



# Gender and Grade Level as Factors Influencing Perception of Geography

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## Abstract

Pupils' perception of any science subject significantly influences their achievement. Identification of perception of some subject is essential part of educational research. This study is focused on finding out differences in the four dimensions of geography perception (1. Geography as a school subject; 2. Geography and environment; 3 Importance of geography; 4. Relevance of geography lessons to pupils life) between gender and grade level of lower secondary school pupils. The research tool was questionnaire with 27 Likert type items; the data were obtained from 540 lower secondary pupils from Czech Republic. The data were analyzed by the method of descriptive (mean score, standard deviation) and inductive (analysis of variance) statistics. The gender had got significant influence in the first dimension and grade level in the fourth dimension. Results are discussed in the conclusion part and there is information about the possibility of future research.

**Keywords:** gender, grade level, lower secondary school pupils, perception of geography

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## Introduction

The geography has got a unique position; it is standing between social and science subjects. In the conditions of the Czech Republic this subject is including among science subject together with other subjects as biology, physics and chemistry. The

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content of the lower secondary geography education is divided into educational fields: 1. Geographic informations, sources of data, cartography and topography; 2. A natural picture of Earth; 3. Regions of the world; 4. The social and economic environment; 5. The natural environment; 6. The Czech Republic; 7. Geographical fieldwork, practice and application. This dividing is the newest and authors of new curriculum were trying by its content to improve pupils' interest and positive perception of this subject. The positive perception of any subject is important in regards to the achievement of pupils and also interest about geography in the future life. Pupils without positive perception about subject (geography) have got problems to achieve success in this subject. Respectively, the good marks are the result of extrinsic motivation (parents). In this case, the geography is for them useless and they do not see its importance. This fact was valid in the past (Germann 1988) and also nowadays (Anwer, Iqbal & Harrison 2012).

The perception of geography in the conditions of Czech Republic by pupils was not deeply investigated. The investigations were realized mostly in USA or in the Middle East (Turkey). The older studies (McTeer 1979; Sack & Petersen 1998) are focused on the ranking of geography among other subjects. The geography was ranked by the respondents as relatively less favourite subject. The newer studies are focused on the perception of geography by respondents with the using of questionnaires in the majority of cases. Ozdemir (2012) investigated high school Turkish students' perception of geography by the using of scaled questionnaire. The students expressed positive perception of geography. Kubiatko, Janko & Mrazkova (2012) found out relatively positive perception of geography among lower secondary school pupils by the using of scaled questionnaire. The interesting study is provided by Tomal (2010), where author was trying to find out ranking of geography among other subject by the using of scaled questionnaire. The respondents were high school Turkish students. The author showed that geography achieved a relatively high ranking, as it was ranked as the highest among science subjects. From the above mentioned information it is possible to carefully say, that the perception of geography is improving over time. However, the majority of research was investigated among high school students and it was out of middle Europe/Czech Republic. So it is hard to say, if this precondition is valid for the Czech pupils.

Some studies, except of finding out the general perception of geography, are focused on the finding out the differences in the perception of geography between boys and girls. The gender is the most often investigated variable. For example Okuranstifa (1975), Sack & Petersen (1998) or Ozdemir (2012) found out the more positive perception of geography by boys in comparison with girls. The next variable, which was investigated, is the age of respondents. Brook (1977) and Sack & Petersen (1998) showed the negative view of the geogrpahy by the age of respondents.

### **The Purpose of study**

The presented study used the same data as the study of Kubiatko, Janko & Mrazkova (2012). Unlike the previous study which was focused on the general perception of geography with the analysis of dimensions being only marginal, this study focused on the analysis of the dimensions in a more detailed view.

This study is trying to partially fill the gap, which is present in the investigation of geography perception among lower secondary school pupils. As was mentioned above, only the study of authors showed the basic results of the lower secondary school pupils' perception of geography.

The aim of the study was to find out differences in the four dimensions of geography perception between gender and grade level of lower secondary school pupils. The variables like gender and grade level belong among the most investigated factors, which can influence the perception of the geography. The analysis of these two factors is missing in the conditions of Czech Republic, so before investigating of the next factors is important to find out the influence of gender and grade level on the perception of geography by the lower secondary school pupils. And also, it is important to investigate the influence of these two variables, because it is hard to say, if these results found out in the other countries are valid for the Czech lower secondary school pupils. The study aims to answer following research questions:

1. Is there any difference between the boys and girls in the four dimensions of the geography perception?
2. Is there any difference between grade levels in the four dimensions of the geography perception?

## **Methodology**

### **Respondents**

The sample size was created by 540 lower secondary school pupils. The pupils were from six Czech lower secondary schools acquired by intentional choice, because random sample was not able to realize due to unwillingness of many teacher to cooperate. In all schools, teaching was typically traditional, characterized by the teacher being the controller of the learning environment. Power and responsibility are held by the teacher, who plays the role of instructor (in the form of lectures) and decision-maker (in regard to curriculum content and specific outcomes). The number of girls was 315. The higher number of pupils was from 7th grade level ( $n = 165$ ), the lowest one was from 6th grade ( $n = 94$ ). The rest of respondents was disseminated between 8th grade ( $n = 155$ ) and 9th grade ( $n = 126$ ).

### **Instrument**

The instrument was 5-point Likert type questionnaire (Appendix A), which was adapted from the biology attitudes questionnaire (BAQ) (Prokop et al., 2007) and was developed in a similar way. Attitude items were prepared following the questionnaires published in similar studies (Prokop, Tuncer & Chuda, 2007). The original form of the questionnaire was developed in the Czech language and then was translated into English for publication purposes with the assistance of a native speaker. The questionnaire is divided into two parts. First part included demographical variables (gender and grade level) and second part included 25 items divided into four dimensions (1. Geography as a school subject (5 items); 2. Geography and environment (6 items); 3 Importance of geography (5 items); 4. Relevance of geography lessons to pupils life (9 items)). In the next text for the last two dimensions is used shortened form (Importance and

Relevance). The questionnaire included originally 27 items, but two were excluded after using of explorative factor analysis. The complete questionnaire is added as Appendix A. The distribution of items into dimensions was realized through explorative factor analysis. The detailed process and results of factor analysis are described in the study of Kubiatko, Janko & Mrazkova (2012).

The items were presented in the random order; they were not grouped together with other items having a similar character. Items were rated by the participants from 1 (strongly disagree) to 5 (strongly agree). There were items worded both positively (e.g. "I like geography more than other subjects") and negatively (e.g. "Geography is not important in comparison with other courses") (Oppenheim, 1999). Negative items were reversed in scoring.

### **Procedure**

The questionnaires were distributed among pupils by their teacher of geography, which was learned about distribution of questionnaires. The distribution of questionnaires among pupils was at the beginning of the year 2011. Pupils were reassured that the questionnaire was anonymous, that it was not a test but rather a research attempt to explore their perception of geography. No time limit was given for the finalization of the questionnaire, but the longest time taken to complete it was approximately twenty minutes. All questionnaires (n = 540) were filled out correctly and were included in the analysis.

### **Analysis of data**

As it was mentioned above the information above factor analysis is in the study of Kubiatko, Janko & Mrazkova (2012). The distribution of the items into dimensions is showed in the appendix A. The reliability of the questionnaire was 0.87, which indicated acceptable reliability of the questionnaire (Nunnally 1978). The reliability of the dimension ranged from 0.66 to 0.84. The reliability of the dimension above 0.60 is sufficient according to Dhindsa & Chung (2003).

For the finding of answers on research question the methods of descriptive and inferential statistics were applied. From the methods of descriptive statistics it was mean score and standard deviation and from methods of inductive statistics it was one-way analysis of variance (ANOVA), where the mean score for dimensions was as dependent variable and gender and grade level was as independent variables. In the analysing of the items, the percentage amount of agree or disagree answers were taken into account.

### **Findings**

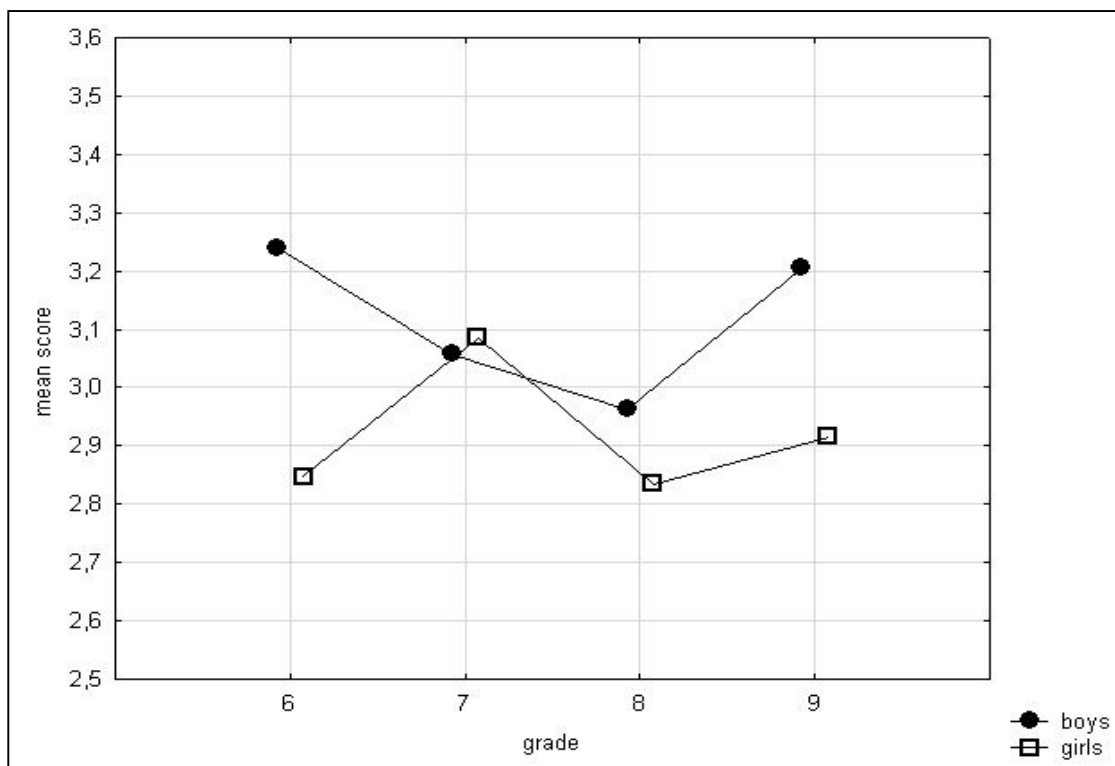
Lower secondary school pupils' responses are evaluated with respect to four dimensions as follows:

#### **Geography as a school subject**

The influence of gender was significant ( $F = 6.44$ ;  $p < 0.05$ ), the boys achieved statistically significant higher score ( $M = 3.12$ ;  $SD = 0.06$ ) in comparison with girls ( $M = 2.92$ ;  $SD = 0.05$ ). The influence of grade level was not significant ( $F = 1.31$ ;  $p = 0.27$ ). The highest score achieved 7th grade pupils ( $M = 3.07$ ;  $SD = 0.07$ ) and the lowest

one 8th grade pupils ( $M = 2.90$ ;  $SD = 0.07$ ). The figure 1 showed distribution of score of gender in the grades, there is possible to see, in all grades achieved boys higher score except of 7th grade, where the score was similar.

The item analysis showed, the 45 % of boys had got the geography like more than other subjects in the comparison of approximately of one third of girls. Only 30 % of 9th grade pupils expressed positive statement with the item “I like geography more than the other subjects”. The most positive answers were detected at the 7th grade pupils (approximately half of all 7th grade pupils). Geography lessons are difficult for the similar amounts of boys and girls (18 %) and only for 9 % of the youngest pupils and 20 % for the pupils from other grades. The boys could have the geography lesson more often (32 %) than girls (22 %). By the evaluating of grade level, the one third of 6th and 7th grade pupils would like to have geography lessons more often and only 20 % of 8th and 9th grade pupils would like to have these lessons more often. Nearly half of boys think, it is necessary to pay more attention to understand geographical content in the comparison with 35 % of girls. The oldest pupils had got the most positive responses (more than 50 % of pupils) on the item “It is necessary to pay more attention to understand geographical content”, the lowest positive responses were from 6th grade pupils (25 %). Nearly half of boys think, the geography is one the easiest subject in comparison with approximately 35 % of girls. The 7th and 9th grade pupils achieved similar number of positive responses, 42 % of them think the geography is the one of easiest subject, from 6th and 8th grade pupils it was approximately 35%.



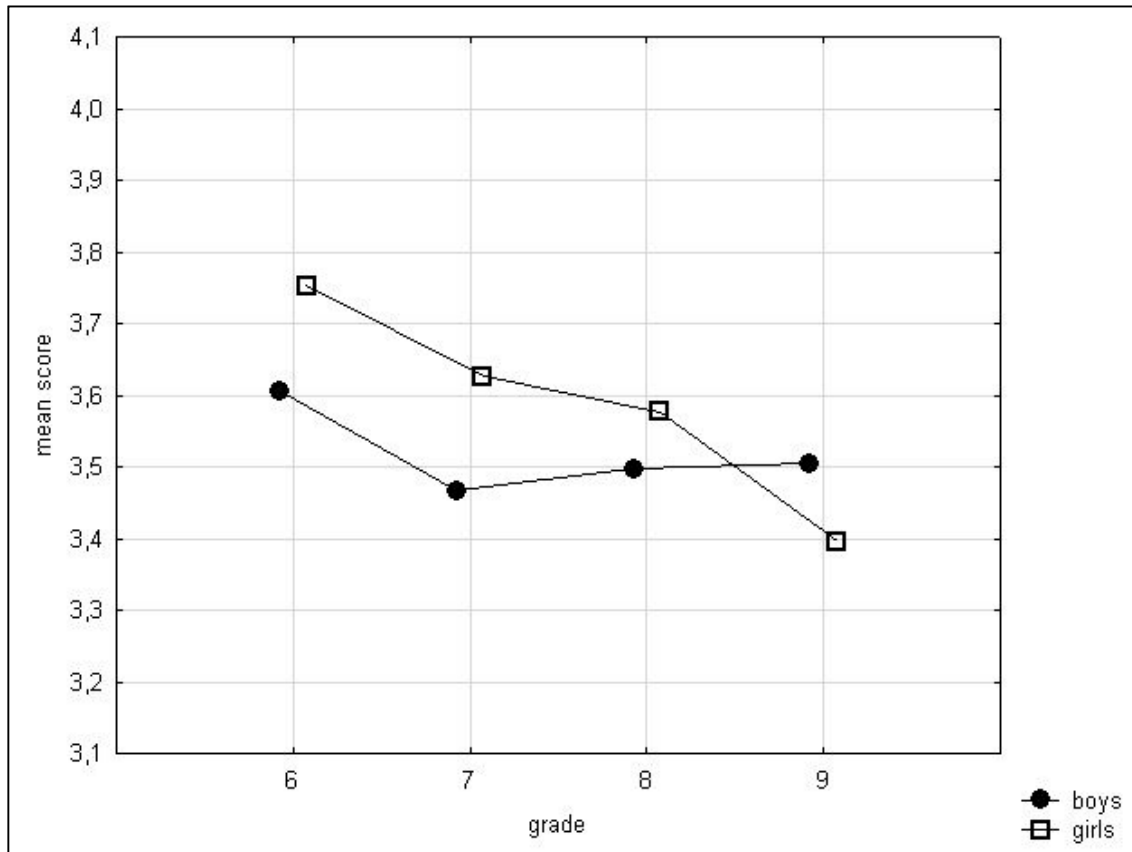
**Figure 1.** Pupils' distribution of score in the dimension "Geography as school subject" with the respect to gender and grade level

### Geography and the environment

The influence of gender and grade level was not significant, the value of ANOVA for gender ( $F = 1.41$ ;  $p = 0.23$ ) and for grade level ( $F = 2.13$ ;  $p = 0.09$ ). The application of Fisher post-hoc test showed, the pupils from 6th grade achieved statistically significant higher score in comparison with 9th grade pupils ( $p < 0.05$ ). The girls achieved higher score ( $M = 3.59$ ;  $SD = 0.04$ ) in comparison boys ( $M = 3.52$ ;  $SD = 0.04$ ). The dividing of score was consistent, the youngest pupils achieved highest score ( $M = 3.68$ ;  $SD = 0.07$ ), the trend of score was decreasing and the 9th grade pupils achieved the lowest score ( $M = 3.45$ ;  $SD = 0.06$ ). The figure 2 showed distribution of score of gender in the grades, there is possible to see, in all grades achieved girls higher score except of 9th grade, where boys achieved higher score.

Geography and nature are strange approximately for 10 % of boys and also for 10 % of girls. The similar values were observed at all grade levels. More than half of boys and girls (approximately 55 %) agreed with the statement "Geographical knowledge can help with solving a problem which is connected with the environment". The similar situation was observed at all grade levels. Approximately 90 % of boys and girls think, the nature is fundamental part of human life. The similar situation was observed at all grade levels. Only 10 % of girls and boys would like to work in the future in the field of science. The similar situation is observed in the evaluation of grade levels. Approximately 60 % of boys considered the processes taking place in the environment

for very interesting, the 50 % of girls agreed with this statement. The two third of youngest pupils agreed with previous statement and from other grades it was approximately half of pupils. The positive responses on the statement “I suppose that geography as a subject is able to explain the impact of humans on the nature” gave approximately 45 % of boys and girls. The situation in grade had got decreasing trend with higher grade. The 52 % of 6th grade pupils agreed with the statement and only 40 % of pupils from 9th grade agreed with this statement.

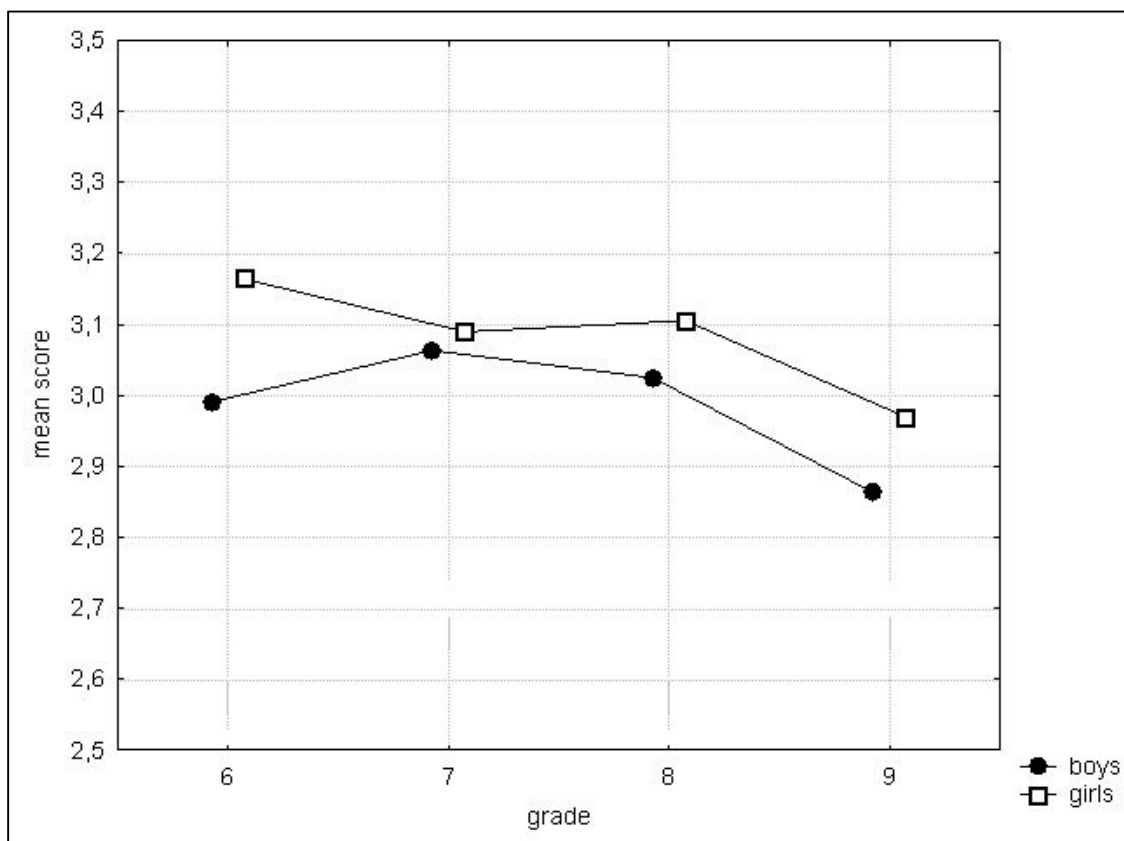


**Figure 2.**

*Pupils' distribution of score in the dimension “Geography and the environment” with the respect to gender and grade level.*

### **Importance of Geography**

The influence of gender and grade level was not significant, the value of ANOVA for gender ( $F = 2.17$ ;  $p = 0.14$ ) and for grade level ( $F = 1.35$ ;  $p = 0.26$ ). The girls achieved higher score ( $M = 3.08$ ;  $SD = 0.04$ ) than boys ( $M = 2.99$ ;  $SD = 0.05$ ). The distribution of score in grade level was like in previous dimension, decreasing with higher age of respondents. The 6th grade pupils achieved highest score ( $M = 3.08$ ;  $SD = 0.07$ ) and 9th grade pupils achieved the lowest one ( $M = 2.92$ ;  $SD = 0.07$ ). The figure 3 showed distribution of score of gender in the grades, there is possible to see, in all grades achieved girls higher score in comparison with boys. The highest difference was in 6th grade and the lowest difference was in 7th grade.



**Figure 3.**

*Pupils' distribution of score in the dimension "Importance of geography" with the respect to gender and grade level.*

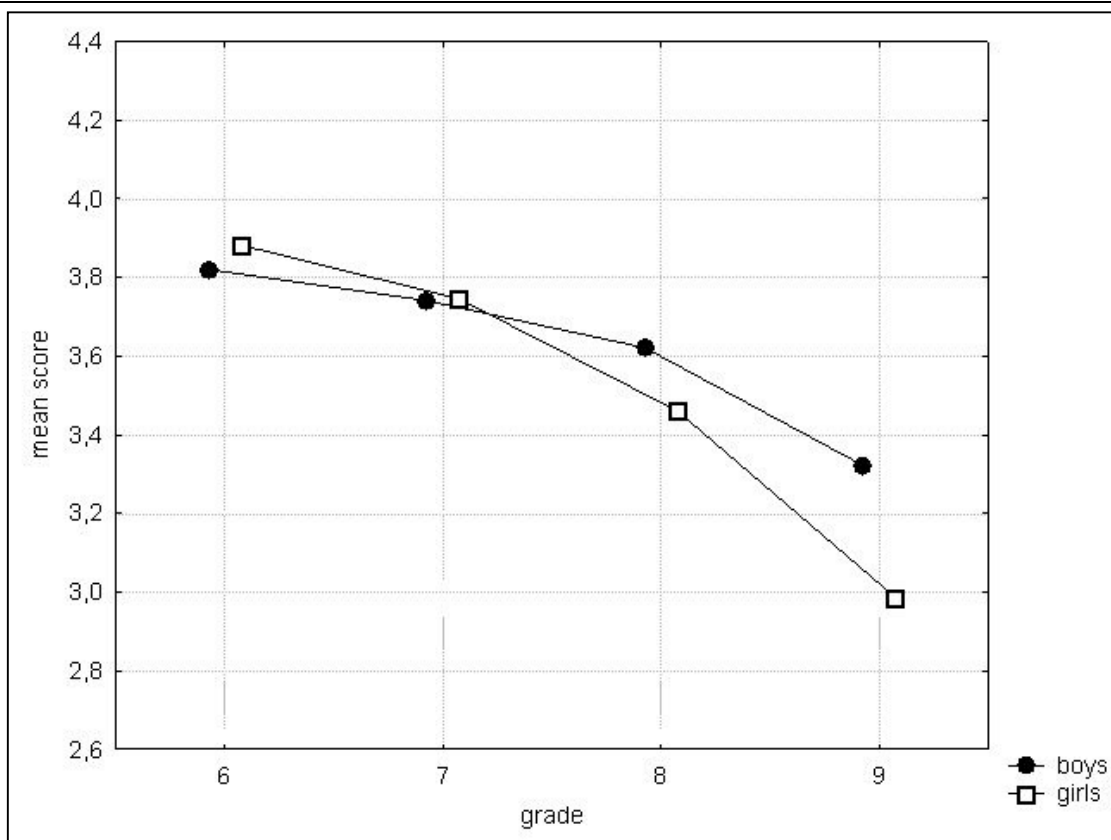
Approximately one third of boys and girls think, the geographical knowledge is important for understanding other subject. The 43 % of 6th grade pupils agreed with this statement and from the other grades it was approximately 30 % of pupils. Nearly 30 % of boys and girls used geographical knowledge in everyday life. The one fifth of 6th grade pupils used this kind of knowledge in everyday life, and from others grades it was approximately 30 % of pupils. Only 15 % of boys and girls planned the use geographical knowledge in their future life. Only 9 % of 8th grade pupils planned to use geographical knowledge in their future life, from 9th grade pupils it was 13 % and from 6th and 7th grade it was approximately 17 %. Nearly 25 % of boys and 20 % girls thought, the geography is not so important in comparison with other subjects. Approximately 15 % of the youngest respondents agreed with this statement and one fourth pupils from other grades had this kind of feeling. Nearly half of boys and girls agreed with the statement "I believe that geography as a subject enables us to understand thinking and behaviour of people from other countries". The similar amount was observed among 6th and 7th grade pupils, from 8th grades it was nearly 60 % and from 9th grade it was below 40 %.



### Relevance of geography lessons to pupils' life

The influence of gender was not significant ( $F = 2.44$ ;  $p = 0.12$ ) and the influence of grade level was significant ( $F = 18.04$ ;  $p < 0.001$ ). The 9th grade pupils achieved statistically significant lower score in comparison with other grades ( $p < 0.001$ ). And 8th grade pupils achieved statistically significant lower score in comparison with 7th grade pupils ( $p < 0.05$ ) and also with 6th grade pupils ( $p < 0.01$ ). The boys achieved higher score ( $M = 3.63$ ;  $SD = 0.05$ ) in comparison with girls ( $M = 3.52$ ;  $SD = 0.04$ ). The distribution of score regarding to grades was similar like in previous two dimensions. The sixth grade students saw the highest relevance of geography ( $M = 3.85$ ;  $SD = 0.08$ ) and the oldest pupils saw the lowest relevance of geography lessons for their lives ( $M = 3.15$ ;  $SD = 0.07$ ). The figure 4 showed distribution of score of gender in the grades, there is possible to see, the girls achieved higher score in the 6th grade, in the 7th grade it was similar score for boys and girls, and in the 8th and 9th grade the boys achieved higher score in comparison with girls.

Nearly 70 % of boys and girls thought geography lessons had got positive influence on the developing of their knowledge and skills. With this statement agreed 70 % of 6th grade pupils, 80 % of 7th and 8th grade pupils and nearly 60 % of 9th grade pupils. One fourth of boys and girls are bored in geography lessons. Approximately similar amount of 6th, 7th and 8th grades had got feeling of boredom on the lessons and this feeling was detected at the 45 % of the oldest pupils. Nearly for two thirds of boys and girls is teachers' explanation interesting. For 70 % of 6th and 7th grade pupils is teachers explanation interesting, with this statement agreed 60 % of 8th grade pupils and only 45 % 9th grade pupils. Nearly half of boys and girls perceived geography as interesting due to teaching by professional teacher. The similar amount was found out at 7th and 8th grade pupils. The 6th grade pupils achieved the highest degree of agreement (60 %) and from 9th grade pupils it was only 30 %. Approximately one fifth of boys and girls did not like their teacher of geography. In the evaluation of grades was detected consistent trend, only 7 % of youngest pupils did not like their teacher of geography, 10 of 7th grade pupils expressed this feeling, nearly 30 % of 8th grade pupils and 35 % of oldest pupils did not like their teacher of geography. Maps, atlases and other geographical aids are interesting for 50 % of girls and for 65 % of boys. The geographical aids are interesting for 45 % of the oldest respondents and other grades achieved approximately 60 % of agreement degree. More than half of both gender agreed with statement "We use a lot of geographical aids in geography lessons". The all grade level except 9th achieved 60 % of agreement degree with this statement, from the oldest pupils it was only approximately 30 %. About 60 % of boys and girls are teaching geographical material interesting. The similar amount was observed at 6th, 7th and 8th grade pupils, the half of 9th grade pupils considered geographical teaching materials for interesting. Approximately 18 % of boys did not like geography lessons and one fourth of girls agreed with this statement. Only 10 % of youngest pupils did not like geography lessons, approximately one fourth of 7th and 8th grade pupils agreed with this statement and one third of the oldest pupils did not like geography lessons.



**Figure 4.** Pupils' distribution of score in the dimension "Relevance of geography lessons to pupils' lives" with the respect to gender and grade level.

### Conclusion and Discussion

Our study was focused on the finding out the influence of gender and grade level on the four dimensions of geography perception. The questionnaire with 5-point Likert scale items was used. The methods of descriptive and inductive statistics were used for the data evaluation.

The significant influence of gender was observed only in the dimension "Geography as a school subject". Boys achieved higher score in comparison with girls. The boys expressed more positive perception of geography lessons in the schools, for them this subject is easier than for girls, boys would like to have geography lessons more often than girls. It is probably caused by the character of the subject content, which is partially connected with science. The positive perception of science subjects by boys in more degree than girls was showed in many studies (f.e. Dawson 2000). The effect of content on this dimension was observed in the influence of grade. In the 7th grade, topics regarding humans (regions of world) are taught. In the 8th grade, problems of the Czech Republic are taught and maybe these problems are not interesting for the pupils in comparison with the regions of world not visited by pupils, which brings new kinds of information for pupils. The region of Czech Republic is known for the pupils and it not so interesting for them. By the analysis of grade and gender, it is possible to

observe, that in the 7th grade the boys and girls achieved similar score. For both genders it is probably interesting to learn material about foreign (exotic countries), but when the learning content is regarding to planet or to region of Czech Republic or to economic geography the boys preferred more these topics in comparison with girls.

The influence of gender and grade level was not significant in the second dimension. This dimension contained items regarding to environment. The importance of this connection (geography and environment) is more relevant for girls in comparison with boys (girls achieved higher score), this finding is little bit surprising in the general opinion about girls perception of the environment. Maybe, the higher score of girls is caused of the items character, which is focused on the solving of environmental problems, which can be connected with human lives and prosocial behaviour is more developed by girls (Eagly 2009). The perception of this dimension with respect to grade level was consistent. The youngest pupils achieved the highest score and then the trend was decreasing. This trend is observed in other studies by the evaluating of other subjects (biology) (Prokop, Tuncer & Chuda 2007) and also in the evaluating of geography (Sack & Petersen 1998). Maybe, the style of teaching is responsible for this trend, in the lower grades the teaching is more fun and runs in a relaxed atmosphere, but in the higher grades the teaching style is more formal and the pupils have other interests as well.

The geography is important for boys and girls on the similar level. The score of both genders was neutral; although it indicated with relative certainty that geography will be important for them in future life, if they will be connect with geography in future. The similar finding is possible to see in the studies, where the same dimension was investigated (Prokop, Tuncer & Chuda 2007). The influence of grade level was similar like in previous dimension. The sixth grade pupils saw more importance of geography in comparison with older pupils. They probably did not see the importance, but they were more enthusiastic than older respondents, who saw geography as a boring subject.

In the last dimension was not detected significant difference between boys and girls, however boys saw geography lessons more relevant in comparison with girls. It can be caused by the character of items. The boys probably preferred the using of geographical aids in the lessons of geography in comparison with girls and the teacher is more sympathetic for them if used geographical aids and not only explained the topic. The statistical significant difference was observed among grade levels. The 9th grade pupils did not see the relevance of geography lessons in comparison with others and also the 8th grade pupils achieved lower score. This fact could be influenced by several aspects, the older pupils are decided about their future career and from our sample size the majority of older pupils did not consider geography to be a subject which will play a significant role in their future life. The next aspect is the lack of interest about any school subject and their interests are out of school, so they did not see relevance of not only geography lessons.

From the results it is obvious that perception of geography is influenced by gender and grade level only in some observed aspects. The educators should pay attention, how to improve the perception of geography by the pupils. There are some possibilities, which could be incorporated into lessons of geography. Teachers should try to connect

geography lessons with the real world and bring real-world problems (e.g. social, political, and economical) to geography lessons. They should attempt to teach students how to use geographical skills to interpret these “everyday” problems as pupils have got a poor idea about the use of geographical knowledge in their future job and everyday life. Teachers could try to enrich geography lessons by teaching through the use of games. It can make it easier to understand complicated parts of geography and consequently pupils might consider geography one of the clearest and most stimulating subjects and the content of lessons might become easier to understand for them. Or pupils’ interest in geography could be increased through meetings with professional geographers and sharing their ideas about the role of geographical knowledge in everyday life. Students display a lack of interest in geography in connection with their future job and so these facts and the facts mentioned above could help improve the popularity of geography.

Finally, more research should be realized in this field of study, for example to find out the influence of teacher, family, peers on the perception of geography. Findings of such studies may significantly contribute to improve geographical education in the future. The data were obtained from the Czech Republic lower secondary schools only. A follow-up study could examine high school students and/or college students’ perception of geography and compare the results. Investigations about perception of geography from other countries could also bring new knowledge in this area of research. The sample size was also one of the limits. When divided into groups according to gender and grade level, the students did not differ in their responses (see the small SDs). A bigger sample from more countries could cause a higher variance in responses.

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## **Appendix A**

Geography attitudes questionnaire (The numbers of items are identical with the number in the questionnaire.)

### **Geography as a school subject**

1. I like geography more than the other subjects.
4. Geography lessons are very difficult for me.
6. I would like to have geography lessons more often.
16. It is necessary to pay more attention to understand geographical learning.
27. I suppose, geography is one of the easiest subject.

### **Geography and natural environment**

3. Geography and nature are strange for me.
10. Geographical knowledge can help with solving of problem which is connected with the environment.
17. Nature is fundamental part of human life.
18. If I finished my study I would like to work in the field of science.
23. I consider the processes proceed in the environment as very interesting.
24. I suppose that geography as subject is able to explain the impact of humans on the nature.

### **Importance of geography**

7. Geographical knowledge is important for understanding of other subjects.
11. I use geographical knowledge in everyday life.
12. I will use geographical knowledge in my future job.
15. I suppose, geography compared to other subject is not important.
26. I suppose geography as subject enables us to understand thinking and behaviour of people from other countries.

### **Relevance of geography lessons to pupils' live**

5. Geography lessons develop my knowledge and skills.
8. I am bored within geography lessons.
9. Teacher's explanation in geography lesson is interesting for me.
13. Geography is interesting for me because we are taught by professional teacher.
14. Maps, atlases and globes used in geography lessons are interesting for me.
20. I do not like geography lessons.
21. I do not like my geography teacher.

22. We use a lot of geographical aids in geography lessons.

25. Teaching materials (books, magazines, video, souvenirs, etc.) connected with geography are interesting for me.

***Deleted items***

2. We do not use any aids in geography lessons.

19. Geographical knowledge is not important in everyday life.

**Biographical statements**

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**Dr. Tomas JANKO** is a postdoc at the Institute for Research in School Education, Faculty of Education, Masaryk University, Brno, Czech Republic. His research focuses on students' treatment of textbooks, visuals in geography textbooks, and nonverbal information processing.