

Mental Maps as a Learning Tool Geography

S.I. Beketova, Z.A. Khusainov, E.I. Vlasova, R.I. Gaisin and N.P. Yachina
Institute of Management, Economics and Finance, Kazan Federal University,
420008 Kazan, Russia

Abstract: The study is devoted to topical issues of methods of teaching geography. The study deals with the geographic competence and the competence of the teacher of geography. The question of the means of teaching geography: a pedagogical drawing, a geographical map, a schematic map. The technique of Kevin Lynch on drawing mental maps and the creation of mental images in the study of urban landscapes as well as methods of compiling intelligence-maps (schemes), Tony Byuzan, to create mental images, the objects of study by comparison. Mental maps are regarded as the object and a learning tool in the study of geography.

Key words: Teaching materials, teaching drawing, map, schematic map, mental maps (schemes), intelligence maps, city

INTRODUCTION

The changes taking place in society place new demands on teacher training. The priority becomes the competence approach. Today, the teacher should be mobile, to strive for self-education, self-development and self-improvement, these processes relate to the competence. Competence is a manifestation of professional commitment and ability to fulfill their potential for a successful creative activities, recognizing the importance of social and personal responsibility for the results of this activity, the need for its continuous improvement. In the formation of the geographical competence are five main types of competencies: motivation, values and motivational information and cognitive, communicative and practical-creative. For information and cognitive competencies include mapping, research, readers (Gaisin *et al.*, 2014).

MATERIALS AND METHODS

The research used theoretical and empirical methods: the study and analysis of methodological literature on the use in the educational process of pedagogical drawings, maps, map-chart, mental maps (schemes), the creation of mental images; design methodology development of mental maps (schemes) in the educational process and its implementation with the use of comparison, analysis, synthesis studying and generalization of pedagogical experience, observation, conversation.

Theory: The teacher in the educational process seeks to inform up to consciousness pupils all that accumulated cognition mankind in the world. Education made more accessible and intuitive help learning tool: visual, verbal and information, technical. Systematic work with the means of education is an important condition for improving the effectiveness of the educational process. Learning Tools perform the functions visibility, increase knowledge, provide the operating activities of students, learning management, educate and develop aimed at stimulating and enhancing cognitive functions. Skills relate to the training facilities necessary in practice. Among them are the ability to observe, sketch, work with maps, drawings teaching, tools and instruments. Each learning tool performs certain functions such as “visual aids” create visual images of the studied objects, processes and phenomena of the world, providing a unity of sense and logical, concrete and abstract, promoting the development of thinking of students. Considering the causal relationships, using maps, map-chart bond scheme, the teacher shows the diversity and unity of the material world, developing dialectical thinking as an integral part of the scientific outlook (Samigullin *et al.*, 2012).

One of the main learning tools and objects of study of geography is a map that allows a person to navigate in space, to extract a variety of information. Mastering the basics of cartographic literacy the requirement for the results of learning of geography. In the educational process pupil must be able to read, understand, know the geographical map. In the process of map reading in identifying characteristics of the study area creates a

mental image. When the pupil knows the map, it may be present on the memory location, the relative size, shape, geographic features, establish causal relationships. At each stage of the study of geographical disciplines formed cartographic skills: grades 5-6 students acquire the ability to navigate the terrain using the plan to determine the bearing and distance, in the 7th grade to work with thematic maps and maps of continents, be physical and geographical characteristics of geographical objects using reception overlay and matching cards, 8th grade, integrated use of cards in the study of the territory of Russia, in grades 9-11 the ability to analyze the social and economic map, giving the complex economic and geographic characteristics of the studied geographic features. Along with the maps used schematic map, their plotting, as well as the use of pedagogical pattern is instructional techniques.

In the practice of geography teaching reveals the logical links between the physical and geographic features and phenomena, between economic and geographic features and phenomena, they are revealed through schematic maps and schemes ties. Each element of the scheme and maps of the content must match. Since, the scheme is a generalization, it does not require specificity and accuracy in the figure, it is not required in a map the degree network contours simplified geographic features. It is advisable to charting and map-chart for homework.

On the lessons of economic and social geography teacher is increasingly address issues related to the historical development, the growth of cities, their culture, especially the planning of urban development, the historical-cultural and natural monuments, creating a complete image of the city. Let us dwell on the issues of the study of urban space.

The well-known expert on the history of the visual perception of the city Lynch (1960), exploring the complex spectacle of the city, tried to structure it, to identify the main elements on the basis of that person as if building a "framework" figurative representation of the environment in which he lived. The main plot for Lynch, the environment in human perception. Man plunges into the sphere of purely aesthetic categories, locked in the empire psychophysiological observations. He sees that the structure of the medium is determined by socio-economic relations, cultural norms. Everything is perceived in relation to the environment, to the related chains of events to the memory of the previous experience (Lynch, 1960).

Particular attention Lynch focuses on visual quality apparent clarity or legibility of the urban landscape, meaning by this the ease in which areas, landmarks, paths

are easily identified and grouped together into a coherent picture. Images of the environment have the results of the feedback between the observer and the environment.

Surroundings offers segmentation and dependence and the observer selects and gives the value of what he sees. Once formed, the image begins to limit the range of perceived and to emphasize something in it. In the analysis of the image of the environment consists of three components: recognizability (structure) and the spatial correlation of the formal object with the observer and other objects, practical or emotional significance (the subjective sense experience).

Lynch (1960) spent exploring the city with the help of mental mapping, the creation of which was attended by townspeople (informants), draw an outline (sketch) of the city, describing the most important and bright objects, fixed in memory. The extent of the selection of an object measured by the frequency of references to the number of respondents. The human sense of spatial and temporal structures are combined in "sense region" should be considered in addressing the planning problems.

Students are attracted to the creation of a mental image of a city map, using shaped memory-memory representation. Defined it as an association of ideas. Performances are reconstructed on the basis of the perception of objects, processes that took place in the past. The more experience of past perceptions, the richer reproduced, processed, summarized presentation of images of geographic features examines images of perception as primary and representation-secondary (Vekker, 1974). In the process of teaching the teacher uses techniques for creating representations of the image memory, imagination image, cartographic representation.

Work on the mental map depends on the individual student, the development of universal and specific cognitive processes: memory, attention, imagination, perception and thought. If creating a mental map embedded personal meaning, feelings, emotions, then it is necessary to work on the creative imagination that transforms performance.

In terms of geography, teaching methodology is the creation of concepts in parallel and simultaneously with the formation of concepts such as the city, the urban landscape, urban planning. Application of mental maps in teaching and cognitive process will not only technique but also a means of exploring the surrounding neighborhood actually investigated in the classroom geographic circle, during extracurricular activities. The results of scientific and job search engine can perform in the classroom, the classroom hour, at the scientific conference of students. Analysis of methodical literature, geography lessons gives you the opportunity to talk

Table 1: Create a mental image of according to the method B. Lynch and T. Byuzan

Methods K. Lynch	Methodology T. Buzan
Establishment of sketches	Establishment of tree structure saying, tasks, ideas related branches
Create mental maps	Sostavlenie information field
Image detail-spatial environment (structure, coherence of objects)	Creation of clusters based on associative links
Select objects from the rest	The choice of the name of the cluster
The contribution of personal meaning, feelings, emotions	Create a mental image
Create a mental image	Presentation

about the possibility of using the lessons of the mental mind maps (schemes), executed by the method of Tony Buzan. Intelligence, the card is a methodological tool that reflects the progress of the thought process and the creation of the logical structure of the information in visual form. They allow you to identify the main idea and identify the relationship between them). The proposed method based on the principle of radiant (association) thinking. In the classroom on teaching geography in the study of inter-subject relationship was established intelligence-Map showing the dialectical relationship existing in nature in the content of academic disciplines (Kamahina *et al.*, 2015). Mental maps are effective in generalising repetition in any geography course. Among Russian researchers in this field can be noted Zamyatin proposed a card shaped like a tool-shaped geographic modeling (Zamyatina, 2008; Mikhailova, 2014).

Create a mental scheme creates a mental image of the study area in geography lessons. Moreover, the scheme created by the method of Tony Buzan, can be used at different levels: local, local, regional, international, at the same time mental maps of geographical objects created by the method by Lynch (1960), used at the micro level and is a system of ideas about the situation which is fixed in detail-spatial environment, the behavior of pupils, their feelings, emotions. Comparison of two methods to create mental images can be presented in a Table 1. Create a mental image of according to the method Lynch and Byuzan

An important feature of mental maps made according to the method Lynch in the educational process is the need for research that requires a certain length of time of its creation and analysis. Mental maps, made according to the method T. Buzan can use the lessons of physical and economic geography, is particularly effective when a large study topics section of the course. Of course, both described methods do not change but rather complement each other. Each has its object, subject, goal, objectives, content, teaching methods but the overall results, the creation of a mental image. Inserting a subjective sense of

feelings and emotions in the creation of mental maps creates emotional and value attitude to the studied material to work. It is important that the value of acquired knowledge and skills acquired became the motive of cognitive activity.

RESULTS AND DISCUSSION

The contents disclosed the geographical competence of the teacher as a social and professional quality of the individual, isolated core competencies as an integrated multi-dimensional characteristics of the preparation of the teacher of geography. It stressed the importance of learning tools to improve the quality and effectiveness of teaching. Using pedagogical drawings, maps, map-chart in the classroom led to the conclusion that they are independent sources of knowledge and the means by which the visibility of the teacher, revealing causal relationships, developing dialectical thinking, forming the scientific outlook of pupils. Method of mental maps (schemes) disclosed in the study of the urban environment by Lynch (1960), designed method of developing mental maps (schemes) in the educational process. A comparison of methods Lynch and Byuzan. Thus, the above means of teaching: pedagogical designs, maps, schematic maps, mental maps (schemes), intellect, the cards in the educational process in schools and universities are an effective means of improving the quality of education.

CONCLUSION

Use of training is an important and necessary condition of modern geography lesson. Learning tools concretize depth and logic of presentation of educational material, making learning more imaginative and bright. Using pedagogical patterns, the teacher not only shows the external and internal structure of the object being studied but also reveals the cause and effect relationships, learn to argue, developing mental operations. With the help of maps and map-chart creates an image of the geographical objects, processes, phenomena, reveals the logical links geographic and economic-geographical phenomena and processes on the basis of which students make inferences, generalizations which contributes to a better perception and understanding of the world. In-service teacher training is imperative acquaintance to new methods of studying the geographical material which contribute to the development of cognitive interest and master the

knowledge, in particular techniques discussed in this study (Samigullina *et al.*, 2015). Using the technique by Lynch (1960), a brilliant example of research that can be used after hours, studying the city. During the study students acquire the ability to plan their search activities, to work with information on the studied subject, to find causal relationships, basic contradictions, hypothesize, to sum up and make decisions. Thus, a critical thinking on the taxonomy of modern education Blloom (1956), a high-level mindset on the level of analysis, synthesis, evaluation. Using intelligence-maps, made according to the method Byuzan, allows you to control their own thought processes, to think with great clarity and breadth by Byuzen and Buzan. Analysis of the material leads to the conclusion that the systematic work with the means of learning the lessons of geography and in after-h work generates mapping, research, practical-creative competence of students. Competence promote activization of informative activity of students, give a new impetus to the knowledge, the ability to develop lifelong learning as one of the core competencies of the individual, taken The Council of Europe in 1996.

It should be noted that the process of creating mental maps (schemes), a creative process, accompanied by emotional experiences: cognitive, aesthetic, social, contributing to the development of the individual. The teacher is not only the learning process but also contributes to the moral, aesthetic, patriotic education, culture, behavior and human harmony with the surrounding reality.

REFERENCES

- Blloom, B.S., 1956. Taxonomy of Education Objectives: The Classification of Educayional Goals. David McKay Publication, Philadelphia, Pennsylvania, Pages: 207.
- Gaisin, I.T., S.I. Beketova and R.I. Gaisin, 2014. Competence-based approach as an effective way to increase the level of training of geographers in universities. *Life Sci. J.*, 11: 166-170.
- Kamahina, R.S., L.A., Lohotskaya and S.I. Beketova, 2015. The use of integration method in shaping students scienti?c worldview by means of biology and geography as school disciplines. *Soc. Sci.*, 10: 153-159.
- Lynch, K., 1960. *The Image of City*. MIT Press, Ñambridge, Massachusetts, ISBN:0-262-12004-6, Pages: 201.
- Mikhailova, M.A., 2014. The possibility of using mind-map (mind maps) in geography lessons. *Geogr. Sch.*, 5: 58-60.
- Samigullina, G.S., S.I. Gilmanchina, I.T. Gaisin, I.R. Gilmanshin and A.I. Rafailevna, 2015. Professional and creative development of natural geographic course teachers within the process of professional retraining. *Int. Educ. Stud.*, 8: 159-165.
- Vekker, L.M., 1974. *Psychological Processes*: In 3t. Leningrad State University, Saint Petersburg, Russia,.
- Zamyatina, N.Y., 2008. Geographic image: Mental map. *Humanitarian Geogr. Sci. Cultural Educ. Almanac*, 5: 206-210.