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GEOGRAPHY EDUCATION IN HESSE – FROM PRIMARY SCHOOL TO UNIVERSITY

INTRODUCTION

The first part of the article describes the possibilities of students to learn geography in the educational system in Hesse and the second part embraces scientific results concerning the fields of pupils interest in geographical topics and their motivation to do field trips.

The educational system in Germany is organized by the federal states. Therefore there are 16 different educational systems in Germany which are similar, but not comparable in detail. In the following I will describe the educational system of the federal state of Hesse with a special focus on geography education.

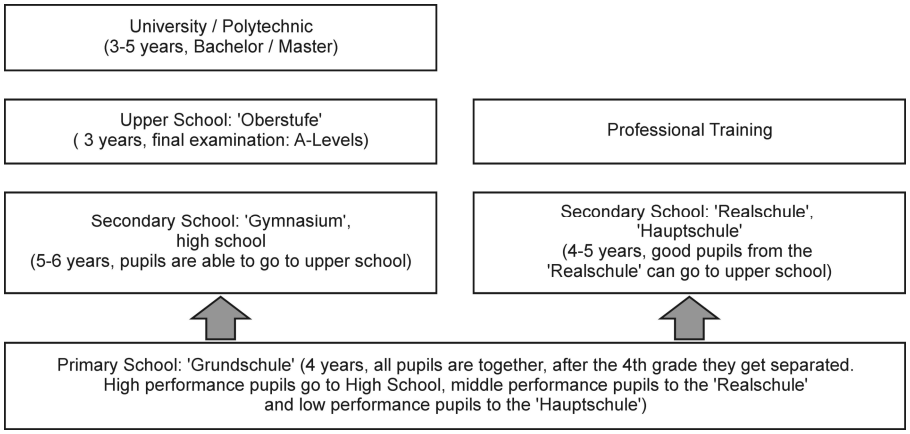

Fig. 1. Structure of t he educational system of Hesse
Ryc. 1. Struktura systemu edukacyjnego w Hesji
Source: own representation based on Bildungsserver Hessen, Grafik Steinhaus
http://www.region-mittelhessen.de/wissenschaft-und-bildung/schulwegweiser-mittelhessen/schulformen-in-hessen/index.html

First the paper provides an overview on the structure of the educational system in Hesse (see figure 1) and then one will walk through the institutions which a statistical pupil attends, from kindergarten to university. A special focus will be directed at their geographical education and the interest in geographical topics and methods.

EDUCATIONAL INSTITUTIONS IN HESSE AND THEIR DEALING WITH GEOGRAPHY

Kindergarten

Young children aged 3 to 6 can go to the kindergarten. Parents can decide whether to register their children for playschool or not – it is voluntary and the parents have to pay for it. In Germany 89% of the 3-year-old children and 96% of the 4- and 5-year-old children go to the kindergarten (Statistisches Bundesamt 2012). In this institution the maximum group size amounts to 25 children and usually there are two educators per group (Tab. 1).

Table 1. Kindergarten
Tabela 1. Przedszkole

Kindergarten	
Age	3 to 6 years
Group size	A maximum of 25 children
Educators	1.75 educators per group
Qualification of the educators	2 to 4.5 years of professional training

Source: author's own elaboration.

Being an educator at the kindergarten is not such a popular job, because it is comparably worse paid. The children play, they have no lessons and they do not learn any specified geographical knowledge in the kindergarten.

Primary School

Pupils start primary school at the age of 6. The maximum group size amounts to 25 pupils and there is one teacher per class (Tab. 2). The teachers in the primary school statistically have studied for 3.5 years German, maths and one another subject. In primary school there is no subject called geography,

geographical topics are embedded in the subject 'Sachkunde', a compound of natural science, geography and social sciences. The curriculum of the subject 'Sachkunde' includes several geographical themes such as: orientation in space, the home town and the life of children in the world, weather observation and seasons.

Table 2. Primary school
Tabela 2. Szkoła podstawowa

Primary school	
Age of the pupils	6 to 10 years
Group size	A minimum of 13 to a maximum of 25 children
Teacher	1 teacher per class and lesson
Qualification of the teachers	3.5 years of studies for primary schools; subjects: German, maths and an optional subject
Geography education	There is no subject called geography, it is embedded in the subject 'Sachkunde', a compound of natural sciences, social sciences and geography

Source: author's own elaboration.

However, the percentage of geography is nearly 10% and depends on the attitude of the teacher towards this subject. In the first two grades pupils have 2 hours per week and in grade 3 and 4 they have 4 hours per week of 'Sachkunde'.

Secondary school: 'Gymnasium' or High School

After primary school the high performance pupils go to High School ('Gymnasium'), from the 5th to the 9th grade. Also high performance pupils from the Realschule are able to switch to the high school and later to upper school. The classes have a maximum size of 33 pupils (Tab. 3). Usually, the teachers who teach geography have studied geography, history or social sciences. In comparison to other subjects in school, geography plays no major role in the federal state of Hesse. During the 5 years at the 'Gymnasium' a pupil has an average of 1.2 geography lessons per week.

Table 4 shows in which grades geography is taught and highlights the amount of lessons per week and the main topics according to the curriculum. We start in the 5th grade with the topography of Germany and the characteristics of important landscapes in Germany. The pupils learn to read maps and get to know details about the agriculture of Hesse, the development of agriculture since

1950, the differences between industrial and organic farming and the advantages and disadvantages of large-scale livestock farming. In grade 6 the perspective is widened from Germany to Europe. The pupils get to know the different climates in Europe, they talk about tourism in the southern Europe and take a closer look at either Great Britain or France.

Table 3. 'Gymnasium'
Tabela 3. Gimnazjum

'Gymnasium'	
Age of the pupils	10 to 18 years
Group size	A minimum of 16 to a maximum of 33 pupils
Teacher	1 teacher per class & lesson
Qualification of Teachers	4.5 years of studies for secondary and upper school; students choose two subjects
Geography education	Geography is a stand-alone subject

Source: author's own elaboration.

Table 4. Main topics
Tabela 4. Główne tematy

Grade	Geography lessons per week	Main topics
5	2	Orientation (maps, globus), Topography of Germany, Agriculture or Hometown; North- & Baltic Sea, Alps
6	1	Climate in Europe, Southern Europe / Mediterranean Sea (tourism), Great Britain or France
7	0	-
8	2	Earth in the solar system, Origin of seasons, Climate and vegetation zones, Rock- and water cycle, Plate tectonics (earthquakes, volcanoes); Soil erosion, Desertification; Structural Change of different regions
9	1	At our school we can choose a topic: sustainable or not-sustainable development in different regions (Aral Sea, Trans-Amazonian highway, Fishing on Lake Victoria, Masdar City, the importance of Amazonia for the pharmaceutical industry, etc.)

Source: Hessisches Kultusministerium (Ed.) (2010).

In grade 8 they examine the solar system, the origin of seasons, the climate zones and the plate tectonics. During the second semester the pupils make a project work regarding the structural changes of various regions. They can choose one of the following regions: Rhine-Main-Area, Russia, China, Japan, India, USA, South America, Africa or Australia. At the end of the project work they have to give a presentation.

In grade 9 (this is special about our school) we tackle the topic of sustainable development. The pupils learn what sustainability is, get to know the development of our ecological footprint and the Living Planet Index and, last but not least, reflect on how our consumption of goods influences them. Afterwards the pupils can choose one region of the world and analyze whether the production of goods is sustainable or not.

In consequence of the bad results of German pupils during the Pisa survey back in 2000 the educational policy has changed. Now the pupils not only are supposed to learn facts but school should also teach them competences (abilities to solve problems). Therefore, additionally to the curriculum, educational standards in geography for the intermediate school certificate have been formulated. These standards describe which skills a pupil should posses according to the different areas of competences like: knowledge, spatial orientation, geographical methods, communication, evaluation and action (German Geographical Society 2012). The teachers at school have the task to combine the topics in the curriculum with the special competences. For example: while we teach the topic climate change, then we have the aim to emphasize the competence of communication, because this topic is suitable for discussion. However, by now, there are no empirical results of research on the introduction of competences.

Upper School

After 5 years in high school pupils reach the upper school, which they can complete with the final examination ‘Abitur’ (A-Level). Pupils are able to focus on their interests and have to choose two subjects as advanced courses (in German: ‘Leistungskurse’). In these advanced courses they have more lessons per week. However, the chance that enough pupils choose geography is low, because geography is an optional subject.

Pupils can choose between several subjects (geography, economy, computer science, Spanish, performing arts, etc.). Only 20% of the pupils choose geography. Therefore in many schools in Hesse there are no advanced courses in geography (‘LKs’). If a pupil chooses geography in the upper school, he or she has 2 lessons per week and is not obliged to continue geography until his

A-Levels. Taking a look at the curriculum the subject geography embraces the main economic and ecological problems of humankind and the characteristics of the 21st century. Despite the fact that these topics are the ones which every pupil should be familiar with, geography is not obligatory.

Table 5. Geography in the highest years of the secondary school
Tabela 5. Geografia w ostatnich latach szkoły średniej

Upper school/Part of high school	
Age of the pupils	15 to 18 years
Group size	No limitation Usually 20 pupils, but there are sometimes classes with 33
Teacher	1 teacher per class & lesson
Qualification of the teachers	4.5 years of studies for secondary and upper schools; students choose two subjects
Geography education	Geography is a stand-alone subject

Source: author's own elaboration.

Table 6. Topics in the last years of the secondary school
Tabela 6. Tematy realizowane w ostatnich latach szkoły średniej

Class	Geography lessons per week	Main topics
E	2	Climate, Climate change, Current Economy & Ecology Problems in the home region (example: Frankfurt Airport) Project work including a presentation
Q1/2	2	Spatial planning in Germany, Location factors for agriculture, industry & service sector, EU Globalization, industrialized countries USA, EU, Russia
Q3/4	2	Developing countries (examples: the Sahel, tropical rainforests – Brasil) Economic potential of China, India and Japan

Source: Hessisches Kultusministerium (Ed.) (2010).

Pupils can choose geography as an examination subject in the A-levels if they have had geography for all the three years of upper school. They can take an oral or a written exam on two topics they have dealt with in 2 different semesters (Q1-Q4). Few pupils choose geography as an examination subject in the A-Levels.

University

At university you can study geography to get a Bachelor's, a Master's or a teacher's degree. I will take a short look at the structure of the course in geography education at the University of Giessen. If you want to be a high school teacher you have to study 2 subjects (for example: geography & maths, English, history, etc.) and additional pedagogical subjects: pedagogy, psychology, politics, sociology. During their geography studies students learn the basic concepts of physical geography, human geography, regional geography and methods (GIS, statistics). Additionally, they work on two projects, for example "Development of tourism on the river Lahn". In geography education they get to know the history of the subject, different theories of how pupils learn, the curricula at school and how to use media in geography lessons. Furthermore they discuss the advantages and disadvantages of different teaching methods and learn how to use them. In addition to that the students get familiar with research results which are of interest for teaching. To gain more life and work experience one has to do several traineeships: (1) an orientation traineeship preceding the studies, not at school but in a pedagogical institution like kindergarten (4 weeks); (2) a business traineeship to get some non-educational professional experience, for example in the industrial sector (8 weeks); (3) a universal traineeship at school (5 weeks + seminar) and (4) a specialized traineeship at school focusing on one of the subjects (5 weeks + seminar) to gather experience as a schoolteacher. The study ends with an examination and afterwards the students have to complete in two years time the so called 'Referendariat' – the practical phase of teacher education.

The students work at school, attend seminars where they are supposed to learn the principles of teaching and have to pass several teaching tests by giving lessons at school. In the first semester of the 'Referendariat' the students sit in on geography lessons in their school and observe. In the second and third semester they have their own classes and teach up to a maximum of 12 hours per week autonomously. If they need help, they can ask their mentors at school (teachers who are responsible for one student). During the last semester the students have to write their final thesis about the evaluation of one of their teaching sequences. At the very end of their last semester the students have to take their final examination in which they have to present two lessons to the examination board, one in each of the subjects they have studied. Afterwards they have to reflect on their lessons and lastly they take an oral examination. Having passed all these examinations, one can become a teacher in a governmental school. If a candidate does not pass the second examination after the 'Referendariat', he or she can work at private schools.

INTERESTS OF PUPILS AND STUDENTS IN GEOGRAPHICAL TOPICS AND METHODS

If we have the aim that more pupils and students in the upper school and university choose the subject geography, we have to increase their interest in geography. I. Hemmer and M. Hemmer (2002) asked 2657 Bavarian pupils from 5th until 11th grade about their interest in geographical topics, regions and methods by means of a questionnaire with a Likert scale (1 = "I am very interested in" until "5 = I am not interested in"). They repeated their survey in 2005. In both surveys the three most interesting geographical topics are: natural hazards, universe, expeditions and the most interesting region is North America/USA (Hemmer and Hemmer 2010). In their first survey they asked the pupils which of the 16 geographical methods in school they like and they asked the teachers how often they use these methods in their geography lessons (see table 7). Pupils are most interested in experiments, films and field trips, but teachers use these methods infrequently (Hemmer and Hemmer 2002).

In my own survey in 2007/2008 I asked 1237 pupils and 49 teachers at 12 high schools in Hesse with standardised questionnaires about their experience with field trips in geography lessons at school and under what circumstances they would like to join a voluntary geographical field trip (Lößner 2011). The aim of the study was to get information about how many field trips pupils do during their time at school, what kind of field trips they make, what expectations pupils have towards geographical field trips and to find out which circumstances have an influence on the motivation to join a field trip. More than 88% of the pupils would like to do more field trips in geography, but only 49.96% have done a geographical field trip in their whole school career.

Subsequently the pupils gave reasons why they wanted to do field trips in geography. Their individual answers were grouped to categories (see table 8). The most important reasons for the pupils are: they think field trips are better than normal lessons in the classroom, they can encounter the topic they are discussing in real life and they think their learning effect will be bigger. One pupil has written: "I do not have the subject geography now, but every time I went on a study trip I found it more exciting to see the real life applications of geographical topics instead of attending theoretical lessons at school. I learn more, if I can see and touch things…"

Table 7. Methods liked by the students vs methods applied by the teachers in German schools
Tabela 7. Metody lubiane przez uczniów i metody stosowane przez nauczycieli w niemieckich szkołach

	Pupils' interests in geographical methods in school (n = 2.560 pupils)		Frequency of how often teachers use these geographical methods in their lessons (n = 89 teachers)	
High	specification	mean	specification	mean
	Experiments	1.49	Work with atlases	1.64
	Work with films	1.52	Work with maps	1.69
	Field trips	1.71	Work with schoolbook	1.94
	Work with photos/pictures	1.89	Work with photos/pictures	2.08
	Work with original materials	2.08	Work with texts	2.34
	Work with travel reports	2.21	Work with current newspaper articles	2.54
	Work with models	2.24	Work with statistics and tables	2.61
	Project work	2.29	Work with films	2.63
	Work with current newspaper articles	2.50	Work with bar or circular charts	2.90
	Work with maps	2.73	Work with models	3.19
	Role plays	2.75	Work with travel reports	3.26
	Work with atlases	2.78	Work with original materials	3.31
	Work with statistics and tables	3.36	Field trips	3.52
	Work with bar or circular charts	3.36	Project work	4.12
	Work with texts	3.43	Experiments	4.16
Low	Work with schoolbook	3.62	Role plays	4.30

Source: I. Hemmer and M. Hemmer (2002, p. 6).

Table 8. Reasons why pupils want to do field trips in geography
Tabela 8. Powody, dla których uczniowie chcą brać udział w zajęciach terenowych z geografii

Categories	N	Percentage (compared to the number of all answers)	Percentage of cases (compared to the number of pupils)
Better than normal lessons in the classroom	259	14.30	23.40
Direct encounter with the topic they are discussing	227	12.50	20.50
Learning effect	218	12.00	19.70
Pupils have the ability to act independently	217	11.90	19.60
Alternative to the daily routine	185	10.20	16.70
Positive affective attitude	182	10.00	16.50
They can remember things better	143	7.90	12.90
Miscellaneous	130	7.20	11.80
Personal interest	75	4.10	6.80
Recovery from school	62	3.40	5.60
Better classroom climate	39	2.10	3.50
Negative affective attitude	32	1.80	2.90
Personal motivation	27	1.50	2.40
Field trips as a positive complement to normal lessons	18	1.00	1.60
Contribute to the process of occupational decision	2	0.10	0.20
Total	1816	100.00	164.30

Source: M. Lößner (2011, p. 84).

The results show that most of the pupils want to do more field trips and that they think that study trips have a positive influence on their learning effect. Teachers also think that field trips have a positive influence on the motivation of pupils and their learning effect, but they do field trips infrequently. The latter were asked to rate reasons against the use of field trips and the most important are: lack of time, because they have to teach so much in short time; the classes are too big; the pressure to reach the educational objectives is too high; they

have problems with cancelled lessons when they are on a whole-day field trip; the working pressure for the teacher is too high. When we take a closer look at the twelve schools which have joined the survey and focus on the aspect of how many pupils in the 9th grade (the last grade they have to do geography) have done a field trip in geography in their whole school career, there are big differences (see figure 3).

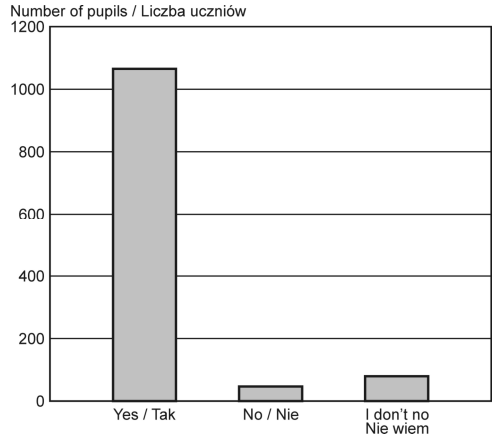

Fig. 2. Answers to the question "Would you like to go on some more study trips in geography?" (N = 1157)
Ryc. 2. Odpowiedzi na pytanie „Czy chciałbyś brać udział w większej liczbie wycieczek edukacyjnych w ramach zajęć z geografii?" (N = 1157)
Source: M. Lößner (2011, p. 83)

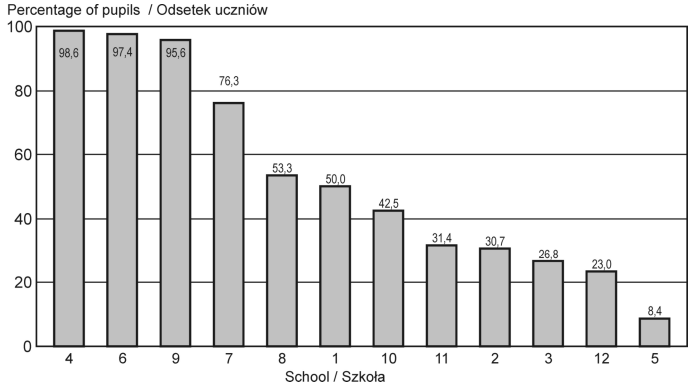

Fig. 3. Percentage of pupils per school who have done one or more field trips in geography (N = 1157)
Ryc. 3. Udział uczniów, którzy brali udział w jednych lub więcej zajęciach terenowych z geografii według szkół
Source: M. Lößner (2011, p. 72)

At schools number 4, 6 and 9 over 90% and at school 7 more than 75% of the pupils have had experiences with field trips in geography. At the other eight schools, however, in most cases less than 50% have done a field trip. The four schools in which field trips are regularly done have embedded field trips in their school organization. One school, for example, has written in their school program that it is compulsory to do a 4-day field trip when dealing with the topic volcanoes in the 8th grade in geography. Therefore the effort to plan this field trip is low, because they do it every year and there are no problems for the teachers to get the permission for it. All teachers in the survey were asked to rank the measures to improve the implementation of field trips at school (see table 9).

Table 9. Suggestions of teachers how to improve the implementation of field trips at school
Tabela 9. Propozycje nauczycieli na temat sposobów zwiększenia roli zajęć terenowych w szkołach

Rank	I would do more field trips in my geography lessons, if …. (n = 49, 1 = agree strongly, 4 = does not apply at all)		
	specification	agree strongly %	mean
1	… there were more geography lessons per class and week	73.5	1.29
2	… there was more temporal space in the scholar timetable (for example: fixed days for field trips)	67.3	1.45
3	…there were no problems to find a second teacher/ assisting person who joins our field trip	46.9	1.88
4	…there were previously prepared materials for field trips	40.8	1.96
5	…there was a compensatory time-off for the unpaid overtime	40.8	2.08
6	…there were training courses for teachers on how to organize a field trip	36.7	1.96
7	…it was written in the curricula that field trips are obligatory	34.7	2.06
8	…there was a colleague who helps me to organize the field trip	28.6	2.08
9	…there was money for the costs of a field trip	26.5	2.04
10	…there was a field trip card index with information about possible field trips in the region and materials	24.5	2.08
11	… there was money for the teachers to do the pre-field-trip to organize the field trip for the pupils	24.5	2.22
12	…the school management would grant the application	24.5	2.49

Source: M. Lößner (2011, p. 110–111).

The most important thing to improve about the implementation of field trips at school is the time aspect. Teachers would like to have more geography lessons, more time to do field trips, fixed days for field trips in the scholar timetable, no problems to get the permission to do a field trip and prepared materials for field trips in order to save time for the organization of a field trip.

CONCLUSIONS

In the educational system in Hesse the subject geography is in comparison to other subjects not really important. Pupils are taught geography maximum two hours per week. In high school only 20% of the pupils choose geography, so 80% have their last geography lesson in the 9th grade. This is an unfavorable situation as geography is the main subject which focuses on the problems of mankind in the 21st century (climatic change, population growth, desertification, land grabbing, …) and combines the perspective of natural and social sciences to analyze and solve problems. Furthermore the chance that pupils decide to study geography after the a-level is not high if they do not have geography lessons in the last three years at school. Different studies show that pupils are interested in geographical topics and that they like geographical methods such as field trips. However only 50% of the pupils in high school have ever done school field trips in geography, hence they missed the chance to try out geographical methods to acquire real data while investigating a geographical phenomenon or problem.

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GEOGRAPHY EDUCATION IN HESSE – FROM PRIMARY SCHOOL TO UNIVERSITY

Summary

The article is about the situation of Geography Education in the educational system of the federal State Hessen. The author describes the structure of educational institutions where pupils and students undergo geographical education. Another focus of the paper is put on the themes the students learn and the number of lessons they are taught in geography in comparison to other subjects. The article answers several vital questions such as: Which parts of the geography education in school are mandatory for the pupils and when do they take the decision to choose geography or other subjects? Which geographical subjects at the University can young students select? Lastly the author presents an overview of pupils` preferences concerning geographical themes and teaching methods. Thus the paper outlines the didactical principles of geography education in Hessen.

Key words: geography education, Hesse, interests, geographical topics and methods.

EDUKACJA GEOGRAFICZNA W HESJI – OD SZKOŁY PODSTAWOWEJ DO UNIWERSYTETU

Streszczenie

Opracowanie jest poświęcone edukacji geograficznej w systemie oświaty kraju związkowego Hesji. Autor dokonuje przeglądu sytuacji edukacyjnych, w których uczniowie mają możliwość odbywania kształcenia geograficznego. Drugi wątek opracowania stanowi przegląd tematów realizowanych w ramach lekcji geografii. Analizie poddano także liczbę godzin geografii oraz porównano ją do innych przedmiotów szkolnych. Opracowanie zawiera ponadto odpowiedź na kilka ważnych pytań, takich jak: „Które elementy edukacji geograficznej w szkole są obowiązkowe?", „Kiedy uczniowie podejmują decyzję dotyczącą wyboru geografii lub innych przedmiotów?", „Jakiego rodzaju przedmioty geograficzne mogą wybrać studenci uczelni wyższych?". Kolejny problem

poruszony w opracowaniu dotyczy zainteresowań geograficznych uczniów i studentów. Udało się jednocześnie zaprezentować zbiór preferowanych przez uczniów i nauczycieli metod nauczania. Ostatni wątek poświęcono założeniom dydaktycznym kształcenia geograficznego w Hesji.

Słowa kluczowe: edukacja geograficzna, Hesja, zainteresowania, tematy geograficzne i metody.