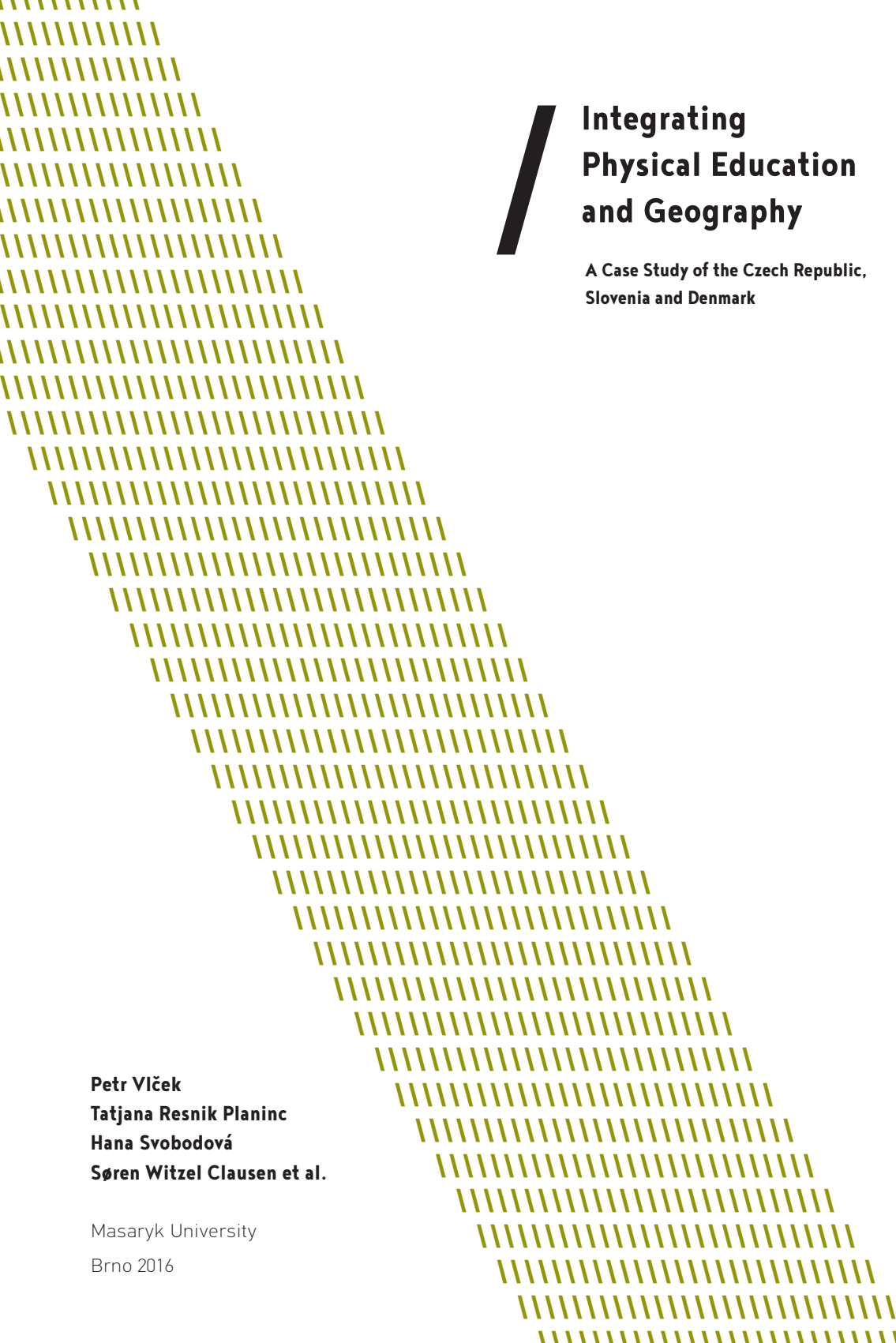




Integrating Physical Education and Geography

**A Case Study of the Czech Republic,
Slovenia and Denmark**

**Petr Viček
Tatjana Resnik Planinc
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Masaryk University
Brno 2016

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Edition: Physical Education and Health Education

Volume 2

This work was supported by a Czech Science Foundation, project 16-00695S "Fieldwork as a powerful learning strategy".

Results presented in the book are based on cooperation of C.A.L.M.A.Z. network members.



International network of Physical Education and geography

C.A.L.M.A.Z. is a network of Physical Education and Geography teachers from different European countries. The purpose of the network is to explore teaching and research issues in the subjects both separately and across curricular.

The goals of the network are:

- Theory exchange
- Didactic exchange
- Students exchange
- Teachers exchange
- Research cooperation

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ISBN 978-80-210-8519-0

ISBN 978-80-210-8518-3 (paperback)

DOI: 10.5817/CZ.MUNI.M210-8519-2016

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1 / Preface

This book is an outcome of the International Network C.A.L.M.A.Z, and examines the opportunities and reality of integration of Physical Education (PE) and Geography subject matter at the basic elementary school level. The authors are active members of the network and representatives of universities in the Czech Republic, Denmark and the Republic of Slovenia.

Interdisciplinary integration is an important didactic approach, which provides students with deeper and more lasting knowledge. This publication describes how the participating countries approach the issue of PE and Geography integration and its implementation.

After comparing contextual factors, namely the specifics of the school systems in the Czech Republic, Denmark and the Republic of Slovenia, curricular documents were analysed and compared in detail. A questionnaire survey of PE and Geography experts from each nation was carried out as well as a content analysis of selected parts of the curricula. A second questionnaire surveyed teachers in lower and higher primary classes, university experts, or other specialists regarding the reality of PE and geography integration.

The results showed that while interdisciplinary integration was often mentioned in the curricula and encouraged and most teachers believe that the integration of PE and Geography is important, the subjects have not been integrated sufficiently. The main reasons are the organisational demands of this type of teaching and a lack of knowledge on the part of the teachers. The research also showed that, from the teachers' point of view, outdoor learning is the focal point of interdisciplinary integration between geographic subject matter and PE and sport. For these reasons, the authors believe that further research and teacher training in the implementation of interdisciplinary integration is critical. Such research is one of the partial aims of the project 16-00695S "Fieldwork as a powerful learning strategy" supported by the Czech Science Foundation. That is why the results gained from the activity of the C.A.L.M.A.Z. network are used as a pilot study of the mentioned project. The results are a very good base for deeper analysis of

integration of geography and movement/PE and also the opportunity to contribute to the debate on strengthening interdisciplinary cooperation (not only of geography and PE) in schools.

In the final part of the book various examples of PE and Geography integration are presented. The examples show that, with considered planning and implementation, a range of interdisciplinary connections is possible which can lighten the teaching load, whilst interdisciplinary integration in the form of activity days and excursions can enhance the experiential aspect.

2 / Introduction – state of the art analysis

In the pedagogical and didactic fields, interdisciplinary cooperation is one of the main topics that both professionals and teacher-practitioners discuss and write about. This means that interdisciplinary cooperation is increasingly making its way into schools. Hayes Jacobs (1989) 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”. As the debates about interdisciplinary cooperation can differ in different countries according to actual settings of school curricula, the following text presents views and ideas of C.A.L.M.A.Z. members’ states—Czech, Danish and Slovene authors contributing to the discussion.

This topic is certainly not new; interdisciplinary integration has been around for a long time though it has been described using other terms and conceptual approaches. The idea of interdisciplinary integration is actually as old as teaching itself.

Interdisciplinary cooperation initiatives are aimed at transforming it from a sporadic (occasional) or random approach to a systematic or planned one, and above all, towards connecting subjects. The main purpose of the interdisciplinary approach is to overcome the fragmentation of knowledge and provide students with lasting and useful knowledge and skills. According to Cone, Werner and Cone (2009, p. 2) “*education can be seen as a process of change that continues throughout a lifetime*”. The type of learning experience we have while in school underpins how we integrate everything we learn, as well as how we transfer knowledge and skills from one experience to another. These authors also claim that the foundation of interdisciplinary education is our innate need to make meaning from discrete pieces of understanding. In 1989 Hayes Jacobs said that “*there is no longer as much discussion among educators about whether to blend the subject areas, as about when, to what degree, and how best to do it*” (Drake & Burns, 2004, p. 1–2).

Due to its many different forms, interdisciplinary integration is one of the concepts in the didactic field that has gained many conceptual labels. The scientific literature contains a number of professional terms that, on the one hand, demonstrate the diversity of the concept, while on the other hand, create a conceptual mess (Peterßen, 2000). Noteworthy terms include: learning correlation, correlation in teaching, cross-curricular correlation or correlation between school subjects, correlation or integration of learning content, cross-curricular links or integration, and interdisciplinarity. The following terms are also found: complex teaching, integrated instruction, cross-subject teaching, cross-curricular themes or links, cross-disciplinarity, transdisciplinarity, and, of course, integrative or integrated curriculum.

Recent brain studies (Mihelič, 2011) confirm what many teachers know from their own experience—students learn through integration. The more links that are created in the brain the more successful they are at learning. The brain has no separate areas for individual subjects. In fact, it is more similar to a road traffic map on which all routes are interconnected. We experience reality as a whole, not structured according to the criteria of individual disciplines. The human brain processes perceptions in parallel, rather than in sequential ways, and regulates information in a complex network with a clear hierarchy of relations. Therefore, a more authentic learning process demands more intensive and deeper links between disciplines or school subjects (Pavlič Škerjanc, 2010, p. 19).

Cromwell (1989, in Lake, 2002) examined how the brain processes and organises information. The brain organises new knowledge based on previous experience, and the means associated with that experience. It processes many inputs simultaneously, producing an integrated (holistic) experience, quickly and easily. Caine and Caine (1991, in Lake, 2002) note that the basic processes in the human brain encompass the search for meaning and pattern. The brain can even “defend” against learning fragmented data presented in an isolated manner. Learning is noticeably faster and more thorough when content is presented in a relevant context and thus has an experience component. Learning theoreticians who advocate a constructivist theory of knowledge spread and promote modern trends in integrated curricula. Several studies of the brain support the idea that knowledge is best gained when information is presented as models and patterns that are understandable and intertwined. This certainly applies to cross-curricular learning (Lake, 2002), which can help teachers create brain-compatible, learner-centred classrooms and better prepare students for

lifelong learning (Fogarty & Pete, 2009). Fogarty & Pete, (2009), for example, propose a four-pronged rationale for using an integrated curriculum, which incorporates findings from brain-based research, parental concerns, practitioner challenges, and student perspectives.

Cone, Werner and Cone (2009, p. 5) list the benefits of interdisciplinary education, arguing that: (1) it provides new ways to present and use concepts and skills; (2) it encourages critical thinking skills such as analysis, synthesis and evaluation; (3) it builds a collaborative approach to learning amongst students; (4) it motivates students, since learning is fun and meaningful; (5) it encourages teachers to collaborate, gain an understanding of other content areas, and develop collegial relationships; (6) it increases the ability to recognise and accept multiple perspectives; (7) it nurtures diverse and creative thinking; (8) it teaches students to use multiple sources to approach an issue; and (9) it demonstrates the transfer of knowledge from one learning context to another.

On the other hand, concerns about interdisciplinary approaches have been raised among some educators and parents who maintain that: (1) it might cause important content to fall by the wayside; (2) the purity of individual subject areas and their logical scope and sequence will be lost in integrated units; (3) one subject area could potentially greatly overshadow another; (4) teachers may be concerned that they do not possess adequate knowledge in another subject area; and, (5) school authorities may not offer opportunities for professional development in interdisciplinary education (Cone, Werner & Cone, 2009, p. 6–7). According to Drake (2007), many of the “gurus” of the late 1980s and early 1990s declared that integrated curriculum was dead and they shifted to areas deemed more appropriate to accountability efforts. Fortunately, the situation has since changed. When educators consider their curricular objectives and students’ needs, they may choose interdisciplinary learning to deliver part or all of the content they present.

There are many ways in which to integrate different subjects or content into a constructive holistic unit (Bunting, 2006; Korvas, 2005). Although some of the integrations might seem a bit awkward at first, the studies referred to previously show that initial misgivings should be re-examined. PE, in particular offers considerable scope for the exercise of cross-cultural and cross-sectoral links, whilst also providing higher level knowledge (i.e. understanding, independent analysis and creative knowledge) (Kovač, Starc & Jurak, 2003; Gilbert, 1992; Connor-Kurtz & Drummer, 1996; Gallahue & Donnelly, 2003; Overby,

Post & Newman, 2005; Cone, Werner & Cone, 2009). Especially during the first years of schooling, a child is at the stage of concrete logical operations and can often be helped to understand the content of other subjects by integrating it with PE (Štemberger, 2008).

Authors often analyse curricula of different subjects in terms of attainment of learning objectives (Umek, 2006; Došla, 2004), whereas others provide a conceptual framework for geographic studies of PE and sport as well as examples of PE and sports-geographic approaches. This suggests that the geography of physical activities ought to be given greater prominence in both geography and PE and sports studies (Rind & Jones, 2011; Posejpal, 2012).

Certain authors show how physical activities can be used to teach geographic concepts (Rovegno & Gregg, 2007; Pahor Bizjak, 2008), claiming that growing student interest in PE and sports provides geography teachers with a prime opportunity to make connections between physical activities and fundamental concepts in their discipline (Edgington & Hyman, 2005). However, others are convinced that despite the popularity of PE and sports, relatively few instructors use physical activity examples in their classes to get students interested in human geography topics (for example, migration, diversity) (Alberts, 2015) or, alternatively, use PE and sport as a pedagogical tool to create global-mindedness among students (Busey & Waring, 2012).

Some authors (Štemberger, 2008) stress that neither the use of movement in the classroom nor the delivery of content from other subjects during PE by itself equates to an interdisciplinary approach if teachers do not realise the learning objectives of the subjects that they are trying to link. Cross-curricular teaching is an approach where the teacher attempts to present specific content or an issue in a comprehensive way by illustrating it from different perspectives. Therefore, such work requires teachers to set well-defined goals, engage in careful planning and organisation as well as execute organisationally more demanding teaching processes (Kovač, Starc & Jurak, 2003). Teachers should integrate disciplines only when doing so allows them to teach important content more effectively (Hayes Jacobs, 1989).

There are authors who also discuss the importance of interdisciplinary approaches at the tertiary level (Samfira, Merghes & Arslan, 2015) using the close connections between PE and sports, environmental studies and geography as an example. They claim that physical activity and the environment influence each other. While engaging in outdoor physical activities has a positive

influence on health, the environment if polluted can cause respiratory illnesses and difficulty in breathing, induce stress and trigger psychological reactions to toxic chemicals. Furthermore, certain physical activities are known to directly influence the natural environment, causing air pollution, ozone layer depletion, habitat and biodiversity loss, soil erosion or waste generation from spectators or construction of facilities (Manual on Sports and the Environment, 2005). This is just one example of how the interdisciplinary approach can help foster in students a new awareness of the meaningful connections that exist between different disciplines. Moreover, since discipline-based learning is the standard teaching structure, tertiary educators have to demonstrate how to approach issues in an interdisciplinary fashion to their students, otherwise they will be unfamiliar with how to synthesise or integrate insights from a range of disciplines into a comprehensive framework of analysis (SERC Pedagogic Service Project, 2012).

To conclude, the decision to implement an interdisciplinary approach into the entire educational vertical should be based upon its fundamental aim of integrating the concepts and guiding principles from multiple disciplines, to systematically form a more complete and, hopefully, coherent framework of analysis that offers a richer understanding of the issue under examination, as described in the SERC Pedagogic Service Project (2012).

3 / Basic terminology

The term *physical movement of a human being* usually refers to the ability of people to move in space and time using muscular activity. Conscious relocation of a person in the given space and time is usually labelled by the term *physical activity*, but its definition is not consistent (see Mužík, Vlček et al., 2010). For instance, Carpensen, Powell and Christenson (1985, p. 126) regarded physical activity as “*any physical movement ensured by skeletal muscles, leading to an increase in one’s energy expenditure*”. Frömel, Novosad, & Svozil (1999, p. 131–132) define physical activity as a “*complex of human behaviour that comprises all one’s kinetic activities. It is executed by involving skeletal muscles while consuming energy*”.

These authors further divide physical activity into non-organized (spontaneous) physical activity and organized physical activity. Non-organized physical activity is described as “*free, (usually emotionally conditioned) physical activity without any supervision*”. Organized physical activity is described as intentional physical activity performed under the supervision of a teacher, trainer or an instructor. The above mentioned authors also distinguish the size of physical activity as a degree of volume and intensity of physical activities, and the level of physical activity as the degree to which individual components are represented, in short FITT (frequency, intensity, time, and type of physical activity). They also understand the term *physical inactivity* as absence of regular physical activity except common everyday activities.

The term *physical activities* (i.e. plural) is understood by other authors (e.g. Dobrý, Čechovská, Kračmar, Psotta & Süß, 2009) as a label for various types of a person’s physical activity. These types are characterised typically by both internal determinants (for example, physiological, psychical, neuromuscular coordination, requirements related to muscular fitness, intensity, etc.) and by outward form and features as performed by the locomotor system at a higher caloric consumption, i.e. with a higher energy expenditure than that of a person with resting metabolism. Physical activities are for instance walking, swimming, running, jumping, throwing, football, etc.

From the point of view of health, physical activity is an indispensable human requirement. One of basic prerequisites for maintaining one's health is consciously performed physical activity included in the locomotive regime (i.e. a set of regular physical activities) which is part of the life cycle (Teplý, 1995) or one's daily regime. As many authors point out, it is vitally important to impress on children the importance of physical activity in people's lives (see Bunc, 2008; Sekot, 2009, etc.) and its indispensability for enhancing one's health (Blahutková, Řehulka & Dvořáková, 2005). Regular physical activity prevents a range of diseases and obesity, and is a natural tool for reducing obesity (e.g. Anderson & Butcher, 2006; Miles, 2007).

Decreasing levels of physical activity and deteriorating health and fitness in children (Vrbas, 2010; Bunc, 2008) encourage the search for new ways of addressing this situation. Like some of the authors mentioned in the previous chapter, Korvas and Cacek (2009) claim that using different physical activities during lessons fosters active participation in the learning process. This in turn leads to better understanding of the curriculum, in particular by gaining experience in the practical application of knowledge and skills. Physical activity stimulates the development of motoric neural systems and can be used as a means of expression or communication. Physical activities motivate children and encourages their interest in the environment. Therefore, it is advisable to offer a new teaching approach, such as *integrated fieldwork* whereby physical activity can be implemented in various subject lessons in a natural way. Connection of physical activities with the educational content of different subjects should have a positive impact on the locomotive regime of primary schools pupils (Trávníček, 2010).

Průcha (2001) characterizes *integrated teaching* as cross-curricular teaching uniting theoretical and practical activities. Such teaching, the author says, is implemented mainly in the form of integrated subjects, modules or topics that together can form another subject, or project, that unites information with practical experience and productive activities. An example is an integration day when the whole school deals with a common theme. Podroužek sees integrated teaching as a "*synthesis of individual subjects' curricula or uniting of cognitively close educational fields with the emphasis on the complex and global nature of learning, with a range of cross-curricular relations playing their role. Thus, integrated teaching is not based on selected areas of education or subjects (i.e. on a subject's curriculum), but it arises from so-called integrated curriculum*" (Podroužek, 2002, p. 11).

Looking for ways to motivate pupils is a never-ending process, which has its peculiarities in a student's relation to certain activities. As clearly follows from other chapters of this publication, schools only have about 800 lessons of physical education (i.e. less than 100 lessons per school year) to arouse children's interest in physical activities and a regular motoric regime. For this reason, traditional schools fail to teach children healthy lifestyles with a sufficient amount of physical activities. This may lead to disharmony in their further development as well as to premature development of lifestyle diseases. Therefore, it is advisable to join students' physical activity with other educational activities at school and in other subjects.

The best option is to use the natural environment to integrate teaching. While being aware of all the pros and cons, the authors believe that teaching away from the classroom not only enables integration of physical activity into lessons, but also enables environmental topics to be integrated with other subjects. This way, pupils will gain a clearer idea of the overall subject matter and will better understand the relations between individual subject fields. This can be called *integrated fieldwork education*.

According to Hofmann (2003, p. 7), “*(integrated) fieldwork is a complex teaching strategy comprising various teaching methods (experiment, laboratory activities, observation, project method, cooperation methods, methods of pedagogy of experience, etc.) and various organisational forms of teaching (walk, field exercise, excursion, thematic school trips, expeditions). Integrated fieldwork therefore appears to be a practical way of teaching in which the curricula of different subjects are connected to field physical activity (i.e. primarily outside the school building). It is the possibility of integrating curricula, especially the curricula of physical education and geography, which is the focus of our international research.*”

4 / Aim of the study

Even though many teachers, teacher educators, curriculum developers, and some politicians see interdisciplinarity as an important issue, there is a lack of knowledge and research concerning the international comparison of curricular documents and outcomes, especially when it comes to the subjects of PE and Geography.

The aim of this international study, between universities from the Czech Republic, Denmark, and the Republic of Slovenia, focuses on an analysis of the elementary school curricular documents for PE and Geography and a comparison of the outcomes of a questionnaire survey among teachers in these subjects.

A second aim of this study is to show how such interdisciplinary cooperation between the two subjects can be carried out, using examples from the three countries involved.

5 / Research methodology

Our lives are full of comparisons. Children want to compare their results at school; they like to show themselves to be, and to be seen as, stronger, faster or more skilful than others in the playground, or in any other places they play. Also, all of us as adults compare. We compare our career, financial well-being, health (our muscles at first, our middle age spread later). As Brandel-Bredenbeck (2005) states, comparing oneself with others is a core element of identity development. We compare more or less deliberately, as comparing is a general cognitive medium of our knowledge.

Comparison is used as a legitimate scientific method and there are various disciplines, sub-disciplines and special fields of research, for example, in politics, law, literature, education etc. (Vlček, 2009, 2015). In this monograph the authors report on theoretical and methodological knowledge derived from a study of comparative education.

Comparative education is a relatively young area of study in a formal sense (compared, for example, to comparative law) although the quest for knowledge about practices and systems in education has been in evidence since the Prussian Count Leopold Berchtold included physical education and sport in a 400 page questionnaire for travellers in 1789 (Noah & Eckstein, 1969). The pioneering work of Berchtold was developed by another Frenchman, Marc Antoine Jullien, who in 1817 published a series of questions on issues in public education in European countries, including Geography and Physical Education.

According to Noah and Eckstein (1969, see also Halls, 1990) the development of comparative education has been marked by five identifiable stages, each characterized by a different motive for comparative study and each producing a different genre of work. The earliest stage, the period of travellers' tales, was promoted by simple curiosity. Second came a period of educational borrowing, when the desire to learn useful lessons from foreign practices was the major motivation. In the third stage, international education cooperation was stressed in the interests of world harmony and mutual improvement among

nations. Since the beginning of the twentieth century, two more stages have appeared, both concerned with seeking explanations for the wide variety of educational and social phenomena observed around the globe. The first of these attempted to identify the forces and factors shaping national educational systems. The second, and the latest, may be termed the stage of social science explanation, which uses the empirical methods of various social sciences, for example, economics, political science, and sociology, to clarify relationships between education and society.

Manzon (2011, p. 215) defines current comparative education as *“an interdisciplinary subfield of education studies that systematically examines the similarities and differences between educational systems in two or more national or cultural context, and their interactions with intra- and extra-educational environments. Its specific object is educational systems examined from a cross-cultural (or cross-national, cross-regional) perspective through the systematic use of the comparative method, for the advancement of theoretical understanding and theory building”*.

Using this definition, four fundamental principles of comparative research can be identified; there has to be more than one studied object, they have to be comparable, and they have to be systematically and scientifically explained in the global context. Hence, the fundamental principles of comparative research are (Vlček, 2015):

- plurality,
- comparability,
- contextuality,
- scientific approach.

These principles mean that a prerequisite for any comparative study, including the one presented here, is to establish the parameters of the units chosen for study. In general, comparative analysis can only be carried out when the units for comparison have some parameters in common, which makes analysis of their differences meaningful (Holmes, 1984). Rather than mechanical identification of similarities and differences between two or more places, attention should be paid (1) to the underlying context of these commonalities and differences (Noah & Eckstein, 1969, p. 97; Liu, 2008), and (2) to their causal relevance to the phenomenon being examined (Noah & Eckstein, 1969).

Comparative research in the social sciences is inseparable from a research strategy that is *“systematic, controlled, empirical and critical”* (Almond & Verba, 1963). Here two approaches have been distinguished. The first, the problem approach, as Bereday (1964) states, enables the researcher to survey comparative evidence in small segments. The second, the total approach, exposes the whole phenomenon to study.

The problem approach fundamentally involves the selection of one theme or topic. As Noah and Eckstein (1969, see also Holmes, 1981; Manzon, 2007) stress, without a specific topic there is no way to decide what data are relevant in the early stages of the investigation, when data gathering should cease, and what countries ought to be included in the sample. This approach has been followed in this study.

In Bereday's (1964) classic book *Comparative Method in Education*, the author introduces his four-step method of comparative analysis, consisting of description, interpretation, juxtaposition, and simultaneous comparison.

It is important to stress once again that the fundamental aspect of problem oriented comparative research is the definition of one theme or topic and one or more precisely described problems. Most important, perhaps, are the criteria by which one accepts or rejects statements about social life. The ultimate criterion is the method by which they are gathered; that it should be relatively systematic and reliable and it ought to be amenable to replication, so that some other researcher looking at the same body of material would come up with roughly the same results (Almond & Verba, 1963). All this implies that the method should be public and explicit.

This study is based on methodology that builds on comparative research in educational sciences (Noah & Eckstein, 1969; Bray & Thomas, 1995; Manzon, 2011) and in physical education and sport (Brandl-Bredenbeck, 2005; Howell, Howell, Toohey & Toohey, 1979). As regards the selection of research methods, the structure of the curriculum as described by Keeves & Adams, (1997) was taken into consideration. The main problem focused on is how PE and Geography curricula are combined in the documents of the researched countries.

The selection of the countries was, of course, motivated by their membership in the C.A.L.M.A.Z network, but also by differences between the countries (different historical and cultural traditions, state systems, economic development, language, geographical indications, etc.) and similarities—all three countries

have recently introduced changes in schooling involving a modernization of the curriculum, including PE and Geography.

The core of the study is an analysis of the curricular documents for PE and Geography and a comparison of the outcomes. The research methodology builds on the classic comparative research methodology proposed by Bereday (1964), which, as previously mentioned, comprises the following steps—understanding, juxtaposition and comparison. The data analysis in this study therefore consisted of the phases described below.

1/ Description – data collection

The research concentrated on elementary education as PE and Geography constitutes a compulsory part of the curriculum in all three countries. Since the curriculum documents differed in number and length, those sections in the documents that related directly to PE and Geography were identified.

The following documents which constituted the set of primary sources were compared:

The Czech Republic:

- Framework Educational Programme for Elementary Education (FEP EE, 2016). Retrieved from http://www.nuv.cz/uploads/RVP_ZV_2016.pdf
- Educational Standards for Elementary Education—Physical Education (Standardy pro základní vzdělávání, Tělesná výchova). Retrieved from http://clanky.rvp.cz/wp-content/upload/prilohy/17383/telesna_vychova_zdravotni_telesna_vychova.pdf
- Educational Standards for Elementary Education—Geography (Standardy pro základní vzdělávání, Zeměpis /Geografie/). Retrieved from http://clanky.rvp.cz/wp-content/upload/prilohy/17383/zemepis_geografie.pdf

Denmark:

- Danish Ministry of Education—Overarching goals and purposes of the primary and lower secondary school in Denmark (2006). Retrieved from <https://www.uvm.dk/Uddannelser/Folkeskolen/Folkeskolens-maal-love-og-regler/Om-folkeskolen-og-folkeskolen-formaal/Folkeskolens-formaal>

- Danish Ministry of Education—PE Curriculum (2014). Retrieved from <http://www.emu.dk/modul/idr%C3%A6t-f%C3%A6lles-m%C3%A5l-l%C3%A6seplan-og-vejledning>
- Danish Ministry of Education—Educational Act, §15 concerning physical activity in primary and lower secondary school (2014). Retrieved from <http://www.emu.dk/modul/lovgivning-og-rammer-4>
- Danish Ministry of Education—Geography Curriculum (2014). Retrieved from <http://www.emu.dk/modul/geografi-f%C3%A6lles-m%C3%A5l-l%C3%A6seplan-og-vejledning>
- Danish Ministry of Education—Statistics on pupils in primary schools and private schools (2015). Retrieved from <http://www.uvm.dk/Service/Statistik/Statistik-om-folkeskolen-og-frie-skoler/Statistik-om-elever-i-folkeskolen-og-frie-skoler>

The Republic of Slovenia:

- Kurikulum za vrtce, 1999. Strokovni svet RS za splošno izobraževanje, Ljubljana, 54 p. (Kindergarten curr.)
- Učni načrt Družba, 2011. Republika Slovenija, Ministrstvo za šolstvo in šport, Zavod RS za šolstvo, Ljubljana (Social Studies Curriculum/Primary School)
- Učni načrt Geografija, 2011. Republika Slovenija, Ministrstvo za šolstvo in šport, Zavod RS za šolstvo, Ljubljana (Geography Curriculum/Primary School)
- Učni načrt Spoznavanje okolja, 2011. Republika Slovenija, Ministrstvo za šolstvo in šport, Zavod RS za šolstvo, Ljubljana (Learning about the Environment Curriculum/Primary School)
- Učni načrt Športna vzgoja, 2011. Republika Slovenija, Ministrstvo za šolstvo in šport, Zavod RS za šolstvo, Ljubljana. Retrieved from http://www.mizs.gov.si/fileadmin/mizs.gov.si/pageuploads/podrocje/os/prenovljeni_UN/UN_sportna_vzgoja.pdf

In addition, the following documents were included as secondary sources:

- International Comparison of Physical Education (Pühse & Gerber, 2005) and

- The structure of the European educational systems 2014/2015 (Euridice, 2014).

Questionnaire surveys

The results of the analysis of curriculum documents were complemented with questionnaire surveys (1) of experts in PE and Geography and who are C.A.L.M.A.Z. members and (2) among teachers focused on the implementation of the curriculum. The detailed methodologies are described in Chapter 10, which deals with results. The questionnaires are also included in this chapter.

2/ Understanding (interpretation)

The goal of this phase of comparative research is to thoroughly describe the material and understand the connections to the research problem; for example, Holmes (1981, p. 61; see also Noah & Eckstein, 1969) asserts that a valuable descriptive study is prepared with a clear problem in mind, which allows for the collection of relevant data and subsequently for comparison.

As Hendl (2008, p. 223) observes, *“a qualitative analysis aims at a systematic, non-numerical data organization whose goal is to reveal topics, patterns, characteristics and relations”*. The purpose of a qualitative analysis is not to identify the distribution of a phenomenon, but to adduce convincing evidence for its existence and its particular structuring.

Hence, the analytical tools used in this research did not rely on quantification, but on creating semantic categories and their description, employing primary and secondary content analysis.

3/ Juxtaposition–coding and categories

The authors conducted an in-depth descriptive analysis of the educational systems in the three countries and of their Geography and PE curricula using codes taken from existing research (deductive coding: Richterová, 2006, Vlček & Janík, 2010) as well as new codes (inductive coding: see Švaříček & Šedová, 2007). The juxtaposition is shown in chapter 10.2.2.

The curricula were scrutinized from two points of view, namely, the formal aspects of the documents as well as their content. The texts were divided into units, which were subsequently coded.

4/ Comparison–looking for causalities

On the basis of the code categories (Švaříček & Šedlová, 2007) in which the data and categories are aggregated and synthesized, key statements were formulated. This last step involves data interpretation, comparison and suggestions for the solution of the problem. These will be presented in the closing chapters.

6 / Findings and results

In Chapters 7, 8 and 9 we present a descriptive analysis of the individual country's educational system and their PE and Geography curricula. Possible ways of combining the PE and Geography curricula in each country are also presented.

These descriptive chapters are followed by the results of the comparative analysis of the school systems, the PE and Geography curricula and PE and Geography integration.

7 / The Czech Republic

7/1 Introduction

The Czech Republic has been an independent European country since 1 January 1993. It is a landlocked country in Central Europe bordered by Germany to the west, Austria to the south, Slovakia to the southeast and Poland to the northeast. Prague, the capital and largest city, has over 1.2 million residents. The Czech Republic includes the historical territories of Bohemia, Moravia, and Silesia, and with a total area of 78 889 km² is a middle-sized European country. The Czech Republic has 10.5 million inhabitants (June 2016), which puts it in the 13th place in Europe (out of 43 countries). Density of population is 134 inhabitants per sq. kilometre.

The Czech landscape is exceedingly varied. Bohemia, to the west, consists of a basin drained by the Elbe and the Vltava rivers, surrounded by mostly low mountains, such as the Krkonoše range with the highest point in the country, Sněžka (1 603 m). Moravia, the eastern part of the country, is also quite hilly. It is drained mainly by the Morava River, but it also contains the source of the Oder River.

The Czech Republic has a temperate continental climate, with warm summers and cold, cloudy and snowy winters. The temperature difference between summer and winter is relatively high, due to the landlocked geographical position.

The president is the formal head of state, and a bicameral Parliament is the supreme legislative body of the Czech Republic. The Czech Republic is a member of NATO and the European Union. It is also part of the Visegrad Group.

7/2 The educational system of the Czech Republic

As many sources state, the history of Czech education begins in 863 with the invitation by Rastislav of Moravia to Cyril and Methodius to come to Great Moravia and serve liturgy in the Slavic language. A big step forward occurred on 7 April 1348 when Charles IV founded the first university in Central Europe. Compulsory school attendance for every child between ages 6 to 12 was introduced in 1774 by the Habsburg emperor Maria Theresa of Austria (1740–1788).

Nowadays, all types of education are found in the Czech Republic, ranging from the pre-school, primary, secondary, tertiary, postgraduate to lifelong education. Compulsory school attendance is nine years, from 6 to 15 years old, but schooling continues for many students until they turn 17. As shown in Figure 1, compulsory education takes place either in continuing (single structure) primary (elementary) schools, or in primary schools and the lower classes of secondary schools, since students can enrol in 8- or 6-year Gymnasia after either Grades 5 or 7 respectively.

Education in the Czech Republic is free, but there are some exceptions like preschools, where only the pre-elementary school year is free and parents pay for any additional years. There is also a long-standing policy discussion about paying university tuition fees. However, currently parents only pay for textbooks, basic equipment and food if their child eats in a school cafeteria. The state also pays health insurance for students up to 26 years of age (up to 28 years in case of PhD study).

The education system of the Czech Republic is divided into relatively independent educational levels corresponding to school type:

- preschools—from 2 to 5 years of age (last year mandatory),
- primary (elementary) education—from 6 to 15 years of age, mandatory,
- secondary education in professional secondary (high) schools, grammar schools, vocational schools and courses,
- tertiary education at universities.

Nursery schools (preschool) provide institutional preschool education of children aged from three until they start attending primary school, typically at the age of six. In cooperation with families, preschool education ensures all-round child-care, supplementing family upbringing as well meeting socialization needs. Attendance in a nursery school is not compulsory and does not provide any level of formal education; as stipulated by the law, it is a preschool institution, not a school.

Primary (elementary) education lasts nine years and is compulsory for all eligible children. It provides pupils with basic education and intellectual, ethical, work-related, aesthetic, and physical education, and prepares them for further studies and practice. It is divided into a two levels. Level 1, elementary school (ISCED 1), lasts five years, from Grades 1 to 5. The classes are usually lead by one teacher for all subjects (sometimes there is a second teacher for foreign language or physical education classes, etc.). Level 2, the lower secondary school (ISCED 2) lasts four years from Grades 6 to 9. A student completes this level either in a continuing (single structure) primary school or at the lower secondary level of a 6- or 8-year Gymnasium. Every subject is taught by a specialised teacher (most teachers have two specialisations).

After obligatory primary education, at the age of 15, pupils can continue in higher types of schools that vary in the number of years, type of qualification

and possibility of university studies. The upper secondary school (ISCED 3) builds on the curriculum acquired during primary education. It provides students with a wider context of general education, or vocational education combined with general education, and hence with the knowledge and skills required for a job or further studies.

Secondary schools can be divided into three basic types: gymnasium (grammar schools), secondary professional schools, and secondary vocational schools.

- **Gymnasias (grammar schools)** provide a comprehensive secondary education finished by a school-leaving (*maturita*) exam and primarily prepare their students to study at a university. The study program is four, six, or eight years long with some students completing their compulsory school years at the longer 6- and 8-year schools. These grammar schools are mostly for talented children and entrance exams are required.
- **Secondary professional schools** provide students with a comprehensive secondary, professional education finished with a school-leaving (*maturita*) exam and prepare their students for specialist and/or professional jobs or for university studies. The study program usually lasts four years. Secondary professional schools may also offer short-term programs; however, these do not have a school-leaving exam and do not allow students to study at a university.
- **Secondary vocational schools** prepare students for skilled and semi-skilled occupations and are designed for students who did not finish all nine years of their primary education or because they failed Grade 9. The study program typically lasts three years and is finished with a final school exam. Some students will attend the schools on a part time basis and also attend training centres to acquire the skills required by specific jobs. Secondary vocational schools may also offer 4-year study programs providing a complete professional education finished with a state organised school-leaving (*maturita*) exam.

Higher education (ISCED 5) in the Czech Republic consists of public, state (police and military) and private universities. Studies at public universities are unlimited and free, but students older than 26 are not entitled to the student status from social services and the state will not pay their health insurance should they continue to study. At private universities tuition fees vary between €2 000 and €3 000. For BSBA and MBA (not accredited by the Ministry of Education)

study programs tuition fees vary between €3 000 and €10 000. The prestige and quality of education and research in public and state universities is much higher than in private ones.

7/3 Introduction of the official curricula

Major educational changes took place in the Czech Republic after the social, political, and economic changes that occurred in 1989. During the 1990s there were changes to the curriculum at all educational levels and in all types of schools. Curricular projects were developed exclusively at the national level by staff at the Ministry of Education and research institutes under the responsibility of the Ministry. Unfortunately teachers and their associations were rarely asked to participate in these projects.

The outcome was the educational revisions set out by The National Programme for the Development Education in the Czech Republic (or White Paper) approved in February 2001. It aims at a policy where school curricula are developed at two levels. The centrally developed Framework Education Programmes (FEPs) define the educational objectives and content of the curricula. These centrally-drafted curricular projects are binding for all schools. They provide a foundation for the School Education Programmes (SEPs) that are set at the school level to help teachers refine and customize the objectives and content of the subjects they teach.

The FEPs specify (1) the level of key competences that students should acquire by the end of specific education levels, (2) define an obligatory content of education (expected outcomes and curriculum), and (3) integrates cross-curricular topics as an obligatory part of education. The document encourages a complex approach towards the content of education, including cross-curricular lessons or teaching, and expects the use of various teaching techniques, methods and tuition forms in accordance with students' individual needs. It is an open document, regularly updated according to the changing needs of society.

For the compulsory stage of education (Grades 1 to 9), the Framework Education Programme for Elementary Education (FEP EE) defines the binding scope of education at this level.

Six key competences are identified in the SEP EE:

- learning competence,
- problem-solving competence,
- communication competence,
- social and personal competence,
- civic competence,
- professional competence.

The educational content is divided into nine, roughly defined educational areas:

- Language and Language Communication;
- Mathematics and Its Application;
- Information and Communication Technologies;
- Man and His World;
- Man and Society;
- Man and Nature;
- Arts and Culture;
- Man and Health;
- Man and the World of Work.

These nine educational areas consist of one or more educational fields of similar educational content, for example, Man and Health includes both physical education and health education whereas Man and Nature comprises physics, chemistry, biology, natural sciences and geography.

The FEP EE describes in detail the characteristics and objectives of each educational area and its educational content (i.e. expected outcomes and the curriculum for each educational field).

The mandatory curricular documents in the FEP EE are sufficiently broad that schools have a level of autonomy with respect to planning what they will teach and how. Individual schools are obliged to develop SEPs based on the FEP for the relevant level and type of school. While preparing these documents, the school can introduce and implement, within the framework of the curricular documents, their own ideas regarding the content of lessons and how the lessons should be delivered.

The schools divide the content of each educational fields into “subjects of instruction” which are further developed, in syllabi that meet the individual needs, interests, specialisation and talents of their pupils. This ensures the development of the key competences.

The FEP EE prioritizes the exploitation of interdisciplinary links and the integration of individual subjects and facilitates the integration of the educational content at the level of themes, thematic areas, or educational fields. It is possible for schools to create one or more subjects from one educational field, or to create a subject by integrating the educational content of several different educational fields (i.e. integrated subject of instruction). However, the integration of the educational content must respect the logic of the structure of the individual educational fields—functional integration requires a qualified teacher.

A crucial part of the educational reforms in the Czech Republic is that schools have to develop these SEPs. It is mainly in this regard that teachers have criticized their implementation by the Ministry of Education, Youth and Sport (MEYS, MŠMT in Czech) for the low on ground support, weak co-ordination, excess bureaucratic demands, and for not-involving the academic community (Janík et al., 2011). This has resulted in teachers not accepting the curricular reforms. The study results of Czech pupils have declined and as a result, the Ministry of Education, Youth and Sports has decided to include educational standards for each subject into the official curricula of the FEPs.

7/4 Description of PE curricula

As stated previously, Physical Education (PE) is part of the educational area Man and Health, which also includes Health Education (FEP, 2016). The instruction in this educational area is aimed at forming and developing key competences by guiding pupils towards:

- recognising health as the most important life value;
- understanding health as a balanced state of physical, mental and social well-being and towards feeling a sense of joy from activities supported by movement, a pleasant environment and an atmosphere of positive relations;
- learning about Man as a biological individual dependent in the individual stages of their life on their own behaviour and decision making, on the quality of interpersonal relations and on the quality of the environment;
- gaining a basic orientation in opinion on what is healthy and can benefit health, as well as what endangers and harms health;
- applying the mastered preventative methods to influence their health in a daily regimen, strengthening ways of decision making and behaving in accordance with the active promotion of health in every life situation as well as familiarising themselves with and utilising places related to preventative healthcare;
- combining behaviour and activities related to health and healthy interpersonal relations with basic ethical and moral attitudes, willpower, etc.;
- understanding fitness, good physical appearance and mental well-being as important preconditions for choosing a professional path, partners, social activities, etc.;
- engaging actively in activities supporting health and in promoting activities beneficial for health at school and in the municipality.

The aim of PE as a component of the pupil's more complex education in health issues (FEP, 2016), is for the pupils to become acquainted with their abilities and interests in personal movement as well as the effects of specific movement activities on their physical fitness and mental and social well-being (FEP, 2016). PE progresses from the pupil's spontaneous movement activity to guided and selective activity, the aim being for pupils to acquire the ability to judge their individual level of physical fitness independently and to include movement into their daily routine. The result of such physical activity is: (1) the satisfaction of personal movement, needs, and interests; (2) optimal development of fitness and performance; (3) recuperation of strength and compensation for various forms of stress; and (4) the promotion of health and the protection of life. In elementary education, a prerequisite for mastering good movement skills is for

the pupil to experience movement and communication during movement—a properly mastered skill retrospectively reinforces the quality of the experience.

PE is characterised by the recognition and development of movement talents. This requires the differentiation of the pupils' activities as well as of the evaluation of their performances. It is no less important to discover the pupil's health impairments and to correct them by means of common as well as specific forms of movement education – in compulsory PE classes, or, if necessary, in optional remedial PE. For this reason, an indispensable part of physical education is corrective and special balancing exercises, used preventively, as needed, during PE for all pupils, or assigned to pupils with a physical impairment, instead of activities that are counter-indicative of their impairment.

The educational content of the PE curriculum (excluding remedial PE) is divided into three thematic areas:

- Activities affecting health.
- Activities affecting the level of physical skills.
- Activities encouraging movement learning.

Expected outcomes and subject matter for each area are clearly defined as can be seen from the example below (FEP, 2016, p. 98):

Activities affecting health:

Expected Outcomes

The pupil shall:

- participate actively in organising his/her personal movement regimen and include certain movement activities regularly and with a specific goal;
- strive to improve his/her physical fitness; select a suitable development programme from what is offered;
- prepare himself/herself before a movement activity and complete it independently in harmony with the main activity - used muscles;
- refuse drugs and other noxious substances as incompatible with sports ethics and health; adjust his/her movement activities according to data on air pollution;

- behave adequately and safely even in less familiar environments of sports grounds, nature, traffic; anticipate possible sources of injury and adapt his/her activities accordingly.

Subject Matter

- the importance of movement for health—fitness and wellness and performance sports, boys' and girls' sports;
- health-oriented fitness—development of health-oriented fitness, conditioning programmes, working with load;
- prevention and correction of unilateral load and muscular imbalance—preparatory, compensation, balancing, relaxation and other health-oriented exercises;
- hygiene and safety during movement activities—in non-standard environments, first aid during physical education and sports in various environments and under diverse weather conditions, improvised treatment of injuries and transport of the injured.

According to the FEP, a variety of activities should be used in PE classes to deliver the FEP health goals. However, the current Czech PE curriculum is not universally understood and/or accepted and there is a low congruence between the intended and implemented curriculum (Vlček & Mužík, 2012). This presents a significant problem for researchers in evaluating Czech educational reform. As mentioned previously the development of physical education standards was meant to help address the situation. However, there is no empirical evidence available on what the standards should be. Furthermore, the FEPs were not formulated with the future standards in mind; the FEP already contains outcomes in relation to attitude and behaviour as well as skills and theoretical knowledge and it is not clear how additional educational standards would align with the existing outcomes. Thus, the PE educational content of the FEP is difficult to achieve, standardise and evaluate.

7/5 Description of Geography curriculum

In elementary education, the Geography curriculum is a part of two educational areas, Man and his World and Man and Nature (FEP, 2016).

Man and his World is the only educational area in the FEP EE that is designed solely for Stage 1, (Grades 1 to 5) of elementary education (ISCED 1). This is a complex area with broad educational content concerning man, family, society, home country, nature, culture, technology, health, etc. It works with the past in mind as well as the present, and leads towards the acquisition of skills for real life through its broadly conceived, integrated content.

The condition for success in this educational area is the pupil's own experience, in actual or hypothetical situations, in acquiring the necessary skills, course of action and decision-making. The teacher's personal example also contributes significantly. The interconnectedness of this educational area with real life and practical experience greatly helps pupils cope with new life situations, including their new role as pupils where it helps them find their position among peers and reinforces their work and regimen habits.

The instruction in this educational area is aimed at forming and developing key competences by guiding the pupil towards:

- developing work habits both through simple independent work and teamwork,
- becoming familiar with the financial issues and values and responsible personal budget administration,
- becoming familiar with the world of information and interconnecting historical, geographical and cultural information in terms of place and time,
- expanding his/her vocabulary in the topics being studied, describing observed facts and capturing them in his/her own forms of expressions, opinions and creations,
- discovering and understanding differences between people, towards adopting cultivated and tolerant conduct and behaviour on the basis of jointly created and accepted or generally applied rules of coexistence, towards fulfilling duties and common tasks,

- acting independently and self-confidently, communicating effectively and in such a way as to avoid problems and conflicts even in less common situations, becoming acquainted with his/her uniqueness (potential and limits) and influencing it,
- developing a considerate attitude to nature as well as cultural products, and towards seeking ways of actively participating in their protection,
- expressing positive feelings towards himself/herself and his/her surroundings naturally,
- discovering and becoming acquainted with everything in which he/she has an interest, that he/she likes and that could be an area of future success,
- learning about the essence of health and the cause of diseases and injuries and their prevention,
- learning and reinforcing preventative behaviour, effective decision making and useful conduct in various situations where his/her health and safety as well as those of others are endangered.

The educational content of the educational area Man and His World is divided into five thematic areas:

- Place where we live;
- People around us;
- Man and time;
- Diversity of nature.
- Man and his health.

The Geography curriculum is concentrated into the first and fourth above mentioned thematic areas. In the first thematic area, Place where we live, pupils learn by becoming acquainted with their immediate surroundings, and with the relations and connections therein, as well as gaining an understanding of the organisation of family life, school life, life in the municipality and in society. They learn to participate in everyday life with their own activities and ideas, to seek new and interesting things and to be able to exist safely in this

world. Emphasis is placed on traffic education, practical learning about local and regional information and on developing the pupil's personal experience. Various activities and tasks should naturally encourage pupils to form a positive relationship with the place where they live, and gradually develop their national consciousness in relation to our country.

In the fourth thematic area, Diversity of Nature, the pupils learn about the Earth as a planet in the solar system where life was created and has been developing. They discover the great diversity and variability of both animate and inanimate nature in our country. They are guided towards realising that the Earth, and life on it, constitute a whole, where all major actions are in mutual harmony and balance, and that this can be easily disturbed by Man and restored only with difficulty. Through practical exploration of their surrounding area and by research, pupils learn to seek evidence of changes in nature, to make use of and evaluate their observations and records, and to monitor the impact of human activities on nature. They also learn how to contribute in age-appropriate ways to protecting nature, improving the environment and to creating long-term sustainable development.

The fifth thematic area, Man and His Health, offers considerable opportunity for integration with the PE curriculum. In this area, pupils are provided with information mainly about themselves as living human beings with biological and physiological functions and needs. They learn how Man develops and changes from birth to adulthood, and what is suitable and unsuitable regarding daily regimen, hygiene, diet, interpersonal relations, and so. They acquire basic information on health and disease, on wellness and first aid, and safe conduct in various real life situations, including emergencies endangering the health of individuals as well as entire groups of people. Pupils gradually realise how responsible each person is for their individual health and safety, as well as the health of others. They learn that health is the most precious value of life. They acquire the necessary knowledge and skills by observing visual aids and specific situations, and through role playing and solving hypothetical situations.

In Stage 2 (ISCED 2) of elementary education (Grades 6 to 9), the geography curriculum is defined in the educational area, Man and Nature, and includes a range of topics associated with the investigation of nature. It provides pupils with the tools and methods for a deeper understanding of natural facts and their inherent laws, thus giving them the necessary foundation for a better use

and understanding of modern technologies and helping pupils better orient themselves in everyday life.

The instruction in this educational area is aimed at forming and developing key competences by guiding the pupil towards:

- investigating natural facts and their interconnections while employing various empirical methods of cognition (observation, measurement, experiment) as well as various rational methods;
- needing to ask questions regarding the course and causes of various natural processes, to formulate these questions properly and to seek adequate answers to them;
- such thinking that requires verifying expressed hypotheses on natural facts through several independent methods; assessing the importance, reliability and correctness of collected natural-science data in order to confirm or refute previously articulated hypotheses or conclusions;
- becoming engaged in activities aimed at considerate behaviour towards natural systems, his/her health and the health of others;
- understanding the connections between human activities and the state of the natural and living environments;
- thinking and behaving in a way that prefers as efficient a use of energy resources in practice as possible, including the widest use of renewable energy resources possible, in particular solar radiation, wind, water and biomass;
- forming the skills to act appropriately when coming into contact with substances or situations which represent a potential or real threat to the life, health, property or environment of Man.

According to the FEP EE (2016), the educational fields of Man and Nature, namely Physics, Chemistry, Natural Sciences and Geography, allow pupils through activity- and research-based instruction to develop a deeper understanding of the laws governing natural processes. Thus, they become aware of the usefulness of natural-science knowledge and its application in everyday life.

What is especially significant is that pupils, in studying nature through a range of specific learning methods, master important skills. These include the following: to observe, experiment and measure systematically, objectively and reliably; to

form and verify hypotheses regarding the nature of observed natural phenomena; to analyse the results of this verification; and to draw conclusions from them. Thus, pupils learn how: to investigate the causes of natural processes and the connections or relations between them; to ask questions (How? Why? What would happen if?) and to seek answers; to explain the observed phenomena; to seek and solve cognitive or practical problems, and; to use their knowledge of the laws governing natural processes to be able to predict or influence them.

The educational content of Man and Nature at this level (Grades 6 to 9) is divided into seven thematic areas:

- Geographic information, data sources, cartography and topography;
- A natural image of the Earth;
- Regions of the world;
- The social and economic environment;
- Environment;
- The Czech Republic;
- Field geographic education, practice and application.

The FEP document defines expected outcomes and subject matter for each area as shown in the following from the example of Geographic information, data sources, cartography and topography (FEP, 2016, p. 75):

Geographic information, data sources, cartography and topography.

Expected outcomes

The pupil shall:

- organise and evaluate geographic information and data sources adequately from available cartographic products and studies, from graphs, diagrams, statistical and other information sources;
- use basic geographic, topographic and cartographic terminology with comprehension;
- assess geographic objects, phenomena and processes in the landscape area, their certain regularities, inherent laws and differences, their

interconnectedness and conditionality adequately, and distinguish borders (barriers) between fundamental spatial components in the landscape;

- create and utilise his/her own mental schemes and mental maps to orient himself/herself in specific regions, to perceive and assess places, objects, phenomena and processes in them spatially, and to form attitudes towards the world around.

Subject Matter

- geographic and cartographic terminology—selected widely-used geographic, topographic and cartographic terms; basic topographical formations: important points, significant linear formations, surface formations and their combinations: networks, surfaces, foci—plexi; main cartographic products: plan, map; map terminology: symbols, conventional markings, legends; statistical data and their graphic expression, tables; basic information geographic media and data sources;
- geographic cartography and topography—globe, globe scale, geographic grid, meridians and parallels, geographic coordinates, determining geographic position in the geographic grid; scale and content of plans and maps, orienting plans and maps with respect to the cardinal points; practical exercises and applications using cartographic products available in printed and electronic forms.

7/6 Possible ways to combine PE and Geography in the Czech curricula

Czech pupils have Geography and PE lessons throughout all the nine years of compulsory education. However, in higher secondary schools, while PE is always part of curricula, Geography is only taught at some secondary schools, mainly gymnasias, business schools, and travel and tourism schools. The same is true of these lessons at university. While PE lessons are part of all universities' curricula, Geography lessons are only included in the study programs of the Faculties of Education, and geographical studies are only taught at Faculties of Science. However, Geography may also be taught as part of study programs dealing with travel and tourism or with economics.

It is apparent, therefore, that the greatest opportunities for integration of the PE and Geography curricula can be found in the elementary curricula.

From the point of view of the Geography curriculum, the integration of Geography and PE can especially be found in the thematic area of Field geographic education, practice and application (from Man and Nature) and its subject matter as follows:

- field exercises in and observations of the local landscape, geographical excursions—orientation points, phenomena, aids and devices; standpoint, determining cardinal and intercardinal points, navigation using a map and an azimuth, estimating the distances and heights of objects in the field; simple panoramic sketches of the landscape, layout plans, schematic sketches of a route axis, evaluation of natural phenomena and indicators;
- preservation of life when life and health are endangered—natural disasters; measures, conduct and behaviour when a dangerous situation occurs, namely natural disasters in model situations.

For this thematic area, the FEP EE defines the following 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,
- observe fundamental rules for the safety of activity and sleeping in the open.

This thematic area, as well as the one described in the previous section (Geographic information, data sources, cartography and topography), pervade the whole geography course at the upper primary school level and provide opportunities for integration of geographic subject matter with PE.

From the perspective of the PE curriculum, opportunities for integration can primarily be found in the thematic area of Activities affecting the level of physical skills. For this thematic area, the FEP EE defines following subject matter:

- hiking and sleeping in nature—movement to the field and proper conduct in transport vehicles, walking in the field, camping, nature preservation.

Another relevant factor is the subject matter of PE: swimming, skiing, ice skating, snowboarding or other movement activities depending on the conditions of the school and the interests of their pupils. It is also reasonable to assume that the integration of physical education and geography, especially within field lessons, may further develop the content of thematic area of activities affecting health in the following ways:

- the importance of movement for health—the pupil's exercise regimen, movement length and intensity;
- preparation of the organism—pre-movement preparation, cool down after exertion, tensing and stretching exercises;
- health-oriented activities—proper body posture, proper load lifting; training, compensation, relaxation and other health-oriented activities and their practical application and development of various forms of movement speed, endurance, strength, flexibility, coordination;
- hygiene during physical education—hygiene concerning exercise activities and the exercise environment, suitable clothing and footwear for movement activities;
- safety during movement activities—organisation and safety of the exercise space, safety in changing rooms and washrooms, safe preparation and storage of gym apparatus, equipment and aids, first aid under physical-education conditions.

From the geographic point of view these activities can be used to learn orientation, description of land reliefs, assessment of tourism development or other geographical characteristics during outdoor sport activities such as skiing or running.

Further opportunities for combining PE and the Geography curricula can be found in the Cross-Curricular Subjects. Cross-curricular subjects in the FEP EE examine current problems of the contemporary world. These subjects have become a significant and indispensable part of elementary education in the Czech Republic. They represent an important formative element of elementary education, create the opportunities for individual engagement as well as cooperation between pupils, and contribute to the development of the pupil's character, primarily in the area of attitudes and values.

All the descriptions of all the cross-curricular subjects have a similar structure. First, they contain the *Characteristics of the Cross-Curricular Subject*, where the significance and position of the cross-curricular subject in elementary education are emphasised and followed by a specification of the relationship of the cross-curricular subject to the educational areas. Second, they contain the *Contribution of the Cross-Curricular Subject to the Development of the Pupil's Character* both in the area of knowledge, skills and abilities and in the area of attitudes and values.

Cross-curricular subjects are a compulsory part of elementary education. All cross-curricular subjects included in the FEP EE must be incorporated by the school in the education at both Stages 1 and 2. Not all cross-curricular subjects, however, need to be represented at each form. It is the school's responsibility to offer all the thematic areas contained in the individual cross-curricular subjects to pupils in the course of elementary education. However, the extent and manner of their implementation is determined by the school when they develop their SEPs. Cross-curricular subjects may be used as an integrated part of the educational content of a subject or in the form of independent subjects, projects, seminars, courses, etc.

The following cross-curricular subjects are included in the FEP EE:

- Moral, Character and Social Education;
- Civic Education for Democracy;
- Education towards Thinking in European and Global Contexts;
- Multicultural Education;
- Environmental Education;
- Media Education.

The most suitable subject for combining PE and Geography is in Environmental Education which often takes place outside the classroom. Fieldwork has been embedded in the curricula of the Czech Republic for more than 100 years and provides many opportunities for integration. As stated before, one of FEP's priorities is consistent exploitation of interdisciplinary links and integration of individual subjects. Fieldwork, as an inseparable part of many subjects, is a suitable teaching method that explores these interdisciplinary links and encourages cooperation between teachers of different subjects.

FEPs introduce fieldwork as early as at the lower level of primary school, especially in the educational area Man and His World, which lays down the basics of natural and social sciences and recommends the use of places where children go to school. There are, for example, topics connected to outdoor orientation. The basics of natural history and geography also contain other factors such as practical observations and easy outdoor measurements, for example, monitoring weather, phonological observations, etc. Students learn how to keep records, for example in field diaries, sketches and herbaria. PE teachers also work with students outside the school, and there may be field exercises, such as skiing and skating. There are also opportunities for long-term fieldwork during extended outdoor camps or excursions. It is up to the teachers how they implement all these activities in the SEP.

Conclusion

In conclusion, one of the priorities of the FEPs is the rigorous use of interdisciplinary links and integration of individual subjects. Fieldwork, which is an integral part of many subjects, is a beneficial teaching method to achieve interdisciplinary links and leads to the cooperation and collaboration of teachers from different educational areas. In relation to the fieldwork, it is up to the teachers which specific activities are included in the school education program. Both short-term and long-term outdoor excursions provide opportunities for fieldwork. In the context of physical education, this includes, for example, outdoor excursions such as camping and summer and winter training courses. One could therefore conclude that the conditions for the application of fieldwork in the Czech educational curriculum are sufficient.

Fieldwork, however, is precise and its preparation is time-consuming; it is demanding both for teachers and for students. Preparation includes perfect planning, preparation of tools and methodical materials, choice of places suitable for short-term and long-term fieldwork, and identification of their geographical characteristics. Fieldwork is also financially demanding and it is important to meet the strict safety criteria set by internal school regulations, for example, first aid box, providing parents with information, and so on. On the other hand, it fosters a range of skill in students connected with practical activities in the nature, and, generally, pervades the whole primary school curriculum in the Czech Republic.

8/1 Introduction

Looking at a map of Europe, Denmark lies as a barrier between the North Sea and the Baltic, like a bridge between Germany and the rest of Scandinavia. A total area is 42 925 km², density of population 133 inhabitants per sq. kilometre. Its most characteristic feature is the 7 200 km long coastline and that no part of the country is more than 50 km from the sea. The shape of the landscape is a result of glacial deposits and postglacial processes. The Scandinavian ice shield, covering the Eastern and Central part of the country, started melting away 19 000 BP, and the ice age ended about 11 500 BP. It resulted in a pronounced moraine landscape with rolling hills up to 171 m and subglacial tunnel valleys combined with deposit of postglacial marine sediments. The Western part of the country became a flat glacio-fluvial outwash plain and along the west coast Aeolian, sand dunes developed. Today, the average height of the country is only around 35 m.

Denmark is closely related to the other Nordic countries—the countries' languages are so close that we more or less understand each other's tongue. This might be explained by a common culture and ancestors, for example, the Vikings. From a recent historical viewpoint, the size of the country has decreased considerably in the last 200 years. Norway used to be part of Denmark, but became a part of Sweden in 1814. After the war against Preussen in 1864, two fifths of the remaining country was lost. Being a small country and with the general trend of globalization in both trade and culture, it makes it vital to be able to communicate and be part of the international community, for example, the European Union and the NATO. Today school children in Denmark have to learn at least English and German, as these countries are some of our most important commercial partners.

There are 5.7 million residents in Denmark (June 2016), with the capital Copenhagen having 0.6 million citizens and 1.3 million if the surrounding suburbs are included. Demographically, the general trend is urbanization with many young people leaving the small villages and moving to the cities to get an education or find work. Another demographic trend is the falling fertility rate among Danish women, though this is compensated for by immigration of relatively young people, especially from the former Eastern European countries. As in many other European countries, Denmark is also the temporary home for many refugees—most of them coming from the Middle East and Africa.

Like the other Scandinavian countries, Denmark is characterized by a well-developed social security system resulting in free access to education, hospitals and, in case of unemployment, social welfare. This social security system was built up during the 1960s to 1990s mainly under the leadership of Labour governments. During the last 10 to 15 years, this system has come under increasing pressure. The market-based reforms of New Public Management have been implemented in the public sector by shifting Liberal and Labour governments, under the influence of increasing international competition from the employment and financial markets.

8/2 The educational system of Denmark

As previously mentioned, education in Denmark is free, both at primary, secondary and tertiary levels, the policy rationale being to release as much intellectual potential as possible by making education independent of parent income. This is seen as being of vital importance to a small nation with a limited number of citizens. It is also aimed at achieving social mobility through the educational system, although this has been of only moderate success.

The *folkeskole* (“People’s School”) in Denmark covers the entire period of compulsory education, from the age of 6 to 16, encompassing pre-school, primary (ISCED 1) and lower secondary (ISCED 2) education. At the primary and lower secondary levels, many Danish schools are organized so that a group of teachers will only teach at a specific level, although this way of organizing the teachers has only become common in the last ten years. Hence, a group of teachers will only give lessons to Grades 1 to 3, another group of teachers only to Grades 4 to 6, and the last group of teachers only to Grades 7 to 9. At Grade 0, which is the transitional class between kindergarten and primary school, most

teachers are educated as preschool teachers. Schools located in the country often only have classes up to middle school (i.e. Grade 6) and students have to go to larger schools, often placed in towns, to finish their last three years of lower secondary school (i.e. Grades 7 to 9).

The Danish government has a goal of 95% of students continuing school after the years of compulsory education to finish their secondary education, and in 2015 over 90% of the students did continue into the upper secondary educational level.

Most students go to a Gymnasium (high school), which aims to prepare students for University. Students can also go to a Trade School, where students achieve competences to get a job afterwards, as well as being able to go to University to start on some specific studies. For example, International business, Commercial law. In 2015, about 74% of all the students leaving primary school were registered to either a Gymnasium or a Trade School (Danish Ministry of Education, 2015).

At the upper secondary level, there is also a range of vocational options at Vocational Schools. These are compulsory for students who wish to be a carpenter, mechanic, social and health service assistant or something similar. The fourth option is to attend a School of Higher Preparation for students who need to take one or more specific subjects at a required level to enter the tertiary educational level. These different levels are shown in Figure 2, including sub-levels with Danish names, the corresponding ISCED 2011 levels, and the approximate age of the students.

Tertiary education comprises four degree levels: the vocational academy (1.5 years), academic or vocational Bachelor degree (3–4 years), Master's or Candidate degree (4–6 years), and PhD (8 years). In 1990 Denmark changed its tertiary educational system and adopted the Anglo-Saxon model, making it possible to achieve a Bachelor, Master's and PhD degree. Before 1990 it was only possible to achieve a Candidate degree, and after that a Licentiate degree, which was equivalent of a PhD.

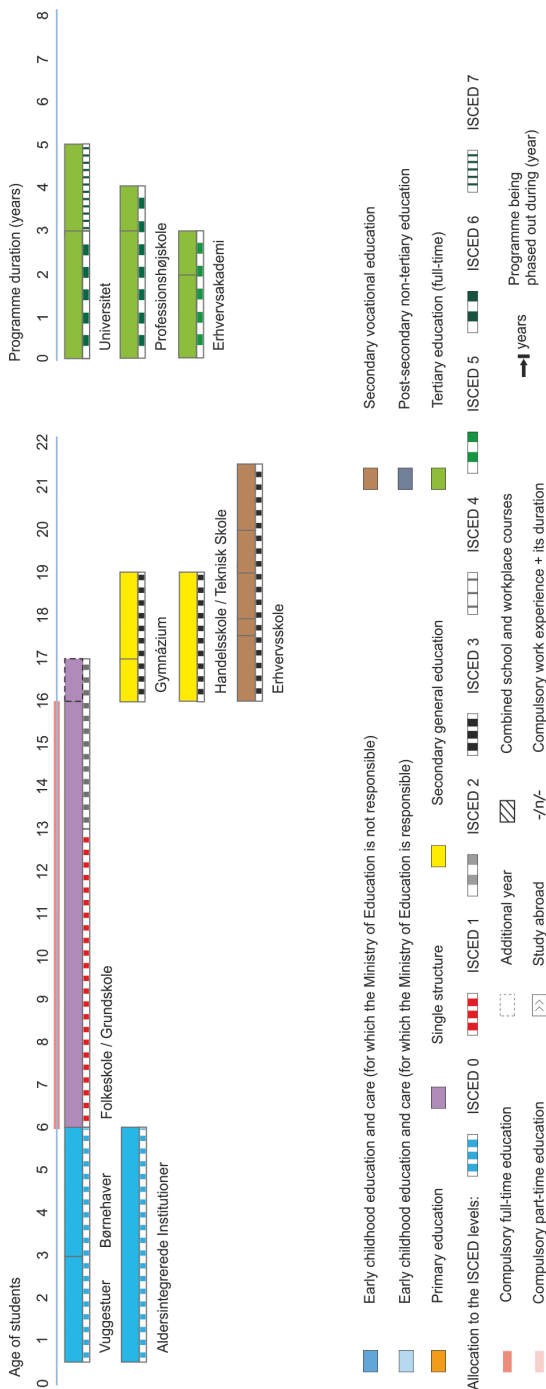


Figure 2 *The educational system of Denmark (Euridice, 2014)*

As stated previously, the Bachelor degree program in Denmark consists of both academic and vocational streams. To become a teacher at the primary or lower secondary level, students need to complete a 4-year vocational bachelor program at a University College. If students want to teach at higher secondary schools, they need to complete a 3-year academic bachelor program and continue to candidate level; in total 5 years of education at the tertiary level at a University.

Progression between the different educational levels in the Danish school system is very flexible. These levels, and how it is possible to go from one educational level to another, are shown in Figure 3. Students can achieve the level of education they want in several ways. If a student wants to become a teacher in the subjects of PE and geography in the lower secondary school, he has to take a vocational bachelor at a University College. Before starting, the student must have taken the right subjects in the Gymnasium with marks at a sufficient level in order to go straight from the Gymnasium to the University College. If this is achieved, the student just has to follow the straight path to the Gymnasium and further on to vocational Bachelor degree, which might be a teacher education. This path is indicated with red lines in Figure 3.

If the same student for example has chosen to go to a Trade school after finishing the compulsory years of education the student would not have achieved a sufficient level in some science subjects (Math, Physics and Chemistry) for them to go straight to the University College. In this case, the student must go to the School of Higher Preparation school to take the necessary subjects at a sufficient level and with sufficient marks. In this case, the person must follow a quite different path (the black lines in Figure 3) than in the first case.

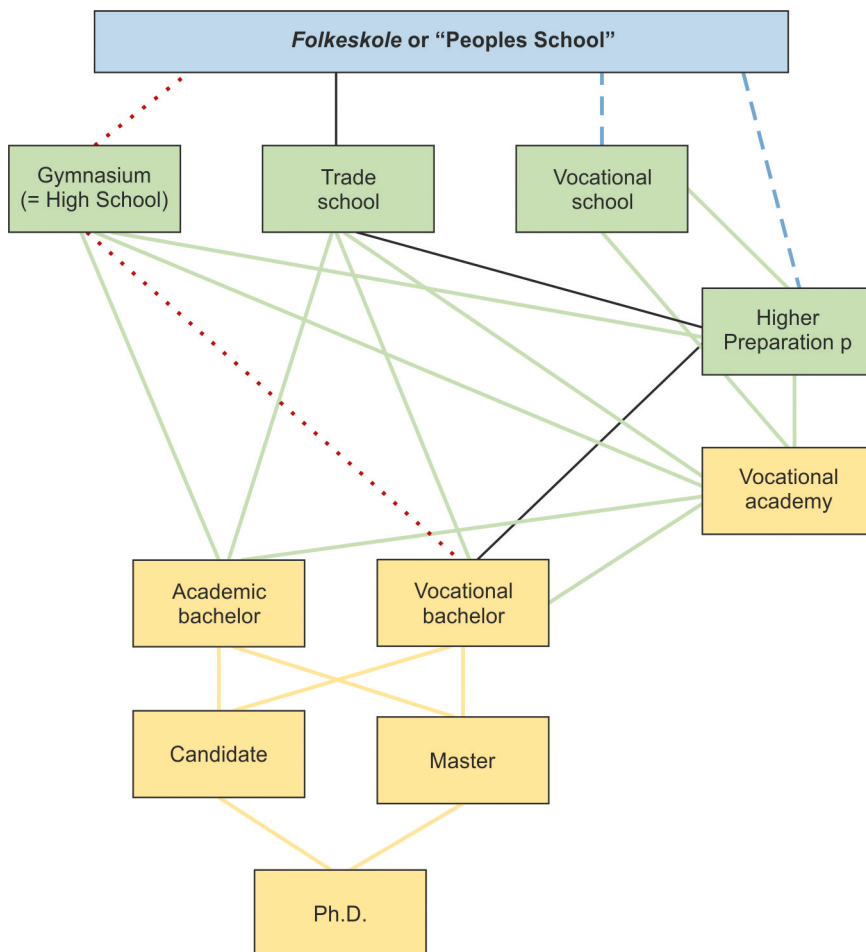


Figure 3 *Different educational paths between the three main levels in the educational system of Denmark (Authors of this publication)*

These two cases show the inherent flexibility in the Danish system, especially at the secondary level of education. As a result young people are able to change educational direction if they want to, and have the intellectual capability to do so.

Most students who start an academic Bachelor degree continue directly to Candidate level and usually, at this level, they leave the educational system. However, only around 10–20% of the students taking a vocational Bachelor degree progress to a Master's or Candidate degree.

Master's and the Candidate programs differ, not only in their length but also in their focus. When Master's students begin their course of study, many of them are in jobs. Therefore, the courses are often targeted at specific competences enabling the students to develop their job functions. On the other hand, most Candidate students continue on directly from their academic Bachelor without having a fulltime job, and the studies are both broader and deeper and not particularly job related.

8/3 Introduction of the official curricula

When looking at curricular development in Denmark, the main issue over the last decade or two is the increasing influence of Anglo-Saxon curricular thinking. Formerly the educational system in Denmark was mainly influenced by a Continental educational tradition in which the word “didactic” means something fundamentally different from the Anglo-Saxon context, where “didactic” is associated with educational methodology based on a detailed curriculum.

In the Continental educational tradition, the curriculum is “loosely described”, leaving room for teacher interpretation; it also has a strong focus on personal formation or *bildung*. In this tradition, the teacher is seen as a competent person being able to ask fundamental didactical questions of the curricula such as: What is appropriate content? How am I going to teach this content in a meaningful way for my students? What are the reasons for choosing this content? It calls for a rather autonomous and reflective teacher with a high degree of professionalism (Biesta, 2011; Hopmann, 2007; Wiberg, 2011).

The change to an Anglo-Saxon approach involves redirecting the curriculum, from content-orientated to competence-orientated. Previously the curriculum in primary and lower secondary schools described the knowledge, concepts and some working methods the students had to learn. A curriculum described in terms of competences emphasizes both the knowledge and skills the student possesses as well as the student being able to use these in different situations.

Emphasizing competences in the curriculum is an outcome of the DeSeCa protocol (OECD, 2002). It is a new way of doing things in Denmark and means that the curricula in all educational sectors are now competence-orientated. As emphasized previously, this leaves less room for the teacher to make personal interpretations and decisions regarding the content. There is also much more

emphasis on the alignment between the educational goals, implementation, and evaluation of teaching.

The OECD-developed PISA tests have significantly increased political interest in the educational sector in many countries, not least in Denmark (Gustafsson, 2008). When the PISA tests in Language, Mathematics, and Science were introduced in 2000, suddenly it became possible for different countries to compare the outcome of their school systems (see for example, Gustafsson, 2008). It became politically very important for governments to improve educational outcomes, because it was regarded as an international competition parameter for the long-term improvement of the national economy (Gustafsson, 2008).

Since the turn of the millennium, there has been ongoing change in the curriculum in primary and lower secondary schools in Denmark, the latest and most radical changes being implemented in August 2014. With the focus on goals, implementation and evaluation, there is now a strong systems approach to the curriculum, which opens the door to political influence on the content being taught and how the teachers teach. The changes in the 2014 curriculum were also radical in that the number of learning goals for each subject was reduced and for some related subjects there was (and still is) an increased focus on cooperation between teachers and integration of subjects.

Preamble for the Danish primary and lower secondary school

The overarching goals of the preamble of the Danish primary and lower secondary school curriculum are presented in Table 1. Despite the strong influence of Anglo-Saxon curriculum thinking, the preamble still has a focus on personal formation, action competence and democracy. This means that those aspects are still the overarching long-term goals for primary and lower school education in Denmark.

Table 1 *The overarching goals in the preamble of the Physical Education curriculum for primary and lower secondary schools in Denmark (Danish Ministry of Education, 2006)*

§ 1.1	The school must cooperate with parents to provide students with knowledge and skills that: prepare them for further education and give them the desire to learn more, make them familiar with Danish culture and history, give them an understanding of other countries and cultures, contribute to their understanding of human interaction with nature, and promote the individual student's all-round development.
§ 1.2	The school must develop working methods and create a framework for experience, immersion and enterprise so students develop awareness, imagination and gain confidence in their own potential and background to decide and act.
§ 1.3	The school must prepare students for participation, joint responsibility, rights and duties in a society with freedom and democracy. Thus school activities must be characterized by intellectual liberty, equality and democracy.

It can be seen from the preamble that:

§ 1.1 is the overarching content dimension for the school and, among other things, emphasizes: “... *Danish culture and history* [...] *other countries and cultures* [...] *human interaction with nature*...”.

§ 1.2 mentions ways students can learn and indirectly emphasizes the development of action competences in students: “... *create a framework of experience, immersion and enterprise* [...] *own potential and background to decide and act*”.

§ 1.3 emphasizes the formative goals of the primary educational institution in Denmark, and among other things mentions freedom, intellectual liberty, equality and democracy.

These three paragraphs constitute the main values by which Danish society wants to influence the upcoming generations.

8/4 Description of PE curricula

Physical Education (PE) is a compulsory subject from the Grades 1 to 9 in primary and the lower secondary school. Tuition is divided in four levels: Grades 1 and 2, Grades 3 to 5, Grades 6 and 7, and Grades 8 and 9.

The purpose of PE is for students to learn to be part of versatile sporting contexts where they achieve physical skills and knowledge of physical activity, and

experience joy and the desire to pursue sport in many different arenas. This purpose is described in the preamble to the curriculum as shown in Table 2.

Table 2 *The purpose in the preamble for Physical Education in lower secondary schools in Denmark (Danish Ministry of Education–PE Curriculum, 2014)*

§ 1.1	In PE students shall develop physical, sporting, social and personal skills. Students will gain knowledge of diverse sports culture and develop positive attitude toward physical activity. Sports courses must provide students with experience and knowledge of the importance of sport for health and well-being and the interaction between society and sports culture.
§ 1.2	Through versatile sport's practice, students shall have the opportunity to experience the joy and desire to pursue sports and develop the means to understand the importance of lifelong physical exercise in interaction with nature, culture and society and the world they are part of. Students will gain insight into and experience in terms of health and physical culture.
§ 1.3	In PE students shall develop prerequisites to take responsibility for themselves and enter into a binding community.

The curriculum requires three areas of competence: versatile sport, sports culture and relationships, as well as body training and well-being, as shown in Table 3.

Table 3 *Areas of competence in the Physical Education curriculum for primary and lower secondary schools in Denmark (Danish Ministry of Education–PE Curriculum, 2014)*

Areas of Competence	After Grade 2	After Grade 5	After Grade 7	After Grade 9
Versatile Sport	The student can participate actively in basic, versatile movements in play	The student can use basic, compound movements in sports practice	The student can use compound movements in the development of sport	The student can use complex movement patterns in the development of a versatile sports practice
Sports culture and relationships	The student can cooperate in sporting activities and games	The student can participate in sports culture and community	The student can analyse sports cultural norms, values and relations.	The student can evaluate sports cultural norms, values and relations in a societal perspective

Areas of Competence	After Grade 2	After Grade 5	After Grade 7	After Grade 9
Body, training and well-being	The student can describe reactions to physical activity	The student can converse about the effect of physical activity on stamina, health and well-being	The student can analyse interaction between body, training and well-being	The student can evaluate interaction between body, training and well-being in a current and future perspective

When being taught PE in the Danish *Folkeskole*, the emphasis is on practicing sport and less on theory, although the cultural and educative aspects of sport are still included and all three competences are involved. The learning processes relate to the three different dimensions of the subject (learning in motion, learning about movement and learning through movement) often referred to by the terms learning *in*, *on* and *through* motion.

Therefore, for each area of competence and for each of the four steps in primary and the lower secondary school cross-cutting themes have been developed, with related goals of skills and knowledge and divided into two phases within the period. In Table 4 the cross-cutting themes for the lower secondary school are shown and in Table 5 an example of gymnastics and tumbling after Grade 7 with goals of skill and knowledge and across two phases is given.

With the curriculum describing the progression of teaching across the four steps of primary and the lower secondary school, and forming the basis for holistic teaching, it is essential that each teaching course incorporates the required skills and knowledge across all competences. It is also important that the teaching is designed in such a way, that single academic teaching sessions are supplemented by interdisciplinary teaching sessions, for example, between PE and Geography.

Table 4 *Cross-cutting themes after Grade 7 in the Physical Education curriculum for primary and lower secondary schools in Denmark (Danish Ministry of Education–PE Curriculum, 2014)*

Areas of Competence	Cross-cutting themes					
Versatile Sport	Gymnastics and tumbling	Ballgames	Dance and expression	Basic motoric	Athletics	Outdoor activities
Sports culture and relationships	Cooperation and responsibility	Norms and values	Sport in society	Vocabulary		
Body, training and well-being	Health and well-being	Physical training	Body and identity			

Table 5 *Goals of skill and knowledge in each of the two phases related to Gymnastics and tumbling after Grade 7 in the Physical Education curriculum for primary and lower secondary school in Denmark (Danish Ministry of Education–PE Curriculum, 2014)*

Areas of Competence	Phase	Gymnastic and tumbling	
		Goal of skill	Goal of knowledge
Versatile Sport	1	The student can master dexterity exercises and jumping	The student has knowledge about gymnastics and tumbling techniques within gymnastics and parkour
	2	The student can participate in sport safely	The student has knowledge about sport techniques and safety

The new 2014 reform has introduced an exam after Grade 9. The exam is drawn from subject matter in Geography, Biology, PE and oral Mathematics.

In PE the exam tests student achievement according to physical, sporting, personal and social competences. The exam is both practical and oral, and is carried out in groups of 2–5 students. Each group chooses a topic or theme for their exam, in cooperation with the PE-teacher, and draws from each of the two areas of content:

- A. Gymnastics and Tumbling, Dance and Expression and Basic motoric.
- B. Ballgames, Athletics, Physical training.

The students prepare a practical programme from the content and the chosen theme, which they demonstrate. This is followed by a theoretical exam based on the practical exam, theme and content.

The evaluation criteria are:

- Physical skills, taking qualified choices and show quality in movement.
- Composition of practice in relation to theme, PE in general, creativity and cooperation.
- PE-knowledge in relation to theme and content.
- Effort—participation and commitment/motivation.

The students are graded individually according to a 7-step scale defined by the Ministry of Education in 2006.

In addition to the specific changes in the PE curriculum, the new school reform has implemented a minimum of 45 minutes of physical activity each school day. All subjects are obliged to implement movement into their classes, either separate to the teaching as a break in the middle of the class, or integrated into the teaching. As part of the new reform, the Ministry of Education also mandated that all teachers of PE must be formally qualified by 2020.

The changes to PE in the lower secondary school are also intended to address issues that have been dominating discussion over the last decade. In 2011 the report “Status on PE in the public school” was published with a description of the development in PE from 2004 to 2011. A number of challenges were identified in the report: the lack of PE in schools, especially among girls in the Grades 7 to 9; a focus on ballgames rather than realising the versatility of the PE curricula; and a growing polarisation between the group of inactive pupils and the group of active pupils. Furthermore, it was noted that many PE teachers were not formally qualified which may have led to very different interpretations of the curricula. As a result of the 2014 changes designed to address these challenges, the status of PE among pupils, teachers and the leader boards of the schools has been rising, but a thorough evaluation of the 2014 reforms is still lacking.

8/5 Description of Geography curricula

Before describing the new Geography curriculum in the lower secondary school (Grades 7 to 9), it is important to note that in Denmark, Geography is a science subject in these grades and taken together with Biology and Physics-Chemistry. However, the Geography curriculum still has a lot in common with Social Science and History, since it is an integrated subject consisting of both Physical and Human Geography.

The purpose of teaching Geography in lower secondary schools in Denmark is described in the preamble to the curriculum as shown in Table 6.

Table 6 *The purpose in the preamble of the Geography curriculum in lower secondary schools in Denmark (Danish Ministry of Education–Geography Curriculum, 2014)*

§ 1.1	“In the subject geography students shall develop science competences and thus obtain insight into how geography—and geographical research—in collaboration with other science subjects contribute to our understanding of the world. Students shall acquire skills and knowledge of basic natural and culturally created prerequisites for living in Denmark and the rest of the world with emphasis on understanding basic geographic concepts, relationships and communities’ use of natural basis and resources”.
§ 1.2	The students’ learning will be based on varied forms of work, which is largely based on their own observations and studies, among others by fieldwork and use of geographic sources. The students’ interest and curiosity about the natural and cultural Geography, science and technology must be developed so they will want to learn more.
§ 1.3	Students must acquire knowledge of foreign cultures and gain recognition of the Physical—and Human—geography contribution to our world. Students’ shall develop responsibility towards nature and the use of natural resources and technology, so they have confidence in their own potential for attitudes and action in relation to sustainable development and human interaction with nature—locally and globally.

One of the main goals is to enable students to become personally involved in, and make consistent analyses of, problems from different places around the world, involving relevant aspects of both Physical and Human Geography. The problems the students work on might often be caused by man but also affect man’s living conditions. An example is climate change where man’s way of living increases the emissions of CO₂ and CH₄ into the atmosphere, causing the temperature to rise. On the other hand, the rise of temperature causes droughts in some regions and rise in the global sea level, with catastrophic consequences for

people living in different regions. This example can easily be related to § 1.1–1.3 in Table 6, especially the last part of the paragraph.

The new curricula for all the science subjects in Grades 7 to 9, identify four competence areas: Investigation, Modelling, Perspective, and Communication. These are shown in Table 7 in relation to the four main Geographic topics: Demography and Business, The Earth and its Climate, Globalization, Nature and Living Conditions. For example, by teaching the topic, The Earth and its climate, the student should be able to do investigations, work with modelling, have perspective and communicate results. Compared with the previous Geography curriculum, there is a reduction in the number of learning goals and the complexity of the curriculum is reduced as well.

Table 7 *The four main competence areas and content areas in the Geography curriculum in lower secondary schools in Denmark (Danish Ministry of Education–Geography Curriculum, 2014)*

Competence goals: After Grade 9, the student is able to ...	Demography and business	The Earth and its climate	Globalization	Nature and living conditions
<u>Investigate:</u> Design, implement and evaluate investigations	Explore populations and urban structures	Weather, climate change, and living conditions	Environmental impacts of resource use	Investigate characteristic landscapes, their impact on people's living conditions
<u>Modelling:</u> Make use of and develop scientific models	Population development using digital simulations	Plate tectonics and geological development	The development of rich and poor countries	Formation of the Danish landscape
<u>Perspective:</u> Perspective content areas to the surrounding world and relate the content to the development of knowledge according to NOS	Analyse population and industrial development importance for sustainable development	Problems associated with mining, water cycle and global warming	Action competence for the development of a sustainable society	Conflicts of interest by use of natural resources
<u>Communication:</u> Communicate about science content in relation to Geography.	Formulate a claim and argue on a natural scientific basis	Orally and in writing express themselves through the use of Geographical terminology and concepts	Reading and writing text in science subjects	-

Another consequence of the new curriculum, is the priority given to increased cooperation between science teachers and the integration of science subjects (Geography, Biology, and Physics-Chemistry) in lower secondary school. The curricula of these science subjects contain six topics that must be integrated in common projects or lessons. These are:

- production and sustainable use of natural resources,
- sustainable energy supply at the local and global level,
- drinking water supply for future generations,
- the individual and society's emissions of substances,
- radiation effect on the living conditions of living organisms,
- technology's impact on human health and living conditions.

In 2017 a final common oral exam will be implemented, that covers all three science subjects. This is a strong motivator for science teachers to increase the cooperation already present. The curriculum for the three science subjects is constructed in the same way as the Geography curriculum described in this section; this, of course, will make the implementation of the common exam much easier.

8/6 Possible ways to combine PE and Geography in the Danish curricula

There seems to be considerable opportunity for interdisciplinary collaboration in the PE and Geography curricula, for PE in the content of Nature and Outdoor life, and for Geography in Nature and Living Conditions. In reviewing the curricula, there seems to be a good opportunity for interdisciplinary collaboration by using outdoor learning.

Definition of outdoor learning

The VIA University College, Research Centre of Outdoor Learning, uses a definition of outdoor learning, as follows: *"... in an educational context can be seen as activities that include learning, personal development, and activities that take place outside the institutional spaces/rooms. It therefore includes places such as nature, parks, museums, and factories. Outdoor activities are a complement to the traditional indoor training arenas and institutional activities"*.

According to Rickinson, there are three categories of “outdoor learning” (Rickinson, 2004):

- fieldwork and outdoor visits (e.g. landscape excursion or visit to a museum),
- outdoor adventure education (e.g. climbing, kayaking),
- school grounds/community projects (e.g. development projects in the local area, such as “green flag” or “green school”).

Outdoor learning in PE and geography

Let us first have a look at outdoor learning as described by Emmelin in a model from 1997 (Bentsen et al. 2009). In this model outdoor learning is characterized by experiences, a changing physical environment, and living and physical outdoor activities. These aspects can certainly be found in both the Geography and PE curricula in Denmark. Søren Andkjær, in a 2005 model, sought to define the field of outdoor learning as a continuum with outdoor sport at one end and wildlife and nature guidance at the other (Bentsen et al. 2009). This also aligns with the Danish curricula.

PE varies from the physical experience of outdoor sport to the recreational approach of traditional Nordic outdoor life. As mentioned previously, PE is generally taught from three perspectives—learning *in*, *on* and *through* motion. This also applies when PE is taught through outdoor learning where students strengthen their bodily and sports competences. The student *in* motion is learning *on* how to move and act in nature, in relation to specific movement activities, or nature in general. Students also learn *through* movement, about outdoor life and about the significance of the physical and personal experience and learning. This contributes to the student’s understanding of outdoor learning as a culture.

As for Geography, the subject is typically viewed from a perspective of society, nature and the environment. Geography teaching through outdoor learning investigates both the natural and cultural worlds; the aim is to have the student make connections between the theoretical geographical concepts, models, and theories learnt in school, and the outside real world where students live their daily life, and where these concepts, models, and theories are explained in different scale and spaces. As Dewey pointed out, “To learn Geography is getting better at perceiving an ordinary action in a spatial and natural context”.

We believe that outdoor learning can be enhanced by interdisciplinary collaboration and integration of PE and Geography. Using the theory on meaning from Polanyi (Kretchmar, 2000), we will try to explain why.

According to Polanyi's theory, meaning is not only the knowledge or information we receive, but the importance one gives to the information. For example, we sense through the body, and then we create a personal understanding of that experience. This personal meaning-making is possibly more important than the information itself, but cannot exist by itself. Thus, as Kretchmar (2000) describes, knowledge and information both help to form the self and the environment where the self is formed.

Many and varied experiences are important to create an understanding of the knowledge and information given and therefore immersion in a field of study is important to enable the creation of meaning, which, after all, is the purpose of the Danish public school.

In nature, the creation of meaning goes beyond functional, rational or experiential knowledge. A cultural understanding of outdoor learning means more than just going out in nature or examining it. It means knowing the environment that is being experienced, the forces of nature as well as local climatic conditions, the variations in landscape compared to movement activities, and of nature conservation.

Immersion in outdoor learning can provide space not only for seeing a meaning, but for students or pupils to create their own meanings. Hence, using Polanyi's theory, the definition of outdoor learning can be expanded to include the aim of giving the student a broader understanding and background, as well as an understanding from which future teachers can plan, teach and evaluate various outdoor learning activities.

In nature, we encounter experimentation and action that is largely structured by us, by our choices, by our personal criteria of meaning and actions; this confirms us as meaning-seeking and meaning-creating individuals (Tordsson, 2006). Hence, we believe that both subjects in outdoor learning can further contribute to a deeper understanding of the area, than the individual subjects can.

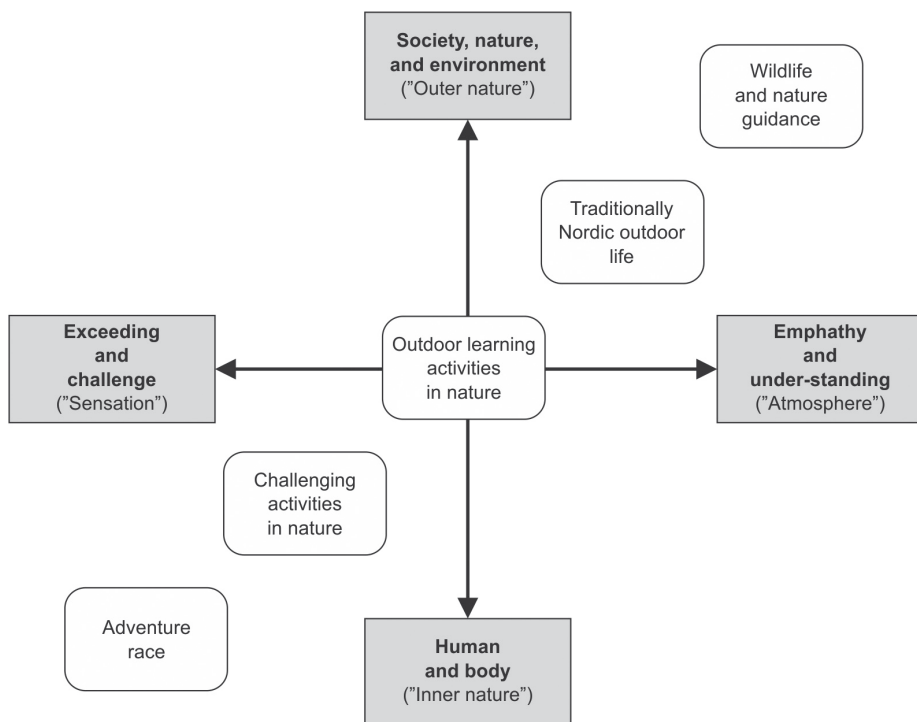


Figure 4 Model showing five prominent dimensions of outdoor learning, which is stretched between the two axes. The vertical axis is the pedagogical justification and legitimation. The horizontal axis is motivation and the attraction from the participants' perspective (Andkjær, 2005)

Teaching example of outdoor learning

When teaching PE and Geography, the interdisciplinary parts of both curricula must be taken into account in a meaningful manner for both teacher and students. Physical exercises and movement is a central part of the Danish PE; as mentioned previously, physical movement is an integrated part of the everyday experience of Danish students in the primary and lower secondary schooling system. However, in the Geography curriculum it is implicit through fieldwork or other practical work. In the references section of this publication, there are some links to homepages with teaching ideas, for both PE and Geography / Science subjects, for inspiration.

When using outdoor learning in an interdisciplinary context, both the PE and Geography curricula should contribute to the educational aims of the process. For example, if teachers plan an outdoor learning activity from the perspective

of education for sustainable development (e.g. Huckle, 2014; Bolstad, 2003; Sauvé, 1996) both the curricula of PE and Geography should contribute to meaningful learning for the students. Teachers should use this as an organizational framework for teaching and include the students in the three educational phases: the preparation phase (before), the outdoor phase (during), the debriefing phase (after) (Jordet, 2010).

During the preparation phase, the students might be involved in planning how to move themselves from point A to point B in the most sustainable manner by only walking, bicycling, or canoeing. They also have to plan their track by using maps. If the outdoor session has a duration of several days the students also have to plan what to eat and how to prepare the food in a sustainable manner, for example, by using as little meat as possible, using an open fire instead gas burner, and without using tin foil. They also have to estimate the amount of calories they might expend during the trip and whether this correlates with the number of calories in the food they are going to prepare and eat. These are just some examples of how to convert different aspects of the curricula from different subjects' curricula (PE, Geography, Mathematics, Biology) into "real problems" for the students when planning an outdoor session.

During the outdoor process itself, the students feel how to use their own body in a different way than normally, and how important it is to think about their daily life habits. They might realize that drinking water is a limited resource that must be collected from a water tap at a distance away from the campsite. Water is heavy and one might say that it is a kind of physical exercise getting water. Around the campfire, it is a very good opportunity to start a more fundamental discussion with the students, about the use of limited resources in their own country and in other countries, as well as having to reflect about different ways of using one's own body.

When back at school, the debriefing phase can take place. During this phase, the students might reflect about their learning outcomes, either alone, for example, in an individual report or essay, or as one of a group of students. The later might take place as a report, a PowerPoint presentation, or perhaps a creative presentation in the form of a play or theatre—using their body. It is of course important that the teacher has guided the students by giving them some points for reflection in advance.

This small description of an outdoor learning session, containing elements from different curricular subjects, might help to break down the distinction between

theoretical school knowledge and practical knowledge based on experienced challenges by the students.

Conclusion

In reviewing the PE and Geography curricula in Denmark, it appears there is considerable opportunity for interdisciplinary collaboration, particularly in using the definition of outdoor learning from the VIA University College, Research Centre of Outdoor Learning. Certainly, the core values and characteristics of outdoor learning by Emmelin (Bentsen et al. 2009) are aligned with the current Geography and PE curricula as is Andkjær's continuum of outdoor learning (Bentsen et al. 2009).

However, it is suggested that the definition of outdoor learning should be extended to encompass Polanyi's theory of meaning, with the aim of giving students a broader understanding of the subjects that they can carry into their adult lives. We believe that by integrating PE and Geography there is greater opportunity for immersion in outdoor learning and therefore in creating meaning for students. We believe this leads to a deeper understanding of the area, than the individual subjects can by themselves.

We have given an example of cooperation between PE with Geography where traditional topics are integrated into an outdoor activity setting. It seems as there are abundant opportunities to integrate subjects, but it is also important that the structure (time, schedule, funds, etc.) is arranged with school principal and colleagues. Another barrier for conducting these kind of teaching activities, is the teacher's lack of experience and ideas, which is why we have made a list of homepages at the end of the reference list, where teachers might get inspiration.

9/1 Introduction

Slovenia has been an independent state since June 1991. Until then it was one of the republics of the former Yugoslavia. The capital city is Ljubljana with 279,756 citizens (January 2016). Slovenia's strategic direction since independence has been oriented towards European integration. This culminated in 2004 with Slovenia entering North Atlantic Treaty Organisation (NATO) and the European Union. Three years later, Slovenia entered into the European currency system and took the Euro as its national currency.

Slovenia is a small Central European country with alpine and Mediterranean regions, lying between the Alps and the Balkans and connecting the Pannonia lowland with the Mediterranean basin or, more precisely, with the Adriatic Sea. With total area of 20 273 km² and 2.1 mil. inhabitants Slovenia is one of the smallest countries in Europe. Density of population is 101.8 inhabitants per sq. km.

The position of Slovenia in Central Europe, between the Mediterranean and the Alps, results in a humid climate especially in its western parts with an annual average precipitation of 1 300 to over 3 000 mm. To the east, the humidity decreases although the most eastern part, the Pomurje region, annually receives about as much precipitation as London.

Slovenia's gross domestic product per capita in 2008 was almost €19 000 and then, in the years following, dropped to approximately €17 000. However, the number of small and medium enterprises is growing, replacing the economic and social role of the once large, powerful enterprises in the new economic power of the small European state in the 21st century. Compared to the economic indicator of GDP, the Human Development Index (HDI) measuring quality of life shows a more positive picture, the 2014 value for Slovenia being 0.880, ranking it 25th among 188 states from all continents (Human development, 2015).

9/2 The educational system of Slovenia

The fundamental values of education in the Republic of Slovenia derive from the common political, cultural and moral values of its European heritage. This heritage combines human rights with the corresponding obligations and principles of pluralist democracy, tolerance, solidarity and the rule of the law (Krek & Metljak, 2011).

The Constitution of the Republic of Slovenia enshrines the right to free education. The Organisation and Financing of Education Act, 2015 lists the key objectives of the education and training system. One of the primary objectives is “to provide optimal development of the individual, irrespective of gender, social and cultural background, religion, racial, ethnic or national origin, and regardless of their physical and mental constitution or physical and mental disability” (Taštanoska, 2015).

In Slovenia, the Ministry of Education, Science and Sport is responsible for education and training. It has the authority to formulate and implement education policies, as well to make system regulations. Since 1990, the Slovenian educational system has been undergoing continuous reform. In the 1990s curricula were developed for pre-school, primary school (commonly referred to as basic education) and upper secondary school. The change from 8- to a 9-year basic education was completed in 2003–2004. In 2007, a revision of the national curriculum for primary and secondary schools once again commenced and much effort was invested in the revision of curricula across all subjects at both primary and secondary level. The new curricula were approved in late spring of 2008 for secondary schools, and then, at the beginning of September 2011, for primary schools.

The current educational system in Slovenia is comprehensively described in Taštanoska (2015) and the detail in this section is sourced primarily from this publication together with information from the websites of the Statistical Office of the Republic of Slovenia (2015) as well as the Ministry of Education, Science and Sport: *Evidenca srednjih šol* (Records of Institutions and Programs).

The language of instruction in schools is Slovenian but in ethnically mixed areas where Italian and Hungarian national minorities live, they have the right to access education in their own language (Italian and Hungarian). The

Constitution also protects the status and gives special rights regarding education to members of the Roma community living in Slovenia.

The education and training system is organized primarily as a public service rendered by “*public and private institutions and private providers holding a concession who implement officially recognized or accredited programs*” (Taštanoska, 2015, p. 12).

Pre-school education is available for children aged from eleven months to six years, the starting age of compulsory primary education. However, pre-school education is not compulsory; parents can decide whether to enrol their child into pre-school education or not. It is delivered by both public and private kindergartens, but the majority of kindergartens (around 93%) are public. The number of children enrolled in kindergartens is constantly increasing. In the 2013–14 school year, there were 83 700 children (or 75.6% of all children of pre-school age) attending pre-school education.

The Kindergarten curriculum includes activities that are classified into the following areas: movement, language, art, society, nature and mathematics (Kurikulum za vrtce, 1999). Each area is important for integrated child development.

Nine years of basic education in Primary Schools (*osnovna šola*) is compulsory in Slovenia. It is state financed and organized into a network of primary and lower secondary schools giving all residents of Slovenia access to education. It is provided by both public and private schools. In addition there are educational institutes for special educational needs (SEN) children, and adult education organizations for those who did not finish basic education when they were children. In the 2013/14 school year, 166 535 children attended 782 primary schools and their branches, as well as 57 schools, school based units and institutions for SEN children.

The basic school programs are attended by pupils typically aged 6 to 15 years and is divided into three educational cycles or periods. Each period covers three grades. The standard maximum class size is 28 pupils, although lower limits may be applied in cases of multi-grade classes, schools of ethnic minorities, classes with Roma children or SEN children. In the first educational period, pupils are taught by a single class teacher. In the second period, while the instruction is primarily provided by a class teacher, some subjects are provided by specialist teachers. In the third and final period, specialist teachers deliver all lessons.

After the nine years of compulsory basic education in Primary Schools, there are two to five years of non-compulsory upper secondary education, which generally begins at the age of 15. Upper secondary education is divided into: **general education**, with different types of 4-year gymnasia (general, classical, technical, economics, arts); and **vocational and technical education**, with educational programs of different levels of difficulty: *upper secondary vocational education programs* (2 or 3 years), *upper secondary technical education programs* (2 additional years after completing a vocational program) and *vocational courses* (1 year).

In the 2013/14 school year upper secondary education was provided by 182 upper secondary schools with 74 907 students enrolled at the end of the school year. Upper secondary school classes typically have 17 to 30 students; however, with the consent of the respective Minister, classes may contain up to 32 students. If there are SEN students in a class, then the number of students in the class may be lower (School for Leadership, 2013).

In the tertiary education context, Slovenia is actively involved in the Bologna process¹ and, as a member of the European Union, is committed to the objectives of the Lisbon Strategy² that aims to establish a high quality, diverse and accessible, as well as internationally comparable tertiary education system. Among the most important fundamental objectives of tertiary education are quality, employability and mobility within Europe and across the world, fair access, and diversity of institutions and study programs.

Tertiary education in Slovenia consists of short-cycle, higher vocational education and longer term, higher education. Almost two-thirds of those who complete their 4-year upper secondary education (typically at the age of 19) enrol in a tertiary education program. In 2013 Slovenia reached a specific objective of the Europe 2020 Strategy; that 40% of people, aged from 30 to 34 years should have completed tertiary education (Čelebič, 2014). It is also important to stress that the percentage of the population who have completed tertiary education in Slovenia is constantly rising.

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1 The Bologna process is series of ministerial meetings and agreements between European countries designed to ensure comparability in the standards and quality of higher education qualifications.

2 The Lisbon Strategy, also known as the Lisbon Agenda or Lisbon Process, was an action and development plan devised in 2000, for the economy of the European Union between 2000 and 2010.

Short-cycle higher vocational education is provided by 64 public and private higher vocational colleges. In the 2013/14 academic year around 13 000 students attended short cycle higher vocational education colleges. The practice-oriented programs last two years and provide students with vocational competences in accordance with vocational standards.

Longer-term higher education is available from both public and private universities as well as independent higher education institutions. In the 2013/14 academic year around 79 000 students were enrolled at faculties, art academies and higher education professional institutions. In the last decade, the number of higher education institutions has increased; in 2013, there were three public and two private universities, one independent public higher education institution and forty-two private higher education institutions. Higher education is organized in three Bologna cycles. The first cycle features higher professional and academic undergraduate Bachelor degree programs; the second cycle features postgraduate Master's study programs, and the third cycle includes PhD study programs. The four levels of the educational system in Slovenia are shown in Figure 5.

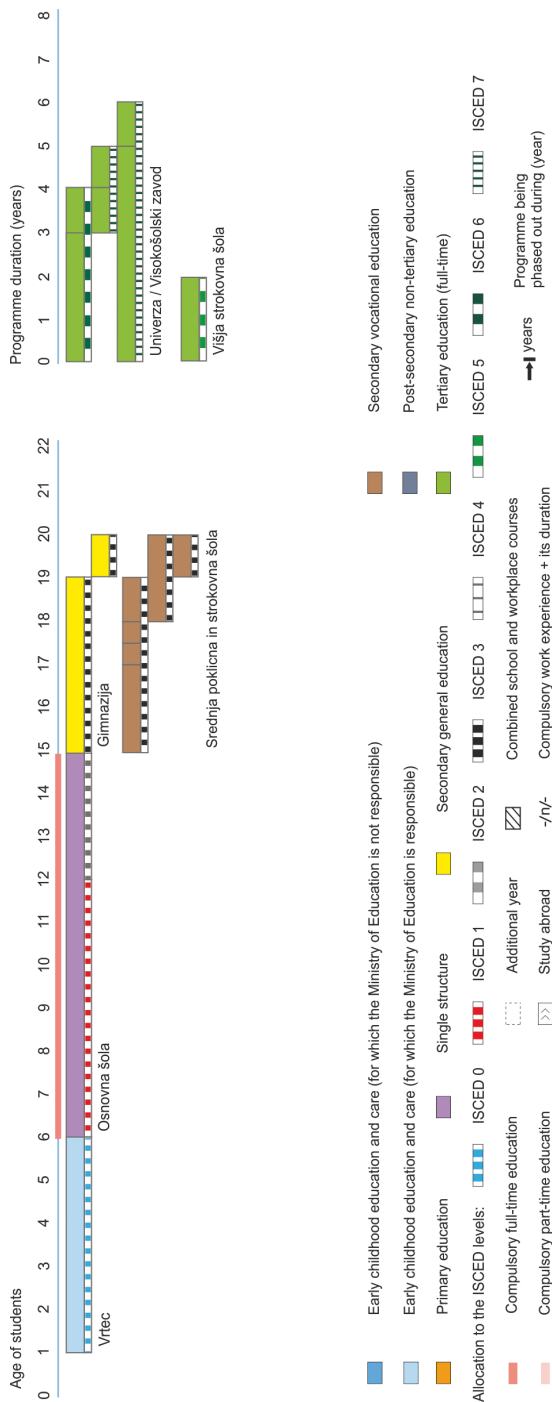


Figure 5 The Educational system of Slovenia (Euridice, 2014)

9/3 Introduction of the official curricula

As previously stated, the Slovenian education system has undergone considerable reform since the country's independence, most recently with new curricula being approved and implemented in secondary schools (2008) and in primary schools (2011). All current curricula are available on the official website of the Ministry of Education, Science and Sport.

The national primary school curriculum is approved by the Expert Council for General Education. This national curriculum determines subjects and syllabi; however, teachers choose teaching methods and textbooks autonomously.

There are two parts to the Primary School curriculum. The first part is the compulsory and extended curriculum. This must be provided by all schools and studied by all pupils. It consists of compulsory subjects, elective subjects and activity days (culture, science, sports and technology). In addition, all schools must provide an optional curriculum; however pupils are free to decide whether or not they will participate. This curriculum includes educational assistance for children with special needs, remedial classes, additional classes, after-school care and other forms of care, interest activities and out-of-school classes.

At the secondary, pre-university, level, the Expert Council for General Education and the Expert Council for Vocational Education determine the curriculum and the weekly schedule of subjects. In general education (i.e. gymnasias) compulsory subjects account for 80–90% of the curriculum (Slovene, Mathematics, two foreign languages, History, Geography, PE, Biology, Chemistry, Physics, Art, Psychology, Sociology, Philosophy and Information Science) while in technical and vocational schools, the number of compulsory subjects depends on the type of school.

The planning, programming and provision of vocational and technical education are the joint responsibility of social partners (employers and trade unions) together with the state. The aims and goals of secondary vocational and technical education are defined in a common curricular document. This document stresses attainment targets in interdisciplinary fields and interest activities. Short-term vocational programmes last a year and a half for students that have completed their basic education, and two and a half years for those without this. The programmes end in a final examination. The final examination certificate

enables students to enter the labour market or to enter the first year at any other (upper) secondary vocational programme (OBESSU n.d.).

9/4 Description of PE curricula

PE is a compulsory subject in primary school and it is mandatory for primary schools to provide two to three lessons (each of 45 minutes) of PE per week. The PE curriculum includes general and operational objectives, together with practical and theoretical material that teachers can use to achieve these objectives. Hence, in PE, students acquire motor skills as well as theoretical knowledge. The latter in particular can be used in forging interdisciplinary connections, since there are certain learning objectives and topics which are in other subjects as well as PE. Theoretical subject matter in the curriculum for PE aims to conceptualise sport, raise awareness about the importance of sport and explain the rules of sports. The PE curriculum can be found on the Ministry for Education and Sport website (*Učni načrt Športna vzgoja* / Physical Education Curriculum, 2011).

There is only one PE curriculum covering all nine years of Primary School. It is divided into three parts according to the educational phase. In the first phase (from Grades 1 to 3) the curriculum includes the thematic modules of ABC of athletics, ABC of gymnastics, natural movements, ball games, dance games, outdoor activities, swimming. In the second and third phase 2 and 3 (Grades 4 to 6 and Grades 7 to 9) the curriculum includes athletics, gymnastic with rhythmic gymnastics, dancing, volleyball, football, handball, basketball and outdoor activities.

The overall objectives of PE in the elementary program comprise proper movement efficiency and the creation of a healthy lifestyle; the acquisition of skills that enable participation in various sports activities; understanding the usefulness of regular exercise and PE, and their role in providing quality free time and the creation of positive patterns of behaviour.

PE is a continuous process of enriching knowledge, developing skills and characteristics as well as being an important tool for the formation of personality and relationships between individuals. Through its objectives, contents and methods of work, PE contributes to the harmonious development of the young person. It aims to educate and teach pupils about the importance of a healthy

lifestyle. The PE curriculum is implemented in all types of secondary schools as well as primary school.

9/5 Description of Geography curricula

In Slovenia the Geography syllabus for gymnasias was reformed in 1998 and Geography became a subject aimed at helping young people acquire the knowledge and skills needed for an understanding of the global world. The geographical education system is comprehensively described by Resnik Planinc (2011) and this is the primary source for the following information. The geography curricula documents are available from the Ministry of Education, Science and Sport website.

Traditional geography with its division into general geography (physical and human geography), and regional geography (the Earth, its continents and their smaller units—regions) characterizes the entire national geography curriculum and syllabi in Slovenia. Geography is a compulsory subject in primary school, with content being incorporated into the syllabus from Grade 1. From Grade 6 of primary school and in gymnasias, Geography is taught as a specialist and compulsory subject. In secondary vocational and technical schools geography is taught for one or two years either as a compulsory subject or integrated, with history and sociology, into social studies. In these schools, general geography is primarily taught, with selected case studies from Slovenia and other countries. Hence, regional geography is, to a certain extent, also part of the geographical syllabi in these schools.

In the first year of the gymnasium, general geography is taught. Its structure is comparable to the scientific approach adopted at the university level, divided into specific branches such as geomorphology, water, climate, soils, biogeography, population, settlement, economy, and so on.

Regional geography is taught in the last years of primary schools (Grades 7 to 9) and after the first year in the gymnasium (in years 2 to 4). At the primary level, regional geography deals systematically with the world, Europe and Slovenia. In gymnasias, however, regional geography becomes more thematically oriented with a problem-solving approach, case studies, practical examples, and so on. Our understanding of the landscape with all its elements, interrelationships,

and processes is becoming increasingly complex; hence, a description of its characteristics means an accumulation of facts of varying importance.

The new national curriculum implemented in 2011 did not result in significant changes to the geography syllabi, although, importantly, competences and the upgrading of skills were added. At the primary level the same order of content between the years remains. The secondary level was similar, except for gymnasias, where the content follows the same order as before but is not divided into specific years (Resnik Planinc, 2011).

**9/6 Possible ways to combine PE and Geography
in the Slovenian curricula**

Recently, “interdisciplinarity”, meaning the integration, complementarity and interconnectedness of content from different subjects, has gained prominence in the Slovenian school system; there is a specific chapter on interdisciplinary connections in curricula to provide teachers with guidance as to which content from other subjects they could use to complement the teaching of their own.

In primary education, geographic subject matter and sport are in different curricula. During Grades 1 to 5, geographic subject matter is taught as part of ‘Learning the Environment’ (in Grades 1 to 3) and “Social Studies” (in Grades 4 to 5). Geography as a specialist subject starts in Grade 6. Hence primary school students participate in a total of 843 hours of PE and 361.5 hours of classes dealing with geographic content, delivered in three subjects: Learning the Environment, Social Studies and Geography.

Table 8 *Geography subject matter and sport by number of class hours in primary school curricula*

GRADE	GEOGRAPHY SUBJECT MATTER – number of class hours	SPORT – number of class hours
1–3	Learning the Environment – 65	Physical Education – 315
4–5	Social Sciences – 75	Physical Education – 210
6–9	Geography – 221.5	Physical Education – 309
Total class hours in primary education	316.5 hours	834 hours

The curricula for subjects dealing with geographic subject matter, suggest that the content is related to, and can be integrated with all the compulsory subjects taught in Primary School: Slovenian Language, Mathematics, Foreign Languages, Arts, History, Civics and Ethics, Physics, Chemistry, Biology, Natural Sciences, Music, Techniques and Technology, Home Economics and PE. Teachers most often integrate geographic content with History, Natural Sciences, and Civics and Ethics. Unfortunately, integration of Geography and PE is seldom part of teaching plans, despite the interconnectedness and complementarity between the subjects, which is particularly evident when using active teaching approaches and methods.

The PE curriculum in primary schools highlights possible interdisciplinary connections with Slovenian Language, Learning the Environment, Music, Natural Sciences (and Techniques), Home Economics, Social Studies, Geography, Biology, Chemistry, Physics, Arts, as well as Civics and Ethics. Hence, PE can also be integrated with practically all the subjects taught in primary school. Furthermore, it can be integrated with material that is not formally part of any specific subject in the program, for example Health Education, Environmental Studies, Traffic Education, Cultural Studies and Information, Communications and Technology (ICT). However, whereas teachers frequently use physical activity as a motivational tool, PE subject matter is used less often as an example of appropriate material for interdisciplinary integration.

In the curricula, theoretical content is provided in thematic modules, together with examples of possible cross-curricular connections that teachers may use as an aid in planning such classes. In order to determine which learning content from PE and geographical subject matter can connect, interact and complement each other, we performed an analysis of the 2011 curricula of all four primary school subjects. We analysed the operational and overall learning objectives, along with knowledge standards and didactic recommendations, in order to determine in which areas teachers can better integrate subject matter. The results for the two streams, namely, PE on one hand, and the geographic content of Learning the Environment, Social Studies and Geography on the other, are shown in Tables 9 to 11.

Table 9 Operational objectives and content for interdisciplinary connection of sport–geography in the subjects Physical Education–Learning the Environment, Grades 1 to 3

THEMATIC MODULE LEARNING THE ENVIRONMENT	THEMATIC MODULE PHYSICAL EDUCATION	OPERATIONAL LEARNING OBJECTIVES OF THE SUBJECT LEARNING THE ENVIRONMENT
SPACE	THE ABC OF GYMNASTICS	Learn about the school neighbourhood and routes to school, using basic concepts describe the characteristics of the environment surrounding the school (back, front, left, right, top, bottom).
	HIKING	
	HIKING	Learn the cardinal directions (East, West, North, South).
		Learn orienteering techniques (making use of identifiable landmarks), and also study features of their hometown or neighbourhood (institution).
		Learn geographical concepts: hill (hills), mountain (mountain range), plain, valley, river, stream, sea, road, railway, cultivated land (field, meadow, orchard), forest, desert, etc.
	DANCING GAMES	Learn about geographical concepts: settlements (city, village), home region. Slovenia Europe World Oceans Continents Cardinal (compass) directions
ATTITUDES	ENJOYMENT OF SPORTS AND EDUCATIONAL GAMES ³	Recognise that people, countries and continents are interconnected and interdependent. Understand the need for people to cooperate and have tolerance.
ENVIRONMENTAL STUDIES	HIKING	Capable of explaining how people affect nature, how they themselves actively contribute to the protection, preservation and regulation of the natural environment they live in. Learn how consumerism impacts the environment. Learn that manufacturing and everyday life generates waste. Environmental protection and maintenance, consequences of water, air and soil pollution.

Source: Učni načrt Spoznavanje okolja (Learning the Environment Curriculum) 2011; Učni načrt Športna vzgoja (Physical Education Curriculum) 2011

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3 Operational objectives for the module “Enjoyment of Sports and Educational Games”

Table 10 Operational objectives and content for interdisciplinary connection of sport–geography in the subjects Physical Education–Social Studies, Grades 4 to 5

THEMATIC MODULE SOCIAL STUDIES	THEMATIC MODULE PHYSICAL EDUCATION	OPERATIONAL LEARNING OBJECTIVES OF SOCIAL STUDIES, which relate to geography	COURSE MATERIAL ⁴ FOR PHYSICAL EDUCATION
SPATIAL ORIENTATION AND CARTOGRAPHY (GRADE 4)	HIKING	Learn how to determine the cardinal directions using the Sun, shadows, a watch and a compass. Learn elements of maps (signs, ground plans, grid, legend, title, author, scale). Orientate oneself using different sketches, charts, maps (of their hometown/ home region); can read information (descriptive, quantitative, symbolic data). Can sketch simple drawings and a map. Use mapping as a method to store and display spatial data.	<i>Students determine the cardinal directions using the Sun and a watch, exploring the environment using a map.</i> Two hiking trips to peaks offering panoramic views. An orienteering expedition along a marked trail.
HOMETOWN	ADDITIONAL PHYSICAL EDUCATION CONTENT	Identify and analyse safe and less safe pedestrian and cycling routes. Understand the various factors that affect the behaviour of traffic participants. Analyse and evaluate examples of pedestrians' and cyclists' behavioural strategies.	Cycling (additional content). 'Krpan' sports program (additional content). <i>Principles of safe sport and exercise, dangers of hiking, swimming, water sports, cycling and winter sports.</i>
HOME REGION	HIKING	Evaluate the human impact on the changing nature	<i>Conservation of nature (learning about nature, caring for the cleanliness of the environment, behaving in nature).</i>
SPATIAL ORIENTATION AND CARTOGRAPHY (GRADE 5)	HIKING	Orientate oneself using a compass and maps. Study elements of maps (relief colour scheme, height above sea level, relative height).	Orienteering expedition along a marked trail. <i>Students determine the cardinal directions using the Sun and a watch, explore the environment using a map</i>

THEMATIC MODULE SOCIAL STUDIES	THEMATIC MODULE PHYSICAL EDUCATION	OPERATIONAL LEARNING OBJECTIVES OF SOCIAL STUDIES, which relate to geography	COURSE MATERIAL ⁴ FOR PHYSICAL EDUCATION
SLOVENIA – LOCATION AND CHARACTERISTICS	HIKING	Learn about the ecological zones of Slovenia, describe and compare some natural and social characteristics.	Students understand the importance of protecting natural and cultural heritage (operational objective).
	DANCE	Recognise and identify certain Slovenian characteristics (typicality), unique features and elements that shape the national identity, natural and cultural heritage. Develop a positive attitude towards tradition, understand the importance of preserving traditions (manners and customs, cultural monuments, etc.).	Students understand the importance of protecting natural and cultural heritage (operational objective). Students dance selected children's, folk and social dances. Dancing games. Concatenation of regional folk dances. <i>Slovenian regional folk dancing and its characteristics</i>
	HIKING	Learn about sustainable development.	Students understand the importance of protecting natural and cultural heritage (operational objective). <i>The effects of walking on the body.</i>
		Learn in the field about some of the natural landscape characteristics of Slovenian ecological zones.	Two hiking trips to peaks offering panoramic views.

Source: *Učni načrt Družba* (Social Studies Curriculum), 2011; *Učni načrt Športna vzgoja* (Physical Education Curriculum) 2011

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4 Operational objectives for the subjects Learning the Environment and PE are defined in different ways, thus cross-curricular connections are identified by comparing the objectives of Learning the Environment with PE's learning material OR operational objectives. Where connections were determined using operational objectives, it is expressly indicated.

Table 11 Operational objectives and content for interdisciplinary connection of sport–geography in the subjects Physical Education–Geography, Grades 6 to 9

THEMATIC MODULE GEOGRAPHY	THEMATIC MODULE PHYSICAL EDUCATION	OPERATIONAL LEARNING OBJECTIVES FOR GEOGRAPHY	COURSE MATERIAL ⁵ FOR PHYSICAL EDUCATION
ORIENTEERING AND SURVEYING THE EARTH'S SURFACE (GRADE 6)	HIKING	Orientate oneself and move through the environment using a compass and a map.	The pace of walking, replacement of lost fluids and thermoregulation. The effects of walking on the human body. Environmental protection, concern for the conservation of natural and cultural heritage. Safety in the mountains. Providing first aid for abrasions, wounds, blisters, contusions (swelling) and insect bites, protection against insects. Emergency responses. Navigating with a map.
LET'S USE THE KNOWLEDGE: A CLASS EXCURSION (GRADE 6)		Visit at least one natural geographical unit of Slovenia (an interdisciplinary excursion); Learn about the beauty and geographical diversity of Slovenia through excursions and fieldwork; Learn about the values and the uniqueness of the Slovenian landscapes, develop a love and respect for Slovenian natural and cultural heritage and a sense of belonging to Slovenia.	
SUBALPINE REGIONS (GRADE 9)		Describe efforts and measures taken to conserve natural and cultural heritage.	
ALPINE REGIONS (GRADE 9)		Describe efforts and measures taken to conserve natural and cultural heritage.	
DINARIC KARST REGION (GRADE 9)		Using the Postojna Cave as an example, students present the efforts and measures taken to conserve natural and cultural heritage.	

Source: *Učni načrt Geografija* (Geography Curriculum) 2011; *Učni načrt Športna vzgoja* (Physical Education Curriculum) 2011

Although teachers most often integrate geographic content with History, Natural Sciences, and Civics and Ethics, the above analysis of the curricula reveals many

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5 Operational objectives for the subjects Learning the Environment and PE are defined in different ways, thus cross-curricular connections are found by comparing the objectives of Learning the Environment with PE's learning material OR operational objectives. Where connections were determined using operational objectives, it is expressly indicated.

possible connections between PE and geographic content. In particular, it can be seen that they most closely interconnect when active teaching approaches and methods are used. Nevertheless, we cannot ignore theoretical content such as knowledge of orienteering, concern for the preservation and appreciation of natural and cultural heritage, care for the environment and one's own health.

Interdisciplinary integration with PE is also emphasized in curricula program documents. For example, the Geography curriculum “(*Učni načrt Geografija / Geography Curriculum*, 2011) emphasises that geography as a subject promotes “responsible and active protection of one's own health, and in Geography lessons students develop values that contribute to “ensuring the maintenance ... of one's own health”.

The Geography curriculum specifically notes that cross-curricular class excursions and fieldwork provide a “good example for developing procedural and transferable lifelong knowledge, common to all school subjects, and allow students to acquire new knowledge that they master and develop, as well as apply, such that it takes on an important dimension in how they understand their homeland”. The curriculum actually requires planned excursions every year “to at least one geographic region in Slovenia, so that over four years students encounter different natural and human geographic regions”.

The PE curriculum (*Učni načrt Športna vzgoja / Physical Education Curriculum*, 2011) also has content that sensibly and relevantly interconnects with the geography based subjects Learning the Environment, Social Studies and Geography. Particularly noticeable is the material dealing with Slovenian folk traditions as well as content linked to hiking. Every year each student must participate in five sports days, two of which include hiking. The subject matter for sports days that include hiking tends to focus on environmental characteristics of the hiking venue, including its geographical, historical and natural features, and includes hiking and orienteering using a compass and map.

The PE knowledge standards also connect to geographic content: at the end of the first period students should be able to “move along a marked trail”; at the end of the second period, “[students are] able to determine cardinal directions ... act in accordance with the principles of environmental protection”; at the end of the third period, the student should “know how to orientate oneself with a map ... is aware of conservation problems and actions that preserve natural and cultural heritage”.

Within different teaching approaches and methods class teachers, sports teachers and geography teachers effectively intertwine geographic and PE subject matter. Below are just a few examples of how interdisciplinary integration of geographic and PE subject matter can be achieved:

- **Class excursion:** Geography teachers may plan a class excursion allowing students to acquire and consolidate geographical knowledge whilst simultaneously meeting the objectives of PE, for example, by building up endurance, by engaging in physical activity or sporting activities. Teachers could include hiking in hills that offer good views and the potential for orientation, organising for the bus to wait at a stop a bit further away so that students walk for a longer period; initiating a variety of physical/active sports and games at specific stops). On excursions to particular regions students can be introduced to and learn traditional dances, manners and customs that involve physical activity. In this way, students also learn about the cultural heritage of an area/region/landscape.
- **Fieldwork:** Teachers can organise fieldwork that takes place in the immediate vicinity of the school and includes active learning methods (orientation during a treasure hunt, various physical/sports activities; measurement—of wind, path of the Sun, rainfall, etc.).
- **Class lessons:** In line with interdisciplinary integration of geographic content and PE teachers can prepare some simple physical/sports activities in the course of regular lessons in the classroom. Thus, for example, when learning about different countries students may learn their traditional dances. Another possibility is for teachers organise orienteering exercises using QR⁶ codes on the school grounds. The theoretical knowledge content in both courses also interconnects—when learning about cultural and natural heritage, caring for the environment, taking care of one's own health, etc. Geographic content can also be integrated into PE lessons carried out in the gym, for example, on outdoor playgrounds, or in the immediate vicinity of the school, for example, an orienteering race. Another possibility is when students assist in setting up the gym and need to manoeuvre gymnastics equipment and props into position based on charts which map out the gym layout and the positions of the equipment.



6 A machine-readable code consisting of an array of black and white squares, typically used for storing URLs or other information for reading by the camera on a smartphone.

Since each chart has a legend students learn to orientate themselves on paper and in space, along with learning how to read a map and a legend.

- **Project days, activity days:** During project days students and teachers can present varied geographic content, for example, distant regions of the world and geographical phenomena such as volcanism, earthquakes, which teachers interconnect with physical/sports activities such as creative movement and dance, role play and showcasing the most interesting sports from different countries.
- **Sports days:** In every year two sports days are reserved for hiking. These have a strong focus on raising the awareness of conservation of nature, landscape features of the hiking venue and different ways of orientating oneself on maps and in nature.
- **A minute for health:** In all subjects, students should break up long periods of sitting down with a minute of physical activity, during which they perform some movement exercises with the windows open. To effectively carry out such exercises, geography and sports teachers absolutely need to cooperate.

Conclusion

To conclude, interdisciplinary integration is increasingly becoming an important part of the educational process in Slovenia and is an important didactic approach which contributes in providing students with lasting knowledge and, above all, practical knowledge. It can partially lighten the load of curricula, whilst also enhancing the experiential aspect of activity days. Interdisciplinary integration is frequently mentioned in program documents, and curricula include a specific chapter on interdisciplinary integration that directs individual subject teachers on teaching subjects that can be interconnected, defining which teaching material from other subjects can complement their own subjects.

However, in practice and also from reviewing curricula, interdisciplinary integration of geographic subject material with content from PE is rarely mentioned. It is more common to seek out synergies and opportunities for the integration of geography with other subjects. In order to determine which subject matter of PE on the one hand and geographical content on the other, connect, interact and complement each other, we performed an analysis of curricula of all four subjects: Geography, Learn the Environment, Social Studies and PE.

We identified in the curricula several opportunities to draw connections between PE and geographic subject matter in the subjects, Learning the Environment, Social Studies and Geography. In particular, it can be seen that the two groups of subjects most closely interconnect when active teaching approaches and methods are utilised, but nevertheless we cannot ignore the theoretical content, such as knowledge of orienteering, concern for the preservation and appreciation of natural and cultural heritage, care for the environment and one's own health.

10 / Results of comparison

10/1 Comparison of the school systems

The organisation of the educational systems in all three countries in the study is primarily within a public administration framework. In both the Czech Republic and the Republic of Slovenia, a single Ministry maintains and regulates an integrated state educational system (the Ministry of Education, Youth and Sports for the Czech Republic and the Ministry of Education, Science and Sports for the Republic of Slovenia), while in Denmark the education system is the responsibility of four different ministries.

In the Czech Republic, all schools have the status of separate legal entities. While the local communities organise pre-primary education and compulsory schooling, upper secondary schools and tertiary professional schools are organised at the regional level. In the Republic of Slovenia pre-school education, compulsory basic education, basic music education, upper secondary and higher education are all within the domain of the Ministry of Education, Science and Sports, and the government is the regulator, the founder, the main finance contributor and the supervisor of public education institutions. In Denmark, the Ministry of Education manages pre-primary, primary and secondary education, while the Ministry of Higher Education and Science manages higher education.

The structure of the educational system in all three countries is similar. Although there are some differences the pre-school education, compulsory basic education, upper secondary education and tertiary education levels can be easily compared.

Pre-school education is optional in all three countries and encompasses centre-based childcare and early general pre-school education. However, **basic education** is compulsory, between the age of six and sixteen in Denmark and between the age of six and fifteen in both the Czech Republic and the Republic of Slovenia. In the Czech Republic, basic education is organised mostly within a

9-year, single-structure system, which is divided into two stages—primary and lower secondary. However, lower secondary education can also be provided by multi-year general secondary schools and 8-year conservatories. In both the Republic of Slovenia and Denmark, primary and lower secondary education is integrated into single-structure schools, of nine years and ten years duration respectively. In Denmark the ten years includes Grade 0, a transitional year between kindergarten and primary school.

Upper secondary education in all three countries is provided by upper secondary schools in either general and vocational fields. In the Czech Republic, upper secondary schools are divided into three basic types: grammar schools (4 to 8 years with a school-leaving exam); secondary professional schools (3 to 4 years with a school-leaving exam) and secondary vocational schools (3 to 4 years with a final exam or a school-leaving exam). In the Republic of Slovenia the upper secondary education consists of general education with different types of 4-year grammar school programmes that finish with a school-leaving exam and vocational (2 to 3 years) and technical education (4 years or 3 plus 2 years with a final exam or a school-leaving exam). In Denmark, there are three types of upper secondary schools: grammar schools (3 years), trade schools (3 years) and vocational schools (3 to 5 years). There are some specifics regarding **the tertiary level of education** although in all three countries the systems are organised in accordance with the Bologna process and the Lisbon Strategy.

10/2 Comparison of the analysed curricula

10/2/1 Questionnaire for the C.A.L.M.A.Z. member countries experts

Method: Two experts from each nation agreed to participate in the data collection—one expert for PE and one for Geography. All of them are academics (mainly associate or assistant professors) at quality universities. Their expertise is evident from the number of scientific papers that they have authored.

We established first contacts at the C.A.L.M.A.Z. inaugural meeting in September 2013 in Ljubljana (Slovenia). All authors received a general information letter (e-mail) and the following qualitative semi-structured, open-ended questionnaire. Their task was to describe the situation of PE and Geography

in their country, with a particular focus on ISCED 1 and 2, according to the following questions:

0. Structure of the educational system

- 0.1 What is the compulsory age for children to attend school in your country?
Age x-y
- 0.2 How many compulsory PE/Geography classes shall be held for one week and for one year at certain school levels?
Level x (e.g. elementary school), Age x-y: y hours
- 0.3 For which of these school levels do you have specific PE/Geography curricula in your country?
- 0.4 What is the current political situation of PE/Geography at school in your country?
- 0.5 Have there been any educational reforms done in the last 5 years or are there any going to be the following years?
- 0.6 Which are the most urgent problems of PE/Geography?

1. Formal issues of the curriculum (asked for both elementary and secondary school)

- 1.1 What is the name of the subject?
- 1.2 When did the current core curriculum enter into force?
- 1.3 Who is responsible for the elaboration of the curriculum?
- 1.4 How centralized or decentralized is your curriculum? (e.g. national level, regional level, school level, ...)
- 1.5 What is the structure of the main curriculum and what are the main thematic chapters?
- 1.6 What is/are the key concept(s) that your curriculum is referring to? (e.g. for PE: physical literacy, fundamental movement skills, health education, sports education, ...). (e.g. for Geography: place, local-global perspectives, interaction of man and nature, ...)
- 1.7 Is the curriculum rather content based (physical activities, concepts, models) or outcome based (competences)?
- 1.8 Does the curricula define any standards? If yes, in what sense? (you can show an example)
- 1.9 Is there any quality control system monitoring the implementation of the provisions of the curriculum? If yes, who are the responsible and how is it organized?

1.10 In how far is it possible to detect any difference between the prescribed curriculum and the real curriculum implemented in the field?

2. Objectives, content and assessment issues of the curriculum (asked for both elementary and secondary school)

2.1 Which are the main general objectives defined in the curriculum?

2.2 Do the following development areas appear in some way or another in the curriculum?

For example, for PE: Forming physically literate individuals; Educating children to lead physically active lifestyle; Developing the knowledge for health-conscious lifestyle; Developing self-knowledge, self-esteem and cooperative attitude; Forming responsible behaviour; Developing problem-solving, constructive, critical thinking.

For example, for Geography: Developing of: action competence, citizenship (local-global), critical thinking, problem-solving competence, organize practical work (e.g. experiments or fieldwork, aesthetic awareness).

2.3 In how many areas is the content divided and what are their names? PE/Geography

2.4 Which activities, contents, appear in the curricula content and which are the dominant ones? PE/Geography

2.5 Is there any kind of central (governmental) assessment on any class level? If yes, in which class level, what is its purpose?

2.6 Is there a summative assessment, evaluating students at different moments during the school year and at the end of the year? If yes, on what elements is the assessment based? (e.g. knowledge; skill, attitude, ...)

Source: authors' own questionnaire survey

The authors had a text delivery deadline of June 2016. The first papers varied somewhat in quality and structure. It was decided that the answers had to undergo careful revision and comparison with the content of the descriptive chapters (Chapter 7, 8, 9). The main goal was to guarantee comparability between statements from different countries. This in turn facilitates cross-sectional study. We steadily sent feedback to those authors whose papers we felt would benefit from some changes before work by the language editor.

10/2/2 Juxtaposition of the questionnaire for the C.A.L.M.A.Z. member countries experts

Table 12 The results of the comparison of the PE and Geography curricula

PHYSICAL EDUCATION		
Czech Republic	Denmark	Slovenia
Structure of the educational system		
What is the compulsory age for children to attend school in your country?		
6–15	6–15	6–15
How many compulsory PE classes shall be held for one week and for one year at certain school levels?		
All grades: 2 classes / week	Grades 1–3: 2 classes / week Grades 4–6: 3 classes / week Grades 7–9: 2 classes / week	Grades 1–3: 3 classes / week Grades 4–6: 3 classes / week Grades 7–9: 2 classes / week
For which of these school levels do you have specific PE curricula in your country?		
2 curricula: Elementary school Grades 1–5 Elementary school Grades 6–9	4 curricula: Elementary school Grades 1–2 Elementary school Grades 3–5 Elementary school Grades 6–7 Elementary school Grades 8–9	There is only one curriculum for PE, covering all nine years of elementary school. It is divided into three parts: Elementary school: Grades 1–3 Elementary school: Grades 4–6 Elementary school: Grades 7–9
What is the current political situation of PE at school in your country?		
Long tradition. Discourse about launching third class a week. academic discussion about changing health oriented goals toward physical literacy.	New reform in 2014 PE got one extra lesson per week at Grades 4–6 class and exam in PE after Grade 9.	Nowadays in a rather good position.
Have there been any educational reforms done in the last 5 years or are there any going to be the following years?		
2004	2014	2007–2008

Czech Republic		Denmark		Slovenia
Which are the most urgent problems of PE?				
Congruence (fidelity) of curricula levels. Low acceptance of new curricula.		Getting PE teachers around the country educated to handle the PE exam.		Implementation of the modern educational trends.
Formal issues of the curriculum (asked for both elementary and secondary school)				
What is the name of the subject?				
Physical (body) education		Physical education		Physical education
When did the current core curriculum enter into force?				
2004		2014		2011
Who is responsible for the elaboration of the curriculum?				
National Institute for Education led by Ministry of Education, Youth and Education		Ministry of Education		Ministry of Education, Science and Sport
How centralized or decentralized is your curriculum? (e.g. national level, regional level, school level, ...)				
Decentralized: The Framework Education Programme (national level) → The School Education Programme (school level).		Centralized on national level.		Centralized on national level.
What is the structure of the main curriculum and what are the main thematic chapters?				
1) Health enhancing activities. 2) Skills enhancing activities. 3) Activities enhancing physical activities learning.		1) Versatile sport. 2) Sports, culture and relationships. 3) Body, workout and well-being.		Grades 1–3: ABC of athletics, ABC of gymnastics, natural movements, ball games, dance games, outdoor activities, swimming. Grades 4–9: athletics, gymnastic with rhythmic gymnastics, dancing, volleyball, football, handball, basketball, outdoor activities.

Czech Republic	Denmark	Slovenia
What is/are the key concept(s) that your curriculum is referring to? (e.g. for PE: physical literacy, fundamental movement skills, health education, sports education, ...).		
PE was embedded in the educational area related to health promotion. The current concept of Czech PE is not accepted universally by the teachers. According to the latest educational programmes a wide variety of physical activities concerning especially health goals should be used in the PE classes.	The key concept is bodily competence, sports competence, social competence and personal competence.	The overall objectives of PE in elementary program: Proper movement efficiency and the creation of a healthy lifestyle. The acquisition of skills that enable participation in various sports activities. Understanding the usefulness of regular exercise and PE, and their role in providing quality free time. The creation of positive patterns of behaviour.
Is the curriculum rather content based (physical activities, concepts, models) or outcome based (competences)?		
Both content and outcome-based	Outcome (competence) based	More content than outcome based
Does the curriculum define any standards? If yes, in what sense? (you can show an example)		
Standards are formulated in a form of expected outcomes; expected outcomes are developed into indicators.	Only standards of what the student knows and is able to do.	Standards are formulated in a form of expected outcomes.
Is there any quality control system monitoring the implementation of the provisions of the curriculum? If yes, who is responsible and how is it organized?		
Czech school inspection should monitor teaching at schools and implementation of the curricula. Though, implementation of the curriculum is not monitored in reality.	Quality control comes with the multiple choice national test (Grade 8) and final oral exam together with biology and physics-chemistry (Grade 9). Both test and exam is initiated by the Ministry of Education.	In Slovenia teachers are obliged to follow the curriculum/syllabus of the subject they teach. The headmasters can (whenever they decide so) participate during their lessons and check their materials. All that can be also checked by school inspectors.

Czech Republic	Denmark	Slovenia
In how far is it possible to detect any difference between the prescribed curriculum and the real curriculum implemented in the field?		
A low congruence between the projected and realised curricula, which presents a significant problem for the quality evaluation of the subject.	There has not yet been a review after the new reform, but that will come as well.	In Slovenia the teacher is obliged to follow the curriculum and to fulfil all its written goals. Teachers should present a written preparation for each lesson. Through lessons preparations and written and oral exams' results of teacher's students and results of final exams (see below) on national level the implementation can be checked. In reality by PE teachers a lot of written goals aren't realized, which is an important problem for the quality of PE (especially in first and second triennium).
Objectives, content and assessment issues of the curriculum (asked for both elementary and secondary school)		
Which are the main general objectives defined in the curriculum?		
General objectives of PE in CZR are all concerned with health issues.	... to learn to be part of versatile sporting contexts where it is vital that pupils achieve physical skills and knowledge of physical activity and experience joy and the desire to pursue sport in many different areas.	PE is directed to pupils' primal needs for exercise and play, personalized development of movement and functional abilities, acquisition of the many and various motor skills and sports knowledge and emotional and rational perception of the sport.
Do the following development areas appear in some way or another in the curriculum?		
For example, for PE: forming physically literate individuals; educating children to lead physically active lifestyle; developing the knowledge for health-conscious lifestyle; developing self-knowledge, self-esteem and cooperative attitude; forming responsible behaviour; developing problem-solving, constructive, critical thinking.		
Yes, the dominant ones: educating children to lead physically active lifestyle; developing the knowledge for health-conscious lifestyle.	Yes	Yes

Czech Republic	Denmark	Slovenia
Which activities, contents, appear in the curricula content and which are the dominant ones?		
Physical education in the curricula – health issues, reality is different.	Gymnastics, Ballgames, Dance and expression, Outdoor activities, Athletics, Swimming, Physical training. Dominant ones are the first 3 activities.	Athletics, Gymnastic, Dancing, Natural Movements, Ball Games, Mountaineering, Swimming, Gymnastic with Rhythmic Gymnastics, Volleyball, Football, Handball, Basketball. There is no dominant activity; all activities are equal.
Is there any kind of central (governmental) assessment on any class level? If yes, in which class level, what is its purpose?		
It is proposed to launch centralised evaluation in Grades 5 and 9.	After Grade 9 pupils take a PE exam, which is both theoretical and practical. This is evaluating knowledge, skills and competences.	The National Assessment of Knowledge (NAK) at the end of Periods 2 and 3, i.e. for pupils from years 6 and 9, is compulsory.
Is there a summative assessment, evaluating students at different moments during the school year and at the end of the year? If yes, on what elements is the assessment based? (e.g. knowledge; skill, attitude, ...)		
The school determines marking – testing is done during school year		
In the middle and at the end of the school year students get report card with written assessment (lower grades) or marks		
There are no universally agreed criteria; PE assessment is seldom formalized.	A written statement from the PE teacher in Grade 8, and a final examination when finishing Grade 9.	At different moments during the school year it is regarded as the determination of the achievement of objectives; achievements are assessed.

GEOGRAPHY

Czech Republic

Denmark

Slovenia

Structure of the educational system

What is the compulsory age for children to attend school in your country?

6–15

6–15

6–15

How many compulsory geography classes shall be held for one week and for one year at certain school levels?

Grades 1–3: "Přívuka" 2–3 hrs/week,
Grades 4–5: "Vlastivěda" 1–2 hrs/week,
Grades 6–9: "Geography" 2-2-2-1 hrs/week

Grades 1–6: Geography is integrated in the Science-Technology subject having 1–3. hrs/week
Grades 7–9: Geography a separate subject.
Grade 7: 2 hr/week
Grade 8: 1 hr/week
Grade 9: 1 hr/week

Grades 1–3: Environmental studies, 3 hrs/week
Grades 4–5: Social studies: 2 hrs/week
Grade 6: Geography 1 hr/week
Grades 7–9: Geography: 2-1,5-1,5 hrs/week

For which of these school levels do you have specific geography curricula in your country?

Elementary school Grades 1–5
Elementary school Grades 6–9

Only specific curriculum for geography, Grades 7–9

Environmental Studies Curriculum (Grades 1–3)
Social Studies Curriculum (Grades 4–5)
Geography Curriculum (Grades 6–9)

What is the current political situation of geography at school in your country?

"Stealing" of geography curriculum by other subjects
(environmental education, biology, civics,
history, ...).

The curriculum for geography, biology and physics-chemistry (Grades 7–9) has the same structure emphasising common science competences (investigation, modelling, perspective, and communication) + 6 interdisciplinary science subjects. In 2017 there will be one common oral examination including all three subjects.

As a subject Geography is rather well positioned in the school system although there are sometimes the aspirations to combine geography content with some other subjects.

Czech Republic		Denmark		Slovenia	
Have there been any educational reforms done in the last 5 years or are there any going to be the following years?					
2004		2014		2007–2008	
Which are the most urgent problems of geography?					
Descriptiveness, encyclopaedic learning, lack of practical use – fidelity.	Many uneducated geography teachers, The municipalities are going to pay for the teachers' in-service training. The 2014 reform of geography emphasis physical geography and the teachers might “forget” the human geography when teaching.	Beside implementation of the modern educational trends, no urgent problems.			
Formal issues of the curriculum (asked for both elementary and secondary school)					
What is the name of the subject?					
Prvouka – vlastivěda – zeměpis (Elementary studies – Geography – Geography) Grades 1–3: “Prvouka” (Elementary studies) Grades 4–5: “Vlastivěda” (Geography) Grades 6–9: “Zeměpis” (Geography)	Grades 1–6: Science-technology Grades 7–9: Geography	Grades 1–3: “Spoznavanje okolja” (Environmental studies) Grades 4–5: “Družba” (Social studies) Grades 6–9: “Geografija” (Geography)			
When did the current core curriculum enter into force?					
2004	2014	2011			
Who is responsible for the elaboration of the curriculum?					
National Institute for Education led by Ministry of education, youth and sport	Ministry of Education	Ministry of Education, Science and Sport			

Czech Republic	Denmark	Slovenia
How centralized or decentralized is your curriculum? (e.g. national level, regional level, school level, ...)		
Decentralized: The Framework Education Programme (national level) → The School Education Programme (school level)	Centralised on national level	National level
What is the structure of the main curriculum and what are the main thematic chapters?		
For Geography 9 thematic units (3 of them contain geography): Grades 1–5: thematic unit “Man and his world”, Grades 6–9: thematic unit “Man and nature” contains “Planet Earth, Regional geography of continents, Geography of the Czech Republic and general physical and human geography and cartography”	Grades 1–6: Science-technology, emphasise on topics from physical geography. Grades 7–9: Four geographical core topics: Demography and economic geography, the earth and its climate, globalization, and natural resources and living conditions. The three science subjects Grades 7–9 (geography, biology and physics-chemistry) also have to work interdisciplinary with six topics several of them concerning sustainability.	Grade 6: Planet Earth Grade 7: Regional Geography of Europe and Asia Grade 8: Regional Geography of Africa, Australia and Oceania, America and Polar regions Grade 9: Geography of Slovenia
What is/are the key concept(s) that your curriculum is referring to? (e.g. for Geography: place, local-global perspectives, interaction of man and nature, ...).		
Recent unsuccessful attempts to understand processes in nature.	Geographical key concept: Interaction of man and nature, place, local to global scale. Students competences: investigation, modelling, perspectivation, and communication.	Geography helps to acquire knowledge, abilities and skills, which can help them to understand the environment.
Is the curriculum rather content based (physical activities, concepts, models) or outcome based (competences)?		
Focus both on the content (content-based curriculum) and on the outcomes (outcome-based curriculum).	Competence base, which means focus is on student outcome.	More content that outcome based.

Czech Republic		Denmark		Slovenia	
Does the curriculum define any standards? If yes, in what sense? (you can show an example)					
Standards are formulated in a form of expected outcomes; expected outcomes are developed into indicators.	Only standards of what the student knows and is able to do.	Standards are formulated in a form of expected outcomes.			
Is there any quality control system monitoring the implementation of the provisions of the curriculum? If yes, who are the responsible and how is it organized?					
Czech school inspection.	National test (Grade 8) and final exam (Grade 9). Both are initiated by the Ministry of education.	School inspectors.			
In how far is it possible to detect any difference between the prescribed curriculum and the real curriculum implemented in the field?					
Teachers do not understand the goals of the reforms or do not want to implement them because it is easier to teach in old, used ways than to implement new things.	The curriculum of geography was changed in 2014. Since then, no research has been conducted concerning the implementation of this curriculum.	Teacher is obliged to follow the curriculum and to fulfil all its written goals. Teachers should present a written preparation for each lesson. Through lessons preparations, written and oral exams' results of teacher's students, results of final exams on national level the implementation can be checked.			
Objectives, content and assessment issues of the curriculum (asked for both elementary and secondary school)					
Which are the main general objectives defined in the curriculum?					
Geographical thinking about man and nature, environment, use of energy... – exploration of facts, processes and their context, using various methods of cognition.	The main geographical objective is that students achieve competence to apply knowledge from the following main areas, in appropriate connections: Demography and economic geography, The Earth and its climate, Globalization, Natural Resources and living conditions.	Knowledge and understanding of space, natural and socio-economic systems on Earth, processes in home region, the country and the world in terms of temporal changes.			

Czech Republic	Denmark	Slovenia
Do the following development areas appear in some way or another in the curriculum? For example, for Geography: Developing of: action competence, citizenship (local-global), critical thinking, problem-solving competence, organize practical work (e.g. experiments or fieldwork, aesthetic awareness).		
Competence to learn, competence to solve problems, critical/geographical thinking	Ability to organize and achieve data collection and to use their knowledge in different geographical contexts. In the preamble of geography, action competence and citizenship are emphasized.	Action competence, citizenship, critical thinking, problem-solving competence, organizing practical work, aesthetic awareness.
In how many areas is the content divided and what are their names?		
Elementary schools: Grades 1–5 have 5 thematic units with Geography concentrated in 2 units. Grades 6–9 have 7 thematic units (Note in Secondary Schools: Grades 6–9 have only 6 thematic units).	Grades 1–6: weather and climate, Danish landscapes, plate tectonic, environmental studies. Grades 7–9: Demography and economic geography, the earth and its climate, globalization, natural resources and living conditions.	Grades 1–3: Spoznavanje okolja – learning the Environment. Grade 4–5: Družba – Social studies. Grades 6–9: Geografija.
Which activities, contents, appear in the curricula content and which are the dominant ones?		
No dominant activities, there are several balanced topics. Geography should explain processes in the world in general, but reality is that geography describes the world.	No dominant activities. However, it is vital that the students are able to organize and conduct data collection; and process, interpret and speculate on the material collected in the appropriate contexts. This implies that students have to do practical work when having geography. This might be lab. work, fieldwork, outdoor learning etc.	Geography focuses on understanding the world, understanding the dynamic interactions of elements that compose it, and in recognition of its continuous development and transformation. The educational mission of the geography is the acquisition of knowledge, thinking skills and practical skills, the formation of attitudes and values.

Czech Republic			Denmark	Slovenia
Is there any kind of central (governmental) assessment on any class level? If yes, in which class level, what is its purpose?				
<i>It is proposed to launch centralised evaluation in Grades 5 and 9.</i>	National assessments in Geography at Grade 8 (national test) and Grade 9 (final exam).		<i>The National Assessment of Knowledge (NAK) at the end of Periods 2 and 3, i.e. for pupils in Grades 6 and 9, is compulsory.</i>	
Is there a summative assessment, evaluating students at different moments during the school year and at the end of the year? If yes, on what elements is the assessment based? (e.g. knowledge; skill, attitude, ...)				
The school determines marking – testing is done during school year				
In the middle and at the end of the school year students get report card with written assessment (lower grades) or marks				
Testing during school year by the teacher. The knowledge is assessed. No other assessment.	Only national test (Grade 8) and final exam (Grade 9). The geography teacher might use some other summative tools (e.g. on the internet) to evaluate the students learning.		Assessment at different moments during the school year. It is regarded as the determination of the achievement of objectives; achievements are assessed.	

Source: authors' own questionnaire survey

10/2/3 Comparison of the PE and geography curriculum- -C.A.L.M.A.Z member countries experts' answers

Physical Education

Structure of the educational system

The current state of PE within the educational system is relatively strong in all three countries in the study. PE has a long tradition in the Czech Republic and currently the possibility of a third class per week is being discussed. At the same time, there is a debate among academics about shifting the focus of PE from the current health oriented goals toward physical literacy. School reform in Denmark in 2014, resulted in an increase in the number of PE lessons for Grades 4 to 6, and an exam in PE after the Grade 9. When asked about the current policy in PE, the Slovenian respondent states that currently PE is in a rather good position within the basic education system.

Nevertheless, in all countries PE is experiencing problems. In the Czech Republic, it is the low congruence (fidelity) between curricula levels (for example between the goals and educational content) as well as low acceptance by teachers of the new curricula. In Denmark, the issue is educating PE teachers around the country to handle the PE exam and in Slovenia, there is a problem in implementing modern educational trends.

In the Czech Republic, the minimum time allocated for all grades is two lessons of PE per week. In Denmark, it is two lessons for Grades 1 to 3 and for Grades 7 to 9, and three lessons for Grades 4 to 6. In Slovenia, Grades 1 to 6 have three lessons of PE per week, and only two lessons per week in the last two primary education grades.

In all three countries, the PE curriculum changes during primary education. In the Czech Republic, there are specific curricula for Grades 1 to 5 and for Grades 6 to 9. In Denmark, there are four curricula specific for Grades 1 to 2, Grades 3 to 5, Grades 6 to 7, and Grades 8 to 9. In Slovenia, there is only one curriculum covering all nine primary education grades, but nevertheless, it is divided into three parts, one each for Grades 1 to 3, Grades 4 to 6, and Grades 7 to 9.

The implementation of the curriculum is quality assured in different ways. In the Czech Republic, inspections are carried out by the Czech School Inspectorate; however, in reality the implementation of the curricula is not checked directly

and remains the responsibility of the school itself. In Denmark, quality is assured by a national testing regime initiated by the Ministry of Education. In Slovenia, inspection is carried out at a school level and is initiated by the director of a school.

Formal issues

In this section we make some general comments on the PE curricula in the three countries involved in the study, identified through the respondents' answers to ten questions that referred to both the lower and higher primary education level.

All countries use the same name for the subject—"physical education", although in the Czech Republic they sometimes refer to PE as "body education". The oldest curriculum is that of the Czech Republic (2004), although the document has been modified since then, most recently in 2011, with another revision planned for the autumn 2016. Slovenia and Denmark have more recent curricula that were introduced in 2011 and 2014 respectively. In these two countries the curricular documents are developed by their respective Ministries of Education, while in the Czech Republic, the Ministry of Education commissions the National Institute for Education to develop curricula.

Unlike Denmark and Slovenia, where development of the curricula is centralized at the national level, the Czech curriculum is developed both at the national level (The Framework Education Programme), and at the school level (The School Education Programme). The Czech curriculum includes activities encouraging health, skills and learning physical activities, Denmark's curriculum typically supports versatile sport, sports, culture and relationships as well as body, workout and well-being. In lower grades, Slovenia's curriculum lays down the ABC of athletics, the ABC of gymnastics, natural movements, ball games, dance games, outdoor activities, and swimming; these are further developed in higher grades by adding sports such as volleyball, football, handball, and basketball.

The concepts underpinning the PE curriculum are also different. In the Czech Republic the focus is on encouraging health. Denmark's curriculum focuses on achieving competence—bodily competence, sports competence, social competence, and personal competence. Slovenia's curriculum focuses on achieving lifelong physical activity and emphasises proper movement efficiency and the creation of a healthy lifestyle, the acquisition of skills that enable participation

in various sports activities, understanding the usefulness of regular exercise and PE and the creation of positive patterns of behaviour.

The three curricula also differ in their educational approach. When asked “Is the curriculum content based (physical activities, concepts, models) or outcome based (competences)?” the Czech respondent said “both content and outcome-based”, the Danish respondent said “Outcome (competence) based” and the Slovenian respondent said “more content than outcome based”. All the three curricula contain standards which are usually defined as expected outcomes (Czech Republic and Slovenia), and as standards of what the student knows and is able to do in Denmark.

In all three countries, the potential of the intended curriculum often fails to be fully realised. In the Czech Republic, there is a significant problem for the quality evaluation of PE because of a low congruence between the planned and realized curriculum. In Slovenia, planned goals often fail to be realized by PE teachers. In Denmark, the reform has been implemented only recently and results are not yet available.

From the results of the study it appears that general characteristics of PE curricula in the three countries differ in many aspects.

Objectives, content and assessment issues of the curriculum

In the following section we explore in detail the specific objectives, content and assessment issues of the PE curriculum in the three countries.

The objectives of the PE curricula differ. In the Czech Republic all objectives refer to health issues, while in Denmark, the objective is that students learn to be part of versatile sporting contexts where it is vital that pupils achieve physical skills and knowledge of physical activity and experience joy and the desire to pursue sport in many different areas. In Slovenia the main objectives are pupils’ primal needs for exercise and play, personalized development of movement and functional abilities, acquisition of the many and various motor skills and sports knowledge and emotional and rational perception of the sport.

Respondents all agree that their national curricula include the ideas of forming physically literate individuals, educating children to lead physically active lifestyle, developing the knowledge for health-conscious lifestyle, developing self-knowledge, self-esteem and cooperative attitude, forming responsible behaviour, and developing problem-solving, and constructive, critical thinking.

The PE educational content is similar with all three curricula including gymnastics, athletics, ball games, dancing and swimming. Gymnastics, ball games, and dance and expression, are dominant in the Denmark's curriculum, which further contains outdoor activities and physical training. Unlike others, Slovenia's curriculum also offers natural movements and mountaineering. The Czech curriculum is divided into activities that impact health, activities that influence the level of locomotive skills, and activities encouraging locomotive learning. Besides the common content, it further contains martial arts activities, tourism, and outdoor stays.

Formal assessment of pupils in PE lessons is obligatory in Slovenia and in Denmark. In Denmark, pupils receive a written statement from the PE teacher in Grade 8 and are tested at the end of Grade 9 for knowledge, skills and competences. In Slovenia, achievement of objectives is assessed at different times during the school year and compulsory testing is conducted within the National Assessment of Knowledge (NAK) at the end of in Grades 6 and 9. In the Czech Republic, formal testing is not compulsory although national testing at the end of the Grades 5 and 9 is being debated. Currently, however, only progress testing is carried out.

Geography

Structure of the educational system

In the Czech and Slovenian curricula some themes in Geography overlap the content of other subjects, for example, Civics, Biology, History, etc., Interestingly, this is perceived by the respondents in a rather negative way. However, Denmark's curriculum aligns geography with Biology and Physics-Chemistry. From 2017, there will be one common oral examination including all three subjects. The new structure emphasises common science competences (investigation, modelling, perspectivation, and communication) and six interdisciplinary science subjects.

The study reveals that there are only minor issues with the geography curricula across the three countries. In the Czech Republic, there are issues with excessive descriptiveness, encyclopaedic learning and lack of practical use. In Denmark, the problem is the many uneducated geography teachers. In response to this situation, the municipalities are going to pay for in-service training for teachers. Furthermore, since the 2014 reform, the emphasis has been placed on physical geography and there may be an issue that teachers "forget" human geography

when teaching. In Slovenia, as stated previously, it is only the implementation of modern educational trends that is problematic, as stated previously.

There are different structures between countries in the Geography curricula for primary education. In the Czech Republic, Geography has a single curriculum for primary schools further divided into “*Prvouka*” (Elementary studies) for Grades 1 to 3, “*Vlastivěda*” (Geography) for Grades 4 to 5, and “*Zeměpis*” (Geography) for Grades 6 to 9. In Denmark, Geography in Grades 1 to 6 is integrated in the Science-Technology subject having 1 to 3 hrs/week. In the higher primary level Geography is an independent subject, with the emphasis on the cooperation between Geography, Biology and Physics-Chemistry (Science), with two lessons per week in Grade 7 and one lesson per week in Grades 8 and 9. In Slovenia, the curriculum is divided into three—Environmental Studies Curriculum (Grades 1 to 3), Social Studies Curriculum (Grades 4 to 5) and Geography Curriculum (Grades 6 to 9).

The implementation of the curriculum is quality assured in the same ways as the PE curricula. In the Czech Republic, inspections are carried out by the Czech School Inspectorate; in Denmark, quality is assured by a national testing regime initiated by the Ministry of Education. In Slovenia, implementation of the current curriculum is tested by means of lesson preparations, written and oral exam results of students, and results of final exams on national level. Inspection is carried out at a school level and is initiated by the director of a school.

Formal issues

In all three countries Geography is taught under different names in different school years. The word “geography” does not appear in any of the curricula until higher primary grades, since the subject content in the lower primary grades is merged with elements of history, biology, and basics of physics and chemistry.

The oldest geography curriculum can be found in the Czech Republic (2004); however, as with PE, it has been modified several times. Slovenia and Denmark have considerably more recent curricula, dating back to 2011 and 2014 respectively. As with PE, curricula documents in these two countries are developed by their respective Ministries of Education, while the Czech Ministry of Education commissions the National Institute for Education to develop the curriculum.

As stated previously for PE, in Denmark and Slovenia the curricula are developed centrally, at the national level, while the Czech curriculum is developed

both at the national level (The Framework Education Programme), and at the school level (The School Education Programme).

In the lower primary grades, in all three countries, Geography deals predominantly with physical geography and, in general, covers the world nearby, for example, Man and his World in the Czech Republic, and Environmental Studies in Slovenia (home, school, local community, basic terminology, and orientation) and then Social studies (geographical, historical, sociological topics of home region and Slovenia).

In the higher primary years in all three countries, the subject content focuses on learning about the Earth and regional geography of the world including detailed geography of their own country. However, Denmark's curriculum explores the subject in more depth and focuses on four geographical core topics: demography and economic geography, the Earth and its climate, globalization, and natural resources and living conditions. The Czech curriculum also goes beyond the physical geography in the higher primary grades where it deals with general physical and human geography and cartography.

The key concepts underpinning the Geography curricula differ between countries as it did for the PE curricula. In the Czech Republic there is a focus on understanding processes in nature; in Slovenia, the focus is on understanding the environment through knowledge, abilities and skills. In Denmark, the focus is on understand the interaction of man and nature, place, local to global scale. The student's competences are investigation, modelling, perspectivation, and communication.

The curricula also differ in their educational approach, in the same way as the PE curriculum does. When asked "Is the curriculum rather content based or outcome based?", the Czech respondent said that it focuses both on the content and on the outcomes, the Danish respondent said it is competence based, which means the focus is on student's outcomes, and the Slovenian respondent said it is more content than outcome based. From this point of view, the geography curriculum in the countries discussed does not differ considerably from the PE curriculum. All the three curricula contain standards which are, as in PE, most often defined as expected outcomes (in the Czech Republic and Slovenia), and as standards of what the student knows and is able to do in Denmark.

The Czech Republic seems to be the least successful in realizing the planned curriculum as teachers do not understand the goals of the reforms or do not

want to implement them because it is easier to teach in old and set ways than to implement new things. The situation in Denmark was monitored at a national level in 2004 and 2011; however, evaluation of the new curriculum has not yet been carried although is expected in summer 2017. In Slovenia, implementation of the current curriculum is tested by means of lesson preparations, written and oral exam results of students, and results of final exams on national level.

Objectives, content and assessment issues of the curriculum

The main objectives of the Geography curricula are very similar in all three countries. In the Czech Republic it is geographical thinking about man and nature, environment, use of energy and so on—exploration of facts, processes and their context, using various methods of cognition. In Denmark, the main objectives focus on competence and the emphasis is on the ability of students to apply their knowledge, in the appropriate context, of the following: demography and economic geography, the Earth and its climate, globalization and natural resources, and living conditions. In its description of objectives, Slovenia's curriculum lists the knowledge and understanding of space, natural and socio-economic systems on Earth, processes in home region, the country and the world in terms of temporal changes.

All the curricula seek to develop certain competences. In the Czech Republic these are the competence to learn, competence to solve problems, and critical/geographical thinking. Denmark's curriculum emphasises action competence and citizenship as well as the student's ability to organize and achieve data collection, and to use their knowledge in different geographical contexts. Slovenian curriculum includes action competence, citizenship, critical thinking, problem-solving competence, organization of practical work, and aesthetic awareness.

In the Czech Republic and in Denmark the geography subject content is divided into two levels, and in Slovenia, into three. In the Czech Republic, the first level (lower primary) has five thematic areas—Place where we live, People around us, Man and time, Diversity of nature and Man and his health. For the second level (higher primary) there are seven thematic areas—geographic information, data sources, cartography and topography; then a natural image of the Earth, regions of the world, social and economic environment, environment, Czech Republic and field geographic education, practice and application. In Denmark, the first level (Grades 1 to 6) deals with weather and climate, Danish landscapes, plate tectonic, environmental studies, and the second level (Grades 7 to 9) consider

demography and economic geography, the earth and its climate, globalization, natural resources and living conditions. The geography content of the Slovenian curriculum is divided into three levels: Environmental Studies (Grades 1 to 3), Social Studies (Grades 4 to 5) and Geography (Grades 6 to 9).

Topics in the geography curricula are equally balanced with no topic predominant. The content of the Czech and Slovenian curricula seeks to make pupils get to know and understand the world; however, in Czech school, teachers tend to focus on the description of the world. Denmark's curriculum emphasises students' ability to organize and conduct data collection, and process, interpret and speculate on the material collected in the appropriate contexts. This implies that students have to do practical work in geography. This might be laboratory work, fieldwork, outdoor learning etc.

Central assessment of the student's knowledge of Geography is similar to the assessment of PE knowledge and skills. In the Czech Republic, there is a debate about introducing formal testing at the end of the Grades 5 and 9. In Denmark, testing is carried out at the end of Grade 8 with a national multiple-choice test and in Grade 9 for knowledge, skills and competences. In Slovenia, compulsory testing is done within the National Assessment of Knowledge (NAK) at the end of Grades 6 and 9. Progress testing in geography is usual in Slovenia and the Czech Republic, while in Denmark, according to the respondent, teachers might use some other summative tools (for example, on the internet) to evaluate the student's learning. Progress tests in all the countries are only carried out by teachers. In the Czech Republic, it is usually done via oral or written tests, while in Slovenia, the achievement of objectives is assessed.

10/3 The questionnaire survey analysis–PE and Geography integration

The questionnaire survey was carried out in the school year 2015/2016, in the three countries involved in C.A.L.M.A.Z. (the Czech Republic, the Republic of Slovenia, and Denmark) in order to determine how experts (teachers in lower and higher primary classes, university experts, or other specialists) perceive the integration of physical education and geography. The questionnaire survey was developed using Google Docs forms and completed on-line by participants.

The questionnaire contained 11 questions, four of which were identification questions—about the respondents’ country of origin, their sex, age, and contact details. Further questions enquired about the respondent’s experience with the integration of physical education and geography, in their studies or in practice. The respondents were to state whether or not they regarded integration as important, and if they did, they were asked to list goals and examples of integration. If they did not consider integration important, they were asked to provide reasons and potential barriers and problems related to integration. The results can be further sorted according to the length of the respondents’ teaching practice.

Questionnaire for teachers of Physical education and Geography

Background information

Male / female (M / F):	The main school level you teach: 1.–5./6. grade (X): 5./6.–9. grade (X): Secondary school (lower grade) (X):
Age:	
Years of teaching experience:	
Country (Denmark, Slovenia, Czech Republic):	
Please write below the subject(s) you teach this school year (2015/16)	

1. Do you have any **experience** (personal, colleague, during studies ...) with **combining physical education and geography**?

YES

• If yes, please give a short description (max. 5 lines):

NO

2. Do you find **combining** of physical education and geography **important**?

YES

- If yes: Can you mention the 3 most important goals when combining physical education and geography (1. being the most important goal and so on).

1.

2.

3.

NO

- If no: Why not?

3. Can you see any **possibilities** to combine physical education and geography in primary/secondary education?

YES

- If yes, please describe, how (in general or concrete activities)?

NO

- If no, why not (describe barriers, problems or threats)?

Source: author's own on-line questionnaire survey

A total of 69 responses were received; 14 from Denmark, 16 from the Czech Republic, and 39 from Slovenia. In closed questions (mostly identification questions), basic statistical methods (addition, average, and correlation) were used. For the remaining questions, given the number of respondents and the open nature of most of the questions, the survey is regarded as qualitative and all answers are included in the results. In these questions, the qualitative research method of key words analysis of individual statements was used. Actual statements from respondents are used for illustration purposes.

It is important to note that responses from the countries concerned did not differ in essence. Table 13 shows the breakdown of respondents according to

gender and age. The numbers of men (30) and women (39) are quite even. Most respondents are aged between 50 and 59 and the average age of respondents is 42.9 years. The length of teaching practice is proportional to their age. A correlation coefficient calculated by means of function CORREL in MS Excel from the age of a respondents and the length of their teaching practice amounts to a value of 0.9418, which represents almost a linear relationship between these two quantities. The average length of the respondents' teaching practice is 16.9 years.

Table 13 *Characteristics of the survey's respondents according to their gender and age*

Age	Female	Male	Total (abs., rel. in %)	
< 29	5	5	10	14.5%
30–39	9	10	19	27.5%
40–49	7	9	16	23.2%
50–59	8	13	21	30.4%
> 60	1	2	3	4.3%
Total	30	39	69	100.0%

Source: author's own on-line questionnaire survey

The overwhelming majority of respondents were teaching in primary education when they were asked to fill in the questionnaire, with only five respondents working in a different type of education such as a university. Seven teachers teach only in lower primary classes (typically Grades 1 to 5 but including Grade 6 in Slovenia), 49 teachers teach in higher primary classes (or lower secondary level (Grades 5/6 to 9) in Czech gymnasias), the other eight teachers work at both levels.

The combinations of subjects taught by the respondents are diverse. Respondents teach physical education most often (41), either as the only subject or combined with another subject (most frequently a language, geography in seven cases, or mathematics). A total of 20 respondents teach Geography, either as the only subject or combined with another subject. Ten respondents teach almost all subjects in lower primary classes.

A total of 33 respondents have personal experience with the integration of physical education and geography (i.e. the respondents experienced integration during their studies or they know a colleague who is involved in it, or they are involved in integration themselves), while 36 respondents have no experience.

Interestingly, teachers without experience of integration are more likely to think that integration is not important. A total of 55 respondents including even the 19 respondents who lack the experience, consider the integration of physical education and geography important (see Table 14).

Table 14 *Matrix of respondents' responses regarding their experience with the integration of physical education and geography, and the importance of integration*

		Do you find combining of physical education and geography important?		
		Yes	No	Total
Do you have any experience (personal, colleague, during studies ...) with combining physical education and geography?	Yes	31	1	33
	No	24	12	36
	Total	55	13	69

Source: authors' own on-line questionnaire survey

Integration is considered very important by all teachers who teach both physical education and geography; 25 (71%) of physical education teachers and 11 (84%) of geography teachers see the integration of exercise and geography as important. However, geography teachers, no matter whether they teach geography only or in combination with another subject, adopt a more favourable attitude towards the integration of physical education and geography than teachers of physical education.

Three core activities were frequently given as examples of personal experience with the integration of physical education and geography; each of them was mentioned in approximately one third of all responses although some responses mentioned more activities:

- orientation in nature with map, compass, GPS and orienteering (36% of responses),
- outdoor teaching (34%),
- excursion, outdoor sport/project day (30%).

The respondents were also asked to list their three most important goals when combining physical education and geography. The results reveal four key goal areas:

1. for enhancing the learning process from the student's and teacher's point of view

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

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

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

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

"Students work out and study in one time."

"Fieldwork = reasons and consequences."

"To stimulate learning."

"Learning by doing."

"Learn to work interdisciplinary."

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

"Learning through other means than usual."

"Better explanation and understanding of problem."

"Movement promotes learning."

"The education in real environment."

"Convert theoretical knowledge into practise."

"Learning with (all) senses."

2. for health

"Be fit."

"Increase physical fitness and resilience of students."

3. for communication and cooperation

"Better communication and cooperation between students."

"Enhancing team work."

"More fun."

4. for real life

"Understanding the World we live in."

"Complex development of students."

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

"The care for 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."

If respondents did not consider integration of physical education of geography important (13 respondents), they were asked to explain their reasons. The most frequent reason (five respondents) was *"I do not see any connection"*. Another reason given is that physical education and geography are not suitable subjects for integration. The combination of physical education and biology was mentioned as one offering better possibilities. Other reasons included time constraints and the fact that such integration is not part of the curriculum. In particular, teachers mention the fact that such lessons are very demanding in terms of organization, and that teachers have not been professionally trained to integrate the two subjects. One of the teachers asked why pupils should be forced into integration if boosting their attitude to sport and exercises would be sufficient.

Although more than 50% of teachers and experts have no experience in integrating physical education and geography (36 respondents as compared to 33) and some of them cannot see reasons for doing so, 60 out of 69 respondents could see potential in the integration of physical education and geography in lessons. The integration via orientation in nature with a map/GPS and orienteering is most often mentioned (18 responses). Other activities include sports days or courses (cycling, biking, canoeing, skiing, mountaineering and caving), school outdoor stays, and other outdoor activities. Other non-traditional activities mentioned are disc golf with a compass, playing settlers in large format, geocaching or where I go, parkour in urban environments and battle games in woods. Some teachers even see the possibilities of integration in for example, collecting rocks, transport planning, or ecological lessons. One of the teachers, however, points out the indispensable knowledge of first aid and awareness of risks connected with outdoor lessons.

Respondents were given space for free comments at the end of the questionnaire, which only a few of them took advantage of; however, two interesting views were provided: *“Geography is a multidisciplinary science. Through educational system, tourism and economy, a placement of sport facilities and national health strategy strongly connects geography with physical education.”* or *“Great to be PE and geography teacher!”*

11 / Summary and Discussion

Our research was based on the problem-oriented, comparative scientific approach described in Chapter 5 and the results relate to two of the principles of comparative research—contextuality and comparability. The main problem being examined is the extent of the integration of the PE and Geography curricula in three different countries, both the intended curricula and the realised.

We focused on the basic (elementary) school level in the Czech Republic, Denmark and the Republic of Slovenia. At this level, the context of the research (the school systems) can be compared relatively easily. The results of this comparison (Chapter 10.1) showed that structure of the educational system in all three countries is similar, although there are some small differences, for example the duration of the compulsory basic education.

The actual PE and Geography curricula were compared in detail in Chapter 10.2 and the results of this comparison are summarized as follows.

Currently both subjects are in a strong position within the basic education system in all three countries. Nevertheless, there are problems in implementing the current curricula for both PE and Geography.

In PE in the Czech Republic, it is the low congruence (fidelity) between curricula levels (for example between the goals and educational content) as well as low acceptance by teachers of the new curricula. In Denmark, the issue is educating PE teachers around the country to handle the PE exam. In Slovenia, there is a problem in implementing modern educational trends.

In Geography, the issues are less significant—excessive descriptiveness, encyclopaedic learning, lack of practical use and, in Denmark, a lack of fully educated geography teachers.

Differences were identified in how the curricula (both PE and Geography) were developed—at the national level in Denmark and Slovenia but at both national and school level in the Czech Republic. There were also differences in how

implementation of the curricula was quality assured—by compulsory external exams in Denmark and Slovenia but not in the Czech Republic, although compulsory testing is currently being debated. The curricula also differed in their educational approach—whether it was more oriented towards content or to outcomes.

In the detailed comparison of the PE curricula, similarities were observed in the time allocated to PE, in how the PE curricula changed during primary education, and in the curricula content regarding landscape specifics. However, the concepts underpinning the PE curricula differed. The Czech curriculum differed the most, as it is primarily health oriented whereas in Denmark and Slovenia the curricula were more movement oriented.

In comparing the Geography curricula, differences were found in what the subject was called in the different school years, and the term “geography” does not appear in any of the curricula until the higher primary grades. We also found differences in that, while the Geography subject matter usually overlaps with subjects such as Civics, Biology and History, in Denmark the Geography curriculum is formally aligned with Biology and Physics-Chemistry. The key concepts underpinning Geography also differ: in the Czech Republic there is a focus on understanding processes in nature; in Slovenia, the focus is on understanding the environment through knowledge, abilities and skills; in Denmark, the focus is on understanding the interaction of man and nature, place, local to global scale. However, the main objectives of the Geography curricula are very similar in all three countries and all the curricula seek to develop certain competences, particularly action competences, critical thinking and problem-solving competences.

Integration of elementary school subjects is emphasized to a varying extent in all the curricula and there are considerable opportunities for integration of the Geography and PE curricula (Chapters 7.6, 8.6 and 9.6). Teachers in lower and higher primary classes, university experts, and other specialists were surveyed to record the reality of PE and geography integration (Chapter 10.3).

It is important to note that responses from the countries concerned did not differ in essence—while integration is often mentioned, in practice it has not been implemented sufficiently. The survey also showed that, from the teachers’ point of view, outdoor learning is the most important focal point of interdisciplinary integration between geographic subject matter and PE and sport.

Teachers with experience of integration are more likely to think that integration is important than teachers without experience. Unfortunately, more than half of the respondents have no experience in integrating PE and Geography, either in their studies or in practice. Some experienced respondents mentioned that such lessons are very demanding in terms of organization, and that teachers have not been professionally trained to integrate the two subjects. For this reason, further research and teacher training in the implementation of interdisciplinary integration is critical.

Currently two specific research projects are being conducted at Masaryk University, Faculty of Education:

- The use of fieldwork as a powerful teaching strategy, MUNI/A/0946/2015;
- Training teachers of geography and biology for fieldwork, MUNI/A/1262/2016.

The Faculty of Education of the University of Ljubljana has established a course in Interdisciplinary Integration. Competences obtained by students attending this course include:

1. Generic (general) competences:

- Synthetic, analytic, creative thinking and problem solving;
- Sensitivity/openness to people and social situations, ability to work in teams.

2. Course-specific competences:

- Expanded expert knowledge in diverse areas of education that are part of primary and secondary educational stages;
- Ability to have an interdisciplinary and a cross-curricular, as well as a holistic overview of the education process;
- Ability to plan and prepare different forms of interdisciplinary integration for classes;
- Capacity to develop new ideas (creativity) in education;
- Shouldering of responsibilities for directing educational processes.

The experience provided by fieldwork is irreplaceable as it encompasses equal amounts of learning about and experiencing landscapes, practical training in

navigation, observational and investigative field skills, collection of primary data, and practical views about environmental issues and outdoor safety. The delivery of such outdoor programs yields positive results in terms of education learning outcomes. By using different senses, students gain a broader awareness, which is necessary for developing the lifelong, knowledgeable and powerful connections that are essential for a healthy future.

Fieldwork that enables pupils to work in a real environment with the proper selection of curriculum content leads to a more effective understanding of the subject matter (both PE and Geography) and has significant potential to attract pupils to science. Fieldwork in its various forms in terms of the external control of the teacher, is also associated with the use of modern scientific techniques, the separate identification of environmental problems, working with data and literature in the field and the development of communication skills of pupils.

Finally, practically oriented fieldwork integrating PE and Geography is able to eliminate the lack of physical activity and also lack of practical demonstrations and experiments in regular classroom lessons, insufficient development of the instrumental skills of students (the so-called “hands-on activities”), and the lack of the educational focus on issues which students encounter in everyday life. As such, the authors believe it represents a modern educational direction that will help increase motivation and interest of students, enhance their physical activity and develop their critical thinking, creativity and problem-solving skills.

12 / Examples of good practice

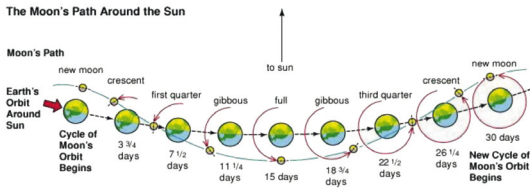
Integrated Geography and PE lessons are part of the educational process in primary schools in all three countries participating in this study. Teaching through experiences not only provides pupils with a new and broader perspective of the subject matter, but it also motivates and fosters the pupil's abilities to discover new relationships and, consequently, create new models, systems, and structures. This chapter contains some examples of good practice. All the examples clearly demonstrate how the Geography curriculum and the PE curriculum can be integrated into one thematic unit with the aim of gaining complex knowledge that might be used in real life. It is primarily the implementation of cross-curricular relations and the connection of theoretical activities with practical ones.

Numerous examples from Denmark include: integrated subjects, modules or topics placed in lessons; projects uniting knowledge gained in more subjects with practical experience and productive activities; or integration days when the whole school deals with one theme. From the Czech Republic an example is given of how one type of activity (i.e. dancing and games) can be integrated with Geography. From Slovenia one detailed outdoor learning activity is described in detail.

12/1 Abstracts of interdisciplinary approaches between PE and Geography, Denmark

In this section some examples of integrating physical education and geography in Denmark are presented. The activities aim to meet a wide spectrum of teaching goals, for example, work with GPS, physical activity in the field in different conditions, work with a compass, map reading, orienteering, work with a tablet and smartphone, exergames, and so on. In Table 15 the activities and descriptions are listed and the opportunities for integration of geography and physical activities are highlighted.

Table 15 Abstracts of interdisciplinary approaches between PE and Geography, Denmark

No.	Title, name etc.	Description of activity
1	Title of activity: Orbits of planets Needed materials: None Target group (ages): 12–16 years Purpose/learning goal(s): student feels and knows how the most prominent planets move according to each other.	Students are divided into groups of 3 or 4 persons. One is the Sun, one is the Earth, and one is the Moon. If four, the last student might be the one to organize and explain the others what to do. If 3 persons, it is just one of the three. The students have to make the movements the different planets make during an “earth-year”. “The Sun” stands still. “The Earth” rotates around its own axis once a day (the student shall of course not rotate 365 times, but just display the movement with several rotations around himself). “The Moon” rotates around the Earth—which actually is quite a complex movement—see Figure below. The Moon's Path Around the Sun  The diagram illustrates the Moon's path around the Sun. It shows the Earth's orbit around the Sun and the Moon's orbit around the Earth. The Moon's path is a series of loops. The phases of the Moon are shown at various points along its path: new moon, crescent, first quarter, gibbous, full, gibbous, third quarter, and back to new moon. The time intervals between these phases are given in days: 3 3/4 days, 7 1/2 days, 11 1/4 days, 15 days, 18 3/4 days, 22 1/2 days, and 26 1/4 days. The total cycle is 30 days. The diagram is credited to © 2006 Encyclopædia Britannica, Inc. After doing it once, the students swap positions and another student from the group has to explain and organize the exercise. In spite of doing it before, students need to understand the task well to be able to explain the complex path of the moon. Other physical phenomena, for example plate tectonic movements, can also be expressed in a similar way.

No.	Title, name etc.	Description of activity
2	Title of activity: Geocaching Needed materials: GPS and maybe a map over the area Target group (ages): 8–18 years Purpose/learning goal(s): Using GPS and move your body under different conditions.	The students are divided in groups of 2–4 persons. In many countries there are already different geocaching paths. Otherwise the teacher(s) (PE/Geography) might create a path themselves. The track can differ in difficulty according to the students' age, and the “treasures” might contain questions with a PE/Geo content. For geocaching see e.g. the link: https://www.geocaching.com/play Evaluation afterwards deals with both the “treasure questions” and how the groups find their way helping each other. Before starting, it is important to emphasize that all students in the group are going to use the equipment.
3	Title of activity: Orienteering with map & compass Needed materials: Maps, compasses, running gear. Target group (ages): 14–18 years Purpose/learning goal(s): Knowledge about reading maps, orientation with compass etc. and knowledge of their own physical capability.	This is a classic activity combining PE and Geography/ map knowledge. It can be organized either as a single person task or as group task. The evaluation task can emphasize the geography of the landscape. Under this category there are many possibilities: 1) Exercise in scale on map 2) Orientation in map 3) Walk by compass only 4) Run where you remember the map (orienteering in landscape) 5) Distance running 6) Nature compasses—trees, moss, anthill, churches and more
4	Title of activity: Forms of movement through the landscape Needed materials: GPS, heart rate monitors + gear for cycling and running. Target group (ages): 15–18 years Purpose/learning goal(s): different landscape and transportation forms impact on own body. Group dynamic and social interaction when you are under pressure.	Groups of 3 students are formed, and each group has to go from point A => B, which includes different landscapes (flat, hilly, winding tracks and so on). Two of the students have to run and the last one has to cycle. They shall/may shift ways of movement during the trip! When travelling, the students monitor their heart rate and the landscape on the GPS, and make waypoints on the GPS where they may shift from running to cycling or conversely. After finishing, they make a short report of the connection between landscapes, ways of move, and impact on their bodies. This exercise requires careful introduction of safety issues (where to go...) and group dynamics.

No.	Title, name etc.	Description of activity
5	Title of activity: Expression of culture Needed materials: Reading material about other cultures gesticulations—maybe some dress-ups? Target group (ages): 6–18 years Purpose/learning goal(s): Students learn about different cultures and to express themselves.	The students are divided into groups of 3–4 persons. First, groups read about different body gestures from different countries, e.g. Group 1 reads about how to gesture “good day” in 5–10 different countries. Group 2 reads about how to gesture “thank you” in 5–10 different countries. Group 3 reads about how to gesture “I’m hungry” in 5–10 countries—and so on. After reading and practicing for themselves, they have to perform in front of the class, and the other groups have to guess which gestures are associated to which countries. The groups have to come with arguments for their guesses of the different gestures. For different gestures check examples in: https://en.wikipedia.org/wiki/List_of_gestures
6	Title of activity: Xnote/Woop app Needed materials: Smartphone Target group (ages): 10+ Purpose/learning goal(s): Orienteering in and knowledge about landscape.	Xnote or Woop app is an orienteering app for smartphones that uses GPS. In smaller groups, pupils are sent a route on one of the apps. The group follows the arrow guided by the app and when they find the location, a question will pop up, which might refer to the landscape to ensure that the pupils have acquired orienteering competence.
7	Title of activity: Book creator Needed materials: Tablet Target group (ages): 14–16 years Purpose/learning goal(s): Knowledge about outdoor education.	After studying the relevant geographic and PE subject matter students are given following task: You are to make a digital book about outdoor movement. You are to find and analyse 3 different environments (forest, hills, urban, rocks...) with respect to how the environment can facilitate movement. Give as precise analysis as possible and document examples of facilitation of movements. An example: Forest—what are the conditions? What is the surface like? What is the landscape like? Is it possible to do downhill mountain-biking? How should we move according to the surroundings, surface, weather conditions and so on? All this is to be documented in a digital book using the tablet app, Book creator.

No.	Title, name etc.	Description of activity
8	Title of activity: Outdoor life Needed materials: Outdoor equipment Target group (ages): 12–18 years Purpose/learning goal(s): Knowledge and competence in outdoor life.	In Geography and PE lessons pupils learn about outdoor life: in PE, how to behave, activities, take care of oneself living in the outdoor and be aware of one's own comfort zone both physically and mentally; in Geography, about the environment, living conditions and resources, climate and more. At a certain natural location, the pupils are divided into groups of 5–6. They are sent first to analyse the environment so they can make informed decisions on how to prepare themselves the best way possible. Analysis includes: climate, surface, possibilities of finding food in the nature and so on. On this basis the group plans a 1 overnight stay in the area. Students can also be given the task of conducting the outdoor trip with as little impact on nature as possible. This might include reflections on how to come to the spot (walking, cycling, by car, by bus, etc.), what kind of food (find some of it yourself, buy imported food, ecological food, etc.), how to prepare the food (gas burner, open fire, use tin foil, etc.). These and many other issues might be part of the preparation and are of high relevance according to both environmental issues and how the students act physically as well as mentally when being on the trip. Evaluation can be either oral or as a report, but should include both curriculum goals as well as personal reflections.
9	Title of activity: Turn a country Needed materials: Paper and pen Target group (ages): 6–16 years Purpose/learning goal(s): Students train their knowledge of concepts related to geography.	Memory game pieces are made of A4 or A5 size that pairs words and symbols related to geography. The pieces may be laminated, so the shelf life is extended. The teacher prepares the return game pieces that fit together in pairs. The words and symbols on the pieces match the theme being worked on in class. If working with countries, one piece in a set may have the name of the country, while the corresponding piece has its flag or details of the country. The exercise is best carried out in small groups. In this case, there may be several copies of the pieces—or more games with different themes. The game is played as a normal memory game where each student takes turns in turning two pieces. If the student finds two pieces that fit together, they will receive a "plug" and must take the two pieces. The game ends when everything is unplugged. The winner is the student with most sets. Variation The exercise can be used in a wide range of subjects and is especially good in situations where the teacher wants to work out something that must be learned by heart.

12/2 Dancing games in various regions in the Czech Republic

This section focuses on specific examples of integration of Geography and PE in the Czech Republic. It introduces the district of Slovácko in South Moravia and its three notable regions, Hornácko, Hanácké Slovácko and Podluží. Each of these regions has a characteristic landscape and natural conditions that have influenced people's lives. Geographical and historical information is linked to period dances from this area.

Given the current curricular reform in the Czech Republic, one of the priorities of a Czech primary school teacher is to consistently use *cross-curricular relations and integration of individual subjects*. The formation of basic educational goals and individual competences is facilitated primarily by *activating teaching forms and methods*, one of which is undoubtedly fieldwork.

The Czech Republic, and primarily South Moravia, is rich in ethnographic and folklore heritage. Many regions that have their own unique dialects, different folk costumes, music and songs, and a unique way of life. The regions differ in nuances formed by time and the environment. These geographically separated units can be connected by physical activities in the form of dance games that will allow us to exemplify regional differences.

Dance-activity games have always been part of people's lives. People create them mainly because they yearn to compete and enjoy themselves with their music and associated physical activity, and because they perceive it as a social need. Such games have always reflected people's immediate temper, their daily life, typical work and activities. They contain features linked to people and their lives in the form of music, lyrics, content, clothes, or tools. Each region is reflected differently in games, according to prevalent conditions.

This can be documented on three authentic (at least 150 years old) dance games from three different sub-regions of the folklore district of Slovácko in South Moravia.

Hat game

Hornácko is a hilly area near the border with Slovakia and the town of Velká nad Veličkou. The region was poor, but its folklore was rich. The hats men wore became props in this game.

Description of the game:

A random number of dancers dance in a circle, each of them is wearing a hat. While keeping the rhythm of the melody, they have to take the hat from the neighbour to their right and put it on their head. The tempo of music gets faster and faster until one of the dancers gets out of the rhythm and fails to take the hat and put it on. At that moment everybody shouts “Enough!”, the music stops playing, and the person who spoilt the game drops out. The game goes on until one dancer finally wins. Dancers change positions and figures during the game.

Variations:

- The hat is taken alternately with right and left hand.
- Side steps to the right or left are added.
- Dancers may stand back to back or they may sit.
- They clap their hands, squat down, take the hat, and so on.

The dance features elements of rhythmic activities and manipulation skills close to juggling.

Thatch game

The rich, fertile, and sunlit region of Hanácké Slovácko near the town of Velké Pavlovce and the town of Hustopeče gave a rich harvest of grapevine and corn. This is where the Thatch dance comes from, using thatches (i.e. straws of corn ears)

Description of the game:

Boys stand in front of crossed straws or twigs. One of the straws lies flat in front of their feet, the other lies crosswise to form a cross dividing the dance floor into four parts.

They first sing the lyrics:

“Starý došky vázal, (The old man made thatches)

do stodolky skládal, (he put them in a barn)

Můj starý stařečku, (My little old man)

dajte otépečku.” (give me a little bundle)

The dance consists in jumping over the straws and crossing left and right legs alternately. The twigs may not be upset. The tempo is faster and faster. Various figures and types of jumping over the straws may be thought of, and added, even jumping in pairs.

It is a physically demanding dance due to the jumping, hopping and coordination requiring elements.

Broom game

The region of Podluží enjoyed a rich social life and commercial activities near the city of Břeclav, which is where the fun pair Broom dance comes from.

Description of the game:

A random number of mixed pairs dance in a closed circle typical of a round dance. In the middle of the circle there is an odd dancer holding a broom in his hand. First the boy in the middle sings the following song:

“Mám já metlu, mám, (I have a broom, I have it)

Kemu já ju dám, (Who shall I give it to)

nedám já ju žádnýmu, (I won't give it to anyone)

enom děvčátku švarnýmu, (except for a pretty girl)

temu já ju dám.” (I'll give it to a pretty girl)

Then, the boy starts dancing polka acting as if the broom was his dance partner. At one point he drops the broom on the floor giving a signal to all the other dancers who are dancing in pairs. The dancers let go of each other and the male dancers have to find a new partner as quickly as possible. The boy who was dancing with the broom tries to find a dance partner as well. The boy who does not find a partner gets hold of the broom and starts dancing with it. The dance brings entertainment, quick reactions and dance skills.

This way, pupils get to understand that all three games geographically refer to the region they come from. They learn that each region displayed different geographical and social conditions reflected in the nature of individual games. In a natural way, students become aware of historical, cultural, geographical as well as locomotive contexts.

12/3 An example of interdisciplinary integration in the Republic of Slovenia – Šmarna Gora field trip

This section describes an example of good practice that is suitable for Grade 5 or possibly Grade 4. It is a self-contained fieldwork project with specific content applicable to Slovenia. It is a time-consuming teaching exercise combining material from the Geography curriculum and a significant amount of physical activity.

The example takes the form of an activity day/field trip to 'Šmarna Gora' (Mount Saint Mary) but can also, with a few modifications, take place at other peaks offering panoramic views. 'Šmarna Gora' and 'Grmada' are twin peaks of a prominent solitary mountain in the middle of the Ljubljana Basin. They are popular excursion destinations for residents of Ljubljana as well as for people from further afield. Despite being slightly lower than Grmada (676 m), Šmarna Gora (669 m), with its excellently preserved defensive walls from the time of the Turkish invasion, a church and a traditional guesthouse, is the more renowned of the two peaks. Due to its position on the outskirts of Ljubljana, many schools in and around Ljubljana use it as an excellent starting point and destination for carrying out educational programs. The path starts at 300 m and rises to the summit at 669 m above sea level.

Before the field trip, students are provided with worksheets and instructions. A few assignments require that students prepare in advance, either in school or at home, and perform certain tasks before the start of the trip. The rest of the assignments are carried out during the ascent of Šmarna Gora, at the summit and during the descent. All assignments relate to the objectives of the fifth grade curricula for PE and Social Sciences.

Students can work in groups and report their findings to each other, or perform selected tasks defined and delegated by the teacher. Hence, there is also potential for differentiated instruction.

Tasks in preparation for the field trip

Before starting the field trip, students examine a map of Šmarna Gora. They find on the map the starting and finishing points of the route and calculate the anticipated duration of the ascent and descent along the marked trails. They take into account that, in one hour, a group will cover 300 m of altitude during

an ascent and 400 m during a descent (the vertical component), and that in one hour of walking a group will travel 4 km (the horizontal component).

Students also mark the destination point (the summit of Šmarna Gora) on a map of Slovenia, anticipate panoramic views from the top and draw a panoramic map with the summit as the centre point. On a thicker sheet of paper they draw a circle with a diameter of 18–20 cm, and mark Šmarna Gora at its centre. They also mark the direction of north and draw in orientation lines facing certain settlements, mountains and other points of interest, for example, the Ljubljana Castle, 'Rašica' and 'Krim' mountains, the Ljubljana airport, the 'Grintavec' peak, Slovenia's highest mountain 'Triglav' (2864 m), the settlements of 'Zalog' and 'Škofja Loka', the Italian coastal town of Trieste, the Croatian capital Zagreb, and their hometown, along with ten different points of their own choosing.

Finally, it is important that students prepare for the fieldtrip and ensure that they are equipped with weather appropriate clothes and walking shoes (and also with extra clothes) and pack liquids as well as a personal first aid kit.

Tasks at the base of Šmarna Gora and during the ascent

At the meeting point at the base of Šmarna Gora, students have to get their bearings by reading a map, mark their own standing point and then trace the walking trail on the map. There is a head count at the beginning followed by a discussion about the various possibilities for keeping track of participants and the importance of responsible student behaviour when it comes to ensuring their own as well as the safety of their fellow students. The first and last students in line are designated.

Before hiking, each student measures and records their heart rate (number of beats per minute) and the respiratory rate (number of breaths per minute). Later, these measurements are repeated twice more (immediately after reaching the first stop and just before continuing on towards the second stop) and a ratio between the number of steps and the number of breaths is determined. This is how students monitor the strain on the body caused by hiking and learn about the difference between the heart rate during rest and physical activity.

At the first stop, reached after approximately 20 minutes of walking, students rest on a plateau in the midst of a mixed forest. They are asked to relax, close their eyes and take one minute to experience their surroundings using other senses, and then they describe the location in their own words. They also find

the location on the map and determine its altitude. Then they discuss the orientation (S, SE, W, SW, etc.) of the hillside that they had just walked up.

Following the instructions, students walk around the area, undertake the following tasks and fill out a spreadsheet about the natural geographical features they observe in their surroundings:

- Pick up something from the natural environment and examine it in detail. In the spreadsheet, they name and describe the thing that they have tactilely and visually examined (e.g. a piece of detached tree bark, a fern, a mushroom or a twig).
- Determine the nature of the terrain (steep or gentle slopes, plateaus, concave formations such as depressions and ditches, structures with either sharp or rounded edges etc.) and discuss in pairs which of the different terrains are natural, man-made (anthropogenic) or natural but (anthropogenically) transformed by humans.
- Search for rocks on or adjacent to the trail, and observe whether most of the rock is barren or partially covered by soil and vegetation, what colour it is and if it crumbles. They think about all possible factors that cause rocks to break down, whilst also naming the physical and human geographical phenomena and processes that affect rocks. At various sites they check whether they can see the rock structure (granules, adhesion of coarse fragments, layers etc.) and write down their findings. A small sample of the predominant type of rock is collected.
- Select a site where they carefully remove fallen leaves and some of the vegetation. Using their hands they pick up some soil, knead it and try to form a roll out of it. They try to determine its humidity and graininess (for example, if the roll of soil crumbles during kneading, the soil will most likely be considered clay, based on its graininess). On the designated spot in the spreadsheet, a bit of the soil is rubbed in order to determine its colour. A sample is also collected.
- Spread out within sight of the teacher and collect leaves from at least seven different types of trees that they must identify with the help of a pictorial guide—a vegetation key containing a collection of leaf outlines of the 30 most common types of trees growing in Slovenia. They take down the names of the trees they have identified. A leaf of each of the different tree types is either collected as a sample or photographed.

- Observe the undergrowth. They record, whether it is composed primarily of one or several types of plants, how tall it grows, whether it covers the entire area, etc. and they photograph it.
- Search for, name and collect or photograph an object that attracts their attention and that they consider part of nature. After examination of this object, they are asked to come up with an interesting question for fellow students.

After a further 20 minutes of walking, a second stop is made at a place where the natural environment is significantly different and the set of observations is repeated. Next, they compare the findings from both sites and comment on the differences. They try to deduce what causes the observed differences and therefore engage in causal thinking whilst learning how to search the landscape for evidence that supports certain geographical facts and findings. For example, at the second stop they may observe that the rocks are not uniformly covered by soil, that the slope is steep and that the soil is shallow. They can then deduce, that the observed characteristics exist because of extensive soil erosion on the steep terrain.



Figure 6 *Map of Šmarna Gora*

Source: Polhograjsko hribovje in Šmarna gora, Planinska zveza Slovenije, Planinska založna št. 122, Inštitut za geodezijo in fotogrametrijo

Tasks at the summit

Students are encouraged to feel a sense of satisfaction at having made the effort to reach the summit and recognize in themselves an inner peace as well as a strengthened mentality based on the achievements of the whole group. There is discussion about which segments they found challenging or most beautiful, what were the most fun and interesting situations. Then they focus on the

aesthetics of the landscape and compare students' expectations from before the trip with how they are feeling in the present. The anticipated panoramic vistas are then observed *in situ* and directly compared to the panoramic map that students have with them.

The entire group examines the exterior and interior sides of the walls as well as the fortress church on the summit. Students look for clues as to why the church is considered a fortress church. They write down some of their observations—the construction materials of the walls, an estimate of the thickness of the walls and their height at the tallest point, and the orientation of the church entrance and the altar, which they determine with the use of a compass. In the sketch of the church, which is provided to them, students label the areas marked with arrows, draw in the two wells they observe and mark the (inter)cardinal directions.

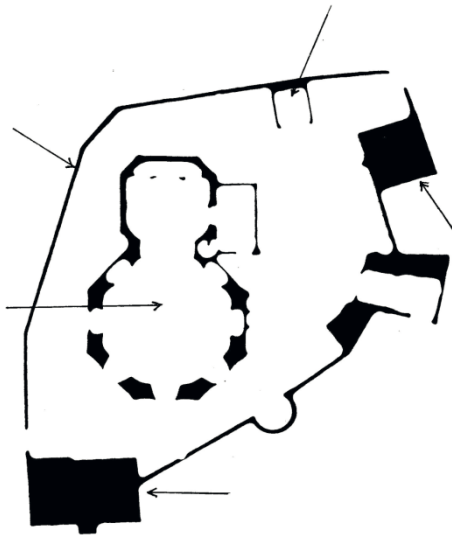


Figure 7 Sketch of fortress church which students fill in

Source: Šmarna gora: vodnik (eds. Miha Marenče, Franci Stare). Ljubljana: Delavska enotnost, 1981

Individuals who wish to deepen their knowledge can do so by reading additional information accompanied by pictures. They also learn details about famous people associated with Šmarna Gora. The rich history of this excursion destination is significant and learning about it through exploration has a greater impact than learning about it from books.

Next, students pick five random Šmarna Gora visitors in order to inspect their hiking gear and determine whether they have appropriate clothes and footwear.

Then they inspect the summit visitor book and pick three dates which they record and then compare the visitor numbers for those days. They also note what other kind of information they can acquire from the visitor book and make assumptions about what, in their opinion, influences the popularity of this hiking destination. Another task is for students to think about why such books exist and why visitors fill them in.

This tourism and history set of tasks are followed by traffic related observational tasks. Students choose an appropriate spot that allows them to clearly see the highway and record for a one minute the type and number of vehicles travelling on it. Then a discussion about the different methods the students have used in recording traffic takes place and comparisons are made between students' results and between the different kinds of records they created (tables, lists etc.).

Finally, students sketch a map including the Sava River, major roads, certain settlements and a feature of their own choosing, complete with an adjoining legend.

Tasks on return to starting point

On the descent, students consult written records of a folk legend originating from the time of the Turkish invasion, to locate the so-called 'imprint of the Turkish hoof' in the rock and the stone boulders called 'the petrified Turks'. Teachers make sure the group stays close together until the end of the trip.

Tasks back in the classroom

Students relive the activity day back in the classroom by looking at photographs taken during the excursion. They discuss everything that was covered, the methods that were used and the findings. Certain results/findings are verified using available literature and online data (so called secondary sources). Amongst themselves, students compare rock and soil samples collected at different observation sites (so called primary sources). They try to explain the reasons behind the observed differences (different sampling methods, different rock types, vegetation, steepness...) and then compare findings with the secondary sources. They also try to answer each other's questions that they prepared while looking at the photographs of their selected objects or the objects themselves.

Together, individual tasks from the spreadsheets are examined and analysed in detail.

The Šmarna Gora field trip program is a specific detailed example of tasks aimed at interdisciplinary integration of PE and geographic content in Grade 5 of primary school. In fact there are, of course, many more such examples given Slovenia's diverse landscape. However, teachers should not restrict themselves only to the concepts of physical geography, as human geography is equally important, and sometimes even more interesting, when it comes to the interdisciplinary integration of sport and geography.

References

- Alberts, H. C. (2015). Using sports examples in geography courses. *Journal of Geography*, 114(5), 211–218.
- Almond, G. A., & Verba, S. (1963). *Political culture: political attitudes and democracy in five nations*. Princeton, N. J.: Princeton University Press.
- Anderson, P., & Butcher, K. (2006). Childhood obesity: Trends and potential causes. *The future of children*, 16(1), 19–45. Retrieved from <http://www.jstor.org/stable/3556549>
- Andkjær, S. (2005). *Friluftsliv under forandring: en antologi om fremtidens friluftsliv*. Slagelse: Bavnepanke.
- Bereday, G. Z. (1964). *Comparative method in education*. New York: Holt, Rinehart and Winston.
- Biesta, G. (2011). Disciplines and theory in the academic study of education: A comparative analysis of the Anglo-American and Continental construction of the field, *Pedagogy, culture & society*, 19(2), 175–192.
- Blahutková, M., Řehulka, E., & Daňhelová, Š. (2005). *Pohyb a duševní zdraví*. Brno: Paido.
- Bolstad, R. (2003). Environmental education: Roots in the past, visions of the future, opportunities in the present. *Research informations for the teachers*, 3, 10–14.
- Brandl-Bredenbeck, H. P. (2005). Comparative physical education – Why, what and how? In U. Pühse & M. Gerber. *International comparison of physical education: Concepts, problems, prospects*. (pp. 19–31). Oxford: Meyer & Meyer Sport.
- Bray, M., & Thomas, R. M. (1995). Levels of comparison in educational studies: Different insights from different literatures and the value of multilevel analyses. *Harvard educational review*, 65(3), 472–491.
- Breakspear, S. (2012). The policy impact of PISA: An exploration of the normative effects of international benchmarking in school system performance, *OECD education working papers*, No. 71, OECD Publishing.
- Bunc, V. (2008). Nadváha a obezita dětí – životní styl jako příčina a důsledek. *Česká Kinantropologie*, 12(3), 61–69.
- Bunting, C. J. (2006). Interdisciplinary teaching through outdoor education. *Human Kinetics*, Auckland, New Zealand.
- Busey, C. L., & Waring, S. M. (2012). Global mindedness as the “goal”: Soccer as a pedagogical tool in the social studies. *The social studies*, 103(6), 260–266.
- Carpensen, C., Powell, K., & Christenson, G. (1985). Physical activity, exercise, and physical fitness: Definition and distinctions for health-related research. *Public health reports*, 100, 126–131.

Cone, T. P., Werner, P. H., & Cone, S. L. (2009). *Interdisciplinary elementary physical education*. Human kinetics.

Danish Ministry of Education—Geography curriculum. (2014). Retrieved from <http://www.emu.dk/modul/geografi-f%C3%A6lles-m%C3%A5l-l%C3%A6seplan-og-vejledning>.

Danish Ministry of Education—PE curriculum. (2014). Retrieved from <http://www.emu.dk/modul/idr-f%C3%A6lles-m%C3%A5l-l%C3%A6seplan-og-vejledning>.

Danish Ministry of Education. (2006). Overarching goals and purposes of the primary and lower secondary school in Denmark. Retrieved from <https://www.uvm.dk/Uddannelser/Folkeskolen/Folkeskolens-maal-love-og-regler/Om-folkeskolen-og-folkeskolen-formaal/Folkeskolens-formaal>.

Danish Ministry of Education—Educational Act, §15 concerning physical activity in primary and lower secondary school. (2014). Retrieved from <http://www.emu.dk/modul/lovgivning-og-rammer-4>.

Danish Ministry of Education. (2015). Statistics on pupils in primary schools and private schools. Retrieved from <http://www.uvm.dk/Service/Statistik/Statistik-om-folkeskolen-og-frie-skoler/Statistik-om-elever-i-folkeskolen-og-frie-skoler>.

Dobřý, L., Čechovák, I., Kračmar, B., Psotta, R., & Süß, V. (2009). Kinantropologie a pohybové aktivity. In V. Mužík & V. Süß (Eds.). *Tělesná výchova a sport mládeže v 21. století*. (pp. 8–16). Brno: Masarykova univerzita.

Došla, J. (2004). Běh, orientační hry a možnosti jejich využití na sportovních kurzech. *Outdoor 2004*. Brno: Paido.

Drake, S. M. (2007). *Creating standards-based integrated curriculum: Aligning curriculum, content, assessment, and instruction*. Thousand Oaks: Corwin press

Drake, S., & Burns, R. (2004). Meeting standards through integrated curriculum. *Association for supervision and curriculum development*.

Edgington, W. D., & Hyman, W. (2005). Using baseball in social studies instruction: Addressing the five fundamental themes of geography. *The social studies*, 96(3), 113–117.

Educational standards for elementary education—geography (Standardy pro základní vzdělávání, Zeměpis /Geografie/). Retrieved from http://clanky.rvp.cz/wp-content/upload/prilohy/17383/zemepis_geografie.pdf

Educational standards for elementary education—physical education (Standardy pro základní vzdělávání, Tělesná výchova). Retrieved from http://clanky.rvp.cz/wp-content/upload/prilohy/17383/telesna_vychova_zdravotni_telesna_vychova.pdf

Egelund, N. (Ed.) (2013). PISA 2012-undersøgelsen. *En sammenfatning*. KORA.

Eurydice. (2014). The structure of the European education systems 2014/15: Retrieved from http://eacea.ec.europa.eu/education/eurydice/documents/facts_and_figures/EN_2014_15_diagrams_version_finale_pngs.pdf

FEP EE—see Framework educational programme for elementary education. (2016). Retrieved from http://www.nuv.cz/uploads/RVP_ZV_2016.pdf

Fogarty, R. J., & Pete, B. M. (2009). *How to integrate the curricula*. Corwin Press.

- Foskett, N. (1997). Teaching and learning through fieldwork. *Teaching and learning geography*, 189–201.
- Frömel, K., Novosad, J., & Svozil, Z. (1999). *Pohybová aktivita a sportovní zájmy mládeže*. Olomouc: Univerzita Palackého.
- Gallahue, D. L., & Donnelly, F. C. (2003). *Developmental physical education for all children*.
- Gilbert, A. G. (1992). A conceptual approach to studio dance, Pre K-12. *Journal of physical education, recreation & dance*, 63(9), 43–48.
- Gustafsson, J. E. (2008). Effects of international comparative studies on educational quality on the quality of educational research. *European educational research journal*, 7(1), 1–17.
- Halls, W. D. (1990). *Comparative education: Contemporary issues and trends*. Paris: UNESCO.
- Hayes Jacobs, H. (1989). *Interdisciplinary curriculum: Design and implementation*. ASCA: Alexandria, Va.
- Hendl, J. (2008). Kvalitativní výzkum: základní metody a aplikace. Praha: Portál.
- Hofmann, E. (2003). *Integrované terénní vyučování*. Brno: Paido.
- Holmes, B. (1984). Paradigm shifts in comparative education. *Comparative Education Review*, 28(4), 584–604.
- Hopmann, S. (2007). Restrained teaching: The common core of Didaktik, *European educational research journal*, 6(2), 109–124.
- Howell, R., Howell, M. L., Toohey, D., & Toohey, M. D. (1979). *Methodology in comparative physical education and sport*. Champaign, Illinois: Stipes Publishing Co.
- Huckle, J. (1991). Education for sustainability: Assessing pathways to the future. *Australian journal of environmental education*, 7, 43–62.
- Jacobs, H. H. (1989). *Interdisciplinary curriculum: Design and implementation*. Association for supervision and curriculum development: Alexandria.
- Jordet, A. N. (2010). *Klasserommet utenfor. Tilpasset opplæring i et utdvidet læringsrom*. Oslo: Cappelen Akademisk Forlag.
- Keeves, J. P., & Adams, D. (1997). Comparative methodology in education. In J. P. Keeves (Eds.), *Educational research, methodology and measurement: An international handbook* (pp. 31–40). London: Pergamon.
- 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. Banská Bystrica: Univerzita Mateja Bela.
- Korvas, P. (2009). *Integrovaná terénní výuka s pohybovými aktivitami* (Habilitační práce). Brno: Fakulta sportovních studií Masarykovy univerzity.
- Korvas, P., & Cacek, J. (2009). *Integrovaná výuka a tělesná výchova na základní škole*. Brno: Masarykova univerzita.
- Kovač, M., Starc, G., & Jurak, G. (2003). Medpredmetno in medpodročno povezovanje pri športni vzgoji. *Šport*, 51(2), 11–16.
- Krek, J., & Metljak, M. (2011). *Bela knjiga o vzgoji in izobraževanju v Republiki Sloveniji*. Department of Education and Sport. Retrieved from http://pefprints.pef.uni-lj.si/1195/1/bela_knjiga_2011.pdf.

Kretchmar, R. S. (2000). Moving and being moved: Implications for practice. *Quest*, 52(3), 260–272.

Kurikulum za vrtce. (1999). Strokovni svet RS za splošno izobraževanje, Ljubljana.

Lake, K. (2002). *Integrated curriculum*, School improvement research series (SIRS). Retrieved from <http://www.curriculumassociates.com/professional-development/topics/Integrated-Curriculum/extras/lesson1/Reading-Lesson1.pdf>

Liu, B. (2008). *Zeitgenössische deutsche und chinesische Sportpädagogik im Vergleich: ausgewählte Beispiele* (Doctoral dissertation), Deutsche Sporthochschule Köln. Retrieved from http://esport.dshs-koeln.de/75/1/Dissertation_Bo_Liu.pdf

Manual on sports and the environment. (2005). Retrieved from http://www.olympic.org/Documents/Commissions_PDFfiles/manuel_sport_environment_en.pdf

Manzon, M. (2007). Comparing Places. In Bray, M., Adamson, B. & Mason, M. *Comparative education research: Approaches and methods*, (85–123). Comparative education research centre: The University of Hong Kong.

Manzon, M. (2011). *Comparative education: The construction of a field*. Hongkong: Springer.

Mihelič, L. (2011). *Problematika medpredmetnega povezovanja geografije in zgodovine v gimnazijskih učnih načrtih*. (Magistrsko delo). Oddelek za geografijo, Filozofska fakulteta, Univerza v Ljubljani. Ljubljana. Retrieved from http://geo.ff.uni-lj.si/pisnadela/pdfs/mag_201203_ludvik_mihelic.pdf

Miles, L. (2007). Physical activity and health. *Nutrition bulletin*, 32(4), 314–363. Retrieved from <http://doi.org/10.1111/j.1467-3010.2007.00668.x>

Ministrstvo za šolstvo in šport. (2011). *Učni načrt Družba*. Zavod RS za šolstvo. Retrieved from http://www.mizs.gov.si/fileadmin/mizs.gov.si/pageuploads/podrocje/os/prenovljeni_UN/UN_druzba_OS.pdf

Ministrstvo za šolstvo in šport. (2011). *Učni načrt Geografija*. Zavod RS za šolstvo. Retrieved from http://www.mizs.gov.si/fileadmin/mizs.gov.si/pageuploads/podrocje/os/prenovljeni_UN/UN_geografija.pdf

Ministrstvo za šolstvo in šport. (2011). *Učni načrt Športna vzgoja*. Zavod RS za šolstvo. Retrieved from http://www.mizs.gov.si/fileadmin/mizs.gov.si/pageuploads/podrocje/os/prenovljeni_UN/UN_sportna_vzgoja.pdf

Ministrstvo za šolstvo in šport. (2011). *Učni načrt Spoznavanje okolja*. Zavod RS za šolstvo. Retrieved from http://www.mizs.gov.si/fileadmin/mizs.gov.si/pageuploads/podrocje/os/prenovljeni_UN/UN_spoznavanje_okolja_pop.pdf

Ministry of Education, Science and Sport. (2011). *Seznam posodobljenih učnih načrtov za obvezne predmete*. Retrieved from http://www.mizs.gov.si/si/delovna_podrocja/direktorat_za_pedsolsko_vzgojo_in_osnovno_solstvo/osnovno_solstvo/ucni_nacrti/

Ministry of Education, Science and Sport. (n.d.). *Evidenca srednjih šol*. Retrieved from <https://krka1.mss.edus.si/registriweb/Seznam2.aspx?Seznam=3010>

- Mužik, V., & Vlček, P. (2010). *Škola, pohyb a zdraví : výzkumné výsledky a projekty* (pp. 193–199). Brno: Masarykova univerzita.
- Noah, H., & Eckstein, M. (1969). *Towards a science of comparative education*. London: Macmillan.
- OBESSU. (n.d.). *Educational country file. School systems: Slovenia*. Retrieved from http://www.edufile.info/index.php?view=school_systems&topic=topic_general_infos&country=22
- OECD. (2002). Organisation for economic co-operation and development, directorate for education, employment, labour and social affairs, definition and selection of competences: theoretical and conceptual foundations. Strategy paper JT00132752.
- Overby, L. Y., Post, B. C., & Newman, D. (2005). *Interdisciplinary learning through dance: 101 moventures*. Leeds: Human kinetics.
- Pahor Bizjak, N. (2008). Krajevno ljudsko izročilo v luči medpredmetnega povezovanja športna vzgoja in krajevno ljudsko izročilo. *Gibalna, špo[r]tna vzgoja v luči kakovostnega izobraževanja*, 390–398.
- Pavlič Škerjanc, K. (2010). Smisel in sistem kurikularnih povezav. In Rutar Ilc, Z., Pavlič Škerjanc, K. (Eds.). *Medpredmetne in kurikularne povezave. Priročnik za učitelje*. Ljubljana: Zavod RS za šolstvo.
- Peterßen, W. H. (2000). *Fächerverbindender Unterricht*. München: Oldenbourg.
- Podroužek, L. (2002). *Integrovaná výuka na základní škole v teorii a praxi*. Plzeň: Fraus.
- Posejpal, J. (2012). *Integrovaná výuka zeměpisu a tělesné výchovy – teoretická východiska a současná situace na gymnáziích* (Diplomová práce). Praha: Karlova Univerzita. Retrieved from <https://is.cuni.cz/webapps/zzp/detail/68089/>
- Průcha, J. (2001). *Pedagogický slovník*. Praha: Portál.
- Pühse, U., & Gerber, M. (2005). *International comparison of physical education: Concepts, problems, prospects*. Meyer & Meyer.
- Resnik Planinc, T. (2011). Future prospects for geographical education in Slovenia. *RIGEO* 1(1). Retrieved from <http://www.rigeo.org/vol1no1/3.pdf>
- Richter, C. (2006). Konzepte für den Schulsport in Europa. *Bewegung. Sport und Gesundheit*. Aachen: Meyer & Meyer Verlag.
- Rickinson, M., Dillon, J., Teamey, K., Morris, M., Young Choi, M., Sanders, D., & Benefield, P. (2004). *A review of research on outdoor learning*. London: Field studies council.
- Rind, E., & Jones, A. P. (2011). The geography of recreational physical activity in England. *Health & place*, 17(1), 157–165.
- Rovegno, I., & Gregg, M. (2007). Using folk dance and geography to teach interdisciplinary, multicultural subject matter: A school-based study. *Physical education and sport pedagogy*, 12(3), 205–223.
- Samfira, M., Merghes, P., & Arslan, H. (2015). Interrelationship perception between sport activities—healthy life—environment in educational development. Elsevier Ltd.
- Sauvé, L. (1996). Environmental education and sustainable development: A further appraisal. *Canadian journal of environmental education*, 1, 7–34.

- School for Leadership, Kranj: Ministry of Education, Science and Sport. (2013). *Podatki z analizo za srednje sole in dijaške domove, Strokovno srečanje ravnateljev in ravnateljic a srednje šolstvo*. Retrieved from http://www.mizs.gov.si/fileadmin/mizs.gov.si/pageuploads/podrocje/ss/Publikacija/Podatki_z_analizo_za_SS_in_DD_2013.pdf
- Sekot, A. (2009). Pohybová aktivita versus obezita. In *Tělesná výchova a sport mládeže v 21. století* (pp. 58–66). Brno: Masarykova univerzita.
- SERC Pedagogic Service Project. (2012). *Interdisciplinary approaches to teaching*. Retrieved from <http://serc.carleton.edu/sp/library/interdisciplinary/index.html>
- Sortkær, B. (2015). Fra OECD landereview (2004) til folkeskolereform (2014). *Dansk Pædagogisk Tidsskrift*, 4, 70–79.
- Standardy pro základní vzdělávání, Tělesná výchova. (2013). Retrieved from http://clanky.rvp.cz/wp-content/upload/prilohy/17383/telesna_vychova_zdravotni_telesna_vychova.pdf
- Statistical Office of the Republic of Slovenia. (2015). Retrieved from <http://www.stat.si/StatWeb/prikazi-novico?id=5157&idp=9&headerbar=7>.
- Štemberger, V. (2008). Medpredmetno povezovanje in športna vzgoja. *Didakta*, 18(19), 39–44. Retrieved from http://www.didakta.si/doc/revija_didakta_2008_december.pdf
- Švaříček, R., & Šedová, K. (2007). *Kvalitativní výzkum v pedagogických vědách: pravidla hry*. Praha: Portál.
- Taštanoska, T. (Ed.) (2015). *The Education system in the Republic of Slovenia*. Ljubljana: Ministry of Education, Science and Sport.
- Teplý, Z. (1995). *Zdraví, zdatnost, pohybový režim*. Praha: Česká asociace sportu pro všechny.
- Tordsson, B. (2006). *Perspektiv på friluftslivets pædagogik*. Haderslev: CVU Sønderjylland University College.
- Trávníček, M. (2010). ACTIV – projekt integrované terénní výuky ve studiu učitelství. In V. Mužík & P. Vlček, *Škola, pohyb a zdraví : výzkumné výsledky a projekty* (pp. 193–199). Brno: Masarykova univerzita.
- Umek, M. (2006). Kartografija pri naravoslovju, matematiki in športu. In: Darovec, D. (Ed.), *Zgodnje učenje in poučevanje otrok. Koper: Univerza na Primorskem, Znanstveno-raziskovalno središče* (pp. 483–491). Založba Annales: Pedagoška fakulteta.
- Vlček, P. (2009). Komparativní kinantropologie. *Česká kinantropologie*, 13(1), 82–95.
- Vlček, P. (2015). Srovnávací výzkum v pedagogice: některé úvahy o metodologii problémového přístupu. *Pedagogická Orientace*, 25(3), 372–394.
- Vlček, P., & Janík, T. (2010). *Školské reformy a tvorba kurikula tělesné výchovy v České republice, Spolkové republice Německo a Spojených státech amerických*. Brno: Paido.
- Vlček, P., & Mužík, V. (2012). Soulad mezi projektovaným a realizovaným kurikulem jako faktor kvality vzdělávání v tělesné výchově. *Česká kinantropologie*, 16(1), 31–45.
- Vrbas, J. (2010). *Nové přístupy k hodnocení tělesné zdatnosti žáků – součást výchovy ke zdraví na 1. stupni ZŠ* (dizertační práce). Brno: Masarykova univerzita.
- Wiberg, M. (2011). Forståelse i forskningsbaseret undervisning: især i relation til human og samfundsvidenskab, *Dansk Universitetspædagogisk Tidsskrift*, 10, 58–64.

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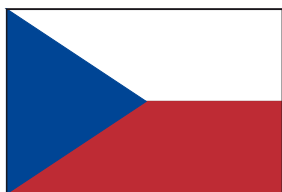
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Masaryk University is part of the C.A.L.M.A.Z. network, located in Brno. Masaryk University is the second-largest public university in the Czech Republic and the leading higher education institution in Moravia. At present, it comprises nine faculties with over 200 departments, institutes and clinics. Recognized as one of the most important teaching and research institutions in the Czech Republic and a highly-regarded Central European university, it has been imbued with a strong democratic spirit ever since its establishment in 1919. The University also plays a major role in the social and cultural life of the South Moravian Region.

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Knecht, P. & Hofmann, E. (2013). K problému řazení geografického učiva ve školních vzdělávacích programech. *Informace České geografické společnosti, Praha: Česká geografická společnost*, 32(2), 13–25.

Hofmann, E., H. Svobodová, & P. Knecht. (2017). Geography Curriculum in Czechia: Challenging Opportunities. In Karvánková, P., Popjaková, D., Vančura, M., Mládek, J. (Eds.). *Current Topics in Czech and Central European Geography Education*. Springer, pp. 15–32.

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Lupač, M. (2014). Category system as a methodological tool for comparing PE curricula. In K. Pešková (Ed.). *Elementary school curricula: methodological approaches and empirical findings*. Brno: Masaryk University.

Lupač, M. (2014). Adaptation courses for first grade of elementary schools. In *Komenský*, Brno: Masaryk University, 140(4), 44–48.

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Mužíková, L. & Mužík, V. (2011). Experience with Health Education in Basic School. In E. Řehulka & Sollárová, E. (Eds.). *Health education: Czech-Slovak Experiences*. Brno: Masaryk University.

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Hofmann, E., Svobodová, H. & Knecht, P. (2014). *Geography Education Standards in the Czechia, Slovakia and the USA. Let us get inspired?* Faculty of Education, Masaryk University: Portal: educoland.muni.cz.

Hofmann, E. & Svobodová, H. (2017). Case Studies in Geography Education as a Powerful Way of Teaching Geography. In Karvánková, P., Popjaková, D., Vančura, M., Mládek, J. (Eds.). *Current Topics in Czech and Central European Geography Education*. Springer. pp. 115–128.

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Šeráková, H. & Nováková, L. (2016). *Warming up in Physical Education Classes at the Elementary School (ISCED 1)*. Brno, CZ: Masarykova univerzita. Elportál. Retrieved from http://is.muni.cz/do/rect/el/estud/pedf/ps16/pruprava_tv/web/index.html.

Šeráková, H. (2007). Present knowledge on the problems of wrong body posture. In E. Řehulka. *School and health 21*. Brno: Paido, pp. 599–609.

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Trávníček, M. (2013). Benefits of an integrated fieldwork for physical activity of primary school students. In: P. Matošková, (Eds.). *Fórum pedagogické kinantropologie*. Praha: Univerzita Karlova v Praze, Fakulta tělesné výchovy a sportu.

Hofmann, E., M. Trávníček & Soják, P. (2011). Fieldwork and integrated education as a system (Integrovaná terénní výuka jako systém). In: *Smíšený design v pedagogickém výzkumu: Sborník příspěvků z 19. výroční konference České asociace pedagogického výzkumu*. Masaryk University.

Trávníček, M. (2010). ACTIV—a project of integrative fieldwork in teacher's education (ACTIV – projekt integrované terénní výuky ve studiu učitelství). In: V. Mužík & P. Vlček. *Škola, pohyb a zdraví: výzkumné výsledky a projekty*. Brno: Masarykova univerzita.

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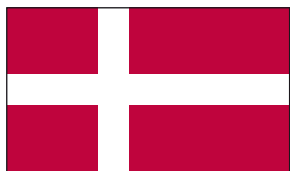
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Vlček, P. & D. Masaryková. (2014). A comparison of the recent physical education curriculum development in the Czech Republic and Slovakia. *International Journal of Physical Education*, Aachen: Meyer&Mayer, 51(2), 30–38.

Vlček, P. (2011). A comparison of physical education (PE) development in the Czech Republic, Germany, and the USA—a historical perspective. *Acta Universitatis Palackianae Olomucensis. Gymnica*, Olomouc: Palacký University, 41(1), 51–61.

Vlček, P. (2014). Congruence between projected and realized curricula as a factor of physical education quality. In *Physical Education—quality in Management and Teaching*. Berlin: Logos Verlag Berlin.

About the Danish C.A.L.M.A.Z. members and authors of the book



VIA University
College

VIA University College is part of the C.A.L.M.A.Z. network, and the University is located in eight different campuses in the central part of Jutland. In 2008, VIA University College was founded as an amalgam of different educational institutions. It is now the third largest educational institution in Denmark with more than 19 000 students and approximately 2 100 staff, divided in four Faculties, and currently offering 53 education programmes. VIA University College is the biggest institution in Denmark, when it comes to education of teachers and pre-school teachers, and has a strong tradition of educating professionals to work in a democratic society based on equality and active citizenship.

Member of C.A.L.M.A.Z.: VIA University College, Faculty of Education and Social Studies, Department of Teacher Education Aarhus, Physical Education and Geography. Website of VIA University College, English version: <http://en.via.dk/>

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Specialization: Education of Geography teachers, curriculum development, outdoor learning

Clausen, S. W. (2015). *Geography teachers' pedagogical content knowledge and internal didactic transposition of the topic weather formation and climate change, Mathematics and Science: The relationships and disconnections between research and education—Papers from a doctoral course at the University of Copenhagen*, København: IND skriftserie, 39, 61–70. http://www.ind.ku.dk/publikationer/inds_skriftserie/2015-39/Hoveddokument.pdf (24.05.2016).

Clausen, S. W. (2015). *Danish geography teachers' perceptions of their own teaching professionalism according to climate change*, LUMAT, 3(2). <http://www.luma.fi/lumat-en/3851> (24.05.2016).

Clausen, S. W. (2010). Kan praksis ændres gennem aktionslæring? *Aktionslæringens DNA En håndbog om aktionslæringens teori og metode*, Aarhus: forlaget VIA Systime, 1. udgave, 1. oplag, 267–281.

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Specialization: Education of Geography teachers, Philosophy of science

Conradsen, K. (2004). Spildevandsrensningens historie. In E. Hofmeister (Ed.), *De ferske vandes kulturhistorie i Danmark*. Silkeborg: Ferskvandscentret.

Conradsen, K. (2014). *Naturvidenskabens væsen*. Retrieved from NTSnet: http://ntsnet.dk/sites/default/files/Videnskabens_v%C3%A6sen_KC.pdf

Conradsen, K., & Heier-Nielsen, S. (1995). Holocene paleoceanography and paleoenvironments of the Skagerrak-Kattegat, Scandinavia. *Paleoceanography*, 10(4), pp. 801–813.

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Specialization: Education of Physical Education teachers

About the Slovene C.A.L.M.A.Z. members and authors of the book



Univerza v Ljubljani



Among the universities involved in the C.A.L.M.A.Z. network is the University of Ljubljana, which is the oldest, largest, and internationally best-ranked university in Slovenia. The University, with its rich traditions, was founded in 1919. It has more than 40 000 undergraduate and postgraduate students and employs approximately 5 600 higher education teachers, researchers, assistants and administrative staff in 23 faculties and three arts academies located throughout urban Ljubljana. The University supports and strengthens its academic community of professors, researchers, students and other associates, and is constantly working to enhance its reputation at home and across the world. This reputation, in research, education, professional and public activities, as well as in the relations between the university and community members, is based on academic excellence and the academic freedom of staff and students. These freedoms include: the freedom of creativity; autonomy in relation to the state, political parties, corporations and religious communities; humanism and human rights including equal opportunities; and solidarity with the world as well as ethical and responsible attitudes towards it.

Website of the University of Ljubljana: <https://www.uni-lj.si/eng/>. Members of the C.A.L.M.A.Z.: Faculty of Education: <http://www.pef.uni-lj.si/12.html> and Faculty of Arts: <http://www.ff.uni-lj.si/en>.

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Hergan, I. & Umek, M. (2016). Comparison of children's wayfinding, using paper map and mobile navigation. *International research in geographical and environmental education*, 25(17).

Hergan, I. & Umek, M. (2013). Raba zemljevidov spodbuja miselno aktivnost učencev. *Geografski vestnik*, 85(1).

Hergan, I. & Umek, M. (2011). Zgodnje kartografsko opismenjevanje – spontano in načrtno. In: M. Cotič, V. Medved-Udovič, S. Starc (Eds.). *Razvijanje različnih pismenosti*. Koper: Univerza na Primorskem, Znanstveno-raziskovalno središče, Univerzitetna založba Annales.

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Specialisation: didactics of geography

Ilc Klun, M. (2014). Teoretična in terminološka izhodišča izseljenstva ter poznavanje tematike izseljenstva med slovenskimi učenci in dijaki. *Dela*, ISSN 0354-0596. [Printed version], 41, 165–181.

Ilc Klun, M. & Puklek Levpušček, M. (2013). Europe and the EU: relationship between attitudes and knowledge among Slovenian students. In: A. Klonari & T. Resnik Planinc, (Eds.). (pp. 123–138). *European identity at the crossroads*, Zürich; Berlin.

Resnik Planinc, T. & Ilc Klun, M. European identity in Slovenian education system through geographical perspective. *Hrvatski geografski glasnik*, 73(1), 301–319.

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Specialisation: sustainable mobility, mountain geography

Vintar Mally, K. & Ogrin, M. (2015). Spatial variations in nitrogen dioxide concentrations in urban Ljubljana, Slovenia. *Moravian geographical reports*, 23(3), 27–35.

Ogrin, M., Ogrin, D., Rodman, N., Močnik, M., Vengar, R., Smolej, A. & Bunčič, G. (2011). Climate change and the future of winter tourism in Slovenia. *Hrvatski geografski glasnik*, 73(1), 215–228.

Ogrin, M. (2012). Sustainable mobility in Slovenian Julian Alps. *Dela*. ISSN 0354-0596. [Printed version], 38, 89–108.

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Specialisation: didactics of geography

Resnik Planic, T., Ogrin, M. & Ilc Klun, M. (Eds.). (2015). *Trajnostna mobilnost v procesu izobraževanja*. Ljubljana: Znanstvena založba Filozofske fakultete.

Resnik Planic, T. (2013). Development and present situation of Slovenian didactics of geography. *Annales Universitatis Paedagogicae Cracoviensis, Studia Geographica*, 4, (110–125).

Resnik Planic, T. (2012). European dimension and European identity through the perspective of geography teaching in Slovenia. *Dela*, ISSN 0354-0596. [Printed version], 37(5–25).

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Specialisation: didactics of physical education

Štemberger, V. (2010). Teachers' health, occupational diseases of teachers and the quality of physical education. In: M., Krejčí (Eds.). *Adequate movement regime and bio-psycho-social determinants of active life style*. České Budějovice: University of South Bohemia.

Štemberger, V. & Šimunič, B. (2010) Športna aktivnost otrok v povezavi s stopnjo izobrazbe staršev in z velikostjo družine. In: B., Šimunič, T., Volmut, & R., Pišot (Eds.). *Otroci potrebujemo gibanje: otrok med vplivi sodobnega življenjskega sloga: gibalne sposobnosti, telesne značilnosti in zdravstveni status slovenskih otrok*, (Knjižnica Annales kinesiologiae). Koper: Univerza na Primorskem, Znanstveno-raziskovalno središče, Inštitut za kineziološke raziskave, Univerzitetna založba Annales.

Pišot, R., Plevnik, M. & Štemberger, V. (2014). Effective teaching in physical education: Slovenian perspective. *Research Quarterly for exercise and sport* 85(22), 153–156.

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Specialisation: didactics of social studies, geography primary teaching.

Umek, M. (2010). Learning through Photography in Social Science from the Third to the Fifth Grade. In: Valenčič-Zuljan, Milena (ed.), Vogrinc, Janez (Eds.). *Facilitating effective student learning through teacher research and innovation* (pp. 317–330). Ljubljana: Faculty of Education.

Umek, M. & Hergan, I. (2011). Nove tehnologije in kartografsko opismenjevanje. In: M. Cotič, V. Medved-Udovič, S. Starc (Eds.). *Razvijanje različnih pismenosti* (pp. 416–423, 545–546). (Knjižnica Annales Ludus). Koper: Univerza na Primorskem, Znanstveno-raziskovalno središče, Univerzitetna založba Annales.

Umek, M. & Hergan, I. (2013). Problems in understanding procedural learning = Problemi u razumevanju proceduralnog učenja. *Istraživanja u pedagogiji*, 3(2), 48–60.

Appendix

Language Editor: Dr. Kay Pearce

Our special thanks belong to Dr Kay Pearce. Her task was to concentrate on language and flow, while preserving the chapter's cultural flavour. She put particular emphasis on short, clear and logical sentences. Without Kay's keen contributions over many months, we would not have managed to edit this book.

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Integrating Physical Education and Geography

A Case Study of the Czech Republic,
Slovenia and Denmark

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Edition: Physical Education and Health Education
Volume 2

Proofreading: Dr. Kay Pearse
Graphic design: Mgr. Jana Nedomová & Mgr. Tomáš Janko, Ph.D.
Published by Masaryk University, Žerotínovo nám. 617/9, 60177 Brno, Czech Republic
1st electronic edition, 2016

ISBN 978-80-210-8519-0

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This is the second book of a new series published by the Faculty of Education, Masaryk University on topical issues in physical and health education. This book aims to address the lack of international knowledge and research in interdisciplinary teaching and curriculum development, especially when it comes to the subjects of Physical Education and Geography. The authors analyse and compare elementary school curricular documents from three countries, the Czech Republic, Denmark and the Republic of Slovenia, to reveal how integration is embedded at the policy level. A questionnaire survey of teachers shows how the integrated curriculum is implemented in practice. The book also includes examples of interdisciplinary cooperation between the two subjects.