to identify whether the pupils drew the route they were taking during the outdoor education on the map[34]. A total of 16 grade 5 pupils and two grade 6 pupils responded positively to this question (agree, somewhat agree), five grade 5 pupils and two grade 6 pupils did not manage to draw the route (they tried to at first, but because they had trouble finding their way on the map due to a lack of time, they abandoned the drawing later on). Four pupils did not even attempt to indicate the route on the map.

Another scale-based question concerned the perception of the pupils of the landscape surrounding them during the outdoor education. During the outdoor education, the pupils were encouraged by the teacher to observe the forest, plants, etc.; so a positive answer was expected for this question. A total of 21 grade 5 pupils and four grade 6 pupils answered positively. Three pupils responded that they did not take heed of the landscape around them while indicating the route. Two pupils did not comment on the question at all.

34 The teacher called this form of outdoor education "expedition". This is because she wants to motivate pupils that it is something interesting and exciting.

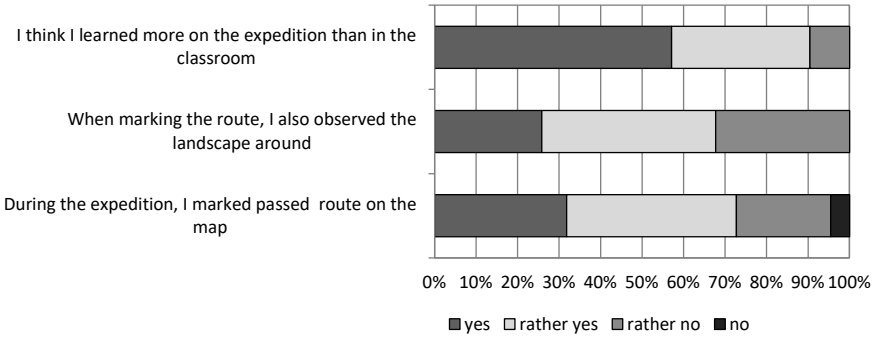

FIGURE 24. ASSESSMENT OF PUPILS' ACTIVITIES DURING OUTDOOR EDUCATION – GRADE 5.
Source: questionnaire survey with pupils of the model school.

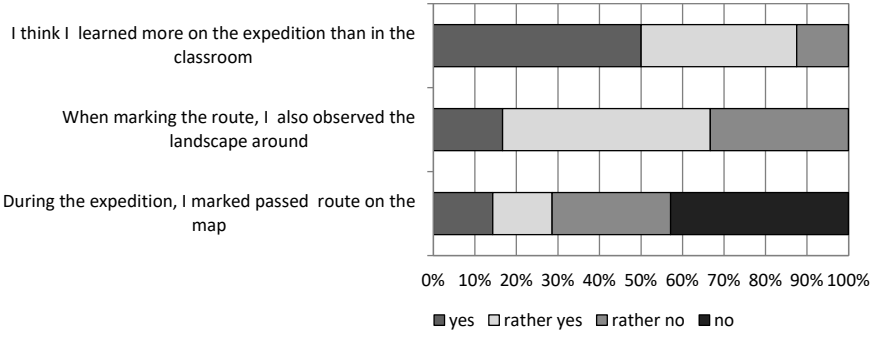

FIGURE 25. ASSESSMENT OF PUPILS' ACTIVITIES DURING OUTDOOR EDUCATION – GRADE 6.
Source: questionnaire survey with pupils of the model school.

The last scale-based question in this part of the questionnaire sought to establish whether the pupils thought they learnt more during the outdoor education than during regular classroom lessons. Nineteen grade 5 pupils responded positively (12 pupils agreed, seven pupils somewhat agreed) as did 7 grade 6 pupils. Three pupils believe they learn more in the classroom than during an expedition (two grade 5 pupils and one grade 6 pupil).

The next question looked into the pupils' view of outdoor education. Here, the pupils were left to choose out of multiple choices (figure 26). The most frequent response was that outdoor education presents the pupils with an opportunity to learn something new (orientation with a map and GPS, information from educational boards, etc.). The option was singled out by 18 grade 5 pupils and four of the grade 6

pupils. Other response options (four grade 5 pupils indicated a different response than any of those offered to them) expressed the opinion that outdoor education provides them with an opportunity to be with their friends, feel at ease or experience a fun form of tuition, or that they regard outdoor education as a kind of a trip during which they can learn something.

An open question follows, asking the pupils to write down the three most important things they learnt or memorised in the outdoor education (figure 27). When we evaluated the number of responses, then 20 pupils of both grades fully answered the question (i.e. wrote all three things). Four pupils only filled out two things, two pupils put down one answer only, and four pupils did not put down a single thing they learnt (memorised) in the outdoor education.

The responses were put into categories as for their common features and the six most frequently recurring items were singled out. The most frequent response among the 5th grade pupils (seven responses) was that they had learned how to behave in a protected landscape area (the items indicated here included things such as "do not pick up flowers", "protect nature", "adhere to the rules of the protected landscape area", etc.). Six pupils reported they had learnt to work with a map (map orientation, indicating a route on a map) and the same number of them reported that they had learnt some local names (e.g. Valley of Snowflakes, Rakovec Valley, Poslík spring, Three spruces). The most prevalent response among the grade 6 pupils (four pupils in total) was that they had learnt to identify plants (some said they had learnt several plant names), three pupils reported they had learnt what to do when outdoors ("stay with the rest of the class", "do not run", "listen", etc.). As for the more sporadically occurring responses, the following may be added to the list: "next time bring a sufficient quantity of something to drink", "listen to the sounds of the forest", "various myths", doing "experiments", etc.

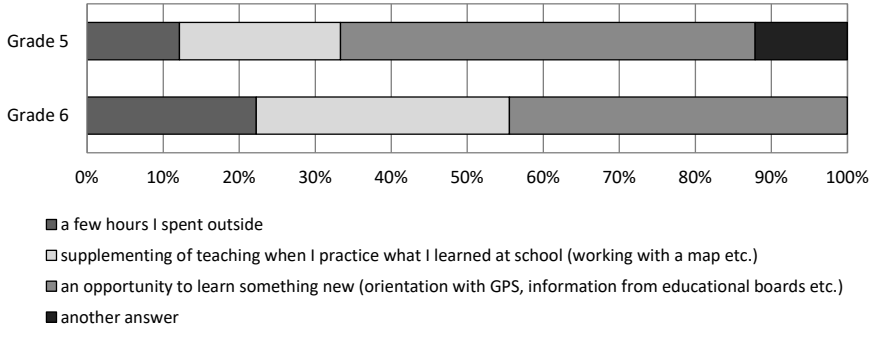

FIGURE 26. THE PERCEPTION OF OUTDOOR EDUCATION BY PUPILS OF GRADES 5 AND 6.
Source: questionnaire survey with pupils of the model school.

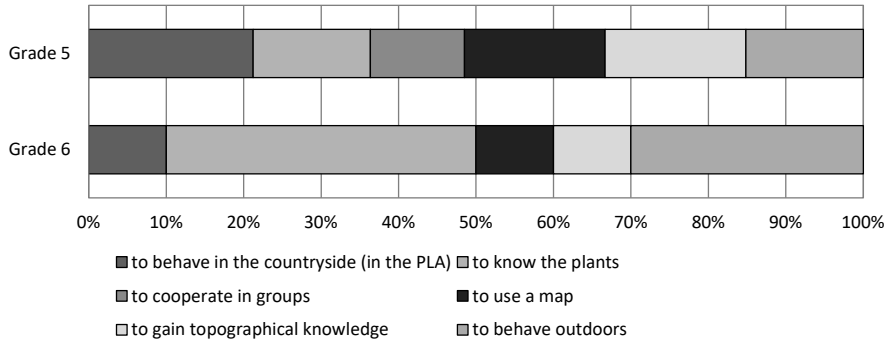

FIGURE 27. THE MOST IMPORTANT SKILLS THAT PUPILS OF THE GRADE 5 AND 6 LEARNED OUTDOORS.

Source: questionnaire survey with pupils of the model school.

The next question, identical for grades 5 and 6, focused on identifying the forest shown in a picture (figure 28) and was complemented with a question relating to the growth of herbs in the given forest (in what forest will more herbs grow and why?; table 19). Of the grade 5 pupils, all but two correctly answered that the forest was deciduous and coniferous. Two pupils got the answer wrong – instead of a deciduous forest, they said oak forest and mixed forest, and instead of a coniferous forest, they said a dark and spruce forest. All grade 6 pupils except one successfully identified the correct type of forest.

FIGURE 28. PHOTOS OF THE FOREST WHERE THE PUPILS WERE SUPPOSED TO DECIDE WHAT HERBS THERE ARE.

Source: Google Images.

TABLE 19
THE OPINIONS OF PUPILS OF THE GRADES 5 AND 6, WHETHER HERBACEOUS PLANTS THRIVE IN A DECIDUOUS/CONIFEROUS FOREST

	deciduous					
	Do herbaceous plants thrive well here?			Why do herbaceous plants thrive well here?		
	correct	wrong	unanswered	correct	wrong	unanswered
Grade 5	16	2	4	17	3	2
Grade 6	7	0	1	3	1	4
	coniferous					
	Do herbaceous plants thrive well here?			Why do herbaceous plants thrive well here?		
	correct	wrong	unanswered	correct	wrong	unanswered
Grade 5	18	4	0	12	9	1
Grade 6	2	1	5	2	1	5

Source: questionnaire survey with pupils of the model school.

The question whether herbs are likely to thrive in a deciduous forest (the correct answer is yes), was answered correctly by 16 grade 5 pupils and seven grade 6 pupils and the correct reason (more space, more sunlight, more moisture) was identified by 17 fifth graders and three sixth graders. For the coniferous forest, the correct answer was that herbs do not thrive there (due to less space, less sunlight and less moisture). Eighteen fifth graders and two sixth graders answered the question correctly. The correct reason was given by 12 fifth graders and two sixth graders.

The next question was different for grades 5 and 6. The grade 5 pupils had a photograph taken during the outdoor education attached to their questionnaires, and the pupils were asked three specific questions relating to the place shown on the photograph. All the pupils correctly answered the sub-question which asked for the name of the place they all went to see during the outdoor education. The second sub-question concerned the name of the vanished village that was formerly located there. The question was answered correctly by three pupils, and wrongly by eleven pupils; eight pupils did not answer the question. The third sub-question concerned the name of the Czech fairy-tale film that was filmed at the location. In total, 18 pupils provided the correct answer; three of them got the answer wrong – see figure 29.

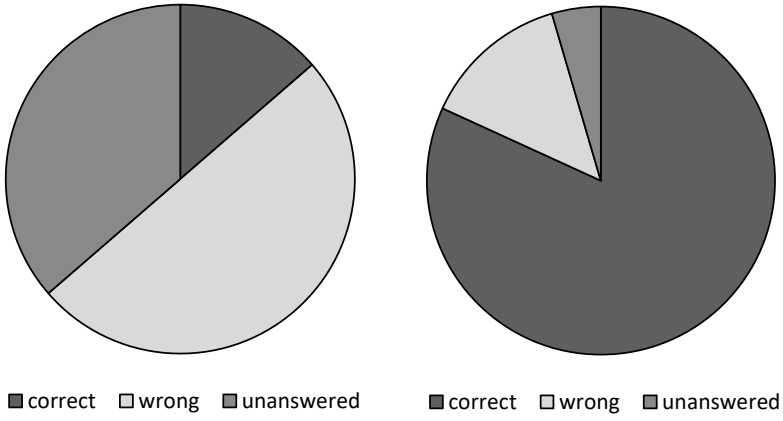

FIGURE 29. ANSWERS OF GRADE 5 PUPILS RELATED TO THE STOP POINT DURING OUTDOOR EDUCATION.

Source: questionnaire survey with pupils of the model school.

Instead of a photograph, the grade 6 pupils were presented with an aerial picture of the village Ruprechtov, the starting point of the outdoor education. The questions revolved around the windmill located in the village. The first task was to identify its location on a map. All the pupils correctly identified the location of the windmill, except for one, who did not identify the location at all. After that, the sixth graders answered the question regarding the former purpose of the windmill and the material that was processed there. All of the pupils got the answer right. The question regarding the purpose the windmill serves today was answered correctly by two pupils, but five pupils did not know its contemporary purpose, and one pupil did not answer the question at all. The last question concerning the windmill sought to establish whether the pupils knew any villages nearby where another windmill is located. Only two pupils provided the correct name of another village (Ostrov u Macochy, Rudice).

The next question was again identical for both grades 5 and 6, revolving around the origins of the names of the places the pupils went to during the outdoor education. For "Rakovecké údolí", only two of the sixth graders provided the correct answer i.e. that the name was derived from the local Rakovec stream. Contrary to this almost all of the pupils were able to infer the origin of the "Valley of Snowflakes" name (with only one pupil failing to provide an answer). The outdoor education took place during the flowering season of the snowflake.

To answer the next three questions, the pupils worked with an inserted map. The fifth graders were asked to indicate on the map the route they had taken during the expedition. The sixth graders were asked to indicate the course of the Rakovec

stream on the map. The routes indicated on the map were then divided into the following three categories according to the degree of accuracy: almost accurate, partially accurate (along about a half of the route), and entirely inaccurate. Among the grade 5 five pupils got the route almost entirely right, ten pupils indicated the route with partial accuracy, and seven pupils did not manage to indicate the route at all. Among the grade 6 pupils who were asked to indicate the course of the Rakovec stream, only two pupils tried and got the course entirely wrong, while the others did not make any marks on the map.

The next question involving the use of a map concerned the indication of the place known under the local name "The Main Rock". The pupils went to see this place during their outdoor education. The question was evaluated by how much the course indicated on the map was off the actual course of the place concerned. Among the grade 5 pupils, three managed to indicate the position precisely, seven pupils were less than 1 km off the mark and eight pupils provided no answer at all. Among the grade 6 pupils, one managed to get the location of "Hlavní skála" right, and two pupils were less than 1 km off the mark; the remaining pupils did not provide any indication.

The last task involving the map was to determine whether the altitude of "Hlavní skála" was more or less than 500 m a.s.l. Among the grade 5 pupils, five of them got the answer right (i.e., the altitude was less than 500 m), and 14 got it wrong. Among the grade 6 pupils, three pupils got the answer right.

The last question relating to the expedition sought to establish what the pupils found most and least entertaining during the outdoor education. Here, the pupils had the chance to write freely. Some pupils gave multiple answers. The answers were categorised. The most frequent answer with regard to what pupils liked about outdoor education was that they did not have to sit on chairs but got to go out (15 answers in total in both grades). The second most frequent answer was that the pupils learnt new things about nature or got to know new places (13 answers in both grades). Three pupils wrote that they liked that type of learning more because they get the chance to see the things in real life. Similarly, three pupils liked the opportunity to work in groups and communicate with one another. Also, a total of seven pupils found outdoor education to be a form of entertainment. In the same question, the pupils could say what they disliked about it. A negative assessment was only recorded for three answers, two answers expressed that the pupils did not like crawling through the bushes and one pupil did not like going up the hill (see figure 30 for details).

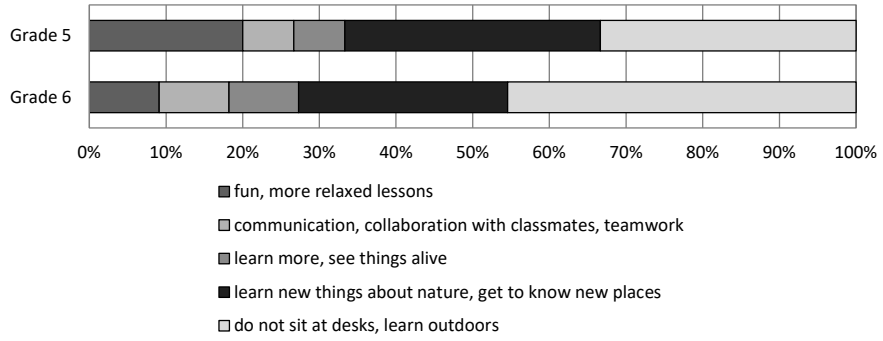

FIGURE 30. WHAT PUPILS OF THE GRADES 5 AND 6 ENJOY MOST DURING OUTDOOR EDUCATION. Source: questionnaire survey with pupils of the model school.

5.3.2 RESULTS OF A QUESTIONNAIRE SURVEY WITH PUPILS OF GRADES 8 AND 9

Part one of the questionnaire sought to establish the pupils' identification data. In grade 8, a total of 14 pupils took part in the questionnaire survey, including twelve girls and two boys. In grade 9, 17 pupils took part in the questionnaire survey, including three girls and 14 boys.

For grade 8 pupils, who had gone through outdoor education, the questionnaire included five specific questions relating to the Jedovnice – Rudice expedition, which were not included in the questionnaire prepared for the grade 9 pupils. These questions sought to establish whether the pupils were wearing a measuring sensor, an estimated of the distance covered, whether the pupils always tried to use the shortest route when handling GPS and how they perceived the landscape when handling the GPS device. As for the last question, the pupils were asked to sketch on the map the route they had taken during the expedition. These questions were evaluated separately; each of the remaining questions will be compared between the grade 8 and 9. Grade 9 did not take part in this outdoor education.

The introductory questions were devoted to the actual expedition the pupils completed outdoors. The total length of the route completed by the grade 8 pupils during the expedition was 4 km. The first task was that the pupils were asked to indicate the length of the route they had taken. A total of six out of 14 pupils were less than 1 km off the actual route length in their estimate. Others displayed a larger variance, and three pupils even indicated that the route was 10 km long. On average, the pupils were 2.8 km off the actual length of the route.

After this, the grade 8 pupils were asked to indicate, using the *agree – somewhat agree – somewhat disagree – disagree* scale, whether they always tried to establish the shortest route when handling a GPS device (which may be problematic since various unforeseeable obstacles may be encountered on the way). Five pupils "agreed" while the remaining nine "somewhat agreed".

Four out of five pupils who said they had always looked for the shortest route also chose the "agree" option for the question asking whether they could pay attention to the surrounding landscape while handling the GPS device. The remaining pupils went with the "somewhat agree" option.

The next question was posed to grades 8 and 9, it was semi-closed and offered a choice of four options, while the last option also gave the pupils an opportunity to express themselves freely. The pupils could choose multiple options. The grade 8 pupils indicated 21 options in total, while the grade 9 pupils came up with 25 answers. However, the difference in how outdoor education is viewed between the two grades is relatively large. While the grade 8 pupils, whose outdoor education was organised several weeks before the questionnaire survey, most frequently indicated the option that they viewed outdoor education as a "couple of hours they could spend outside" the grade 9 pupils who did not complete any outdoor education during the given school year most frequently saw outdoor education as an "opportunity to learn something new" (see figure 31 for details).

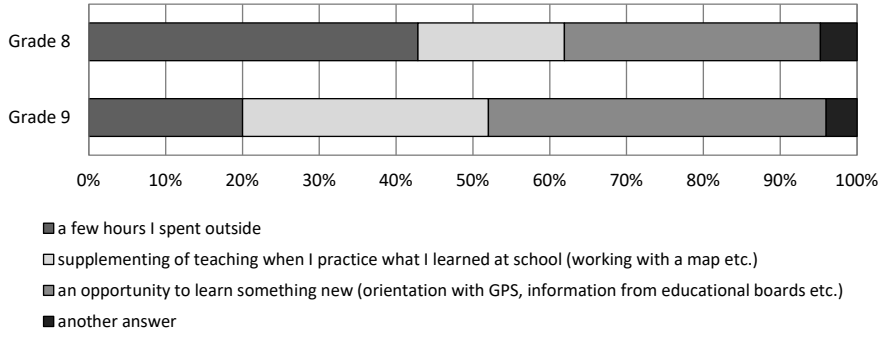

FIGURE 31. THE PERCEPTION OF OUTDOOR EDUCATION BY PUPILS OF GRADES 8 AND 9.
Source: questionnaire survey with pupils of the model school.

The scale-based question sought to establish whether the pupils thought they learnt more during the outdoor education than during regular classroom lessons. The question was answered positively by ten eighth graders and nine ninth graders (the "agree" and "somewhat agree" options). Two rather negative and two plain negative answers were recorded for eighth graders. Among grade 9 pupils eight rather negative but no plain negative answers were given – see figure 32.

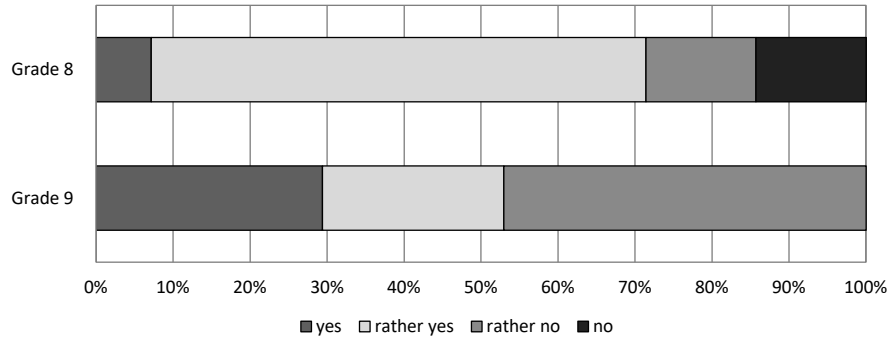

FIGURE 32. GRADE 8 AND 9 PUPILS' OPINION ON OUTDOOR EDUCATION.

Source: questionnaire survey with pupils of the model school.

An open question followed, asking the pupils to write down the three most important things they learnt or memorised in the outdoor education. In terms of the number of answers, 11 out of 14 pupils in grade 8 and 10 out of 17 pupils in grade 9 provided a full answer to the question, i.e. they put down all three things. The remaining three eighth graders only provided one answer. Three of the ninth graders only provided two answers, one pupil only indicated one answer and two pupils did not provide any answer at all.

The answers were categorised by common features. The answers of the pupils of the two grades reflect the nature of the outdoor education they completed. For the grade 8 pupils who completed an outdoor education event in the Moravian Karst region along the Jedovnice – Rudice trail just several weeks before filling out the questionnaires, the most common answer was "working with a GPS device" (16 times), the "pay attention to/observe the surrounding landscape" option appeared six times and the "looking for information" option (the pupils drew information from educational panels) appeared five times. The following answers were also recorded: map orientation/working with a map (four times), cooperation and communication with others (four times) and others.

For the grade 9 pupils, the part of the outdoor education that had the strongest impact on them was related to the Dalešice water power plant and the Dukovany nuclear power plant, since the most frequent answer given was that the pupils had got to know how a power plant works (five times), and the answer that the pupils had acquired specific skills necessary to remain outdoors (e.g. to build a tent, ration out food supplies, avoid swamps, etc., nine times) was also frequent. The "map orientation/working with a map" option was chosen by five pupils, and the "working with tools" (most often the compass) appeared four times. Among the less frequently used options, there was cooperation with others (three times), paying attention to/observing the landscape (three times), and working with GPS (two times).

FIGURE 33. PHOTOS WHERE THE PUPILS OF GRADE 8 AND 9 WERE SUPPOSED TO DECIDE IF IT WAS A KARST PHENOMENON OR NOT.

Source: Google Images.

For the next questions, the pupils attending both of the grades under review were asked to decide whether the presented photos showed a karst phenomenon, or not and if so, to identify it.

A karst phenomenon was pictured in three of the four images: a rock wall (top left), a sinkhole (top right) and a sink (bottom right). The fourth picture shows sandstone cliffs (bottom left) – see figure 33.

As for the first picture (a rock wall), three incorrect answers were given by pupils both in grades 8 and 9 (although in grade 8, there were 14 pupils answering the question compared to only 17 pupils in grade 9). In grade 8, only three pupils managed to identify the correct type of the karst phenomenon pictured – two answers were "a rock", which may pass as the right answer. The pupils passed this formation on their expedition, but were not familiar with the specific type.

The picture showing a sinkhole was correctly identified by only six out of the 14 eighth graders (one pupil provided no answer at all) and seven out of the 17 ninth graders. One grade 8 pupil attempted to identify the design of the karst formation, writing it was a "hole". In grade 9, seven pupils attempted to identify the type of karst formation pictured, of which five correctly indicated that it was a sinkhole, another pupil wrote

it was a "depression" and the other answers were wrong. It should be noted that the pupils did not see this particular phenomenon during the expedition, but several specimens may be seen around the municipality where the school is located.

Eight grade 8 pupils and ten grade 9 pupils correctly wrote that the formation in the third picture – a sandstone cliff – was not a karst formation. None of the grade 8 pupils attempted to determine the exact type. All five of the ninth graders who went with an open answer gave the correct type of formation.

The last picture showing the Rudice sink was correctly identified by most 8th and 9th grade pupils. The eighth graders had seen this place during their expedition several weeks before taking the questionnaire survey, and 13 answers provided were correct; moreover, nine of the ten open answers indicated that it was a sink. The ninth graders who did not go to the place produced two incorrect answers. Seven pupils in total attempted to identify the type of the formation, and five pupils correctly wrote it was a sink.

The differences in the answers given by the eighth and ninth graders were not significant in any way. It was only with the fourth picture – the Rudice sink – that the pupils who had visited the place as part of their outdoor education remembered the exact phenomenon better (see table 20 for details).

TABLE 20
THE DECISION OF PUPILS OF GRADES 8 AND 9 REGARDING WHETHER THE KARST PHENOMENON IS IN THE PICTURE OR NOT

	The picture is a karst phenomenon (a rock wall)			The picture is a karst phenomenon (a sinkhole)		
	correct	wrong	unanswered	correct	wrong	unanswered
Grade 8	11	3	0	6	7	1
Grade 9	14	3	0	7	10	0
	The picture is not a karst phenomenon (sandstone cliffs)			The picture is a karst phenomenon (a sink)		
	correct	wrong	unanswered	correct	wrong	unanswered
Grade 8	8	4	2	13	0	1
Grade 9	10	7	0	15	2	0

Source: questionnaire survey with pupils of the model school.

The next question was again identical for both grades 8 and 9, revolving around the origins of the names of the places the eighth graders went to see during the expedition. The names of the towns were Jedovnice and Rudice[35]. The eighth graders acquired the information during their expedition; the ninth graders could only guess, presuming they did not know the answer from sources other than the expedition. Only six of the 14 eighth graders managed to get the answer right (association with "poison"), and among the ninth graders, only seven came up with the correct answer. However, for Rudice, all eighth graders and 12 of the 17 ninth graders managed to answer the question correctly; three other pupils indicated a wrong answer and the two remaining pupils did not come up with any answer at all.

The eighth graders who had undergone the Jedovnice – Rudice expedition were asked to draw on a map the route they had taken as part of the expedition. None of the 14 pupils managed to draw the correct route. Six pupils managed to get the route at least partially right, and the same number of them drew an incorrect route; two pupils drew nothing – see figure 34. Each of the six pupils who managed to plot at least parts of the route correctly got a mark 1[36] in geography at half-year; as part of their open answers two of them wrote that they learnt to work with a map during the expedition.

The next map question involved plotting the point at which water enters the karst underground – namely, the Rudice sink hole already referred to above, which the eighth graders went to see as part of their expeditions. Among the eighth and ninth graders, two pupils per grade managed to plot the correct point. Two eighth graders and five ninth graders remained within the 1km tolerance. Paradoxically, the eighth graders who completed the expedition were more likely not to plot any point on the map, but, with only one exception, these were the pupils who were all unable to plot the route in the previous question.

35 Jed = poison, ruda = ore.

36 Marks in Czech schools are 1 to 5, where 1 is the best mark, 5 the worst.

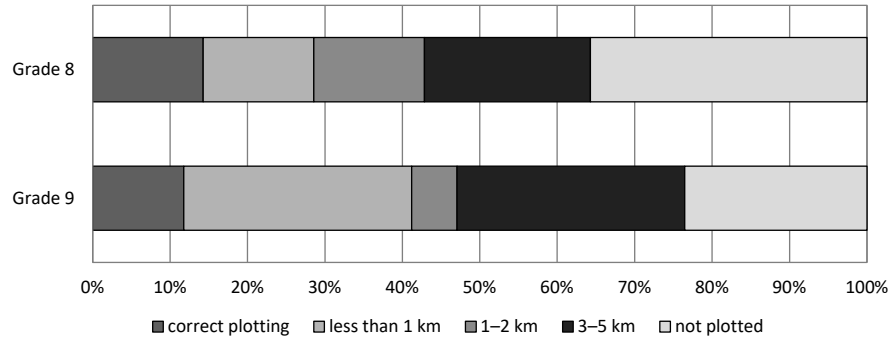

FIGURE 34. THE ACCURACY OF THE RUDICE SINK PLOTTING ON THE MAP BY GRADE 8 AND 9 PUPILS.

Source: questionnaire survey with pupils of the model school.

In the next open question, the pupils were asked to indicate what the point where water enters the karst underground is called. It should be noted that the word was indicated in the picture on which the pupils were asked to identify whether or not the formation pictured was a karst phenomenon. Interestingly, two pupils who previously could not name what they saw in the picture managed to indicate the name of the place here. On the other hand, two other pupils who got the previous picture right could not provide the correct answer here. Overall, eight eighth graders provided the correct name of the place, while the rest did not indicate an answer. Out of the ninth graders, only six managed to come up with the correct answer. Only one of them provided the correct term although he did not manage to answer the question relating to the previous picture correctly. The other seven pupils provided the wrong answer, and the remaining four pupils did not provide any answer at all. Therefore, this question once again reveals the recurring trend where the eighth graders who had visited the very place remembered its name better, but they were not able to plot its location on the map with more accuracy than their fellow pupils who had not been to the place.

In the final open-ended question, the pupils were asked to say what they liked or disliked about outdoor education (the expedition). Here, the pupils had the chance to write freely. Some pupils gave multiple answers. The answers were categorised. The categories of which there were three and more were evaluated (see the following figure). The most frequent answer with regard to what pupils liked about outdoor education was that they did not have to sit on chairs but got to go out (19 answers in total in both grades). Eight pupils wrote that they found outdoor education entertaining because it gives them an opportunity to communicate with their peers more and because they learn more when they see the things live. The pupils also appreciate that the lessons are more relaxed, that they acquire new experience or that they enjoy working with the map – see figure 35.

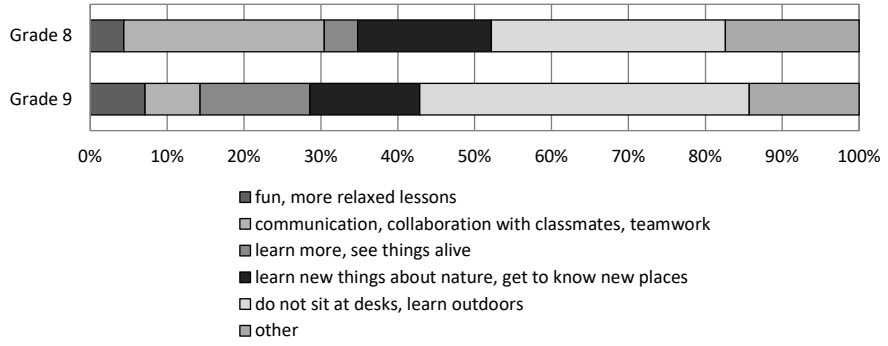

FIGURE 35. WHAT PUPILS OF THE GRADE 8 AND 9 ENJOY MOST DURING OUTDOOR EDUCATION. Source: questionnaire survey with pupils of the model school.

In the same question, the pupils could say what, on the contrary, they disliked about outdoor education. There were eight negative answers in total, three of them claiming that the pupils did not like doing the tasks, one pupil wrote that they did not like outdoor education when the weather is bad, one did not like working with the GPS device, when the subject matter was too detailed and another one did not like long walks and insects.

5.4 OUTDOOR EDUCATION FROM THE PERSPECTIVE OF PARENTS

The parents of pupils attending the model school were given questionnaires to assess the benefits the outdoor education event had brought to their children. The survey showed how the parents (n = 114) viewed the effects outdoor education had on their children. According to the parents, 83% of the children look forward to outdoor education more than toward the traditional classroom-based tuition, and 12% regard this type of tuition as identical to classroom-based lessons. 6% of the parents surveyed were unable to assess the impacts outdoor education has on their children. When asked whether they felt they were restricted in any way while planning or organising an outdoor education event for their children, a total of 95% of the parents responded that they were not restricted by anything, while six parents (5%) considered the financial burden a possible restriction. The parents' additional answers referred to the benefits rather than the barriers of outdoor education: "more variety in teaching", "connecting theory and practice", "communication and cooperation", "getting to know the countryside and places where they live", etc.

The survey also sought to ascertain how often the parents go out to the countryside with their children – see figure 36 for the results.

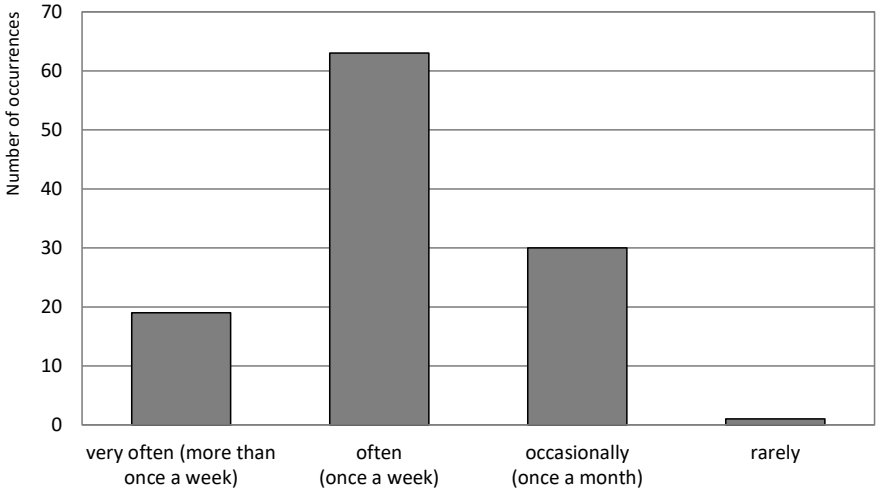

FIGURE 36. FREQUENCY OF PARENTING IN THE COUNTRYSIDEWITH CHILDREN.
Source: questionnaire with pupils' parents of model elementary school.

More than half of the respondents (63 parents; 55.3%) answered that they take their children to the countryside at least once a week. 30 parents (26.3%) only take their children to nature once a month. Conversely, 19 (16.7%) of the parents take their children to the countryside very often (more than once a week). Here, the location of the school has to be considered: the model school is located in a small municipality (with about 500 inhabitants) and receives pupils from the surrounding municipalities. This implies that the parents do not have to travel far with their children to go to the countryside, and therefore may be expected to take more frequent trips.

Relating the parents' view of the benefits outdoor education may provide and the frequency of the parents setting out to the countryside with their children, we can assume that, if the parents take their children to the countryside more often, they will regard outdoor education as more beneficial. The calculations[37] have shown that those parents who take their children to the countryside less often tend to see lower benefits for development in the given areas. However, the results are not significant, the calculations were conducted on a small sample; if the sample were more representative, it could turn out that the differences between the groups are and will be significant, and we could then assume that the more often the parents take their children to the the countryside, the greater benefits they see in individual areas of development (knowledge, skills, attitudes and interpersonal relationships).

37 Kruskal Wallis test, p = 0.30.

Furthermore, the survey confirmed that the parents (95% of respondents) almost unequivocally believe that outdoor education contributes to the increased physical activity of children. The free answers of parents confirm this result. The importance of outdoor education in connection with movement is seen in the fact that the children "do not sit at the computer and on the Internet", "are in the countrysideand fresh air", "walking is people's natural and basic movement; schooling not only reduces it but also replaces it with sitting down and fresh air", or "children have little exercise except for physical education, they sit with computers and their mobiles".

5.5 TRIANGULATION OF RESULTS

5.5.1 COMPARING THE SEPS CONTENT ANALYSIS TO THE OUTCOMES OF INTERVIEWS WITH TEACHERS

An analysis of 50 SEPs showed that individual SEPs differed not only in the quality of their content but also in the various types of outdoor education activities they incorporated. While some SEPs contain a detailed account of the subject matter including outdoor education, in essence others only serve as a mandatory document each school is obliged to elaborate. In general, however, SEPs represent a document entrenching the competencies related to individual subjects rather than describing their content. The latter tends to be elaborated upon in each school's annual thematic plan.

Most SEPs speak of outdoor education in the introductory description of individual subjects taught – explaining in specific terms that the tuition takes place outdoors, in the countryside, at a traffic playground, employs museum tours and exhibitions, excursions, etc. More details on how outdoor education is incorporated into the subject are mostly lacking. If the method of incorporation is referenced, the specific suggestions especially have to be looked for under links to the given subject. At the lower elementary school stage this is under links to the People and Their World and People and Health educational areas and at the upper elementary school stage in the People and Nature educational area, where especially biology and geography are represented.

Another important fact in terms of outdoor education is that for a number of the expected outcomes and subject matter, it is impossible to ascertain in any accurate terms whether or not outdoor education is actually implemented (and to what extent), simply on the basis of an analysis of the SEP. The indicated activities may be executed both in the classroom and outside.

For some educational areas of the subject matter in geography and physical education, however, specific subject matters and expected outcomes which expressly have to be realised outside of school do appear in the FEP. However, the SEPs analysed often fail to specify in greater detail any form of outdoor education for this subject matter or the expected outcomes. Therefore, it can be assumed that the school implements some form of outdoor education. More details are missing for certain forms of outdoor education, especially for excursions, museum tours, etc. – where the excursion should be, what subject matter it covers, in what grade it should be undertaken, and, most importantly, what role the pupil and the teacher should play in it and what objectives it should cover. Also, the SEPs analysed do not reveal the interdisciplinarity of outdoor education. An integrated concept of outdoor education is primarily foreseen in projects (such as the Day of the Earth, Water Day, Day of the Environment, Day Without Cars…), which the SEPs, unlike the schools' websites, do not mention. Many school websites (news sections, projects, teachers' materials) often show that the incorporation of outdoor education may be significantly higher than the SEP implies.

Outdoor education is often extensively represented even in subjects where this is not primarily anticipated, such as in mathematics, in order to render the subjects more practice-oriented. However, whether the pupils actually go outdoors as part of their maths classes cannot be ascertained from the SEP. Some tuition forms are also present in optional subjects (ecology seminars, etc.), the preparatory class or the school club.

More detailed information on the forms of outdoor education implemented was only obtained upon conducting interviews with teachers, which, however, revealed, as implied by the previous content analysis of the SEPs that most schools had not put in place an actual concept of outdoor education, and the SEP only provided the already established medium- to long-term forms of outdoor education.

5.5.2 COMPARING THE TEACHERS', PUPILS' AND PARENTS' VIEWS OF OUTDOOR EDUCATION

The teacher

Nine lower stage elementary school teachers and ten upper stage elementary school teachers were asked the following question: "What, in your opinion, is the biggest benefit of outdoor education for pupils?" The teachers were asked about specific categories, whether the pupils develop in terms of knowledge, skills, attitudes, interpersonal relationships or other areas. The evaluation was assessed on a scale from 1 to 5, with 1 being the lowest and 5 the highest score. Nine (out of 19) teachers rated all of the sub-categories. In other cases, they only commented on some of the categories or did not provide a score, only a verbal comment.

TABLE 21
BENEFITS OF OUTDOOR EDUCATION THROUGH TEACHERS' VIEW

	Weighted arithmetic mean		
	lower stage	upper stage	lower and upper stage
Developing pupils' knowledge	4.00	3.75	**3.89**
Developing pupils' skills	4.60	3.83	**4.21**
Developing pupils' attitudes (towards nature/region/ subject)	3.67	3.67	**3.67**
Developing pupils' interpersonal relationships (pupil–pupil, pupil–teacher...)	4.33	3.66	**3.99**
Average value of the outdoor education benefits – total	4.15	3.73	3.94

Source: interview with elementary school teachers, n = 19.

The question was evaluated (see Table 21) using weighted arithmetic mean calculated for each category out of the total number of responses for that category according to the following formula:

$$\overline{x} = \frac{x_1 n_1 + x_2 n_2 + \cdots + x_k n_k}{n_1 + n_2 + \cdots + n_k}$$

where individual values are marked as x_1, x_2 to x_k, k is the number of different value variants of each feature, and the frequencies of occurrence of the individual values (weighing) are marked as n_1, n_2 to n_k.

Lower elementary school teachers have identified the following benefits of outdoor education. In their view, pupils undergo the most significant development in the area of skills (4.60 points out of a maximum of 5.00 points), followed by interpersonal relationships (4.33 points), knowledge (4.00 points) and attitudes (3.67 points). At the upper elementary school stage teachers again assign the greatest significance to skills (3.83 points) and knowledge development (3.75), followed by developments in attitudes (3.67 points) and interpersonal relations (3.66 points).

In the last category, the teachers could add their own area of development. These included the categories of exercise (three cases) and individual cases of arousing interest, relaxation, change, and health.

A comparatively significant difference was observed in perceptions of the benefits of outdoor education in individual categories between lower and upper elementary school teachers. Lower elementary school teachers perceive the benefits of outdoor education much more intensively in all areas than upper elementary school teachers. The reason may be found in the additional parts of the conducted interviews – lower

elementary school teachers each teach an entire school day (year), and thus have much more time for implementing outdoor education – they can dedicate a whole day to it, combining schoolwork in a single integrated block. A fatal barrier at upper elementary schools appears to be the lack of time for implementing outdoor education during the school year. The rapid alternation of short teaching units only allows for conceiving short-term and medium-term forms of outdoor education, and only if many demanding conditions are met (swapping classes with a colleague, swapping break supervision with a colleague, administration of said changes, resistance from the management, clashes of opinion with parents, etc.). The frequent "lack of anchoring" of outdoor education in reporting the teachers' work amounts to a significant problem. Some teachers have confessed they face difficulties having outdoor education recognised as full-fledged lessons and have to replace the lessons spent outdoors with unpaid substitute lessons. This is massively discouraging and has a fatal impact on the advancement of outdoor education at schools. Teachers at lower elementary schools welcome the freedom of teaching, where they are their "own masters". They can organise their own teaching to meet their ideas, making flexible use of seasonal phenomena or good weather.

The pupils

Next, the views of the pupils of grades 5, 6, 8 and 9 of the model school were surveyed. The grade selection was intentional – grade 5 is the last lower elementary school grade where all teaching is conducted by a single teacher. It was the difference between grades 5 and 6 that was surveyed in the first place; in grade 6, pupils begin the upper elementary school stage and the tuition system changes, with individual subjects being taught by different teachers. The intentional grade selection was also related to the day-long outdoor education organised, referred to as "expedition", which grades 5 and 8 completed just before taking the questionnaire survey, unlike the grade 6 and 9 pupils, who did so with a delay of one year. Grade 9 was tested as it is the last year at a school characterised by strong dedication to intensive outdoor education across the entire nine-year school attendance cycle.

The first of the questions below sought to establish how pupils view outdoor education. The question was semi-closed, with four options, and allowed a free answer for the last option. There was also the option to choose more than one answer; 22 of the 61 pupils made use of this, resulting in a total of 88 answers. However, the difference in how outdoor education is viewed between the two grades is relatively large – results are presented in the figure 37.

A total of 40 pupils (45.5% of all answers) marked the option "opportunity to learn something new (working with GPS, information from the educational boards etc.)", with this option most often chosen by the grade 5 pupils (54.5%) and least often by the grade 8 pupils (33.3%). For the grade eight pupils, the outdoor education mostly

amounted to "a couple of hours I spent outside". The option was marked by 42.9% of the pupils. The eighth graders' responses significantly coincided with a portion of the teachers' statements obtained from the interviews, namely that the pupils often view outdoor education as a "tuition-free day, a trip" with no educational content. 22 pupils (25.0%) saw outdoor education as a "complement to normal tuition, where I can practise what I've learnt at school (working with maps, etc.)". In a comparison between individual classes, the sixth and ninth graders were more likely to come up with this option. A different response was provided by a total of six pupils, who mentioned the following statements: "being with friends, feeling relaxed", "a fun form of learning", "fun with friends", "more like going on a trip and learning something there", or "not stuck in school, going out instead".

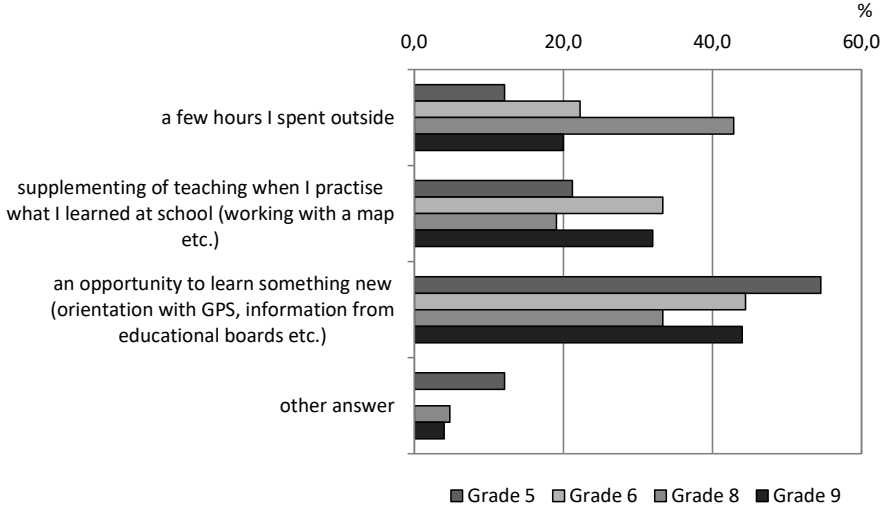

FIGURE 37. THE PERCEPTION OF OUTDOOR EDUCATION BY PUPILS OF THE GRADE 5, 6, 8 AND 9 OF THE MODEL ELEMENTARY SCHOOL.

Source: questionnaire survey with pupils.

Similarly to the teachers' attitudes, the attitudes of the grade 5, 6, 8 and 9 pupils at the model school were recorded using a 5-stage scale. Similarly to the teachers' responses, individual assessments were used to calculate the weighted arithmetic mean value (with the weighting having been specified as follows: 5 for "agree", 4 for "somewhat agree", 3 for "neither agree nor disagree", 2 for "somewhat disagree", 1 for "disagree"). For an overview of the pupils' other views of outdoor education see the summary in Table 22.

TABLE 22
ATTITUDES TO OUTDOOR EDUCATION OF PUPILS AT GRADES 5, 6, 8 AND 9 OF THE MODEL ELEMENTARY SCHOOL

	I enjoy outdoor education	Outdoor education is more interesting to me than education in the class	During the expedition, I learned more than in the class (knowledge, skills)	I would like more outdoor education during the school year
Grade 5	4.75	4.50	4.13	4.50
Grade 6	4.50	4.75	4.25	4.75
Grade 8	4.38	4.63	3.25	4.25
Grade 9	4.50	4.50	3.38	4.25
Total	4.50	4.63	3.75	4.50

Source: questionnaire survey with pupils.

Outdoor education seems to have been entertaining for all pupils of all grades, except for one pupil. The "agree" option was chosen by an overwhelming 67.2% of pupils, while 31.1% answered "somewhat agree". The weighted arithmetic mean of all pupils' answers for all grades was 4.5 out of the maximum possible value of 5.00. The highest value of the weighted arithmetic mean was calculated for grade 5, namely 4.75.

Numbers/ratios similar to those recorded for the previous question were obtained in response to the question as to whether learning outdoors, outside the classroom, is more interesting to the pupils than learning at school. Only one grade 5 pupil provided a negative answer, and another two grade 5 pupils chose the "somewhat disagree" option. The same option was chosen by one grade 9 pupil. Overall, however, the pupils' relationship to outdoor education appears to be positive – 72.1% of the pupils responded "agree", and the weighted average of all pupils' answers was 4.63.

The pupils also feel that they learn more outdoors, outside the classroom, than they learn at school. This view prevails among the grade 6 pupils (100% of the pupils chose the "agree" or "somewhat agree" option); the fifth graders subscribe to this point of view – with 73.9% indicating one of these two options. Conversely, the eighth graders who completed the outdoor education event just a few days before the survey viewed outdoor education less favourably (64.3%, the cold and windy weather may have been a factor), while for the ninth graders, who did not undergo the expedition at all before the survey, the percentage of pupils subscribing to this view was even lower (56.3%). Overall, however, the predominant view for all grades is that pupils learn more outside than in a traditional classroom setting – out of 61 of the pupils surveyed, 22 chose the "agree" option (36.1%), and 21 chose the "somewhat agree" option (34.4%). Therefore, globally speaking, 43 out of 61 pupils (70.5%) have a positive attitude towards outdoor education. The weighted arithmetic mean for all pupils of all grades was only 3.75.

When asked whether they wanted to see outdoor education included more frequently during the school year, the pupils expressed an even keener relationship to this form of teaching, despite the fact that in their answer to the question some pupils said the learning process was not more efficient than in the classroom setting. What they liked about learning outdoors was that they do not have to sit in the classroom as they do during traditional (usually frontal) lessons. Six pupils "somewhat agreed", one for each of the grades 5 and 6, and two for each of the grades 8 and 9. The answer "disagree" was not given in any case. The weighted arithmetic mean out of all responses was 4.50.

The parents

Similarly to the teachers' survey (see Table 21), the parents were asked to identify what they thought the most significant benefit of outdoor education was (see Table 23). The evaluation was again on a scale from 1 to 5 with 1 being the lowest and 5 being the highest score.

TABLE 23
BENEFITS OF OUTDOOR EDUCATION THROUGH PARENTS' VIEW

	Average
Developing pupils´ knowledge	3.93
Developing pupils´ skills	4.05
Developing pupils´ attitudes (towards nature/region/subject)	4.37
Developing pupils´ interpersonal relationships (pupil–pupil, pupil–teacher)	4.13
Average value of the outdoor education benefits – total	4.12

Source: questionnaire survey with pupils' parents of model elementary school, n = 114.

The results showed that the greatest benefit of outdoor education as perceived by the parents concerned pupil development in the area of attitudes (4.37 points), followed by the development of interpersonal relationships (4.13 points) and skills, while parents attributed the least importance (3.93 points) to pupil development in the area of knowledge. When comparing the teachers' and the parents' views of pupil development in the given areas (see Table 21 and Table 23), the parents saw a greater benefit of outdoor education in all the areas of their children's development except for skills. The parents believe that the greatest benefit of outdoor education is in the area of attitudes and interpersonal relationships. This result confirms, for example, the research by Ford (1986) in that parents consider outdoor education a type of recreation for their children rather than learning; they do not have a clear idea that outdoor education can bring specific knowledge or skills as well. Conversely,

teachers (see Table 21) see the greatest benefit of outdoor education in the area of skills, because they are aware of the fact that specific skills cannot be obtained in any other way than by illustrative teaching outdoors.

If we compare the results of the sequentially performed analyses, then the overall result is the following:

- **SEP content ≠ conception of outdoor education realised by teachers** – SEP is mostly the document where not all forms of outdoor education are specified and if they are, not in detail (why, where, how long…). Usually, only the medium- and long-term forms of outdoor education which are repeated each school year are mentioned, while the short-term forms are not ordered conceptually. SEP is often some years old and cannot reflect the actual activities realised by teachers during the school year.

- **Teacher´s view ≠ pupils´s view on outdoor education** – teachers appreciate the pupil´s skills development while pupils report that outdoor education is interesting, but from all of the assessed areas, knowledge and skills are the least important for them.

- **Teacher´s view ≠ parent´s view on outdoor education** – teachers appreciate the pupil´s skills development while the parents are most aware of the pupil´s attitudes development.

5.6 BENEFITS OF OUTDOOR EDUCATION FOR THE DEVELOPMENT OF THE PUPILS' PHYSICAL ACTIVITY

The recommended daily amount of received and spent energy naturally differs for individual children. It depends on the age and gender of the child, physical activity, health condition and the current stage of growth. Older children need more energy and children who do sports regularly have a higher need of energy. A sporting adolescent may need more energy than the parent with a sedentary job and passive leisure activities.

Table 24 (according to the Dietary Guidelines 2015–2020) specifies the amount of energy that the children should receive on average – girls and boys from 9 to 11 years of age – which corresponds to the researched grade 5 pupils, and from 13 to 14 years of age, which corresponds to the grade 8 pupils. The data from the ActiGraph accelerometer captures the expenditure for energy. However, no information on the average daily recommended energy expenditure of younger schoolchildren was found because it is based on lifestyle (see above). For the subsequent analyses, however, it is necessary to consider that the consumption of energy must be higher than the expenditure (to ensure correct development of the organs and growth of the child's body).

TABLE 24
AVERAGE ESTIMATED CALORIES NEED PER DAY, BY AGE, SEX, AND PHYSICAL ACTIVITY LEVEL FOR PUPILS OF GRADE 5 (AGE 9–11 IN THE MODEL SCHOOL) AND GRADE 8 (AGE 13–14 IN THE MODEL SCHOOL)

Grage / age	**Gender**	Sedentary [a]	Moderately active [b]	Active [c]
Grade 5 Age 9–11	Male	1667	1867	2133
	Female	1467	1733	1933
	Average	1567	1800	2033
Grade 8 Age 13–14	Male	2000	2300	2700
	Female	1700	2000	2300
	Average	1850	2150	2500

Source: Dietary Guidelines 2015–2020, own calculations.

[a] Sedentary means a lifestyle that includes only the physical activity of independent living.

[b] Moderately active means a lifestyle that includes physical activity equivalent to walking about 1.5 to 3 miles per day at 3 to 4 miles per hour, in addition to the activities of independent living.

[c] Active means a lifestyle that includes physical activity equivalent to walking more than 3 miles per day at 3 to 4 miles per hour, in addition to the activities of independent living.

In our approach to the measurement, we found inspiration in a paper by Steele, van Sluijs et al. (2009) who used the ActiGraph instrument when investigating patterns of the children's sedentary and vigorous physical activities throughout the week and Fairclough, Beighle, Erwin and Ridgers (2012), who measured the patterns of physical activity of variously active pupils during the school day.

The results of the measurements of the grade 5 pupils' physical activity by the ActiGraph device (Table 25) show that on a standard teaching day without PE (4 lessons), the average value of consumed energy is 23.806 kcal. On a teaching day with PE, the average value of consumed energy is 57.227 kcal. During outdoor education at the same time as classroom education, the average consumed energy is 189.334 kcal, i.e. three times higher than a school day with PE and eight times higher than without PE. Of course, the values of the boys and girls differed. Outdoor education can thus very significantly contribute to the pupils' consumption of energy.

TABLE 25
THE AMOUNT OF CONSUMED ENERGY (KCAL) OF GRADE 5 PUPILS DURING FOUR LESSONS OF VARIOUS TYPES OF EDUCATION

Student (sex)	Weight status (see Table 18)	Education without PE	Education with PE	Outdoor education
student 1 (M)	slim	27.117	41.711	157.456
student 2 (M)	proportional	22.965	84.447	266.275
student 3 (M)	proportional	21.045	32.856	136.660
student 4 (M)*	proportional	11.286	23.270	41.431
student 5 (M)	overweight	33.074	70.778	235.441
student 6 (F)	proportional	18.550	40.640	151.332
student 7 (F)	obese	11.100	74.025	199.620
student 8 (F)	proportional	41.116	82.842	199.511
student 9 (F)	prop./at risk	20.676	38.221	134.540
student 10 (F)	at risk	31.127	83.475	371.074
Average – male	–	*23.097*	*50.612*	*167.453*
Average – female	–	*24.514*	*63.841*	*211.215*
Average	–	*23.806*	*57.227*	*189.334*

Source: ActiGraph measurement, own calculations.

* The lower values of student 4 can be partly explained by incorrect measurement by the ActiGraph – for details see limitations of the research.

The results of the grade 8 pupils' measurements (Table 26) show in all cases a higher contribution to the daily consumption of calories than the grade 5 pupils. The differences between the classes are given mainly by different activities of the pupils during the individual types of lessons and individual biometric characteristics of the pupils in grade 5 and 8.

On a typical school day without PE, the average value of consumed energy is 53.367 kcal. On a school day with PE, the average value of consumed energy is 110.588 kcal. During outdoor education that took the same time unit (i.e. four hours) as classroom education, the average consumed energy is 277.669 kcal, i.e. 2.5 times higher than the school day with PE and 5 times higher than without PE.

TABLE 26
THE AMOUNT OF CONSUMED ENERGY (KCAL) OF GRADE 8 PUPILS DURING FOUR LESSONS OF VARIOUS TYPES OF EDUCATION

Student (sex)	Weight status (see Table 18)	Education without PE	Education with PE	Outdoor education
student 1 (F)	proportional	47.940	130.320	403.870
student 2 (F)	proportional	70.971	71.878	241.360
student 3 (F)	proportional	30.303	49.188	205.811
student 4 (F)	slim	38.882	95.946	191.747
student 5 (F)	at risk	54.337	176.880	302.487
student 6 (F)	proportional	44.347	61.424	291.894
student 7 (M)	overweight	77.686	205.830	362.866
student 8 (F)	proportional	53.025	95.306	233.740
student 9 (F)	at risk	57.785	89.396	319.096
student 10 (F)	proportional	58.389	129.710	223.820
Average – male	–	*77.686*	*205.830*	*362.866*
Average – female	–	*50.664*	*100.005*	*268.203*
Average	–	*53.367*	*110.588*	*277.669*

Source: ActiGraph measurement, own calculations.

Accelerometers have also been used to determine the amount of time that children spend in a sedentary way, again during different types of education.

It was proved that grade 5 and 8 pupils spend a school day without PE or outdoor education mostly (more than 80% of the time) in a sedentary position – see Figure 38 and 39. They spend about 20% of the time doing light or moderate physical activity, which roughly corresponds to the break periods when the pupils can move freely (in total, 40 minutes out of the measured 240 minutes). On a school day with PE, there is a higher proportion of time when the pupils have moderate physical activity – approx. 15–20%. The share of light physical activity is similar to the day without PE, i.e. approx. 10%. Compared with the school day without PE, the share of vigorous physical activity is higher (approx. 3–5%).

A day of outdoor education has a very different proportion of various types of physical activity. Although the sedentary type of activity still prevails in grade 8, in grade 5 it is different – the moderate type of activity prevails. The vigorous type of activity is represented by approx. 15% in both researched grades.

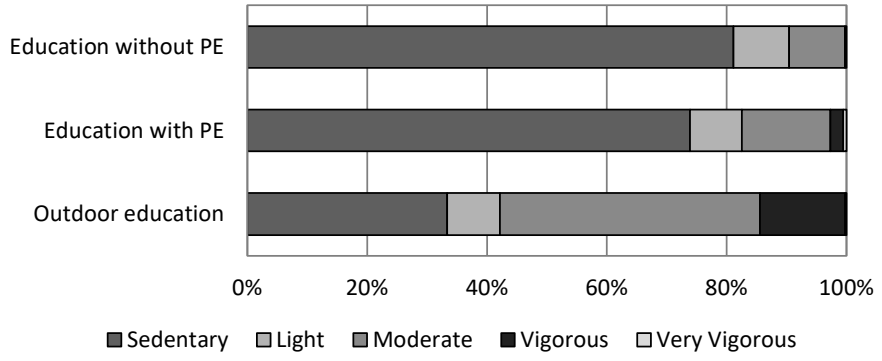

FIGURE 38. THE PORTION OF TIME SPENT ON DIFFERENT KINDS OF ACTIVITY FOR TEN PUPILS OF GRADE 5 DURING FOUR LESSONS OF VARIOUS TYPES OF EDUCATION.

Source: ActiGraph measurement, own calculations.

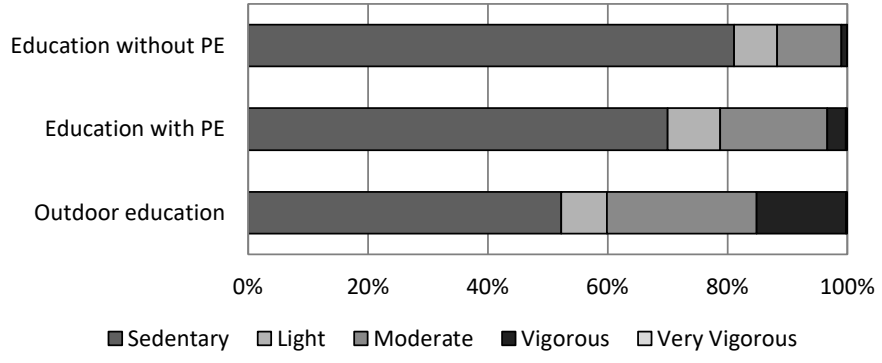

FIGURE 39. THE PORTION OF TIME SPENT ON DIFFERENT KINDS OF ACTIVITY FOR TEN PUPILS OF GRADE 8 DURING FOUR LESSONS OF VARIOUS TYPES OF EDUCATION

Source: ActiGraph measurement, own calculations

In general, the benefit of outdoor education as regards its contribution to daily processing of calories and the sedentary analysis can be evaluated as more positive than the habitual classes. If we compare one lesson of outdoor education with one lesson of PE (see table 27), then the grade 8 pupils used up 48.16 kcal on average during one PE lesson and 107.29 kcal during outdoor education; the grade 5 pupils burned up 30.79 kcal during one PE lesson and 39.10 kcal during one lesson of outdoor education. This information suggests that one lesson of outdoor education can have

a slightly higher contribution to the pupils' physical activity than a PE lesson. This can be caused by specific conditions during particular lessons. In both cases of outdoor learning, pupils had to be active (physically) during the whole session of a measured period because they had to walk, observe, measure, etc. all the time. Although during the PE lesson in grade 8 pupils played volleyball (and ran for their warm-up), there were sometimes where the physical activity was lower (e.g. when active children are performing an excellent game, while the less active ones are nearly standing still and waiting). Of course, this can vary depending on the given sport and children's attitude to sport activities.

TABLE 27
COMPARISON OF ENERGY (KCAL) USED UP BY TEN 5TH GRADE PUPILS AND TEN 8TH GRADE PUPILS DURING A LESSON OF PE AND OUTDOOR EDUCATION

Type of education	Grade 5	Grade 8
1 PE lesson – average	30.79	48.16
1 outdoor education lesson – average	39.10	107.29

Source: ActiGraph measurement, own calculations.

6 DISCUSSION

A child, more than anyone else, is a spontaneous observer of nature.

Maria Montessori

Limitations of research

Limitations of the research could be seen in three key aspects connected to the group of elementary school pupils.

The first aspect is the limited sample of elementary school pupils with whom the questionnaire survey and measurement of physical activity was undertaken during their tuition. The number of pupils for the questionnaire school was limited by the number of pupils at the model elementary school which was willing to cooperate. The physical activity measurement was limited by the number of available ActiGraph accelerometers.

The undisputed advantage of ActiGraph devices is to easily handle the devices, including their settings, before measuring and downloading data after measurement. However, a large number of inappropriately measured values can be considered a second major problem when measuring the physical activity of elementary school pupils. Despite the successful implementation of the pilot measurement with grammar school students where the proportion of ineligible values was relatively low – 18.7%, or 7.0% when taking out one pupil with 76.9% inaccurate data, there was another problem with pupils in elementary school when securing the chest straps, which were too long for pupils of grades 5 and 6. Despite their operational shortening (less than the shortest possible length), this problem is probably the cause of the lower data representativity – 75.0% of the measured data. In general, the chest strap is uncomfortable for younger children and can be replaced by more modern sensors with a wrist pulse metre. The problem in replacing older devices with new ones, however, is the very high cost of ActiGraph accelerometers.

Because of the high proportion of inaccurate data, it would be appropriate to repeat the measurement of physical activity with the same sample of pupils. However, this is not possible because it is not possible to include a similar form of outdoor

education for identical pupils in a limited period of research. That is why the available measured data were used, and the measurement can be considered another pilot measuring the pupils' physical activity during the education process in the Czech Republic. The author is aware that it will be necessary to collect more representative data for deeper analysis.

Comparison with other research

It is difficult to assess the anchoring of outdoor education in curricular documents in various education systems of different countries. An attempt to evaluate the anchoring of outdoor education in Czechia, Slovenia and Denmark was conducted by Vlček et al. (2016). Comparison with other countries has not yet been dealt with, but it is clear from a number of papers that some countries implement outdoor school education more often than in Czechia (see Becker, Humberstone, & Schirp, 2018, for Great Britain; Karppinen, 2012, for Finland; Gray & Martin, 2012, for Australia; or Chuan & Poh, 2000, for Southeast Asia) and consider it an integral and irreplaceable part of the school curriculum. The vague way of anchoring outdoor education in the Czech curriculum is also reflected in the inconsistency of its definition and understanding of the forms of outdoor education that, in addition, in Czechia, by their goals and obsessions often do not correspond to the modem concept of outdoor education (in Czechia a walk and excursion are the most commonly used forms of outdoor education whereas in foreign curricula the dominant form is inquiry-based outdoor education).

Also, some foreign authors mention the problem of the descriptiveness of fieldwork/outdoor education (Philipsen & Carbaugh, 1986). This is one of the criticised aspects of outdoor education. Cook, Phillips and Holden (2006) add that the difference between "field-work" and a "field-trip" have to be highlighted as a trip is just a passive way of learning or "academic tourism". That is also why we tried to explain the differences between different forms of outdoor education. Unfortunately, while in foreign countries this explanation went through 80s a90s of the 20th century, in the Czech Republic it is at the beginning. Meanwhile, in progressive countries, outdoor education is much further. Nowadays, it is focused on experiential outdoor education which uses all senses of pupils (Howden, 2012; Martin & Franc, 2017; Priest, 1986; Roberts, 2012).

It is clear from the above that the current Czech curriculum reform has not met with full understanding on the part of the teachers who, with the freedom the FEP gives them, cannot cope with it. They continuously build upon long-outdated concepts of (outdoor) education. For the creation of SEP, teachers were supposed to become full co-authors of the school curriculum and to work together more closely in its design, which should be reflected especially in the development of the modern concept of outdoor education.

However, it is clear from the SEP analysis that this did not happen in the case of the most studied schools. This cannot be inferred from teachers' lack of interest, but rather that teachers do not have enough time and space to create a new and progressive curriculum, including the modern concept of outdoor education, which in many countries is the result of the work of ministries, national councils, research institutes or other bodies (US, UK, Germany and others), not teachers. But not in all countries. Authors from Singapore (Chang & Ooi, 2008) argue that it is not very clear how the actual fieldwork fits into the overall geography curriculum. The place of outdoor education in the curriculum as whole or individual disciplines is discussed in many studies (Hungerford, Peyton, & Wilke, 1980; Lugg, 1998; Boyes, 2000). These studies serve as an example for the Czech curriculum.

The inclusion of outdoor education in the curriculum is based on the many positive effects of outdoor education. Some authors, however, point to the negative aspects of outdoor education or states like Hoffmann and Fetter (1975) that they did not find considerable differences in learning between fieldwork and classwork, but found that field-educated students were generally more motivated.

Some other authors are even criticising some aspects of outdoor education. All of them claim that geography outdoor education is important, on the other hand, they criticise some controversial aspects. One of the problems is a lack of confidence in the analysis of and conclusions drawn from field data. This sentiment hinges on their belief that the undisciplined procedures of fieldwork enable researchers, to a higher degree than practitioners of other methodologies, to influence the very situations they are studying, thereby flagrantly violating the canons of scientific objectivity (Shaffir & Stebbins, 2003, p. 10). Cicourel (1964, p. 39) comment this as following: "Researchers in the social sciences are faced with a unique methodological problem: the very conditions of their research constitute an important complex variable for what passes as the findings of their investigations. (...) The activities of the investigator play a crucial role in the data obtained."

We are aware that outdoor education research has many pitfalls. Therefore, we analysed 50 school educational programmes and verified the results of content analysis by opinions of teachers to eliminate obtaining inappropriate data. Then we investigated the situation at one model school, however in different grades, to check the results. The pupils at this school are influenced by the positive attitude of the school and their teachers to outdoor education. The situation at other schools with other teachers could be completely different. We hope that our research could be a valuable contribution to the discussion about the benefits of outdoor education.

A completely new attitude to the benefits of outdoor education in the Czech Republic was the measurement of the physical activity of pupils during different types of education. The theme of the development of pupils' physical activity will undoubtedly

become important in the future due to the increasing incidence of obesity. Already nowadays many authors in different disciplines, such as medicine, physical and health education, psychology, sociology or geography are interested in this topic (Hills, King, & Armstrong, 2007; Jakšić, Petrić, Štemberger, & Blažević, 2018; Kahn et al., 2002). In this respect, we see high potential in obtaining more data about Czech pupils not only to analyse the movement activity more deeply but also to promote the importance of outdoor education. Another alarming phenomenon that speaks for the promoting of outdoor education is that children currently spend very little time outdoors in general (České děti venku, 2016). Therefore, outdoor education can be a non-violent form of natural physical activity.

Recommendations for next research

A Road Map for 21st Century Geography Education (Bednarz, Heffron, & Huynh, 2013, p. 38) recommends "more research on how fieldwork relates to student learning is needed" and states that "future research should examine what conditions result in a sustainable, positive field experience that produces demonstrable inquiry and learning".

The project "Fieldwork as a powerful learning strategy" was one of the first extensive pieces of research on the implementation of outdoor education in the Czech Republic. So far, only partial studies have been produced, summed up by Činčera and Holec (2016) in their meta-analysis. Based on the study of more than 70 mainly foreign and several Czech studies, the authors summarise the impact of field lessons on student knowledge, attitudes, skills, beliefs and behaviour. In all these topics, research can continue to deepen in the Czech environment. Some initiatives have not been captured in professional literature and are more likely to be put into practice in the form of practical methodologies, interactive materials or seminars.[38]

Even the principles of carrying out outdoor education in the educational process have not yet been elaborated for the Czech educational system. As a result of the finding that teachers do not often place outdoor education conceptually (for example, without linking it to classroom lessons, with little pupil activity), a Technology Agency of the Czech Republic project entitled TJ01000127 "Fieldwork Education System for Elementary Schools" was developed as a follow-up project to the above Czech Science Foundation project. The aim of the follow-up project was to develop a proposal of outdoor education conception that would serve as a guide for teachers to prepare for outdoor education, taking into account the subjects of People and Their World and Geography, both in terms of process and content. Through the Conception, the benefits of outdoor education can be taught to teachers. Then, through outdoor

38 E.g. https://ucimesevenku.cz/, http://badatele.cz/, https://globe-czech.cz/ and others

education, the teacher can provide a pupil with a certain view of the place where they live and the attitudes of how to behave in such a place. The pupils should carry these aspects to the future life.

The preparation of teachers for outdoor education, including the preparation of future teachers during university studies, is another completely unexplored topic, except for the contribution of Svobodová and Hofmann (2018). It turns out that students often do not consider preparation for outdoor education sufficient (from the point of view of methodology, information on safety and possible topics for implementation), which can later be reflected in the unconceptual implementation of outdoor education in the school curriculum. The preparation of teachers for interdisciplinarity of outdoor education is also insufficient. Due to the growing demands of a newly-accepted curriculum that should not be firmly bound to the boundaries of subjects designed according to individual disciplines, and not limiting the development of general competencies, more attention should be paid to inter-subject links; both in terms of theory[39] and practice.

The challenge for the Czech education system is the effective setting up of further teacher education (FEPW). While studying at university, the student faces multi-layered teaching of a range of disciplines without knowing what will be useful in practice in future. During the course of the teaching practice in school, they often find out about the teaching knowledge and skills they lack. And they often lack the ability to implement useful outdoor education.

In the Czech environment, the contribution of outdoor education to the development of pupils' physical activity is also completely neglected. The outcomes of the project "Fieldwork as a powerful learning strategy" in this respect can be considered as a pilot, and it would be beneficial to continue measuring the pupils' physical activity. Given the increase in the number of obese people in the world, we can assume that this topic will become more and more relevant in the future. If pupils learn to go to the countryside regularly, they can be expected to behave sensitively in it and to enjoy staying outdoors, even in later years of their lives.

A topic for further research is the processing of video studies of outdoor education. Video studies are commonly performed in classroom lessons. However, they have not yet been implemented outdoors. They may have a deeper insight into the realisation of outdoor education, whether sensory, content or movement.

39 A number of contributions have already been published in this field, the most recent being the publication of the authors Slavík, Janík, Najvar and Knecht (2017).

Recommendations for school practice

Recommendations for school practice were presented in chapter 3. However, the recommendations are no use while teachers look for reasons why not to implement outdoor education. If they try to reason why they should do it, if they start to believe in positive contributions for their pupils and for the whole education process, only then will outdoor education become a powerful teaching and learning strategy.

Schools should, as far as possible, allow teachers to implement outdoor education in all its forms. A school ground that most schools have in a certain form is usually suitable for short-term forms of outdoor education. If the school does not own a school ground, it is possible to use nearby parks, biotopes, but also the environment of the municipality. In this way, pupils should be allowed to explore different environments. As long as pupils are outdoors, teachers will see that the often-mentioned security barrier will soon be broken down. Pupils can develop a range of skills outdoors that it is not possible to develop in class, including care for their own safety. Moreover, they will see the world around them directly and will not need to look at it through texts in the textbook.

There are many methodological materials that are ready for use for outdoor education, but as already been mentioned, outdoor education requires the courage of teachers and also parents. Parents have to give teachers full confidence when teaching outside. Outdoor education also requires the experience of the teacher gained through practice. Sometimes the teacher has to improvise in outdoor education because the landscape changes, pupils react differently than in the classroom, or an unexpected situation can happen. The whole world around us is in constant motion. Therefore, this offers many incentives for active cognitive development of pupils. Moreover, the teacher should gradually give the pupils confidence and give them the opportunity to participate in the preparation and the course of education. This will not only strengthen the skills of pupils but also increase their motivation.

Recommendations for outdoor education could be many, but the personal experience of both a teacher and a pupil are indispensable. Therefore, the main recommendation is to teach outdoors.

> *Their minds were not built to sit and be taught. They were built to explore, play and learn.*
>
> Initiative "How we learn".

CONCLUSION

Give the pupils something to do, not something to learn; and the doing is of such a nature as to demand thinking; learning naturally results.

John Dewey

At the end of the publication, let us return to the beginnings of outdoor education. As it was stated in the introduction "using the real world is the way learning has happened for 99.9% of human existence, only in the last hundred years did we put it in a little box called a classroom". Separation of school education from direct observation of natural and human processes in the landscape has made it difficult for contemporary pupils to imagine a number of processes in the landscape. Pupils are afraid to stay in the countryside, they watch TV, where they can see everything. Also, many teachers nowadays still present geography and thus outdoor education as a purely descriptive discipline rather than as a tool for cognition and a solution to problems occurring in a real environment. However, geography and its integral part – outdoor education – brings more than learning about the outdoors. Outdoor education is a crucial ingredient for pupils' development. As Scott, Fuller and Gaskin (2006, p. 170) say, outdoor education represents: "learning opportunities that cannot be replaced effectively".

"Lack of connection with nature has become a valid concern for parents, educators, health professionals and environmentalist alike" (Gray 2018, p. 146). Thus, the publications are focused on introducing the concept of outdoor education from the formal and processual side and also the experience of selected teachers, pupils and parents with outdoor education, in both positive and negative terms. In conclusion, we draw a summary of the different parts of the publication with reference to meeting the research aims.

The interviews with teachers indicated that all schools perform some form of outdoor education; less so where outdoor education is not a priority or where the teacher does not have a positive attitude to it or does not know the school surroundings. Nevertheless, it has been shown that both lower and upper elementary school teachers believe that outdoor education promotes greater development of pupils' skills and a deeper understanding of the topics at hand.

However, the SEPs, as fundamental curricular documents for each school, usually do not provide a comprehensive overview of all implemented forms of outdoor education. Usually, only the repetitive forms (the long-term forms of outdoor education), are indicated. Similarly, the SEPs usually do not include the hourly allowances of the individual forms of outdoor education in the subjects. If the teachers carry out short- or mid-term forms of outdoor education, they thematically tend to be related to the currently taught curriculum. The topics for outdoor education most frequently arise from the school surroundings – the municipality, the region. In smaller municipalities, the school is closely related to the life of the municipality.

It is easier to specify a day for outdoor education in the lower stage because a single teacher teaches all the subjects, which can mingle. In the upper stage, the teachers tend to implement medium- or long-term forms of outdoor education (trips, courses) because a short-term activity (e. g. didactic walks) presents an administrative problem (safety, parents' approval, exchange of lessons and supervisors, the need for another teacher to supervise the pupils, lesson taught in the field is not regarded as a taught lesson – a problem for the teacher) and the time – 45 minutes is usually not enough to get to the area. Another barrier for implementation of outdoor education is its preparation, which is more demanding than a standard lesson. Each activity must have its own aim and clear objective to eliminate the pupils' feeling that the outdoor education is a mere relaxation. The knowledge of the environment is also important.

In general, outdoor education requires very close cooperation of teachers but also of teachers and pupils. The interview showed that both the evaluation and feedback constituted an important component of outdoor education.

The benefits of outdoor education for pupils are hard to assess. No two outdoor education events will be completely alike, even if organised for two different classes on the same day and along the same route. Unlike classroom-based tuition, outdoor education is strongly influenced by the season of the year in which it takes place – in particular by weather, the occurrence of plants and animals, people the pupils may encounter along the way and also by the pupils and the teacher themselves.

No distinct differences may be seen between the impacts outdoor education had on the pupils who completed it just before the questionnaire survey and those who completed it approximately one year before that. The effect of outdoor education on the advancement of cartographic skills was minimal. Although the pupils worked with a map or a GPS device during the outdoor education, most of them failed to plot the route or pinpoint the highlights on the map later on. This is a reflection of the situation where the pupils had not fully absorbed these activities because they do not regularly practise them in classes (either outdoors or indoors). Most pupils maintain they learn more outdoors than in class, although the results for some of the questions do not

seem to corroborate it. Pupils find outdoor education more entertaining, especially because they do not have to stay at their desks, and also because it gives them an opportunity to learn something new (how to behave in the open, get to know plants, topography, working with a map). However, some pupils continue to view outdoor education only as time spent outside, and it is up to the teachers to change that point of view.

Where a faster or more lasting acquisition of knowledge occurs may not be objectively assessed, which often has individual implications. In any event, the teachers agreed that outdoor education contributes to greater motoric activity of pupils and that pupils may also use the experienced obtained from outdoor sessions in other subjects or life situations.

Parents observe that the children look forward to outdoor education more than towards the traditional classroom-based education, but they are unable to assess clearly the impact outdoor education has on their children. They see the benefits of outdoor education mainly in the area of attitudes and of course, increased physical activity of children.

It is not possible to judge the development of key competencies. The results show that all key competencies are developed by the outdoor education, but the teachers', pupils' and parents' views are different.

If the previous results of the research were hard to judge, the benefits of outdoor education on pupils´ physical activity are very apparent. The summary of research on the schoolchildren's physical activity indicates that the time which the pupils spend at school usually pays a very small contribution to the development of the pupils' physical activity. At a time when the physical fitness of pupils decreases from an early age in comparison with previous years, the school should also look for options of contribution to the pupils' development in this area. One of the options where the school can partially contribute to the development of physical activity is through more frequent incorporation of outdoor education in short-term (1–2 lessons), medium-term (usually one day) and long-term (two or more days outside the school) forms. During elaborated outdoor education, the pupils perform a natural non-structured activity (walking, running, cycling), simultaneously deepening their knowledge and skills without missing the curriculum.

Physical activity of pupils during outdoor education can be fully comparable with activities which the pupils perform during physical education. This education, however, has a limited time allowance. By comparison, outdoor education can be incorporated into almost all subjects and thus also develop inter-subject relations – naturally between physical education and the other subjects. Another benefit is the fact that the pupils learn in the real environment within the natural scientific subjects, which is a current trend (Adkins & Simmons, 2002; Vlček et al., 2016).

The author is aware of the limitations of the presented research, and she is also aware that conclusions cannot be generalised for the entire population. The next research aim is to gain more robust data about outdoor education to describe more properly the situation its implementation into educational process in the Czech Republic. More complicated goal is to show the teachers the way how to implement outdoor education not only into the curriculum but also in practice and real life.

RESUME

Terénní výuka je výuková forma, která je už dlouhá léta považována za velmi silnou výukovou strategii pro chápání dnešního světa. Jakkoliv se v případě terénní výuky jedná o jejím nezastupitelném místě ve vzdělávacím systému, stále se ji v některých českých školách nedaří uplatňovat. Klade totiž velké nároky, nejen na učitele a žáky, ale i na vedení školy a rodiče. Pro učitele, kteří jsou zvyklí na dominantní postavení ve vedení výuky, je terénní výuka velkou překážkou, protože je to výuka, nelze hodnotit jen za dosažené výsledky, ale je nutné hodnotit celý její průběh. Je to výuka s otevřeným koncem. Terénní výuce jako komplexu rovněž nebyla v českém prostředí věnována dostatečná pozornost v oblasti výzkumu. Tato monografie se tuto výzkumnou mezeru snažila aspoň částečně vyplnit.

Monografie si klade za úkol přiblížit terénní výuku jako silnou výukovou strategii, popsat její vztah ke školnímu kurikulu a podat učitelům pomocnou ruku k vytvoření koncepce terénní výuky. To vše je založeno na výzkumu přínosů terénní výuky pro učení a rozvoj pohybové aktivity, která je její přirozenou součástí, z pohledu žáka a zjištění postoje učitelů a rodičů k terénní výuce. Je nutné podotknout, že ačkoliv se monografie věnuje terénní výuce jako způsobu výuky, který je možné implementovat do výuky napříč všemi předměty, některé části publikace jsou zaměřeny na terénní výuku zeměpisu, který se zabývá zejména interakcí člověka a přírody.

První část publikace pojednává o terénní výuce jako o specifické strategii učení. Je analyzováno zakotvení terénní výuky v českém školním kurikulu, jsou nastíněny kroky nezbytné pro její realizaci, ať už se jedná o přípravu samotného učitele nebo žáků. Zároveň jsou popsány proměny terénní výuky a srovnán aktuální stav terénní výuky v zahraničí a v České republice včetně popisu nejčastějších forem terénní výuky uplatňovaných v současných českých školách. V závěru této části je představena modelová příprava terénní výuky. Jedná se o určitý návod, jak terénní výuku realizovat tak, aby podporovala jak řešení problémů, tak pohybovou aktivitu žáků.

Druhá část publikace je věnována výzkumu terénní výuky jako silné výukové strategie. Nejprve je popsána výzkumná potřeba a cíl výzkumu včetně použitých metod. Následně jsou detailně představeny výsledky výzkumu, který byl realizován ve spolupráci s učiteli základních škol, žáky modelové základní školy a jejich rodiči. V závěru publikace jsou uvedena konkrétní doporučení pro tvorbu koncepce terénní výuky pro základní školy.

RESOURCES

A different view. A manifesto from the Geographical Association. Sheffield: Geographical Association. Retrieved from: https://www.geography.org.uk/write/MediaUploads/Support%20and%20guidance/GA_ADVBookletFULL.pdf

Abell, S. K. (2000). International perspectives on science teacher education: An introduction. In S. K. Abell (Ed.), *Science Teacher Education* (pp. 3–6). Dordrecht: Springer.

Act No. 395/1991 Coll., on School Recovery Facilities.

Adami, M. F., & Kiger, A. (2005). The use of triangulation for completeness purposes. *Nurse Researcher (through 2013)*, *12*(4), 19.

Adkins, C., & Simmons, B. (2002). *Outdoor, experiential, and environmental education: converging or diverging approaches?* Charleston, WV: ERIC Digest.

Beames, S., Higgins, P. J., & Nicol, R. (2012). *Learning outside the classroom: Theory and guidelines for practice*. New York: Routledge.

Becker, P., Humberstone, B., & Schirp, J. (2018). (Eds.). *The changing world of outdoor learning in Europe*. Oxon and New York: Routledge.

Bednarz, S. W., Heffron, S., & Huynh, N. T. (Eds.). (2013). *A road map for 21st century geography education: Geography education research (A report from the Geography Education Research Committee of the Road Map for 21st Century Geography Education Project)*. Washington, DC: Association of American Geographers.

Bělecký, Z., & Hausenblas, O., Hučínová, L., Kabeláčová, I., Kargerová, J., Košťálová, H. … Straková, J. (2007). *Klíčové kompetence v základním vzdělávání*. Praha: Výzkumný ústav pedagogický.

Berman, D. S., & Davis-Berman, J. (2005). Positive psychology and outdoor education. *Journal of Experiential Education*, *28*(1), 17–24.

Bičík, I. (2009). Zamyšlení nad proměnami českého vzdělávání. *Geografické rozhledy*, *19*(1), 24–25.

Biddulph, M., Lambert, D., & Balderstone, D. (2015). *Learning to teach geography in the secondary school: A companion to school experience*. London: Routledge.

Biggs, J. (1999). *Teaching for quality learning at university*. Buckingham: Society for Research into Higher Education and Open University Press.

Bláha, J. D., & Hátle, J. (2014). Tvorba náčrtů a plánků ve výuce geografie. *Geografické rozhledy* *24*(4), 13–14.

Bland, K., Chambers, W., Donert, K., & Thomas, T. (1996). Fieldwork in the School. In P. Bailey & P. Fox (Eds.). *Geography teachers' handbook* (pp. 165–175). Sheffield: Geographical Association.

Bogner, F. X. (2002). The influence of a residential outdoor education programme to pupil's environmental perception. *European Journal of Psychology of Education*, *17*(1), 19–34.

Borić, E., & Škugor, A. (2014). Achieving students' competencies through research-based outdoor science teaching. *Croatian Journal of Education-Hrvatski Casopis Za Odgoj I Obrazovanje, 16*(1), 149–164.

Boss, J. A. (1999). *Outdoor education and the development of civic responsibility*. Charleston, WV: ERIC Digest.

Boyes, M. (2000). The place of outdoor education in the health and physical education curriculum. *New Zealand Physical Educator, 33*(2), 75.

Bransford, J. D., Brown, A., & Cocking, R. (1999). *How people learn: Mind, brain, experience, and school.* Washington, DC: National Research Council.

Brookes, A. (2002). Lost in the Australian bush: Outdoor education as curriculum. *Journal of Curriculum Studies*, *34*(4), 405–425.

Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, *18*(1), 32–42.

Brown, K. M. (2014). Spaces of play, spaces of responsibility: Creating dichotomous geographies of outdoor citizenship. *Geoforum*, *55*, 22–32.

Bruner, J. S. (1960). *The process of education*. Cambridge MA: Harvard University Press.

Cachelin, A., Paisley, K., & Blanchard, A. (2009). Using significant life experience research to inform program evaluation: A case study of The Nature Conservancy's Wings & Water wetlands education program. *Journal of Environmental Education, 40*(2), 2–14.

Carbaugh, D., & Hastings, S. O. (1992). A role for communication theory in ethnography and cultural analysis. *Communication Theory*, *2*(2), 156–165.

Caton, D. (2006). Real world learning through geographical fieldwork. In D. Balderstone (Ed.). *Secondary Geography Handbook* (pp. 60–71). Sheffield: Geographical Association.

Cicourel, A. V. (1964). *Method and measurement in sociology*. New York: Free Press.

Cook, V. A., Phillips, D., & Holden, J. (2006). Geography fieldwork in a 'risk society'. *Area, 38*(4), 413–420.

Creswell, J. W., & Clark, V. L. P. (2011). *Designing and conducting mixed methods research*. Los Angeles: SAGE.

Crompton, J. L., & Sellar, C. (1981). Do outdoor education experiences contribute to positive development in the affective domain? *The Journal of Environmental Education*, *12*(4), 21–29.

CTGV (The Cognition and Technology Group at Vanderbilt). (1990). Anchored instruction and its relationship to situated cognition. *Educational Researcher, 19*(6), 2–10.

Czesaná, V., Matoušková, Z., Havlíčková, V., Šímová, Z., Kofroňová, O., Lapáček, M., … Žáčková, H. (2009). *Ročenka konkurenceschopnosti České republiky 2007–2008. Analýza. Část – kvalita lidských zdrojů.* Praha: Národní observatoř zaměstnání a vzdělání NVF, Centrum výzkumu konkurenceschopnosti české ekonomiky.

Činčera, J., & Holec, J. (2016). Outdoor education in formal education. *Envigogika*, *11*(2), 1–19.

Dietary guidelines 2015–2020. Estimated calorie needs per day, by age, sex, and physical activity level. (n. d.). Retrieved from https://health.gov/dietaryguidelines/2015/guidelines/appendix-2/

Dillon, J., Rickinson, M., Teamey, K., Morris, M., Choi, M.Y., Sanders, D., & Benefield, P. (2006). The value of outdoor learning: Evidence from research in the UK and elsewhere. *School Science Review*, *87*(320), 107–111.

Donaldson, G. W., & Donaldson, L. E. (1958). Outdoor education a definition. *Journal of Health, Physical Education, Recreation*, *29*(5), 17–63.

Drummer, T. J., Cook, I. G., Parker, S. L., Barrett, G. A., & Hull, A. P. (2008). Promoting and assessing 'deep learning' in geography fieldwork: An evaluation of reflective field diaries. *Journal of Geography in Higher Education*, *32*(3), 459–479.

Duffin, M., Powers, A., & Tremblay, G. (2004). *Place-based education evaluation collaborative (PEEC): Report on cross-program research and other program evaluation activities 2003–2004*. Swanzey: PEER Associat. Retrieved from http://www.seer.org/pages/research/PEEC%202004.pdf

Dvořák, F. (1982). *Základy didaktiky biologie*. Brno: UJEP.

Dvořan, S. (2008). *Zeměpisné exkurze s environmentální tématikou pro 2. stupeň ZŠ*. Liberec: Technická univerzita v Liberci, Fakulta pedagogická.

Dyment, J. E., & Potter, T. G. (2015). Is outdoor education a discipline? Provocations and possibilities. *Journal of Adventure Education and Outdoor Learning*, *15*(3), 193–208.

Eastwell, P. (2009). Inquiry learning: Elements of confusion and frustration. *The American Biology Teacher*, *71*(5), 263–266.

Eaton, D. (2000). *Cognitive and affective learning in outdoor education* (doctoral dissertation). Toronto: Ontario Institute for Studies in Education of the University of Toronto.

Entwistle, N., & Ramsden, P. (1983). *Understanding student learning*. London: Croom Helm.

Fabiánková, B. (1996). *Prvouka v 1.–3. ročníku základní školy*. Brno: Paido.

Fairclough, S. J., Beighle, A., Erwin, H., & Ridgers, N. D. (2012). School day segmented physical activity patterns of high and low active children. *BMC Public Health*, *12*(1), 406.

Ford, P. (1986). *Outdoor Education: Definition and Philosophy*. Las Cruces, NM: ERIC Clearinghouse on Rural Education and Small Schools.

Fox, P., & Avramidis, E. (2003). An evaluation of an outdoor education programme for students with emotional and behavioural difficulties. *Emotional and Behavioural Difficulties*, *8*(4), 267–283.

Framework Educational Programme for Elementary Education. (2016). Praha: Ministerstvo školství mládeže a tělovýchovy.

Framework Educational Programme for Secondary General Education (Grammar Schools). (2007). Praha: Výzkumný ústav pedagogický v Praze.

Frömel, K., Novosad, J., & Svozil, Z. (1999). *Pohybová aktivita a sportovní zájmy mládeže*. Olomouc: Univerzita Palackého.

Fuller, I. A. N., Edmondson, S., France, D., Higgitt, D., & Ratinen, I. (2006). International perspectives on the effectiveness of geography fieldwork for learning. *Journal of Geography in Higher Education*, *30*(1), 89–101.

Gearon, L. (Ed.). (2014). *Learning to teach citizenship in the secondary school: A companion to school experience*. London: Routledge.

Giddens, A. (2013). *Sociologie*. Praha: Argo.

Gilbertson, K., Bates, T., McLaughlin, T., & Ewert, A. (2006). *Outdoor education: Methods and strategies*. Champaign, IL: Human Kinetics.

Google Images. (n. d). Retrieved from https://www.google.com/imghp?hl=EN

Grác, A. (1967). *Aktuální problémy přírodopisného vyučování*. Brno: Krajský pedagogický ústav.

Graham, R. W. (2005). Illustrating triangulation in mixed-methods nursing research. *Nurse Researcher*, *12*(4), 7–18.

Gray, T. (2018). Outdoor learning: Not new, just newly important. *Curriculum Perspectives*, *38*(2), 145–149.

Gray, T., & Martin, P. (2012). The role and place of outdoor education in the Australian National Curriculum. *Journal of Outdoor and Environmental Education*, *16*(1), 39.

Greasley, B., Clammer, R., McLeod, P., & Nicholls, R. (1987). *Geography today. Teachers´ resources*. London: Harper Collins Publishers.

Gruenewald, D. A. (2008). The best of both worlds: A critical pedagogy of place. *Environmental Education Research*, *14*(3), 308–324.

Hammerman, W. M. (1980). *Fifty Years of resident outdoor education, 1930–1980: Its impact on american education*. Martinsville, IND: American Camping Association.

Hardwick, S. W. (2009). Case study approach. In R. Kitchin & N. Thrift (Eds.), *International encyclopedia of human geography* (pp. 441–445). Oxford: Elsevier.

Hay, I. (2010). *Qualitative research methods in human geography*. (3rd ed.). Oxford: Oxford University Press.

Healey, M. (2005). Linking research and teaching exploring disciplinary spaces and the role of inquiry-based learning. In R. Barnett (Ed.), *Reshaping the university: New relationships between research, scholarship and teaching* (pp. 30–42). Maidenhead: McGraw-Hill/ Open University Press.

Healey, M. J., & Roberts, J. (Eds.). (2004). *Engaging students in active learning: Case studies in geography, environment and related disciplines*. Cheltenham: University of Gloucestershire.

Hendl, J. (2012). *Kvalitativní výzkum: základní teorie, metody a aplikace*. (3. vyd.). Praha: Portál.

Hill, A. (2012). Developing approaches to outdoor education that promote sustainability education. *Journal of Outdoor and Environmental Education*, *16*(1), 15.

Hill, J., & Woodland, W. (2002). An evaluation of foreign fieldwork in promoting deep learning: A preliminary investigation. *Assessment & Evaluation in Higher Education*, *27*(6), 539–555.

Hills, A. P., King, N. A., & Armstrong, T. P. (2007). The contribution of physical activity and sedentary behaviours to the growth and development of children and adolescents. *Sports Medicine*, *37*(6), 533–545.

Hindle, B. P. (1993). The 'Project': Putting student-controlled, small-group work and transferable skills at the core of a geography course. *Journal of Geography in Higher Education*, *17*(1), 11–20.

Hoelscher, D. M., Kirk, S., Ritchie, L., & Cunningham-Sabo, L. (2013). Position of the academy of nutrition and dietetics: Interventions for the prevention and treatment of pediatric overweight and obesity. *Journal of the Academy of Nutrition and Dietetics*, *113*(10), 1375–1394.

Hoffman, J. I., & Fetter Jr, C. W. (1975). Field trip modules as complete substitutes for weekly introductory geology laboratories. *Journal of Geological Education*, *23*(1), 18–19.

Hofmann, E. (2003). *Integrované terénní vyučování*. Brno: Paido.

Hofmann, E., & Korvas, P. (2008). Terénní výuka s pohybovými aktivitami. *Geographia Cassovensis, 2*(1), 47–52.

Hofmann, E., & Svobodová, H. (2013). Blending of old and new approaches in geographical education: A case study. *Problems of Education in the 21st Century*, *53*(53), 51–60.

Hofmann, E., & Svobodová, H. (2017). Case studies in geography education as a powerful way of teaching geography. In P. Karvánková, D. Popjaková, M. Vančura, & J. Mládek (Eds.), *Current topics in Czech and Central European geography education* (pp. 115–128). Heidelberg: Springer.

Hofmann, E., Korvas, P., & Poláček, P. (2009). *Multimediální učebnice pro terénní výuku*. Brno: Masarykova univerzita. Retrieved from http://is.muni.cz/do/rect/el/estud/pedf/js09/teren/web/index.html

Hofmann, E., Svobodová, H., & Knecht, P. (2017). Geography Curriculum in Czechia: Challenging Opportunities. In P. Karvánková, D. Popjaková, M. Vančura, & J. Mládek (Eds.), *Current topics in Czech and Central European geography education* (pp. 15–32). Heidelberg: Springer.

Hofmann, E., Svobodová, H., & Mísařová, D. (2016). Realizace terénní výuky očima učitelů. *Geografické informácie*, *20*(2), 111–120.

Holmes, D., & Walker, M. (2006). Planning geographical fieldwork. In D. Balderstone (Ed.), *Secondary geography handbook* (pp. 210–225). Sheffield: The Geographical Association.

Hope, M. (2009). The importance of direct experience: A philosophical defence of fieldwork in human geography. *Journal of Geography in Higher Education*, *33*(2), 169–182.

Hopkins, D. (2000). Powerful learning, powerful teaching and powerful schools. *Journal of Educational Change*, *1*(2), 135–154.

Horká, H., & Hromádka, Z. (2010). Pohybové aktivity pro zdraví v kontextu péče o životní prostředí. In E. Řehulka (Ed.), *Výchova ke zdraví: Mezinárodní zkušenosti* (pp. 265–279). Brno: Masarykova univerzita.

Horwood, B. (2002). The influence of outdoor education on curriculum integration: A case study. *The Ontario Journal of Outdoor Education, 14*(2), 6–12.

Howden, E. (2012). Outdoor experiential education: Learning through the body. *New Directions for Adult and Continuing Education, 2012*(134), 43–51.

Hublová, P. (2014). *Škola v přírodě.* Metodický portál RVP. Retrieved from http://wiki.rvp.cz/Knihovna/1.Pedagogicky_lexikon/S/%C5%Aokola_v_p%C5%99%C3%ADrod%C4%9B

Humphrey, A., Post, T., & Ellis, A. (1981). *Interdisciplinary methods: A thematic approach*. Santa Monica: Goodyear Publishing Company.

Hungerford, H., Peyton, R. B., & Wilke, R. J. (1980). Goals for curriculum development in environmental education. *The Journal of Environmental Education, 11*(3), 42–47.

Hynek, A., & Hynek, N. (2004). Geografické myšlení: Jádro současných geografií. In A. Wahla (Ed.), *Geografie a proměny poznání geografické reality* (pp. 68–77). Ostrava: Ostravská univerzita.

Chang, C. H., & Ooi, G. L. (2008). Role of fieldwork in humanities and social studies education. What the West can learn from the East. Asian Perspectives on the Psychology of Learning and Motivation. *Research in Multicultural Education and International Perspectives Series*, 7, 295–312.

Chuan, G. K., & Poh, W. P. (2000). Status of fieldwork in the geography curriculum in Southeast Asia. In R. Gerber, & G. K. Chuan (Eds.), *Fieldwork in geography: Reflections, perspectives and actions* (pp. 99–117). Dordrecht: Springer.

Inchley, J., Currie, D., Young, T., Samdal, O., Torsheim, T., Augustson, L., ... Barnekow, V. (Eds.). (2016). *Growing up unequal: Gender and socioeconomic differences in young people's health and well-being. Health Behaviour in School-aged Children (HBSC) study: International report from the 2013/2014 survey*. Copenhagen: WHO Regional Office for Europe.

Jackson, P. (2006). Thinking geographically. *Geography, 91*(3), 199–204.

Jacobs, H. H. (1989). *Interdisciplinary curriculum: Design and implementation*. Alexandria: Association for Supervision and Curriculum Development.

Jakšić, S., Petrić, V., Štemberger, V., & Blažević, I. (2018). The prevalence and differences in the physical activity level in preschool-aged children. In H. Svobodová, & P. Vlček (Eds.), *Curriculum and teaching in physical education and geography: Interdisciplinary and international perspectives* (pp. 77–83). Brno: Masaryk University.

Janko, T. (2012). *Nonverbální prvky v učebnicích zeměpisu jako nástroj didaktické transformac.* Brno: Masarykova univerzita, Pedagogická fakulta.

Jelínek, P., & Kysučan, L. (2014). *Venkov a krajina: Evropská krajina mezi venkovem a městem, mezi antikou a novověkem*. Brno: Masarykova univerzita.

Job, D. (1999). *New direction in geographical fieldwork*. Cambridge: Cambridge University Press/ Queen Mary Westfield College.

Kahn, E. B., Ramsey, L. T., Brownson, R. C., Heath, G. W., Howze, E. H., Powell, K. E., ... & Corso, P. (2002). The effectiveness of interventions to increase physical activity: A systematic review. *American Journal of Preventive Medicine*, *22*(4), 73–107.

Karkdijk, J., van der Schee, J., & Admiraal, W. (2013). Effects of teaching with mysteries on students' geographical thinking skills. *International Research in Geographical and Environmental Education*, *22*(3), 183–190.

Karppinen, S. J. (2012). Outdoor adventure education in a formal education curriculum in Finland: Action research application. *Journal of Adventure Education & Outdoor Learning*, *12*(1), 41–62.

Karvánková, P., Popjaková, D., Vančura, M., & Mládek, J. (Eds.). (2017). *Current topics in Czech and Central European geography education*. Heidelberg: Springer.

Kellert, S. R., & Wilson, E. O. (Eds.). (1995). *The biophilia hypothesis*. Washington: Island Press.

Kent, M., Gilbertson, D. D., & Hunt, C. O. (1997). Fieldwork in geography teaching: A critical review of the literature and approaches. *Journal of Geography in Higher Education*, *21*(3), 313–332.

Klein, J. T., & Newell, W. H. (1996). Advancing interdisciplinary studies. In J. G. Gaff & J. Ratcliff (and associates) (Eds.), *Handbook of the undergraduate curriculum* (pp. 393–395). San Francisco: Jossey-Bass.

Knecht, P., & Hofmann, E. (2013). K problému řazení geografického učiva ve školních vzdělávacích programech. *Informace ČGS*, *32*(2), 13–25.

Kobzová, J., Vignerová, J., Bláha, P., Krejčovský, L., & Riedlová, J. (2006). *6th nation-wide anthropological survey of children and adolescents 2001 Czech. Republic*. Praha: PřF UK v Praze.

Kolejka, J. (2008). *Návrh DSP Integrovaná přírodověda*. Brno: Masarykova univerzita.

Kolejka, J. (2014). Jak dál v geografickém vzdělávání talentované mládeže po iGEO 2013 a nejen jí. In A. Ruda (Ed.), *21. středoevropská geografická konference Výzkum a výuka v geografickém vzdělávání* (pp. 280–286). Brno: Masarykova univerzita.

Korvas, P. (2005). Intensity load and energy cost at the geographical terrain practice with sports activities. *Acta Universitatis Matthiae Belii, Physical Education and sport, 6*(6), 59–64.

Korvas, P. (2009). *Integrovaná terénní výuka s pohybovými aktivitami* (habilitation thesis). Brno: Fakulta sportovních studií Masarykovy univerzity.

Korvas, P., & Cacek, J. (2009). *Integrovaná výuka a tělesná výchova na základní škole*. Brno: Masarykova univerzita.

Kotásek, J., & Bacík, F. (Ed.). (2001). *Národní program rozvoje vzdělávání v České republice: Bílá kniha/White paper*. Praha: Ústav pro informace ve vzdělávání.

Kraft, R. J., & Sakofs, M. (Eds.) (1985). *The theory of experiential education*. Boulder, CO: Association for Experiential Education.

Kratochvíl, M., Solfronk, J., & Urbánek, P. (2002). *Základy didaktiky: Studijní texty pro distanční stadium*. Liberec: Technická univerzita.

Kujal, B. (1965). *Pedagogický slovník*. 1. vyd. sv. 2. Praha: SPN.

Kvasničák, R. (2013). Krátkodobý vplyv skúsenostného vyučovania v teréne na vedomosti žiakov o ekosystéme. *Pedagogika, 63*(2), 198–219.

Kvasničák, R., Prokop, P. & Pištová, Z. (2005). Krátkodobý vplyv skúsenostného vyučovania v teréne na vedomosti a predstavy žiakov o ekosystéme. *E-Pedagogium*, *5*(4), 28–36.

Lambert, D. & Balderstone, D. (2010). *Learning to teach geography in the secondary school*. London: Routledge.

Lambert, D. & Reiss, M. J. (2014). *The place of fieldwork in geography and science qualifications*. London: Institute of Education, University of London.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation.* Cambridge: Cambridge University Press.

Laws, K. (1989). Learning geography through fieldwork. In J. Fien, R. Gerber, & P. Wilson (Eds.). *The geography teacher's guide to the classroom* (pp. 104–117). Melbourne: Macmillan.

Lee, J. E., Stodden, D. F., & Gao, Z. (2016). Young children's energy expenditure and moderate-to-vigorous physical activity on weekdays and weekends. *Journal of Physical Activity and Health*, *13*(9), 1013–1016.

Little, H., & Wyver, S. (2008). Outdoor play: Does avoiding the risks reduce the benefits? *Australian Journal of Early Childhood*, *33*(2), 33.

Lobstein, T. J., James, W. P. T., & Cole, T. J. (2003). Increasing levels of excess weight among children in England. *International journal of obesity*, *27*(9), 1136–1138.

Lobstein, T., & Jackson-Leach, R. (2007). Child overweight and obesity in the USA: Prevalence rates according to IOTF definitions. *Pediatric Obesity*, *2*(1), 62–64.

Love, M. S. (2005). Multimodality of learning through anchored instruction. *Journal of Adolescent & Adult Literacy, 48*(4), 300–310.

Lugg, A. (1998). Directions in outdoor education curriculum. *Journal of Outdoor and Environmental Education, 4*(1), 25–32.

Lugg, A. (2007). Developing sustainability-literate citizens through outdoor learning: Possibilities for outdoor education in higher education. *Journal of adventure education & outdoor learning*, *7*(2), 97–112.

Madarasová Gecková, A. (Ed.) (2016). *Mezinárodní zpráva o zdraví a životním stylu dětí a školáků na základě výzkumu studie Health Behaviour in School-Aged Children realizované v roce 2014 Česká republika, Slovenská republika, Maďarsko, Ukrajina a Polsko*. Olomouc: Univerzita Palackého v Olomouci.

Machmutov, M. I. (1975). *Problemnoje obučenije*. Moskva: Pedagogika.

Machyček, J., Kühnlová, H., & Papík, M. (1985). *Základy didaktiky geografie*. Bratislava: SPN.

Malach, J. (2003). *Základy didaktiky*. Ostrava: Ostravská univerzita v Ostravě.

Malone, L., Palmer, A. M., & Voigt, C. L. (2002). *Mapping our world: GIS lessons for educators*. Redlands, CA: ESRI Press.

Maňák, J. (1994). *Kapitoly z metodologie pedagogiky*. Brno: Masarykova univerzita.

Mapy.cz. (n. d.). Retrieved from www.mapy.cz

Marada, M. (2006). Jak na výuku zeměpisu v terénu. *Geografické rozhledy*, *15*(3), 2–5.

Martin, A., & Franc, D. (2017). *Outdoor and experiential learning: an holistic and creative approach to programme design*. Oxon and New York: Routledge.

Martin, F. (2006). Using ICT to create better maps, Chapter 10. In D. Balderstone (Ed.), *Secondary geography handbook* (pp. 106–122). Sheffield: The Geographical Association.

Mazúrek, J. (1984). *Metóda terénnych pozorovani vo vyučovani zemepisu na základnej a strednej škole*. Martin: Osveta.

Mackenzie, B. (2003). *METS*. Retrieved from https://www.brianmac.co.uk/mets.htm

Metodika realizace environmentální výchovy v terénu. (n. d.). Ústí and Labem: UJEP. Retrieved from http://enviregion.pf.ujep.cz/exkurze/ucitele/data/metodika.pdf

Miller, I. (2001). *Didaktika odborných předmětů – VI. Aplikace vhodných forem výuky v odborných předmětech: Učební text – učitelství odborných předmětů*. Retrieved from http://miller.wz.cz/

Minaříková, E. (2011). Video v učitelském vzdělávání: vybrané zahraniční zkušenosti. In T. Janík, & E. Minaříková, et al. (Eds.), *Video v učitelském vzdělávání: teoretická východiska, aplikace,* výzkum (pp. 47–74). Brno: Paido.

Mojžíšek, L. (1959). *Exkurze v družinách mládeže*. Praha: SPN.

Mrázková, K. (2013). *Kartografické dovednosti ve výuce zeměpisu.* Brno: Masarykova univerzita, Pedagogická fakulta.

Musilová, H., Hradil, F., & Šupka, J. (1979). *Přírodověda a vlastivěda na základní škole*. Brno: UJEP.

Musilová, P. (2016). *Terénní výuka ve vybrané lokalitě*. Brno: Masarykova univerzita, Pedagogická fakulta.

Mužík, V., & Krejčí, M. (1997). *Tělesná výchova a zdraví*. Olomouc: Hanex.

Mygind, E. (2007). A comparison between children's physical activity levels at school and learning in an outdoor environment. *Journal of Adventure Education & Outdoor Learning*, *7*(2), 161–176.

České děti venku: Reprezentativní výzkum, kde a jak tráví děti svůj čas. (2016). Nadace Proměny Karla Komárka. Retrieved from http://www.nadace-promeny.cz/cz/vyzkum.html

Navrátilová, K. (1983). *Didaktika vlastivědy a přírodovědy*, 2. část. Nitra: Slovenské pedagogické nakladatelství.

NE x Oprávněné podnikání v cestovním ruchu. (n. d.) Praha: Ministry of Regional Development. Retrieved from: https://www.mmr.cz/getmedia/d45d7c51-6ec8-4b54-9d2b-5c36a6810be1/I-dil-NE-X-Opravnene-podnikani-v-cestovnim-ruch.pdf?ext=.pdf

Neill, J. (2007). *History of outdoor education*. Retrieved from http://wilderdom.com/History.html

Neill, J. (2008). *What is outdoor education? Definition (Definitions)*. Retrieved from http://www.wilderdom.com/definitions/definitions.html

Neill, J. T. (2002). *Meta-analytic research on the outcomes of outdoor education*. New Hampshire: University of New Hampshire.

Neumann, J. (2000). *Dobrodružné hry a cvičení v přírodě*. Praha: Portál.

Outdoor Education. (2015). New world encyclopedia. Retrieved from http://www.newworldencyclopedia.org/entry/Outdoor_education

Nicol, R. (2007). Outdoor education: Research topic or universal value? Part Two. *Journal Of Adventure Education And Outdoor Learning, 2*(2), 85–99.

Ofsted (Office for Standards in Education). (2011). *Geography: Learning to make a world of difference*. Retrieved from http://www.ofsted.gov.uk/resources/geography-learning-make-world-of-difference

Oláhová, J., & Nemčíková, M. (2009). Využitie exkurzie jako mimotriednej organizačnej formy na príklade navrhovaného náučného chodníka Remata. In D. Hübelová (Ed.), *Geografické aspekty středoevropského prostoru*, 1. díl. (pp. 197–203). Brno: Masarykova univerzita.

Oost, K., De Vries, B. & van der Schee, J., A. (2011). Enquiry-driven fieldwork as a rich and powerful teaching strategy – school practices in secondary geography education in the Netherlands. *International Research in Geographical and Environmental Education, 20*(4), 309–325.

Orion, N. (1993). A model for the development and implementation of field trips as an integral part of the science curriculum. *School Science and Mathematics*, *93*(6), 325–331.

Outdoor education. (n. d.). Retrieved from https://en.wikipedia.org/wiki/Outdoor_education

Papáček, M. (2010). Limity a šance zavádění badatelsky orientovaného vyučování přírodopisu a biologie v České republice. In M. Papáček (Ed.), *Didaktika biologie v České republice 2010 a badatelsky orientované vyučování (DiBi 2010)* (pp. 145–162). České Budějovice: Pedagogická fakulta Jihočeské univerzity v Českých Budějovicích.

Papík, M. (1980). Vyučovacie prostriedky zemepisu. In Turkota, J. (Ed.), *Základy všeobecnej didaktiky geografie* (p. 217). Bratislava: Slovenské pedagogické nakladatelstvo.

Petr, J. (2010). Biologická olympiáda – inspirace pro badatelsky orientované vyučování přírodopisu a jeho didaktiku. In M. Papáček (Ed.), *Didaktika biologie v České republice 2010 a badatelsky orientované vyučování (DiBi 2010)* (pp. 136–144). České Budějovice: Pedagogická fakulta Jihočeské univerzity v Českých Budějovicích.

Petty, G. (1996). *Moderní vyučování: Praktická příručka*. Praha: Portál.

Philipsen, G., & Carbaugh, D. (1986). A bibliography of fieldwork in the ethnography of communication. *Language in Society*, *15*(3), 387–397.

Podroužek, L. (2003). *Úvod do didaktiky prvouky a přírodovědy pro primární školu*. Dobrá Voda: Aleš Čeněk.

Podroužek, V. (2002). *Integrovaná výuka na základní škole v teorii a praxi*. Plzeň: Fraus.

Polley, S., & Pickett, B. (2003). The nature and scope of outdoor education in South Australia: A summary of key findings. *Australian Journal of Outdoor Education, 7*(2), 11–18.

Potter, T. G., & Dyment, J. E. (2016). Is outdoor education a discipline? Insights, gaps and future directions. *Journal of Adventure Education and Outdoor Learning*, *16*(2), 146–159.

Practical Outdoor Skills. (n. d.). Retrieved from http://www2.isu.edu/outdoor/Syllabus_PracticalSkills.html

Price, C., Cohen, D., Pribis, P. & Cerami, J. (2017). Nutrition education and body mass index in grades k-12: A systematic review. *Journal of School Health*, *87*(9), 715–720.

Priest, S. (1986). Redefining outdoor education: A matter of many relationships. *The Journal of Environmental Education*, *17*(3), 13–15.

Průcha, J. (1992). *Pedagogické teorie a výzkumy na Západě*. Praha: Karolinum.

Průcha, J., Walterová, E. & Mareš, J. (2013). *Pedagogický slovník*. Praha: Portál.

Register of schools and educational facilities. (n. d.). Praha: MŠMT. Retrieved from https://profa.uiv.cz/rejskol/

Remington, T., & Legge, M. (2017). Outdoor education in rural primary schools in New Zealand: a narrative inquiry. *Journal of Adventure Education and Outdoor Learning, 17*(1), 55–66.

Rickinson, M., Dillon, J., Teamey, K., Morris, M., Young Choi, M., Sanders, D., & Benefield, P. (2004). *A review of research outdoor learning*. London: National Foundantion for Educational Research and King´s College London.

Roberts, J. W. (2012). *Beyond learning by doing: Theoretical currents in experiential education*. New York and London: Routledge.

Řehák, B. (1965). *Vyučování bioologii na základní devítileté škole a střední všeobecně vzdělávací škole*. Praha: SPN.

Řezníčková, D. (2008). *Náměty pro geografické a environmentální vzdělávání: Výuka v krajině*. Praha: Univerzita Karlova v Praze, Přírodovědecká fakulta.

Řezníčková, D. (2015). Didaktika geografie: proměny identity oboru. In I. Stuchlíková, & T. Janík (Eds.), *Oborové didaktiky: vývoj–stav–perspektivy* (pp. 259–288). Brno: Masarykova univerzita.

Samková, L., Hošpesová, A., Roubíček, F., & Tichá, M. (2015). Badatelsky orientované vyučování matematice. *Scientia in educatione*, *6*(1), 91–122.

Scott, I., Fuller, I., & Gaskin, S. (2006). Life without fieldwork: Some lecturers' perceptions of geography and environmental science fieldwork. *Journal of Geography in Higher Education*, *30*(1), 161–171.

Shaffir, W. B., & Stebbins, R. A. (2003). Introduction to fieldwork. In M. R. Pogrebin (Ed.), *Qualitative approaches to criminal justice: Perspectives from the field* (pp. 2–16). Thousand Oaks: Sage Publications.

Schwartz-Barcott, D., Patterson, B. J., Lusardi, P., & Farmer, B. C. (2002). From practice to theory: Tightening the link via three fieldwork strategies. *Journal of Advanced Nursing*, *39*(3), 281–289.

Sigmund, E., & Sigmundová, D. (2011). *Pohybová aktivita pro podporu zdraví dětí a mládeže*. Olomouc: Univerzita Palackého v Olomouci.

Silverman, D. (2005). *Ako robiť kvalitatívny výskum: Praktická príručka*. Bratislava: Ikar.

Slavík, J., Janík, T., Najvar, P., & Knecht, P. (2017). *Transdisciplinární didaktika: O učitelském sdílení znalostí a zvyšování kvality výuky napříč obory*. Brno: Masarykova univerzita, Pedagogická fakulta.

Smith, G. A. (2007). Place-based education: Breaking through the constraining regularities of public school. *Environmental Education Research*, *13*(2), 189–207.

Smrtová, E., Zabadal, R., & Kováříková, Z. (2012). *Za Naturou na túru: Metodika terénní výuky*. Praha: Apus.

Steele, R. M., Van Sluijs, E. M., Cassidy, A., Griffin, S. J., & Ekelund, U. (2009). Targeting sedentary time or moderate-and vigorous-intensity activity: Independent relations with adiposity in a population-based sample of 10-y-old British children. *The American Journal of Clinical Nutrition*, *90*(5), 1185–1192.

Straková, J. (2013). Jak dál s kurikulární reformou. *Pedagogická orientace*, *23*(5), 734–743.

Strong, W. B., Malina, R. M., Blimkie, C. J., Daniels, S. R., Dishman, R. K., Gutin, B., ... & Rowland, T. (2005). Evidence based physical activity for school-age youth. *The Journal of Pediatrics*, *146*(6), 732–737.

Stuchlíková, I. (2010). O badatelsky orientovaném vyučování. In M. Papáček (Ed.), *Didaktika biologie v České republice 2010 a badatelsky orientované vyučování (DiBi 2010)* (pp. 129–135). České Budějovice: Pedagogická fakulta Jihočeské univerzity v Českých Budějovicích.

Svobodová, H., & Hofmann, E. (2018). Are Czech students of teacher training prepared for interdisciplinary teaching? In H. Svobodová, & P. Vlček (Eds.), *Curriculum and teaching in physical education and geography: Interdisciplinary and international perspectives* (pp. 27–38). Brno: Masaryk University.

Svobodová, H., Mísařová, D., Durna, R., Češková, T. & Hofmann, E. (2019). *Koncepce terénní výuky pro základní* školy *na příkladu námětů pro krátkodobou a střednědobou terenní výuku předmětů* Člověk a *jeho svět a Zeměpis.* Brno: Masarykova univerzita.

Svobodová, H., Durna, R., Mísařová, D., & Hofmann, E. (2019). Komparace formálního ukotvení terénní výuky ve školních vzdělávacích programech a její pojetí na modelových základních školách. *Orbis Scholae, 13*(2), 95–116.

Svobodová, H., Durna, R., Pernica, M., & Hofmann, E. (2018). *Námětovník pro terénní výuku socioekonomické geografie*. Brno: Masarykova univerzita, Elportál.

Svobodová, H., Mísařová, D., & Hofmann, E. (2016). Analýza školních vzdělávacích programů ve vztahu k terénní výuce. In A. Nováček (Ed.), *Sborník příspěvků Výroční konference České geografické společnosti Geografické myšlení jako atkuální společenská výzva* (pp. 292–302). České Budějovice: Jihočeská univerzita v Českých Budějovicích.

Škoda, J., & Doulík, P. (2011). *Psychodidaktika: Metody efektivního a smysluplného učení a vyučování*. Praha: Grada.

Štoček, M. (2011). *Rukověť střední školy školní rok 2011/2012*. Nový Bydžov: aTre.

Šupka, J., Hofmann, E., & Rux, J. (1993). *Didaktika geografie I*. Brno: Masarykova univerzita.

Švec, Š. (1995). *Základné pojmy v pedagogike a andragogike (s anglicko-slovenským slovníkom termínov s definíciami as registrom ich slovensko-anglických ekvivalentov)*. Bratislava: Iris.

ŠVP Základní školy JUDr. Mareše, Znojmo – charakteristika vzdělávacího oboru zeměpis. (unpublished manuscript). (n. d.). Znojmo: Základní školy JUDr. Mareše.

Tejeda, R., & Santamaría, I. (2010). Models in teaching: a powerfull skill. In *Proceedings of the 7th WSEAS International conference on engineering education* (pp. 77–85). Sofia: World Scientific and Engineering Academy and Society (WSEAS).

Thematic report. Analysis of school curricula for basic education for the period of 2007–2011. (2012) Prague: Czech School Inspectorate. Retrieved from http://www.csicr.cz/getattachment/81ecf1bd-9e36-4298-817a-3fc2ecc6198c

Tichý, O. (1965). *Metodika zeměpisu*. Praha: SPN.

Trávníček, M. (2007). Poslání současné školní tělesné výchovy pohledem učitelů ZŠ. In E. Řehulka (Ed.), *Přehled anotací 3. konference Škola a zdraví 21* (p. 44). Brno: MSD.

Turčová, I., Martin, A., & Neuman, J. (2005). Diversity in language: Outdoor terminology in the Czech Republic and Britain. *Journal of Adventure Education & Outdoor Learning*, *5*(2), 101–117.

Turkota, J. (1980). *Základy všeobecnej didaktiky geografie*. Bratislava: SPN.

Uhls, Y. T., Michikyan, M., Morris, J., Garcia, D., Small, G. W., Zgourou, E., & Greenfield, P. M. (2014). Five days at outdoor education camp without screens improves preteen skills with nonverbal emotion cues. *Computers in Human Behavior*, *39*, 387–392.

Veisová, E. (2009). *Možnosti a důsledky kombinace metod v sociologickém výzkumu se zřetelem na metody focus groups a internetového výzkumu* (doctoral dissertation). Praha: Fakulta sociálních věd Univerzity Karlovy, Institut sociologických studií.

Vlček, P., Resnik-Planinc, T., Svobodová, H., & Clausen, S. W. (Eds.). (2016). *Integrating physical education and geography: A case study of the Czech Republic, Slovenia and Denmark*. Brno: Masarykova univerzita.

Vystoupil, J., Šauer, M., Holešinská, A., Kunc, J., Tonev, P., & Seidenglanz, D. (2011). *Geografie cestovního ruchu České republiky*. Plzeň: Aleš Čeněk.

Wahla, A. (1973). *Didaktika zeměpisu 1. Obecná didaktika zeměpisu*. Ostrava: Pedagogická fakulta.

Wahla, A. (1983). *Terminologický a výkladový slovník didaktiky geografie*. Ostrava: Pedagogická fakulta.

Waite, S. (2009). Outdoor learning for children aged 2–11: Perceived barriers, potential solutions. In *Fourth International Outdoor Education Research Conference* (pp. 15–18). Victoria: La Trobe University.

Wareham, N. J., van Sluijs, E. M., & Ekelund, U. (2005). Physical activity and obesity prevention: A review of the current evidence. *Proceedings of the Nutrition Society*, *64*(2), 229–247.

Wilczyńska-Wołoszyn, M. M. (2003). The geographical laboratory of half a kilometre space around the school. In A. Kolwalczyk (Ed.), *Theoretical and methodological aspects of geographical space at the turn of century* (pp. 315–320). Warsaw: Warsaw University, Faculty of Geography and Regional Studies.

Yang, D., Wang, Z., Xu, D., & Deng, Z. (2014). A small-scale survey of the views and attitudes of junior high school teachers in China toward geographical fieldwork. *International Research in Geographical and Environmental Education*, *23*(3), 197–212.

Zink, R., & Boyes, M. (2006). The nature and scope of outdoor education in New Zealand schools. *Journal of Outdoor and Environmental Education*, *10*(1), 11.

LIST OF ABBREVIATIONS

BMI	Body Mass Index
BMI P	Body Mass Index percentile
Cf.	Confer (= compare opinions)
e.g.	Exempli gratia (= for example)
Ed(s).	Editor(s)
EEPA	Environmental Education and Public Awareness.
Etc.	Et citera (= and so on)
EU	European Union
FEP	Framework Educational Programme
FEP EE	Framework Educational Programme for Elementary Education
FEP PE	Framework Educational Programme for Preschool Education
FEP SGE	Framework Educational Programme for Secondary General Education (Grammar Schools)
FEP STVT	Framework Educational Programmes for Secondary Technical and Vocational Training
FEPW	Further Education of Pedagogical Workers
GIS	Geographic information system
GPS	Global Positioning System
HBSC	Health Behaviour in School-aged Children
ISCED	International Standard Classification of Education
IT	Information Technology
m a.s.l.	Meters above sea level
MET	Metabolic Equivalent
MEYS	Ministry of Education, Youth and Sports
NAS	National wide Anthropological Survey
No.	Number
PE	Physical Education
SEP	School Educational Programme
TV	Television
UK	United Kingdom
USA/US	United States of America / United States
WS	Weight status

LIST OF FIGURES

LIST OF TABLES

INDEX

M

O

P

R

S

T

U

W

Outdoor Education in Geography: A specific Educational Strategy

RNDr. Hana Svobodová, Ph.D.

Published by Masaryk University Press, Žerotínovo nám. 617/9, 601 77 Brno, CZ

English proofreading: Ailsa Marion Randall, M.A.

Cover design: Mgr. et Mgr. Jana Nedomová, Ph.D.

Typesetting: Mgr. Tereza Češková

First electronic edition, 2019

ISBN 978-80-210-9522-9

MUNI
PED

MUNI
PRESS