

PROBLEMS IN CARTOGRAPHY FOR CHILDREN IN RUSSIA

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Introduction

The topic 'Mapping and children', which encompasses many issues, is appropriate for discussion in current society. In this paper, 13 years of work experience with a Cartographic Children's Club" is used to identify some of these issues and suggest how these may be resolved.

The map is a powerful source of world knowledge. The famous Russian and Soviet scientist-geographer, N. N. Baransky, considered the map as the 'Alpha and Omega of Geography': both the initial and final point of any geographical investigation, as well as a stimulus to filling empty places. The epoch of great geographical discoveries finished long ago. In a similarly vein, the time of important discoveries in the geographical sciences (Geomorphology, Geobotany, Climatology, etc.) have also passed. However, the desire of today's scientists and students aware of the world to be involved in map investigation is still strong.

To date, for many people, maps are still surrounded by a halo of romance and mystery, cartographers are lucky that maps are such alluring and attractive tools to so many.

The map is a very important source of geographical knowledge. It is 'the second language of geography'. Today, without map use, it is impossible to provide students with the knowledge of events such as: the earth sciences; the place of their state among others and, the socio-economic processes taking place or having taken place at a location. When such knowledge is given and the language of maps used in geographical study, political and methodical problems may arise. Different countries resolve the issues in various ways because of differences in the nature of the geographic and cartographic instruction offered as well as the governments' policy in the field of education. The political and methodical problems are most evident in new States. A map can provide a contradictory message. To one State it may suggest an image of hostility while to another portray a united front in which all live in peace and harmony. In the modern world, the idea of the State as a peaceful coexistence should predominate - a message which is evident in children's pictures. To this end anything which could harm the idea of such coexistence must be removed from school maps. Putting this idea into practice in each country could be seen as a significant contribution of cartographers and the science of Cartography, in the defense of World peace.

Every schoolteacher encounters methodical problems when using maps to try and impart geographical knowledge to their students. The knowledge and experience of individual geographers and cartographers does not always help to provide teachers with solutions to their problems. In the future, maps will be produced on new plastic materials using computers and the new technologies. Hopefully, if these are maps based on international teaching experience and research with special users groups (such the blind) they may provide more cartographic possibilities for the teachers.

Problems children have with maps

In the set of the problems being considered, the most important one is teaching the basics of cartography in the schools. This task is complex. In different countries, cartography is taught and studied in different ways. A national secondary school program, which included a basic knowledge of cartography, was only recently realized in Russian. The approach taken was to work from a small scale - from knowledge of the Earth forms, through medium scales (knowledge of the State and its parts) to large-scale maps. The experience of working with the Children's Club demonstrates that teaching is more productive if the reverse order of scales is employed. However, in Russia, the inaccessibility of large-scale maps is an obstacle to such an approach. Other problems include both a lack of appropriate cartographic material in school geography textbooks and appropriate training for teachers in the pedagogical educational institutions. The major problem is "the theoretical nature" of student's knowledge. The pupils "have knowledge" but they "don't know how to work" with the maps, frequently they don't have an opportunity to verify their theoretical knowledge through practical application, particularly at the local level. A particular methodical shortcoming is the constant use of only one projection for all the maps of the same territory. On the one hand, maps which all have the same projection permit maps on different themes to be readily compared. However, the use of only one projection gives a single visual impression of the State boundary. There is the need to provide the same area on

different projections. The problems associated with teaching cartography at the elementary and high school level are international. These can be solved if, after studying the best elements of national programs, an international set of standards can be developed.

"Club Karta" in the Child's Palace (Saint Petersburg, Russia)

In non-school hours, work with maps is generally carried out in an unsystematic manner. As a rule, in the special groups, only maps relevant to the subject are studied. For example, student geologists study only geological maps, and sportsmen taking orienteering examine only sports maps. In St. Petersburg, in the Child's Palace, a cartographic club exists: the "Club Karta", specifically created for children. The Child's Palace is the largest institution in St. Petersburg for additional education. More than 15000 children (youths and teenagers from 5 to 21 years of age) study in its different clubs. Presently there are about 70 pupils between the ages of 9 to 18 years of age studying in the cartographic club. The shortcomings of the formal school education are evident within the club. In this club the students follow the author's "Youthful cartographer" program. It is a four year program which includes studying the basics of many disciplines: geodesy, topography, cartography, geology, geomorphology, environmental protection, local lore (history of the native land), town planning and architecture, tourism, orienteering and physical culture. The program includes an acquaintance with all the kinds of cartographic production, however, emphasis is placed on the study of Orienteering maps (O-maps) (at scales of 1:10000 to 1:15000), town maps (at scales 1:5000-1:30000), and topographic maps at a scale: of 1:200 000. Exposure to these materials allows the student to understand the peculiarities of plans, maps, and small-scale images of the same territory, to master point, line and area, symbols, and other map elements. O-maps play an important role in the program as they allow students to conduct studies in the local area. Over the last few years O-maps have been produced for several of the larger towns. These should be used in national programs.

Mapping activities suitable for different age groups

Many years of work experience with "Club Karta" have enabled me to identify what aspects of cartography are appropriate for study by students of five different age groups. These groups and activities are:

- 8 -10 years of age - providing an introduction to some elements of large-scale maps primarily through the use of games
- 11-12 years of age - teaching how maps work through the interactive use of simple large familiar environment
- 13-14 years of age - providing a more in depth experience with maps through the use of maps of medium complexity as well as introducing and working with large-scale maps of other regions, introducing the experience of constructing large-scale maps of small areas.
- 15-16 years of age - teaching primarily through the construction and revision of is maps using both manual and computer map construction methods.
- 17-19 years of age - involving students in a wide variety of professional cartographic activities (all stages of map production, from compilation through computer preparation to the publishing of simple maps).

Value of involving students in mapping activities

In addition to the hands on activities outlined above the potential of the Internet should not be ignored. Access to data via the World Wide Web and the ability to manipulate and work with such data, offers cartographers the opportunity to popularize their knowledge and experience. At present, however, there is the great need to create a tool, a "mapping compass", to assist students to navigate through, explore and learn cartography through the use of maps available on the Web, computer programs and games, as well as text-books on using maps. Maps can have a great influence on the development of an individual since they allow an individual to solve a variety of tasks. As a result of working with maps, there can be changes in an individual's psychological character (e.g., attentiveness, purposefulness) as well as physical character (e.g., endurance to carry out a project). Work with maps can also bring about personal growth such as a realization of ones potential. The activities of "Club Karta" are organized under the slogan "Maps Unite Us" An investigation into the reasons why children chose to study in the club have shown that the most important reason is peer interaction, followed by the possibility of interesting trips and then the acquisition of professional knowledge. The interactive involvement with others while constructing maps is exceptionally important to the student.

Designing maps for children

Analyzing the issue of "maps and children" is a complex. When constructing maps for this user group it is necessary to consider some of the psychological-physiological aspects of children. As a result of these, only a limited number of map elements should be shown, the generalization of the features portrayed must be within the realms of what the user can handle and, the picturesque nature of a legend needs to be increased. It is important to remember that, for a

child, exactness is not the most important map property. A more important property is an object's form. When children work with maps of a local area attention needs to be directed towards the map scale (1:10000) and the nature (safety) of the environment portrayed. In cases when the map content is complex (e.g., sports maps), the tasks and routes need to be carefully planned to ensure that the children do not encounter difficulties. Because of its very nature complex children are rarely involved in the process of map construction. However, experiences within the child's cartographic club have shown that older students are capable of such work. This provides insight into mapping for students and new questions for cartographers. Areas in which the students encounter problems are object selection for a map (due to inattention - age related), lack of attention to details such as survey details (due to impatience) and, difficulty with analytical-synthetic thinking (in generalization, and the ability to attribute an object quickly to a group). Among new questions for cartographers are: What are the characteristics one associates with an adult cartographer? What are the qualities an adult requires to achieve success in cartography? When students produce maps what is the nature and level of errors that are acceptable? What are the copyrights rules for using new cartographic symbols developed by children? To whom do the maps constructed by children belong? How (and what) should students be paid for products that have a commercial value? All these problems and questions require investigation and a solution.

Conclusion

In conclusion we must reiterate that the majority of the problems which arise when problems a child uses a map whether this be at school, in a club or at home when using a computer, can't be solved by the child himself. They require input from the specialists-cartographers. The problems are not unique to a single country but are in the main international. That is why their solution requires the effort and united input of interested cartographers from many countries.