MAP SKILLS AS A BASE FOR TEACHING REGIONAL GEOGRAPHY

Petra Bendová, Jiří Rypl, Michal Staněk

Abstract

Geography and maps are an inseperable couple. Maps, as a graphical representation of geographic space, are also a useful source of geographic data. The goal of this article is to provide information about how acquiring map skills help teaching regional geography and also how knowledge in regional geography helps increasing map skills. The article also deals with the place of the map skills in the Czech curricular system. Last but not least, it provides some tips and three learning activities for geography lessons. The three activities are called „My place in the world", „Our trip to Africa" and „Mental maps (What are my feelings and experience towards places?)".

Keywords: regional geography, map skills, learning activities, primary school

Introduction – What are map skills?

Nowadays, acquiring multiple skills is becoming an important part of education. The goal of this article is to provide information about the inseparability of acquiring map skills and teaching regional geography. Maps as a representation of geographic space provide useful data about the world and geographic space. Acquiring the map skills can help pupils to read maps and extract these geographic data. Meanwhile, learning regional geography can help pupils to increase the level of their map skills.

Map skills can be placed into a larger group of geographic skills. Geographic skills can be defined as general skills that can be used in the context of geographic issues (Hanus and Marada, 2014). According to Haubrich (1994) geographic skills lie in following:

- Using verbal, quantitative and symbolic data forms (text, diagrams and maps, tables, graphs, pictures etc.)
- Practising geographic methods, such as mapping and field observation, interviewing people and applying statistics,
- Using communication, practical social skills and thinking to explore geographic topics; that is on the range from local to international. This encourages students to identify questions and issues, collect and structure pieces of information, process, interpret and evaluate data, make decisions and judgements, solve problems, work in groups etc.

Map skills as a subgroup of geographic skills can be defined similarly. According to Hanus and Marada (2014), map skills can be, just as geographic skills, defined as partly psychomotor skills (judging from skills as measuring distances in maps, map orientation towards cardinal points etc.) and partly intellectual skills (judging from skills such as figuring out the map scale, reading information from map etc.). Haubrich (1994) states that map skills are basic skills of geography. The most important is reading, using and interpreting maps.

Map skills and regional geography in the Czech curricular system

The Czech curricular system has two levels – the national and the school level. The national level is represented by National Education Programme and the Framework Educational Programmes, that are specifically defined for various stages of education in the Czech Republic. School level is represented by school educational programmes. Each school in the Czech Republic has a right to prepare their own school educational programme on the base of the Frame Educational Programme of the given stage (MŠMT, 2016).

The Framework Educational Programme for Basic Education (FEP BE) is the main curricular document used for this article. The educational field of Geography falls into the educational area called Humans and Nature, along with Physics, Chemistry and Natural Sciences. This educational area deals with natural sciences. These school subjects have similar topics and specific teaching methods. The educational field Geography is further divided into 7 thematic areas: *Geographic information, data sources, cartography and topography; A natural image of the Earth; Regions of the world; The social and economic environment; The natural environment* and *The Czech Republic.* Thematic areas have specific expected outcomes defining what pupils should learn and be competent of after completing the subject matter of the thematic areas (MŠMT, 2016).

Map skills fall into the thematic area of *Geographic information, data sources, cartography and topography* and regional geography falls into the thematic area of *Regions of the world.* To realize how these thematic areas are related to each other in teaching, it is good to talk about the expected outcomes of these thematic areas (Figures 1, 2).

Figure 1: Expected outcomes of the thematic area *Geographic information, data sources, cartography and topography*

GEOGRAPHIC INFORMATION, DATA SOURCES, CARTOGRAPHY AND TOPOGRAPHY

Expected outcomes

pupils will

- ***organize and properly assess geographic information and sources of data from available cartographic products and guides, graphs, diagrams, statistics and other information sources***
- ***knowledgeably apply geographic, topographic and cartographic terminology***
- ***properly assess geographic objects, phenomena and processes in the landscape, their specific regularities, laws and dissimilarities, mutual contexts and conditionalities, and distinguish borders (boundaries) between fundamental spatial elements in the landscape***
- ***create and use personal mental diagrams and mental maps for orientation within specific regions, for spatial perception and the assessment of places, objects, phenomena and processes, and for forming attitudes towards the surrounding world***

Source: MŠMT, 2007

Through the subject matter of *using geographic and cartographic terminology* (for example important points, linear and spatial formations, language of maps, geographic media and data sources etc.) and *geographical cartography and topography* (for example the globe, scales, co-ordinates, cardinal points and their usage etc.) the pupils should be able to work with geographic data sources, apply terminology, assess geographic objects, phenomena and processes and also work with mental diagrams and mental maps for orientation in specific regions (MŠMT, 2016).

Figure 2: Expected outcomes of the thematic area *Regions of the world*

REGIONS OF THE WORLD

Expected outcomes

pupils will

- ***learn basic natural and social phenomena as criteria for defining, delineating and locating regions of the world***
- ***locate continents, oceans and macroregions on a map according to selected criteria, compare their positions, cores of development and peripheral zones***
- ***compare and adequately assess the location, area, natural, cultural, social, political and economic relations, traits and parallels, and the potential and boundaries of the individual continents, oceans, selected macroregions and selected (example) states***
- ***reflect on the changes that have occurred, are occurring and may occur in selected regions of the world, as well as the causes of fundamental changes***

Source: MŠMT, 2007

The subject matter of this thematic area contains *continents, oceans, world macroregions* (defining and comparing them, characterizing them from the point of view of natural and socio-economic relations) and *model regions of the world* (examples of issues – natural, environmental, social, economic and political – and their possible solution). On this basis pupils should be able to define, delineate and locate world regions, locate regions and oceans on a map, compare continents, oceans, macroregions and states according to their natural and socio-economic characteristics and think about changes in the regions and the world (MŠMT, 2016).

The thematic area of *Regions of the world* works very closely with maps to assess regions, oceans, states etc. It is clear from the second expected outcome as given in the FEP BE: *"locate continents ... on a map according to selected criteria, compare their positions, cores of development and peripheral zones"* (MŠMT, 2007; p. 65). As for the third expected outcome many thematic maps can serve as a good graphical representation of *"natural, social, political and economic relations"* (MŠMT, 2007; p. 65). The fourth expected outcome (reflecting on changes in the world) can also be taught via maps. For teaching regional geography, maps are a fundamental source of information, not only as a graphical representation that can make teaching much easier for children, but also to fulfil the expected outcomes of the thematic area *Regions of the world* (MŠMT, 2016). To teach regional geography effectively, it is necessary for pupils to understand the language of the map, think about the map as a source of information and read and work with maps effectively.

Teaching map skills in the Czech educational system

Maps are somehow included in many human activities. That makes them an important source of information. Havelková and Hanus (2014) point out, that maps spread into many fields of work, and this fact urges teaching map skills into Geography and even other educational fields (such as Maths, Biology or History). There are many reasons for teaching map skills. First, there are many jobs that need maps for work, e. g. drivers, soldiers, meteorologists, ecologists, teachers, guides, architects and many more. Second, Verdi and Kulhavy (2002) point out, that using maps in school can help pupils remember more information from text in context with the map. Hinde et al. (2007) mention maps as a motivational factor for learning. Řezníčková (2010) talks about development of graphic and visual literacy. Finally, Hinde et al. (2007) say that using maps improves pupils' reading and mathematical skills.

According to Havelková and Hanus (2014), Czech educational system turns away from mere factual accounts. It focuses more on competencies and their development, along with skills, attitudes, and capabilities. This process comes

along with introduction of Frame Educational Programmes into the Czech educational system. Even though texts are still used in education to a large extent, other teaching materials (mainly the graphic materials – photography, schemes, drawings and even maps) are coming to the fore.

Development of map skills in school is provided by using many cartographic products in geography lessons. These can be globes, world atlases and wall maps. Unfortunately, there have been no surveys of how much time is given to these tools in geography lessons, yet. In general, it is presumed that world atlases and wall maps are used the most. On the other hand, tourist maps, cadastral maps and others are given none or very little time (Hátle and Kučerová, 2013).

Hátle and Kučerová (2013) point out the new possibilities of using cartographic products. Map servers such as Google maps, Google Earth or Mapy.cz (in the Czech environment) constantly get more space in lessons. These are accessible not only on computers, but also via tablets or smartphones. GPS devices are also widely used. Hátle and Kučerová (2013) also highlight that geographic information system (GIS) is used rarely. The problem with GIS in Czech schools is not only the high purchase price, but also the demands on knowledge of this system (Štych, 2013).

Methods

This article is extracted from the diploma thesis by Bendová (2019).

The methodical part of the article deals with the methods of creating learning activities not only for regional geography. Its main goal is to provide a basic insight into creating learning activities and tips for teachers to make these activities effective and meaningful. Any activity used by teachers during their lessons can be considered a learning activity. These can be projects, groupworks or inquiry-based activities along with reading, lectures or discussion (Boise State University, 2019).

Learning goals and objectives of particular subject, topic and lesson are basic components for creating learning activities (University of Tasmania, 2018b; Cardiff University, 2019; Stanford University, 2019). Learning goals and objectives are a guideline towards the meaning of any learning activity. Any learning activity should therefore meet three requirements – to have an intention, to be meaningful and to be useful. Intentions of activities come from the learning goals and objectives. Meaningful activities develop pupils' knowledge and skills. They should also support their activity and be constructive. The usefulness of activities is reflected in pupils' ability to use acquired knowledge and skills during the learning activity itself or in other situations, such as different activities or subjects (University of Tasmania, 2018a).

Mantyla (1999, cit. by Boise State University, 2019) gives few basic components common for all effective learning activities. He proposes these steps of creating learning activities:

1. Set the beginning and the end of the activity,
2. Set the purpose of the activity and its learning goals,
3. Give complete and clear instruction before and during the activity,
4. Have a plan for evaluating the fulfilment of the learning goals and have methods of feedback for pupils,
5. Have accurate information for tools and technological background of the activity.

Other components depend on teachers. Teachers should always have enough time for preparation of the activity and all tools in advance (Mantyla, 1999 cit. by Boise State University, 2019).

University of Cardiff (2019) sets another tips for creating learning activities that support pupils' activity and the possibility to find their own meaning in the activity. These tips include:

1. Give pupils an opportunity to review and reflect on the subject matter,
2. Help pupils learn by doing the activity whenever possible,
3. Use different types of activities and change them approximately every 20 minutes; it is the time that people are able to focus on one thing,
4. Think over the need of worksheets etc.

Activities for teaching regional geography with map skills

My place in the world

Summary:

This creative activity gives pupils an opportunity to think about their location in the world system. Pupils make their own model showing their place in the world with several scales:

- My village/town/city,
- My district,
- My country,
- My continent,
- My planet,
- Our Solar system,
- Eventually more categories according to the needs of the teacher or creativity of pupils.

The activity can be used as an introduction for geographic learning, as a part of cartography learning or as a part of teaching regional geography. The pupils get the basic idea about the hierarchy of the space around us, their place in this space and its extent. It can also provide a basic insight into the topic of map scale and using of different types of map according to their scale.

Time needed: 45 minutes

Age of learners: 6th grade of primary school

Acquired skills and knowledge:

- Pupils get the basic idea about the surrounding space and its extent,
- Pupils can say where they live on several different levels,
- Pupils understand the hierarchy of units in the geographic space,
- Pupils get the basic insight into the topic of map scale.

Link-up to FEP BV:

- Geography:
  - Geographic information, data sources, cartography and topography,
  - A natural image of the Earth,
  - Regions of the world.
- Information and communication technologies
  - Information searching and communication,
  - Information processing and application.

Cross-curricular subjects:

- Education towards thinking in European and global contexts,
- Medial education,
- Environmental education.

Key competencies:

- Learning competencies,
- Problem-solving competencies,
- Working competencies.

Teaching aids:

- Hard paper,
- Stationery,
- Glue/adhesive tape.

Activity:

Pupils work individually. They choose or are given the categories they work with in their project (see the Summary). They assign an existing unit to every of the categories (e. g. city – Prague, country – the Czech Republic etc.). The model will be hierarchically arranged, the smallest unit (village, town or city) should be on the top, the largest unit (the Solar system or other) should be at the bottom.
Teacher can make the work easier by printing out the outlines of districts, countries etc. for pupils. To make the work more difficult, they can also add some wrong shapes. Pupils will have to think harder and check their choices carefully. When carrying out this activity, maps and plans are used to help pupils realize the difference in the scales and the extent of displayed areas in the maps and plans.

The task can be carried out also with the help of computers and map servers such as mapy.cz, Google maps or Google Earth. These map servers can be very helpful with the issue of the scale. Pupils can easily zoom the map and quickly and without much effort see the differences between the hierarchical units.

While working on PC pupils also improve their skills in informational technologies, especially working with the internet, pictures and text editors.

Assessment: At the end of the activity teacher should talk with pupils about the results and their evaluation of the activity and their place in the world. The group discussion can be carried out.

Our trip to Africa

Summary:

This activity stands on the boundary between teaching cartography and regional geography of Africa. Africa as a continent is by no means interesting, but it has many problems. These problems, by the way, make travelling uneasy. In this activity, pupils work with thematic maps of Africa and the world atlas. Their task is to plan a trip to a place, that is either chosen by teacher or by pupils. While planning, pupils have to take many categories into account.
The activity can be further extended by getting ready for the journey. Pupils can therefore use or gain new information about travelling abroad (e. g. what is needed to arrange, what to pack etc.).

Time needed: 45 minutes

Age of learners: 7th / 9th grade of primary school (without extension)

Acquired skills and knowledge:

- Pupils know how to read thematic maps,
- Pupils are able to use information acquired from many different sources,
- Pupils think about current situation and risks before travelling abroad,
- Pupils know what they need to arrange for before travelling abroad.

Link-up to FEP BV:

- Geography
  - Geographic information, data sources, cartography and topography,
  - The social and economic environment,
  - Regions of the world,
  - A natural image of the Earth,
  - The natural environment.
- Czech language
  - Communication and composition.
- Civil education
  - Humans in society,
  - International relations, the global world.

Cross-curricular subjects:

- Personal and social education,
- Education towards thinking in European and global contexts,
- Multicultural education,
- Environmental education,
- Media education.

Key competencies:

- Learning competencies,
- Communication competencies,
- Social and personal competencies,
- Problem-solving competencies,
- Civil competencies.

Teaching aids

- Worksheets,
- Thematic maps of Africa,
- World atlas.

Activity:

Pupils work in groups of 3-4. They can either choose their own place, or they can draw a place prepared in advance, e. g.:

- Cape Town,
- Kilimanjaro,
- Madagascar,
- sources of the Nile,
- Sahara (specific place or spot).

Pupils get worksheet or worksheets. It depends on whether they are going to work only with maps or also with the extension.

For the worksheet "Travel plan to Africa" pupils also get a set of thematic maps of Africa. These maps show official languages, drinking water access, diseases, malaria spread, criminality index and climate. Geographic and political maps of Africa can be found in the world atlas.

Pupils then work according to the tasks in the worksheet. The maps provide information about particular topics, Pupils extract the information they need and fill them in the worksheet. They can also add their own notes.

The extension works with the whole process of planning a journey abroad. The worksheet is called "Our trip to Africa". Pupils fill in the key information for the place they want to go. They can work according to their experience or use the Internet to help them fulfil the task.

In the end pupils introduce their destination, assess it based on the thematic maps (worksheet 1) and tell others what their conclusion about planning the trip is (worksheet 2).

Assessment: It is good to comment, evaluate and expand on their conclusion. Pupils can discuss among themselves or with the teacher. Pupils should also express their opinion on the destination they work with and provide their personal attitude towards it.

Mental maps (What are my feelings and experience towards places?)

Summary:

Pupils get the knowledge of mental maps and their usage. They draw their own mental map according to their feelings and experience of places they visit when travelling to school or the surroundings of their homes. They can also draw mental maps according to their feelings and experience of many other places in the world (the places of their holidays etc.). Apart from developing map skills the

activity helps pupils to express their feelings and emotions, think about their surroundings and evaluating the world around them. Finally, they can compare their maps with the real maps. They can also correct them according to the real scale, its orientation and content (Škodová, 2018).

Time needed: 45 minutes

Age of learners: 6th grade of primary school

Acquired skills and knowledge:

- Pupils can draw a simple plan or map,
- Pupils can create the map legend,
- Pupils can evaluate the world around them according to their feelings and experience,
- Pupils can express their feelings and emotions.

Link-up to FEP BV:

- Geography:
  - Geographic information, data sources, cartography and topography,
  - The Czech Republic,
  - (Regions of the world).
- Civil education
  - Humans in society,
  - People as individuals.
- Art and culture
- Czech language and literature
  - Communication and composition.

Cross-curricular subjects:

- Personal and social education,
- Education towards thinking in European and global contexts,
- Environmental education.

Key competencies:

- Learning competencies,
- Social and personal competencies,
- Problem-solving competencies,
- Civil competencies.

Teaching aids:

- Worksheet.

Activity:

Pupils work individually. The task is to create a mental map of their way to school or the surroundings of their place of residence. Pupils draw a simple plan or map. They leave a blank space for creating the map legend. After that, pupils think over the specific places that they know and that have some impact on them. The impact can be either good, bad, or neutral. Pupils choose symbols that represent their feelings and emotions and mark the places in their map.

The symbols, along with other signs in map, are then presented in map legend. Pupils can also use different colours.

After that pupils comment on the places marked with symbols on the other side of the map. They can briefly describe the reasons of having such feelings and emotions on that particular spot in town (village, etc.).

The activity can be modified according to current needs. Apart from map of the way to school or surroundings of the place of residence, teacher can choose many other topics to cover with this activity. These can for example be:

- Tthe last school trip and the visited places (also a great feedback for teacher and a tip for planning another school activities),
- The school and feelings about places in the building and its surroundings – e. g. playground (also great for evaluating the school climate),
- Different places in the community that pupils know (develops the question of safety in town, possible engagement of pupils in improvement of the situation, consciousness from the viewpoint of citizenship etc.),
- Places in the world pupils have been to or they want to go,
- Places in the world that are taught during geography lessons (can be also held as a project lesson),
- And many other topics.

Assessment: If all pupils agree, it is possible to show and compare maps in the classroom. The permission of all pupils is very important – the maps can include deeply personal issues. It is also recommended to open a discussion about pupils' feelings of specific places, mainly if there are more pupils with same emotions.

Conclusion

The goal of this article was to provide information about how map skills and teaching regional geography interact in geographic learning. Acquiring map

skills can help pupils while learning regional geography. Pupils know how to read maps, understand the map scale and map legends etc. Meanwhile, learning regional geography can help pupils to increase their level of map skills. At the beginning of the article, map skills are introduced and defined as part of geographic skills.

After that, the role of map skills and regional geography is presented in the Czech curricular system and the Czech Framework Educational programme for Basic Education (FEP BE). Map skills belong to the thematic area *Geographic information, data sources, cartography and topography* and regional geography falls under the thematic area *Regions of the world*. Both thematic areas come under the educational field *Geography*.

The next part of the article deals with tips for creating learning activities. It provides basic information about learning activities, along with rules and tips of creating intentional, useful and meaningful activities.

Three learning activities are then presented in the last part of the article. The activities connect map skills with teaching regional geography. During these activities pupils develop not only the map skills, but also use their knowledge of regional geography and develop further knowledge of this topic with the help of maps. All activities can be adjusted to the needs of particular topic and serve as an idea of teaching regional geography with the help of maps.

When put into practice, these activities proved motivational for the pupils and helpful in teaching regional geography and map skills. Pupils need to have at least the basic map skills when learning regional geography. While working with maps, map servers and other geographic sources, pupils realized how useful map skills can be not only in geography lessons, but also in other fields. With the help of the practical and creative activities, pupils can effectively expand on their theoretical knowledge of map skills in practice, and therefore develop their map skills. The inseparability and interaction between map skills and teaching regional geography has therefore been proved.

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Mgr. Petra Bendová
Katedra geografie PF JU
Jeronýmova 10, 371 15 České Budějovice

Základní škola Otokara Březiny, Jihlava
Demlova 34, 586 01 Jihlava
E-mail: peta.bendova216@gmail.com

Mgr. Jiří Rypl, Ph.D.
Katedra geografie PF JU
Jeronýmova 10, 371 15 České Budějovice
E-mail: rypl@pf.jcu.cz

Mgr. Michal Staněk
Katedra geografie PF JU
Jeronýmova 10, 371 15 České Budějovice
E-mail: mstanek@pf.jcu.cz