



## ИЗВЕСТИЯ НА БЪЛГАРСКОТО ГЕОГРАФСКО ДРУЖЕСТВО JOURNAL OF THE BULGARIAN GEOGRAPHICAL SOCIETY

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### The map - "evergreen" in geography education

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#### ABSTRACT

#### Key words:

geography didactic, teaching method-  
ology, geographic map

The geographic map is a diagrammatic symbolic depiction of the earth's surface or a part of it, typically represented on a flat surface. The maps are widely used in geography science as a model of the studied territories and phenomena. At the same time, the importance of maps as a learning tool in geography education is immense. The maps are labeled as "the second language of geography", "alpha and omega of geography"; "litmus paper that shows what is geographic" The map for geography is what is the microscope for biology. So why and what is it all about? What is so special about the geographic map? The current paper will try to find the answers of these difficult questions. It will be presented an up-to-date interpretation and the most general didactical and methodological characterization of the geographic map as a "special source" of information in geography education. Also the author explores map essence, its meaning and peculiarities, and the place of map in regard to the goals, content and methodology of geography training. In the paper is presented an open for discussion model of cartographic competence achieved by pupils in the training process. Consequently, the stages of cultivation of cartographic competence are explored: reading the map - decoding the graphic images and map description; map interpretation – reading and evaluation of the map.

### Introduction

#### 1.1. The map – „a special source of information“

By its nature, the geographic map is a diagrammatic symbolic depiction of the earth's surface or a part of it, typically represented on a flat surface. It is a peculiar model of the studied territories and phenomena, therefore it is widely used in geography science. The geographic map reflects the geographical location and distribution of geographic objects, processes and phenomena. It not only "photographs" them, but also presents them in their quantitative and qualitative evolution, showing their mutual interrelations. Among all other Earth's surface images, the geographic map is distinguished by:

- the mathematically determined image of the Earth's surface on a plain;
- the summarized image of the Earth's surface on a plain (cartographic generalization);
- the symbolic representation of the Earth's surface on a plain (the objects and phenomena from the Earth's surface are depicted on the map by means of graphical constructions - symbols (Бочарова, З., Камранушкова, Х. 1987, 5-6).

The essential features of the map determine its importance to geography:

- the geographic knowledge begins and ends with the geographic map;
- the tool for revealing geographic correlations (maps play key role in revealing the relationships and interdependencies

between geographic objects, processes and phenomena);

- the main criteria for "geographic" (indicates whether a survey or study has a geographic character indeed);
- a necessary mediator between the extreme limited scope of man's immediate observation and the large-scale objects of geographic research (by Баранский, Н. 1990, 221).

According to commonly accepted features, the geographic map is:

- a tool for presenting information;
- a tool for organizing the spatial thinking;
- a tool for modeling and acquaintance with reality (Берлянт, А. 1985/86; Чолеев, Ив. 1996; Баранский, Н. 1990; Кънчев, Д. 2000 и др.)

And according to map's functions, it can also be seen as:

- a source of knowledge;
- a tool for mastering the cartographic cognitive method;
- a tool for learning spatial concepts.

And if we summarize the above-mentioned, we can state the following:

- unique horographic/horological nature of the geographic map - „The meaning of maps is consequential spatial arrangement; it is the fact that objects isolated in real perceptual experience are put into relation with one another on the surface of the map“ (Petchenik, B.B. 1977, 121)
- unique character as a model – By using graphic symbols and

their arrangement map illustrates real space, real geographic objects in the space and their interrelations. The map allows not only orientation/positioning of different objects but also the perception of structures, systems, processes and phenomena in space.

The importance of the map to the geographic science inevitably determines its significance to geography as a subject of study as well. The map is the absolutely necessary tool in geography training process, and at the same time - its goal. It is also the main tool to cultivate the pupils' cartographic literacy. The map is of the great importance for improvement of students' thinking and observation skills, to awake their attention and develop memory, to increase their autonomy as individuals.

Geography didactic in Bulgaria traditionally acknowledges the geographic map as a classical didactic tool, along with the school textbook. However, the map is also considered as a part of the group of diagrams, photos, tables, and graphs that present inconsistently structured information (PISA). But the map shows a number of advantages over them in the training process (Table 1):

**Table 1.** Map advantages in comparison with other sources of information in geography education (by Hüttermann, A. 2012, 192-194).

Source of knowledge	Map advantages
Text	<ul style="list-style-type: none"> <li>• Quick and easy detection of different objects in space or links between them.</li> <li>• Displaying a spatial unit in its entirety.</li> <li>• Possibility to retrieve 20 times more information.</li> </ul>
Table	<ul style="list-style-type: none"> <li>• Possibility to "thicken" the presented information in order to increase its use in practice.</li> <li>• Sophistication of the displayed information by precisely locating the objects and their interrelations in space.</li> </ul>
Photo	<ul style="list-style-type: none"> <li>• Purposeful use of the "cartographic abbreviation" in order to achieve the particular cognitive and training goal or to stimulate an intended communication in training process.</li> </ul>

## 1.2. In geography education the improvement of map's potential begins with its compilation

The geographic map is a complex graphical system, so the knowledge of its constituent elements predetermines the possibility of its complete use. The basic map elements are the mathematical basis and cartographic image and they are functionally interconnected. The mathematical basis as a "construction" of the map allows to transform the reality so it can be depicted on a plane surface. In return, the map scale determines the choice of projection, content volume, accuracy degree, and so on.

Cartographic projection is considered to be the „mathematical way of displaying the surface of the ellipsoid or the globe on a plain“ (Чолеев, Ив. 1996, 84). Projections can be classified according to various features, and the most often according to the nature of deformations and the image type of meridians and parallels.

The cartographic image itself includes all symbols that reveal the content of the geographic map. They are located in the legend and its function is two-sided. On the one hand, the legend reveals the symbols that help to read the map, and on the other – it clarifies the symbols' interrelations. Thus the map legend must have a clearly defined structure.

It is not surprising that there are numerous systematizations of geographic maps. The map classifications are based on a specific principles - for example scale, type of information, time

of making, used language, graphic editing and publishing method, etc. („Географический энциклопедический словарь“, 125-131; Берлянт, А. (ред.) 2003, 14-18). The most complex map classification is according to its content because almost everything can be cartographed at the current stage. Notwithstanding the different approach to compilation, however, each classification must meet certain requirements:

- the map groups have to be divided according to distinct features;
- the map classification to be consistent, i.e. be constructed on the principle “from the general to the partial”;
- every classification level should be determined using only one feature;
- to be complete; map's components as a whole should encompass the entire system of geographic maps;
- to hold reserves, i.e. the possibility to include newly created maps or groups of maps (Дерменджиева, См. и кол. 2010, 165).

By using retrospective viewpoint when exploring the evolution of geographic map classifications, it is obviously how they have changed in sync with geography science itself. At present, in Bulgaria it is produced a number of school wall maps, atlases, contour maps and globes, which are in accordance with the requirements of the educational documentation and are adapted to the educational content of „Geography and Economics“ in the secondary school. Geographic maps for educational needs take into account not only the learning content, but also the age characteristics and level of pupils' knowledge, skills and competences to work with such a source of information. The current and most widely applied classifications are: by content, by scale, and by type of the school map.

In fact, the methodological requirements for the compilation of geographic school maps have not changed significantly, e.g.:

- „The geographic map must be accordant to the geography curriculum and in particular to the educational course it will be used.
- The map's content must be in sync with the textbook. It should be generalized according to the textbook and the training tasks ... The maps (attached to text in the textbooks) should contain only those data that are given in the textbook. Atlas maps must contain from 20% to 40% more workload. Wall maps may contain from 40% to 100% more data than textbooks.
- School geographical maps must be produced into projections that are appropriate for the pupils' age. ... Generally, school maps should be compiled into the smallest possible number of projections so students can get to know their peculiarities and deformations. The same requirements can be applied to the map's scale.
- No matter what kind of thematic maps are used, they should depict only commonly accepted symbols for the relevant type of map. The number of conditional signs should also be limited. This is especially true for the maps presenting relief and economic sectors.“ (Печеџку, М. 1965, 40-41).

The above mentioned is the basis to focus on the following main points which, in our view, are of particular importance to the process of geography training:

Making a map is related to a number of important decisions and should answer some basic questions:

- What kind of map are we working with? Do the title and the legend answer this question?
- What data is selected and what does it mean? Are they really appropriate? Are they related?
- How are the different data grouped? Are they generalized? How many groups are distinguished and what is the reason for this?

Why?

- For what spatial unit do the data refer? (by Hüttermann, A. 2012, 197).

The importance of the cartographic basis becomes clear only when the basic cartographic rules are not complied with or are observed in an unusual form.

- Europe and Africa must be at the center on the world map! Must they be there?
- Legend research is always necessary!

### 1.3. The geographic map in the "center" of geography education

#### 1.3.1. Place of the map considering the educational goals and content

When using maps and cartographic tools in the training process, it not only ensures acquiring knowledge about the map itself, but helps to achieve the main goal of using them – to acquire geographic knowledge, skills and competencies, i.e. to cultivate the geographic culture of the pupils. This is the main consequence of the possibilities offered by the geographical map and coded and presented information becomes the basis for mastering the heuristic thinking.

In principle, the didactic tools used in geography education enable the formation of theoretical and empirical knowledge, skills and competencies, while being a qualitative resource for organizing the self-employed activity of the students and to control their achievements. Amongst them, however, maps and cartographic tools play a dominant role. Their qualitative use is predetermined by the purposeful association of their peculiarities as a didactic source with the different methods and practices of educational activity.

Training skills for qualitative use of the geographic map is a key goal of geography education and an important component of the complex assessment of student's achievements. To improve such skills a "good" knowledge base of the geographic map is needed as a background.

The expression of the map and cartographic images' value for geography training are the conceptually set cores of the curriculum content in the different degrees and stages of training in Bulgarian secondary education. They are specified in the "Geography and Economics" curricula and designed in textbooks and other obligatory school documentations.

The curriculum content cores set in the state educational standards define the knowledge parameters, skills and relations at the end of the educational degree, i.e. the components of pupils' cartographic culture. They are presented in Table 2:

**Table 2.** State educational requirements for educational content in "Geography and Economics" (Source: MOH, <https://www.mon.bg/bg/100105> ).

Geography and Economics Educational degree: <i>Basic</i> Stage: Lower secondary school	
Curriculum content cores	• Knowledge, skills, relations (at the end of the 8th grade)
Sources of information and work with them	• Recognizes and uses the elements of the map; distinguishes different types of geographic maps and the basic mapping methods. • Presents geographic information in contour maps. • Selects, studies and interprets information from various sources (literary, cartographic, graphic, etc.). • Writes essays with geographic content.

Educational degree: <i>Middle</i> Stage: (Upper) secondary school	
Curriculum content cores	Knowledge, skills, relations (at the end of the 12th grade)
Sources of information and work with them	<p>First level</p> <ul style="list-style-type: none"> <li>• Knows the basic approaches and methods in contemporary geographic and economic researches.</li> <li>• Knows the essence and functions of Geographic Information Systems (GIS) and their practical application in real life.</li> <li>• Combines geographic maps with different thematic content. Analyzes statistical tables and graphical materials with geographic and economic content and draws conclusions.</li> <li>• Investigates and analyzes different types of documents and retrieves information from them; writes a paper and an essay with geographic content.</li> </ul> <p>Second level</p> <ul style="list-style-type: none"> <li>• Maps geographic and economic objects and phenomena. Systematizes and graphically presents geographic and economic information.</li> <li>• Comments on scientific texts and documents containing geographic and economic information.</li> <li>• Conducts student projects on geographic and economic topics.</li> </ul>

Therefore, three main groups of goals can be identified when working with a map in the subject "Geography and Economics" in Bulgarian schools. They are presented in Table 3:

**Table 3.** Goals to be achieved working with the geographic map in the school course Geography (by Панчевникова, А. 1983, 115; Цанкова, А. 2005, 56-57).

Goals	Concretization
I. Understanding the map	Students acquire knowledge of the essence, purpose and elements of the geographic map; its role as a main tool in geography education.
II. Reading the map	The ability of a person to study, explore the geographical reality on the map. To read the map, pupils need to understand it, to find the information encoded in the map's symbols. Reading the map is: • Elementary (geographic reality is studied with the help of signs that appear explicitly on the map, e.g. scaling, scale reading, numerical and linear scale recognition, reference to the main parallel and meridian, etc.). • Complex (geographic information is logically derived by transforming activity, e.g. converting numerical scale to linear, measuring distance, defining geographic coordinates, etc.).
III. Knowing the map	Ability to correctly, accurately and quickly operate with the geographic map which is obtained by repeatedly work with the same geographic map. It means students to remember and clearly visualize in memory the location, relative dimensions and shape of the subjects studied in the course. All that is preceded by the understanding and reading of the maps.

There are also three basic groups of skills related to using the map in geography education. They are specified at the method level in Table 4:

**Table 4.** Basic groups of skills used in geography education (by Влаїкова, С. 1988, 60-78; Кѡнчев, Д. 2000, 137-180).

Groups of skills	Method
Reading and comprehension	<ul style="list-style-type: none"> <li>To show on map</li> <li>To describe</li> <li>To characterize</li> <li>To analyse</li> <li>To do measurements</li> <li>„To travel across the map“</li> <li>To compare maps</li> </ul>
Cultivation of cartographic notions	<ul style="list-style-type: none"> <li>Orientation on the plan, map, globe</li> <li>Drawing sketches and schematic map</li> <li>Drawing profiles</li> <li>Work with a contour map</li> <li>Using schematic maps</li> <li>Develop an area plan</li> <li>Add thematic elements on map</li> </ul>
Learning geographic nomenclature on the map	<ul style="list-style-type: none"> <li>To speak</li> <li>To mark objects on the map</li> <li>To discuss</li> </ul>

Hence, cartographic knowledge and skills are characterized by complexity, multi-planning and a significant amount of interconnected components (Дерменжѡева, См. и кол. 2010, 171).

1.3.2. Structural model of cartographic competence

In Bulgaria, the main goal of geography education is the cultivation of pupils' geographic culture as part of their general one. It is developed throughout a person's life, and only the basis is achieved in school. The framework of the geographic culture includes three main components:

- geographic literacy that provides the basic background for understanding and rational activity in geographic space;
- geographic competence understood as „integrating pupils into geographic realities by acquiring skills for their assessment and decision making with geographic orientation while performing different social roles in similar to real life situations“ (Гаїманжѡева, Р. 2000, 125);

- geospatial behavioral model – „for reasonable interacting (adapting) and changing (transforming) the geographic environment while performing different social roles“ (Ibid.).

The arrangement of the three components that we consider to be the sub-objectives of geography education takes place in a hierarchical sequence and interdependence. What is important to underline is they construct the basis for fostering the students' value orientation understood as "an interest in geographic cognition and knowledge, common and moral-aesthetic values that become a motive, norm, and criterion for reasonable activity in the geographic space (Ibid., 253).

Where is the place of the cartographic culture?

It is assumed in Bulgaria that: „... cartographic culture is an integral part of the general culture of the individual. At school it is acquired through geography education. It encompasses the necessary knowledge of the map (basic types of maps, symbols, scale, geographic grid system, map projections, etc.) and skills to work with it (to read and understand the map, to properly display on it, to apply different measurements, etc.) ... In geography education, the map can be used as a tool for visualization, as a source of knowledge and as a tool for cultivating a cartographic culture among students“ (Кѡнчев, Д. 2000, 170).

In our opinion, in geography education, to work properly with the map is designed in the framework of spatial orientation competence and, in particular, in:

- adequate work with the map;
- orientation in real space;
- the perception and reflection of space and spatial systems (by Hüttermann, A. 2012; Krautter, Y. 2015).

Therefore, stimulating situative and creative work with the map in geography education means a continuous learning process on different levels:

- reading and exploring the map;
- independent drawing of simple map;
- assessment of the map (Ibid.).

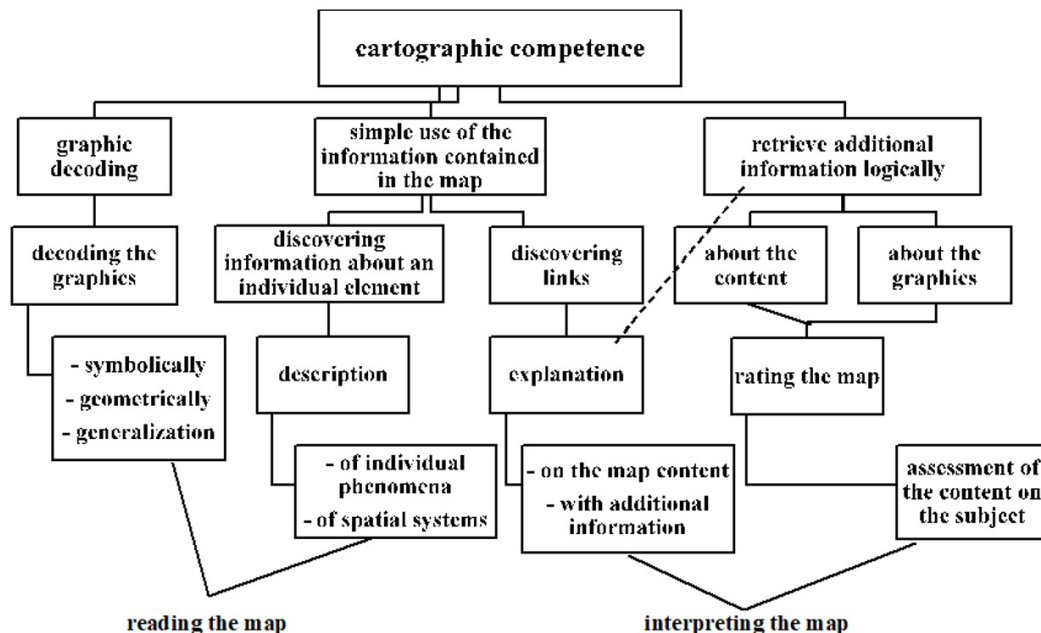


Figure 1. Structural model of cartographic competence (by Hüttermann, A. 2012, 206).



### 1.3.3. Didactic-methodological position of the map in the real process of geography education

As a model depicting reality, a map basic requirement is to be very clear and visible, to give spatially true and accurate quantitative and qualitative information about the cartographed territory. Visibility and authenticity are the obligatory maps' features used in the real geographic training process (by Дабуков, Б. 1998, 40-41).

Maps are used in other study subjects as well but the map knowledge is given only in geography. Different map types are used in the training process. This implies the usage of different methods during the lesson that are put in practice through specific didactic tasks. The methods for working with the map can be structured as follows (Table 5):

**Table 5.** Methods for working with the map (by Берлянт, А. 1985).

Method	Task
<i>Single map analysis</i>	
• Without conversion - analysis by signs, graphics, etc.	<ul style="list-style-type: none"> <li>• Obtaining quantitative characteristics</li> <li>• Structure studying; regionalization</li> <li>• Expression of interdependences and relations</li> <li>• Analysis of dynamics</li> </ul>
• By converting the initial information	<ul style="list-style-type: none"> <li>• Obtaining quantitative characteristics</li> <li>• Structure studying; regionalization</li> </ul>
• By decomposing the depicted into component elements	<ul style="list-style-type: none"> <li>• Structure studying; regionalization</li> <li>• Time forecasts (short and long term)</li> <li>• Spatial modeling</li> </ul>
<i>Series of maps analysis</i>	
• Analysis of different thematic maps	<ul style="list-style-type: none"> <li>• Structure studying; regionalization</li> <li>• Expression of interdependences and relations</li> <li>• Spatial modeling</li> </ul>
• Comparison of different maps	<ul style="list-style-type: none"> <li>• Obtaining quantitative characteristics</li> <li>• Analysis of dynamics</li> <li>• Time forecast(short and long term)</li> </ul>
• Comparison of similar maps	<ul style="list-style-type: none"> <li>• Obtaining quantitative characteristics</li> <li>• Spatial modeling</li> </ul>
• Comparison of maps with different scales	<ul style="list-style-type: none"> <li>• Obtaining quantitative characteristics</li> <li>• Structure studying; regionalization</li> <li>• Spatial modeling</li> </ul>

There are no less or more "cartographic" shares of geography, training courses, sections or thematic units. The geographic map is equally important for the study of both physical (nature) and socio-economic geography. There is always a reason for both self-use of map and map images, and also for combining them with other didactic tools in every lesson. Their effective implementation depends on the teacher's competence and ability to plan the lesson appropriately.

Using the map as a visualization tool in the lesson should be clearly distinguished from its use as a source of knowledge. Its implementation is carried out through a system of certain serial actions, i.e. didactic procedures. And the most commonly used activities in Bulgarian school are: to show details on the map,

geographical description using map, comparison of two or more maps, graphic and grapho-analytical methods, mathematical modeling.

- To show details on the map is applied repeatedly in geography training, even within every lesson. This activity guarantee the acquirement of knowledge about the geographic nomenclature and skills to read and understand the geographic map. The essence of the general concepts is revealed by the definition but also by showing them on the map and thus they can be mastered. The simple terms are also acquired through showing on the map.

- Geographical description is a traditional method for map analysis. The main aim is to highlight the studied phenomena, the peculiarities of the manifestation and their interrelations. The description must be logical and consistent; it should be based on selection and systematization of the facts, and the introduction of elements of comparison and analogy. And finally, conclusions are drawn. Descriptions may be complex (general geographic) or thematic. Above all, being based on the visual analysis of the geographic map, the descriptions are valuable by the fact that they allow for a figurative and holistic view of the studied subject. Hence, „all other methods of using the geographic map can be used not instead, but along with the description of the map“ (Баранцку, Н. 1990).

- The thoughtful "map trips" are particularly attractive for pupils while studying the „Geography of continents and oceans“. Various application technnics are possible, e.g.: to track a route on the map and to describe it in words; to describe a route verbally and to require tracking it on the map; to create verbal route for recognition according to partial description.

- Comparing (overlying) two or more geographic maps is intended to highlight details, find cause-and-effect relationships and interconnections, connect the familiar with the unknown, and strengthen knowledge in parallel use of multiple maps.

- Graphic methods are mainly valuable in the activity-oriented lessons provided by the curriculum. And typical examples are: mapping of graphs, profiles, diagrams, block diagrams, complex landscape profiles, hypsometric profiles, complex socio-economic incisions, etc. Their compilation, however, requires more time, qualitative pre-training by the teacher, and accurately organized pupils activity.

- Grapho-analytical methods are related to cartography and morphometry. Using them, different quantitative values are measured on the map. Cartography is related to determining geographic coordinates, depths, heights, power, length, area, and volume. Morphometry is used to evaluate shape and structure, e.g. density, concentration, disunity.

- Mathematical modeling is a joint use of mathematical and cartographic models and methods for complex geographic study of territory on the map.

Typically, in geography training practice, methods and didactic techniques that suggest work with the geographic maps are used in combination with various verbal methods (descriptive, explanatory, lecture, etc.).

Less familiar and applied in the Bulgarian school, even called innovative, are the methods of working with photo maps, electronic maps, cartographic animation. At this stage, however, their opportunities should not be neglected because they are modern, attractive and allow to introduce the interactive learning methods.

Where is the map's place in planning and structuring the geography lesson?

The geographic map is valuable and can be used in all stages

(phases) of the lesson. The maps are suitable for presenting the new information and facts, for testing acquired knowledge and skills, for consolidating and applying knowledge and skills in similar and new situations. Working with the map is combined with other methods, e.g. live speech of the teacher, work with different tools and devices for visualization, statistical materials, etc. (КОНЧЕВ, Д. 2000, 173).

The typical didactic positions of the map within a study unit are presented in Table 6:

**Table 6.** Typical didactic positions of the map within a study unit (by Rinschede, G. 2007, 357).

Lesson stage	Activity	Map type
Introduction	Localization of geographic objects, processes, phenomena in space	<ul style="list-style-type: none"> <li>• General purpose (reference) map</li> <li>• Wall map</li> <li>• Atlas</li> </ul>
Presentation of new information	Extracting information from the map Performing various map operations	<ul style="list-style-type: none"> <li>• Thematic map</li> <li>• Atlas</li> <li>• Map in the text-book</li> </ul>
Improvement	Cognitive activity	<ul style="list-style-type: none"> <li>• Contour map</li> <li>• Worksheets</li> </ul>
Practice	Space transfer in similar and new situations	<ul style="list-style-type: none"> <li>• Physical map</li> <li>• Thematic map</li> <li>• Wall map</li> <li>• Atlas</li> </ul>

In geography learning and lessons mapping „goes through various methodical pathways“ (Rinschede, G. 2007, 258). Their goal is „to build a mental link between the abstract image of the map and reality.“ (Schneider, Th., SchÖnbach, R. 1999, 79). Generally accepted approaches are: synthesis, analytical and genetic. In addition, it is distinguished other approaches in practice: combined and intensive use of didactic tools in the training process (KÖnig, S., Schmidt, K.L. 1992, 437-441).

The synthesis approach suggests that the necessary knowledge for the map is mastered in small, consistent steps and in compliance with the principle of visualization and activity orientation in training process. The needed steps for presenting and studying the map are: presentation of the mathematical basis, diminution, simplification, orientation and representation on a plain. A typical example of such approach for conducting/structuring the geography training process is: „From the school room to the hometown“. The steps in the structure of the educational process include the following (Table 7):

**Table 7.** „From the school room to the hometown“ – sample structure of educational process (by Hüttermann, A. 1998, 45-46).

Stage	Explanation
Sketching the classroom and the school building	Through this small part of the earth's surface, students understand what a linear abbreviation (diminution) and a mathematical basis of a settlement plan and map mean.
School area or part of the settlement plan	Students are made aware that a larger share of the place's plan depicted on a smaller scale means greater simplification and generalization. Mathematical basis, linear abbreviation and orientation in the world are exercised.
City/village	The work done in previous stage is being exercised by introducing new symbols - church, bridge, etc.
City/village and the neighbor area	Introduction of geographic basic terms and their representation through lines and colors .

This approach is useful when explored spaces are easier to portray and well-known to pupils. The mapping of any space must follow the strict structure:

- getting to know the space (e.g. school area, city, neighbor area);
- representation through a 3-D dimming model;
- transfer of the spatial unit from the model by orthogonal projection in a planimetric image on a plain.

The representation of the relief and its forms, depiction of the heights and generalization through symbols, area and colors is problematic. In this respect, photographic images may be used at the intermediate stage (Schneider, Th., SchÖnbach, R. 1999, 80).

This method offers a very systematic input into understanding the map and, above all, ensures understanding of map making. The path from the real space to the map is mostly based on the principles of proximity to reality and visuality in geography education (the logical path visual-abstract).

The analytical approach follows the opposite direction – from the map to the reality. The terrain plan or a large-scale topographic map is compared to the real space. The image characteristics and limitations can be derived in direct comparison between the reality and the map. The advantage is that we do not need a strict framework of the training process. Direct comparability always implies pupils retrieving the available information and allows them to conduct additional analysis of the map making process (Rinschede, G. 2007, 361). The main advantage of this method is to emphasize the practical use of the map.

The genetic approach, like the synthesis one, origins from reality. However, the emphasis is put on children's/pupils' living space and children's image of space. It is a matter of self-designing a cartographic image by pupils. The so-called „child cartography“ occurs and children exercise the important stages of the map making (Hüttermann, A. 1998, 46).

Applying the comparative analysis and evaluation of the various individual images of reality, the most important facts and notions in the map making are outlined. The main problem for children in this approach is that the space is depicted in front of their eyes and it is reflected in the discussion process. Hence, the common cartographic image can not be made, so it is supposed to add elements from other approaches (Schneider, Th., SchÖnbach, R. 1999, 80).

Today, it is hardly possible to introduce the map comprehension in geography training to be conducted on a strict structure and strict follow-up of a certain approach. Rather, the advantages of the three approaches should be used.

An example of this is as follows:

- at the beginning of the lesson, pupils make a „tour“ according to a complex plan of the settlement (analytical approach) and therefore they understand the difficulties to orientate and interpret this new didactical tool;
- next step is to explore the settlement from a bird's-eye view and the pupils draw a cartographic sketch independently (genetic approach);
- next step is the assesment of the pupils' drawings, model study and cartographic sketch of the settlement (synthetic approach);
- at the end of the lesson, pupils see a topographic map and they understand it better than at the beginning.

As a special approach to introducing the map's understanding in geography education, we have also the so-called „intensive“ use of didactic tools (KÖnig, S., Schmidt, K.L. 1992, 437-441). A variety of didactical tools are used to associate the reality with the map in the different stages of the lesson and the training process. These are, for example, Earth's photos, aerial photos, panoramic

pictures, drawings, wall maps, patterns, models and more. With their help, the reality presented at different levels and in different perspectives provokes pupils to make connections between the map and the reality. In addition, comparing the peculiarities and features of different information sources (didactic tools) contribute to a better understanding of the different goals and tasks of mapping in geography education.

## Conclusion

In conclusion, we will again highlight some basic aspects in the general didactic-methodological characterization of the geographic map:

- The importance of the map for geographic science inevitably determines its importance for geography as a subject of study as well. It is an absolutely necessary tool in the training process and, at the same time – its goal. By using maps the cartographic culture of the pupils is cultivated.
- The geographic map is a complex graphical system, so the knowledge of its constituent elements predetermines the possibility of map's full use in the process of geography education. Revealing map's potential begins with its compilation.
- The geographic map occupies the key importance in geography education goals and curriculum in the secondary school.
- The pupils' cartographic competence evolves in the process of geography training and is an important component not only of their geographical literacy but also of their common one.
- The use of map and map images alone and to combine them with other didactical tools is possible in every lesson. Their effective implementation depends on the teacher's competence and ability to plan the lesson appropriately.

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