

How Do Czech Geography Teachers Use School Atlases?

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Abstract:

School atlases have become an essential part of geography education over the last century. They are mostly composed of various maps supporting the geography curriculum. The main purpose of maps in teaching is to facilitate the explanation of geographical phenomena and their relationships based on spatial visualization. Usability studies allow cartographers and educators to get feedback on the use of their products and identify strengths, weaknesses, threats and opportunities in teaching with maps.

This research investigates how Czech geographic teachers work with cartographic aids, especially printed atlases, maps, or other related digital aids. The research focused on how maps are implemented in geo education, the frequency of their use by teachers, and what tasks students complete with maps. The study also asks what they need and what would help them in working with cartographic aids. The most appropriate method to reach a large number of respondents to understand their needs is an online questionnaire survey. Over 600 geography teachers, which is approximately 15% of all geography teachers in the Czech Republic, answered 30 questions of various types¹. One third of the questions were text-based. The analysis of textual responses is very challenging. To analyse these answers, cooperation with colleagues from the Department of General Linguistics was undertaken. Corpus linguistics methods were used to extract information from teachers' responses. The first type of analysis was to identify the most frequent words, their pairs, or triples. The second, a complementary way of analysing the responses, was based on the detection of key words that could potentially have low frequencies but still carry important information. The most frequently occurring verbs obtained were further assigned to categories using Bloom's taxonomy. Furthermore, an analysis of the relationships between the questions was conducted. This analysis was conducted using the standard chi-square test or its equivalent depending on the type of questions. Individual answers were also analysed separately using pivot tables.

A basic analysis of the individual questions revealed that school atlases are very frequently used aids, and teachers play an important role in their teaching. According to the teachers' answers, most students (57%) work with the atlas every lesson. Approximately one-third of them (29%) work with the school atlas every other lesson. The most frequently used school world atlas in the Czech Republic is the atlas from the publisher Kartografie PRAHA (67.5%). It is used in combination with other atlases by 93.9% of the respondents of the questionnaire survey. Only 12% of respondents use the electronic version of the atlas, while 35% of teachers do not know that publishers offer electronic versions of atlases. Geographic teachers most miss the thematic maps of different topics and scales. Most teachers (99%) use printed aids such as map sheets, wall maps and globes. A significant number of teachers use digital devices, mostly computers and interactive whiteboards, as well as mobile phones and tablets for map teaching. The most common source of maps is the Internet. One-third of teachers use GIS in their teaching, but only 1.2% of students use GIS for map-making. A linguistic analysis of the verbs in the responses revealed that maps are most often used to search geographic phenomena. The division of verbs into the categories of Bloom's taxonomy showed a high representation of the first level (retrieval) at the expense of the other categories. Analysis of the relationships between the questions revealed that female teachers use the atlas significantly more often than male teachers. However, the popularity of using

¹ The collected data are available at Mendeley data doi: 10.17632/h8vg9w9ht5.2.

digital devices among both male and female teachers is the same. The most important factor influencing the use of school atlases is the number of years of praxis. Teachers with fewer years of praxis use the atlas less often than their more experienced colleagues. More experienced teachers are more aware of the digital version of atlases, and they also work with the digital version more often. The type of school largely determines whether teachers will use GIS in their teaching. GIS use is about three times higher at grammar schools than other types of schools (primary and secondary schools combined).

SWOT analysis

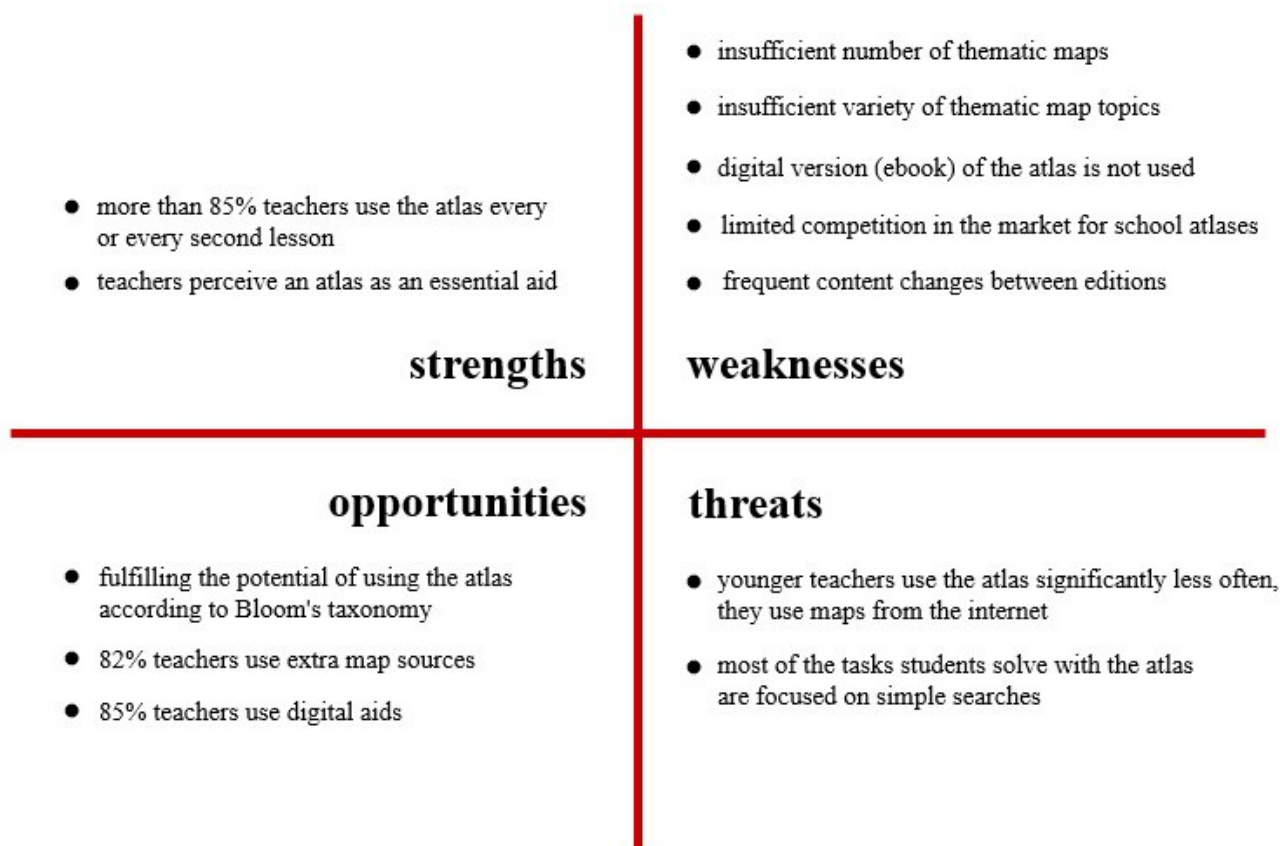


Figure 1. SWOT analysis of the most relevant findings.

Finally, the SWOT analysis Figure 1 was employed to provide an overview of all the most important findings of the study. The strength is that most teachers perceive an atlas as an important aid for geography teaching. The most frequently reported issue is the insufficient number and variety of thematic maps, which leads many young teachers to search for maps on the Internet. This finding was identified as most crucial for education with maps because the teachers cannot guarantee the quality of the maps they use. Even though teachers use digital tools, digital versions of atlases are not used because of low interactivity. The study has shown that the potential of school atlases in the perspective of Bloom's taxonomy is not fully exploited because most of the tasks solved by students are focused on simple searches of phenomena. In the Czech Republic, there is not enough competition in the market of school atlases to force producers to be flexible in adapting their products to current educational needs.

The results provided a detailed insight into the use of school atlases, maps, and other teaching aids. It demonstrated how teachers work with these aids and how they can use them in teaching. The study's findings may be applied by university pedagogues while preparing future teachers or be useful for cartographic publishers. Finally, they will find application in further research.