

# MAP USE, MAP USER AND MAP MAKER; AN EVALUATION OF THE CURRENT EDUCATION MATERIAL CONTAINING MAPS FOR PUPILS IN TURKEY

**Ilkay BUGDAYCI, I. Oztug BILDIRICI**

## **ABSTRACT**

*Maps are central to social studies especially geography and it might therefore be expected that the main thrust of research in primary geography education would be related to pupils' using maps and atlases. Pupils should be able to use maps (relate features on a map directly to features on the landscape); make maps (encode information in map form); read maps (decode successfully the elements of map language); and interpret maps (be able to relate prior geographical knowledge to the features and patterns observed on the map).*

*In this paper we will deal with and discuss the problems in using, reading and perceiving maps. At first, we have been analyzing maps included in the textbooks and atlases currently used in geography courses in Turkey and in other countries (Bulgaria, England). This paper also compares poorly designed maps with better designed maps in some countries good at map making.*

**Key Words: Geography Education, Map Use, Cartographic Design**

Research Assistant Ilkay Bugdayci  
Selcuk University, Engineering and Architecture Faculty,  
42031 Selcuklu, Konya, Turkey  
Phone :+90 332 223 18 96  
Mobile phone : +90 534 952 64 84  
[iatasoy@selcuk.edu.tr](mailto:iatasoy@selcuk.edu.tr)

Associate Professor Ibrahim Oztug Bildirici  
Selcuk University, Engineering and Architecture Faculty,  
42031 Selcuklu, Konya, Turkey  
Phone :+90 332 223 19 38  
Mobile phone: +90 533 467 10 74  
[iobildirici@yahoo.com](mailto:iobildirici@yahoo.com)

## **1. INTRODUCTION**

Cartography has found new workspace, by the effect of developing and changing technology. In addition to this maps are becoming to use by children, scientists, in military and in many different disciplines. Cartographers understand the role, nature and value of mapping in a sustainable society. The children of today are society's future mapmakers and map users. They are a resource whose map literacy needs to be nurtured (Anderson, 2003).

Maps are not only used as communication tools, but they also assume a new role in activating the thinking process of the user. Pupils will be able to transfer and process data on maps, to find location, to distinguish different types of maps, to make calculations using maps (e.g. length, scale, direction), to perceive spatial distribution, to interpret maps correctly, and to create sketch maps.

Maps are very essential tools for geographic research and education. Maps are the visualized forms of the real world and the important source and medium to acquire spatial knowledge for children. Also, map is a powerful tool to enhance children's abilities of spatial imagination, abstraction, and logic thinking (Ni at all 2001).

## 2. GEOGRAPHY COURSES IN THE MINISTRY OF EDUCATION IN TURKEY

Formal education in Turkey, which is governed by the Ministry of Education ([www.meb.gov.tr](http://www.meb.gov.tr)), includes pre-school education, primary education and secondary education. The Council of Higher Education ([www.yok.gov.tr](http://www.yok.gov.tr)) is responsible for the planning, coordination and supervision of higher education.

Turkish primary education is compulsory for every Turkish citizen from the age of six to the age of fourteen. Geography and history are parts of social science course in primary education. 4, 5, 6, 7th grade pupils (10, 11, 12, 13 age) begin to study geography and history in social science. Then 9, 10, 11th grade pupils begin to study geography and history, namely geography course and history course.

In recent years, like other many disciplines, rapid changes and improvements in teaching and learning have been happened in the world. In order to pursue effective learning in teaching and education, new methods and techniques together with the supplementary materials are used in every day past. For this reason, education system has to deal with change and issues associated with it such as new developments and technologies in our societies more than ever.

In order to prepare pupils to the expectations of changing society, there have been recently fundamental innovations being carried out in all subject curriculums in Turkey. In 2005 constructivist education programme that has been an important reformation for education system began to practice in the Ministry of Education's curriculum in Turkey. The 2005 curriculum has, the first and foremost, changed geographic perspectives follows: geography as a mean to make individuals to be aware of some natural, social and political issues and debates within the context of local, national and global scales, forming attitudes, beliefs and values about those issues and being able to construct well-balanced citizens (Karabag at all, 2007).

With the changing programme geography curriculum have to replace as well as materials (maps, graphics, pictures, course books. It brought some standards for teachers that they need to have certain qualities in terms of subject content knowledge and pedagogic content knowledge. Teachers are required to develop some skills that requires technical abilities such as GIS (geographic information systems, reading and perceiving maps) and fieldwork skills (Karabag at all, 2007).

## 3. MAP USE, MAP USER AND MAP MAKER : CURRENT SITUATION

Map use refers to the process of transcribing the physical map back in to a mental picture of reality. Map use consists of three main activities; reading, analysis, and interpretation. In map reading, we determine just what the map makers have depicted and how they have gone about it. In analysis, we begin to pick out spatial patterns and in map interpretation, we want to explain structural character of the patterns we see on maps and the spatial relations between them (Muehrck, 1992).

The science of cartography is connected with and is useful to many other sciences. Maps can be used by a wide spectrum of people, from young children, to specialists such as engineers, the military and others. There is no human activity where a map cannot find an application. The importance of mapping in every society is growing with the new economic and social conditions (Bandrova, 1998). After several decades of research on cartographic communication process, there is still a need for applied research. In fact, the variety of map uses and users is growing. There are an increased number of innovative products and a wide range of map producers with little training (Almeida, 2009).

2005 curriculum provides students with a 'constructivist' framework through which students should be able to questions things, apply theory into practice, use up-to-date real world data and construct a 'world perception' of their own. In addition to this, the implementation of the curriculum is largely left to teachers. Teachers are given autonomy to consider factors such as concepts, patterns, principles, values and skills which are worth teaching, length of the course, time available, and available resources. Teachers are required to develop some skills that require technical abilities such as GIS (geographic information systems) and fieldwork skills (Karabag at all, 2007). Material use is especially emphasized in 2005 curriculum. Thus, it is anticipated that students have completely information of map, produce map related to all of subjects and situations, use also it as evidence, interpret and develop mind map by using diverse course tools and supplies.

If we evaluate maps in our country, in terms of usage, it's not wrong to say there is a considerable deficiency. Unfortunately some maps are poorly designed without cartographic principles, some are not up to date, some others are pressed carelessly, and most of them are not appropriate for pupil's reading and perceiving ability. So maps couldn't be useful. The designers of such maps and geography books are people, in the graphic industry without cartographic education. Most of them are not aware of the functions of maps as a communication tools in the education. No one

(cartographer, university professors, experts, geographers) made high quality maps for education so far. Unfortunately, it seems that teacher candidates have graduated from universities without gaining map perception ability and map reading skills due to the fact that current maps are not enough for all schools and qualified maps are insufficient.

#### 4. CURRENT MAPS

In our country it's possible to find three groups of atlas in education system. For 4,5<sup>th</sup> grade (10, 11 ages) namely first atlas, 6, 7,8<sup>th</sup> (12-14 ages) grade namely middle atlas and 9,10,11,12 grade (15-19 ages) namely essential atlas. In addition to this The Ministry of Education has published some auxiliary materials includes several maps for social studies. Unfortunately pupils see maps firstly when they become 4<sup>th</sup> class (10 age). Map use is not to be seen as an importance necessity. It's aimed at transferring maps into inside of life in order to use as a source in constructivist education. But this seems impossible with the current maps and atlases.

We have summarized common points of deficiencies on maps in course books and atlases in Turkey as below:

- Poor in print quality,
- Maps that includes similar themes, don't look like each other,
- Bad legends (data and legends are incompatible),
- Bad symbolization cartographic design,
- Printing map without permission
- Map maker and published date isn't obvious,
- Cartographic design methods aren't appropriate for each age,
- In textbooks some of themes do not contain any maps despite necessary,
- Unsuitable and variety of scales,
- Some maps are out of date and have old contents
- Mostly maps are not appropriate for the learning level of pupils and etc.

There are some maps using in our education system (geography course book, auxiliary materials of The Ministry of Education, and some atlases) below. Some are designed without cartographic design principles; some others are not well printed. Some are not appropriate for the learning level of pupils'; some others have incorrect data and incompatible legends (Figure 1, 2, 3, 4, 5, 6).



*Figure1. Physical Map of Turkey (C1)*

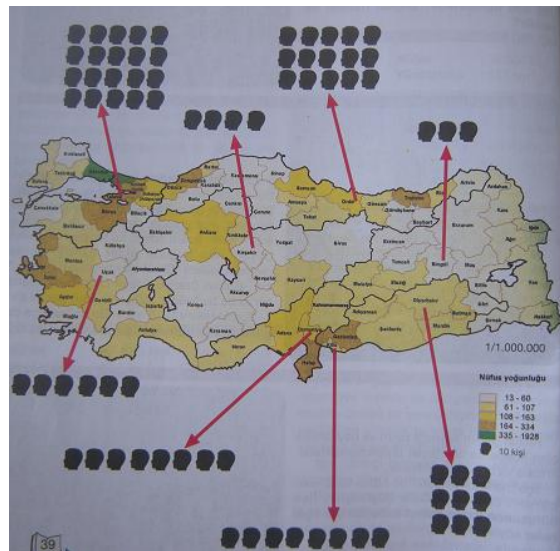


Figure2. Population density in Turkey (C2)

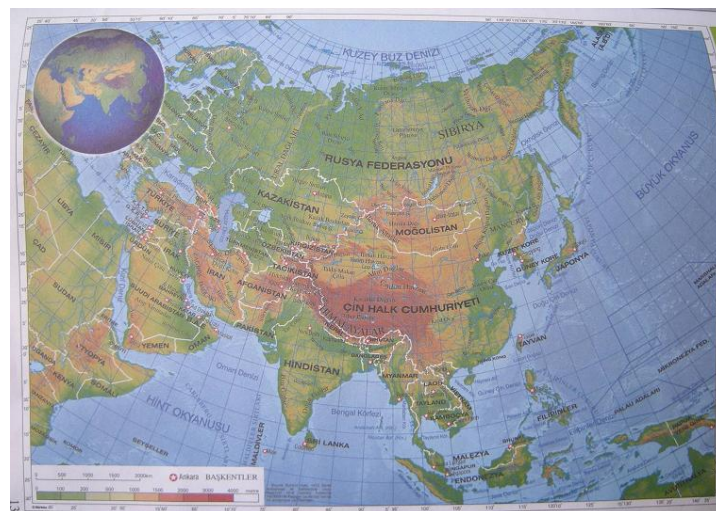


Figure3. A page in A1 atlas, representing physical map of Asia (A1)

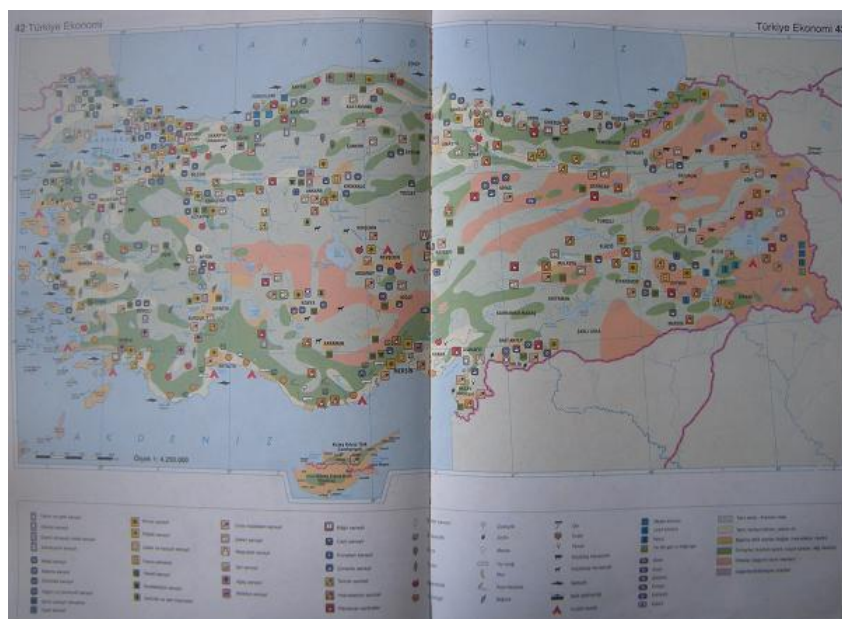


Figure4. A page in A2 atlas, representing economy map of Turkey (A2)

There are some maps taken from auxiliary materials published by The Ministry of Education, for 6<sup>th</sup> grade pupils (Figure5, 6).



Figure 5. A thematic map on industry and agriculture in Turkey (M1)



Figure 6. A thematic map on livestock in Turkey (M2)

There are some maps taken from Bulgarian and English educational atlases. The main property of all maps is to be well designed. Three atlases have been analyzed from England. The first is “Children’s Picture Atlas”(A3), provides a simple introduction to maps, world culture and geographical concepts, countries and their capital cities, most famous landmarks, longest rivers and highest mountains, while picture stories supplement the maps for pre-school children (4<sup>th</sup> Age). A page from this atlas indicated below (Figure 7). The other is namely “First Atlas”, introduces the basic of geography and mapping whilst facilitating the understanding of the relationship between countries and continents. A wealth of colorful maps, facts, diagrams and photographs introduce the continents and countries of the world and their peoples, physical geography and characteristics. It’s for 5-8 ages children. A page from this atlas indicated below (Figure 8). The third atlas namely “Essential World Atlas” is for 8+ age pupils. It explains how maps are made, and how to use maps and atlases, and contains several maps.



Figure7. A page in A3 atlas, representing a map of Africa for 4<sup>th</sup>+ age children (A3)



Figure8. A page in A4 atlas, representing the political map of Asia for 5–8 age pupils (A4)

Here are some maps belongs to Bulgarian school atlases (Figure 9, 10, 11). These Bulgarian school atlases, published by DataMap Ltd. are made available to students and teachers as a result of the experts' advice, ideas and efforts of school teachers, university professors, cartographers and specialists in Geographic Information Systems. Professional artists illustrate them with skill and the art design makes them interesting and attractive. All of them are approved as school handbooks by Ministry of Education in Bulgaria. The atlases match the needs and interests of students at these ages and support the learning in geography and history (Bandrova and Dinev, 2005). Bulgarian children, begins to use maps firstly in 1st grade class (6 ages).

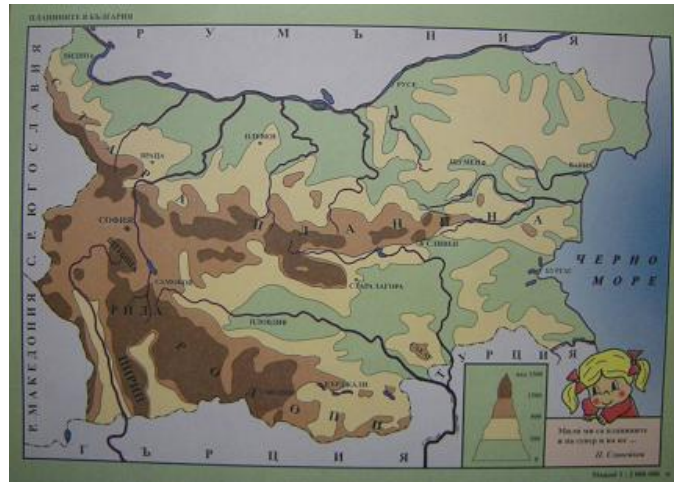


Figure9. A page in A5 atlas, representing physical map of Bulgaria, for 1-2nd (6-7 age) grade pupils (A5)



Figure10. A page in A6 atlas, representing physical map of Bulgaria for 3-4th (8-9 age) grade pupils (A6)

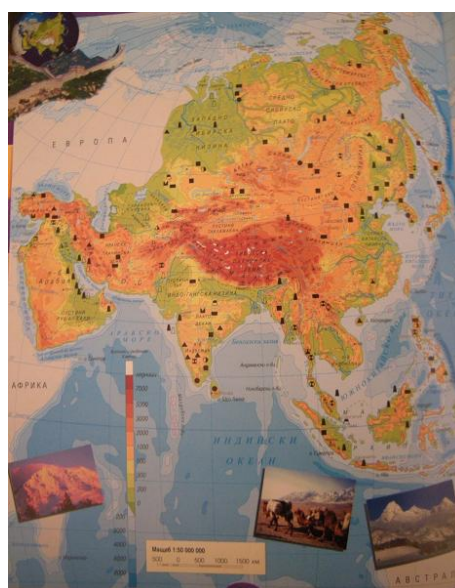


Figure11. A page in A5 atlas representing physical map of Asia for 6th (11 age) grade pupils (A7)

## 5. CONCLUSION

Children are an exciting and challenging user group for map use. For this reason maps have to be prepared by the experts, namely cartographers. And maps have to be designed by considering the learning level of children

Before the constructivist education Turkish schools concerning the school maps and atlases includes, old contents and bad designed cartographic products. Because of constructivist education program and reformed curriculum, courses books meanings and functions have been changed and materials and also map use has become in an important part of education. All curriculum, maps and atlases have been changed. Although maps and atlases have been changed, renovated maps are not sufficient for education. At the same time, the cartographic firms which offered educational atlases and wall maps are not be able to give what is necessary for the educational process. Still nowadays many schools have old wall maps with old contents, cartographic information and design; other ones do not have maps for every continent.

The deficiencies and insufficiencies of geography education concerned with maps have been emphasized for a long time in Turkey. With the reformed education, the greatest necessity of pupils is map use in Turkey.

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## Figures:

- A1: "First Atlas", Turkey, 21.12.2006  
A2: "Essential Atlas", Turkey, 2006  
A3: "Children's Picture Atlas", England, 31.10.2003  
A4: "First Atlas", England, 30.06.2004  
A5: "First Atlas-1,2<sup>nd</sup> grade)", Bulgaria, 1999  
A6: "The Person and the Society - 3, 4<sup>th</sup> grade)", Bulgaria, 2001  
A7: "Atlas on Geography - 6<sup>th</sup> grade", Bulgaria, 2002  
C1: 9<sup>th</sup> grade geography course book approved by Ministry of Education in Turkey, published 04.06.2007  
C2: 7<sup>th</sup> grade geography course book approved by Ministry of Education in Turkey, published 04.06.2007  
M1: Auxiliary materials for 6<sup>th</sup> grade pupils approved by Ministry of Education in Turkey, published 2005  
M2: Auxiliary materials for 6<sup>th</sup> grade pupils approved by Ministry of Education in Turkey, published 2005

## **BIOGRAPHY**

### **Ilkay Buğdayci**

She was born in Konya/Turkey in 1979 and graduated from Selcuk University/Konya in 2002 as a Surveying Engineer. She started to work as a Research Assistant at Selcuk University in 2003. She has been working at the same position at Selcuk University since 2003. She completed MSc program at Selcuk University in 2004. She has been rolling at the PhD programme at the same University since 2005. She studies about cartography and GIS in education, cartographic design and map use.

### **Ibrahim Oztug Bildirici**

He was born in 1965 in Konya/Turkey and graduated from Selcuk University/Konya in 1986 as a Surveying Engineer. He trained Cartography at Polytechnic University of Berlin from 1991 to 1992. Having completed his MSc-Study at Selcuk University in 1994, he started his PhD at Istanbul Technical University. He worked as a Research Assistant at Selcuk University from 1990 to 1995. He worked in the same position at ITU from 1995 to 2000. In 1997, he was awarded a German DAAD Scholarship. He did research about generalization of buildings and roads at the Institute of Cartography and Geoinformatics (ICG) of the Hanover University under the supervision of Prof. Dr. D. Grünreich. He completed his PhD in 2000 at ITU. He was awarded a DAAD scholarship for 3 months in 2003, again. He did research about multiple representation databases at ICG of Hanover University. He worked as an assistant professor at Selcuk University from 2001 to 2006. He has been working at the same university as an associate professor since 2006.