

## **MAP USE EFFICIENCY IN GEOGRAPHY LESSONS: A CASE STUDY IN PRIMARY EDUCATION IN KONYA TURKEY**

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### **ABSTRACT**

Pupils in our education system learn map concepts between 4 (10 age) and 7 grade (13 age) in social studies courses. There are many maps regarding as geographical and historical themes in social studies textbooks that is designed or developed by Turkish Ministry of Education. We have been analyzing maps in current social studies textbooks for a while. Unfortunately we have realized many deficiencies on these maps.

The aim of this study is to assess these maps and current situation about map use by the help of the teachers in certain schools in Konya/Turkey. We have implemented a questionnaire for 153 teachers by face to face. We asked some questions about map use such as; whether they face with some difficulties during the teaching of map concepts or not, whether the current maps has been designed carefully and sufficiently to read, understand and analyze geographic facts, whether pupils like study with these maps, and so on. In this paper we discussed and assessed the results of this questionnaire and related future works.

### **BACKGROUND AND OBJECTIVES**

Maps are very important sources of geographical knowledge. 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 (Yuri,1998). The design of maps is the basic concerns of cartographers. It's even more so with cartographers preparing school atlases, as the legibility of maps, and the capacity to teach and learn by using a school atlas is the most important consideration in editing such a publication (Shachar, 2005). 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). To designed the most suitable map for each users is the most important and hard work.

Map content and design should address user's needs and interests. For example, leisure and tourist cartography enhances students' and teachers' motivation to learn and work with maps when used in a location where tourism is economically strong (Almeida, 2009). The subtlety of details can determine how map data is read and interpreted. The shape of a marker, the width of a line, the arrangement of a pattern\_ each conveys specific information. Map designers pay careful attention to the match between visual variables (such as shape and size) and the characteristic of their data when creating customized symbol (Brewer, 2005).

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 (Bugdayci, 2010).

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 program that has been an important reformation for education system began to practice in the Ministry of Education's curriculum in Turkey. (Karabag, 2007). 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, 2007).

Unfortunately in our country people don't use maps efficiently. This is because of the insufficiency on qualify maps in education system and markets, and teachers graduated without gaining map perception and map reading skills. Consequently every school teacher encounters methodical problems when using maps to try and impart geographical knowledge to their students. For efficient use maps have to design carefully.

Up to now we have analyzed current maps in social studies textbooks and some atlases. We have determined many deficiencies with current maps in education system. The deficiencies and insufficiencies of geography education concerned with maps have been emphasized for a long time. Our aim is to struggle with poor designed maps in education system. For this purpose for clarifying current situation, we have done questionnaire with a number of teachers from some elementary schools in Konya.

### **APPROACHES AND METHODS**

Firstly we have described a problem:

- By using current maps in textbooks, could pupils read and understand geographic information readily? Or not...

In previous studies (Bugdayci 2009, Bugdayci 2010) we have determined many deficiencies in terms of cartographic design in current maps which are being used in education. When searching for answer to the problem, different situations may arise if the answer is negative, this should be considered. For this reason these situations may occur...

- Pupils don't have enough knowledge regard as map use
- During the course, teacher doesn't give enough importance to the map use
- Poor designed maps are being used in education

To investigate and clarify these reasons we implemented a study with some teachers in Konya. In our country geography and history are parts of social studies course in primary education. 4, 5, 6, 7th grade pupils (10, 11, 12, 13 age) begin to study geography and history in social studies courses. Between 4th and 5th grade, pupil's managers are primary teachers. While these 4th and 5th grade pupils are learning social studies from these primary teachers, 6th and 7th grade pupils are learning from social studies teachers. For this reason we have implemented questionnaire to these teachers. We chose 46 schools randomly. 101 primary teachers and 52 social science teachers were participated from 38 elementary schools in Konya. Although being taken required permissions from Konya National Education Directorate, in 8 schools both teachers and the headmasters of schools did not want to participate our study because of busyness, reluctance and etc. Questionnaire was performed face to face by the way of interviewing with teachers. We asked 13 questions and we presented some options for each question. Questions are below:

1. Is there enough time for map use in social studies courses?
2. How often do you use maps in social studies courses?
3. Which materials and atlases do you prefer in social studies courses? You can select more than one option.
4. Which atlas do you suggest? Can you say publisher?
5. Which concepts on maps are complicated for pupils? You can select more than one option.
6. Are there any information related with map use at social studies curriculum?
7. Do pupils show interest in maps during courses?
8. What kinds of maps are difficult according to pupils? You can select more than one option.
9. Which age is more appropriate to learn map concepts easily?
10. Is there any map that forcing you? You can select more than one option.
11. Are maps convenient for each subject in curriculum? If no, why?
12. Are maps on social studies textbooks or atlases sufficient? If no, why?
13. If you want to add your comments and suggestions about this study please enter...

In 4th question we want teachers to say publishers name of atlases. It has forbidden recommending any source by giving its publishers name by the ministry of education. For this reason this question is not answered by teachers. And the 13th question was answered by 58 primary teachers and 34 social science teachers. The answers of this question were told in result section. The questionnaire results can be seen on Table1.

Questions	social studies teachers	primary teachers
<b>1st question</b>		
yes	19	36
no	33	65
<b>2nd question</b>		
frequently	34	55
occasionally	18	40
rarely	0	6
<b>3rd question</b>		
essential	10	6
middle	31	43
first	10	50
relief and wall maps	28	55
<b>5th question</b>		
legend	33	59
symbol	18	25
text	6	10
graphic	25	34
colour	9	14
scale	29	82
others	3	3
<b>6th question</b>		
frequently	3	26
occasionally	16	39
rarely	33	36
<b>7th question</b>		
frequently	20	72
occasionally	17	19
rarely	15	10
<b>8th question</b>		
census maps	19	22
climate maps	19	27
temperature maps	31	32
historical maps	19	34
physical maps	20	35
political maps	6	17
earthquake maps	14	28
out of curriculum	0	10
others	1	2
<b>9th question</b>		
6-7 age and lower age	5	8
8-9 age	6	17
10-11 age	17	37
12 and upper age	9	19
<b>10th question</b>		
census maps	8	14
climate maps	11	15
temperature maps	22	27
historical maps	6	19
physical maps	9	15
political maps	2	12
earthquake maps	9	16
none	19	27
<b>11th question</b>		
yes	25	61
no	27	40
<b>12th question</b>		
yes	18	51
no	34	50

Table 1: Questionnaire results

## RESULTS

While teachers were answering questions, some notes were taken related with teacher's answers and attitudes. Some teachers showed great interest to our study, some others did not. Some teacher answered questions with careful attention, some others answered hurriedly.

In the 1st question, %63 social science teachers and % 64 primary teachers said courses duration was not enough for efficient map use. They said this was because of intensive curriculum. Remainders said the duration was enough.

The result of the 2nd question is; 34(%65) social science teachers are using maps frequently, 18 teachers (%35) are using occasionally. Teachers did not sign the rarely option. On the other hand %54 of primary teachers uses maps frequently, %40 occasionally. We can say majority of teachers in both group are teaching with maps. % 6 of primary teachers uses maps rarely. They explained this was due to limited time

and the absence of map sources. The 3rd question was about material use. Addition to atlases there are wall maps in all schools given by Ministry of Education. Unfortunately all pupils (4th grade to 12th grade) use same wall maps. Sometimes we saw these wall maps in classrooms. Sometimes we saw inactive situation in warehouse named map room. Majority of teachers complains about these wall maps due to the big sizes (difficult to carry from map room to the classrooms) and being poorly designed. And also learning level was ignored. Despite these, the majority of both groups of teachers use wall maps (Figure 1) due to the restricted sources. In our country it's possible to find three groups of atlases in education system. For 4,5th grade (10, 11 ages) namely first atlas, for 6, 7, 8th (12-14 ages) grade namely middle atlas and for 9,10,11,12 grade (15-19 ages) namely essential atlas. Middle and first atlas are both used for 4th and 5th grade pupils with a close ratio. It can be seen from Figure 1. The first atlas is more suitable in terms of 4th and 5th grade's curriculum. But because of economical reasons some families don't want to buy any atlas, some others want to buy middle or essential atlas so that pupils can use these atlases for next terms. Therefore teachers can ignore learning level of pupils. In social studies courses for 6th and 7th grade, middle atlases are used by the %39 percent of teachers (Figure 1). There are also some teachers who use essential and first atlases, however they aren't useful for the learning levels of this group of pupils.

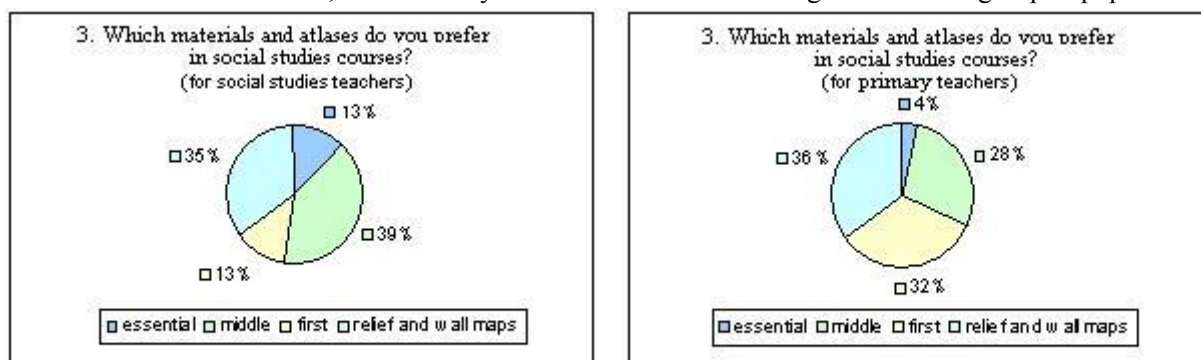


Figure 1: The results of the 3rd question as percent

From the results of the 5th question we can say scale and legend of the maps are the most complicated concepts for both groups. The reason is due to not only poor designed legends but also very small scale maps and non suitable design levels. For both group of teachers there are some problems with almost all concepts of maps. This can be seen on Figure 2. Some concepts are more complicated for many pupils, some others less complicated. This can be change among pupils due to the training quality of teachers and the pupils' interests.

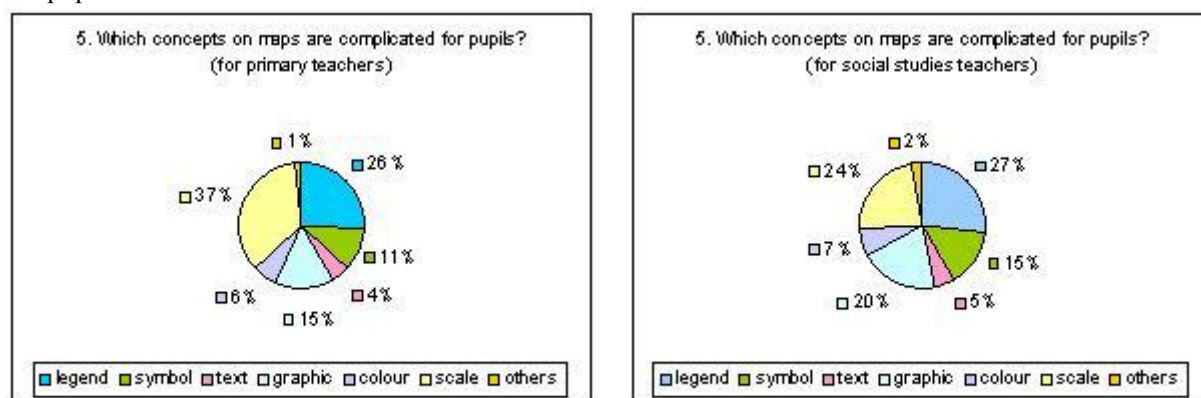


Figure 2: The results of the 5th question as percent

Is the curriculum of social studies different between each school or between each teacher? The answer is certainly "No". The results of the 6th question are interesting. While some teachers say rarely, the others say frequently. However the curriculum is the same in all schools for all teachers. Rarely option is the majority of the results for 6th and 7th grade curriculum. We can say there are some deficiencies related with map use in social studies curriculum by the help of these results. The 7th question related with pupils' interests on maps. This time the rarely answers are the minority of the results. Especially 4th and 5th grade pupils show great interest while studying with maps as we see on Table 1. On the other hand according to the 6th and 7th grade pupils' interests the options were selected almost homogenous (Figure 3). It can

depend on the teachers training. This is because while some teachers show great performance to teach, the others can show less performance.

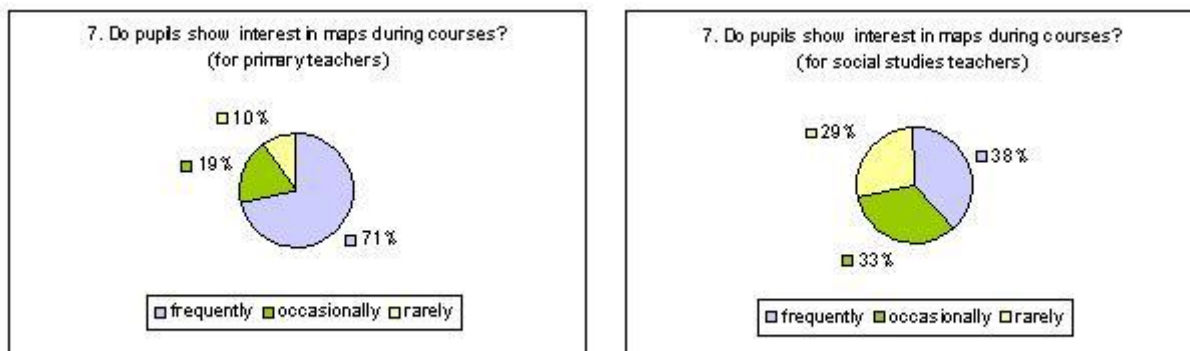


Figure 3: The results of the 7th question as percent

8th question was about difficult maps for pupils. 7 different thematic maps are given as options. From both groups' answers it can be seen that almost every option were selected by teachers. For 4th and 5th grade pupils, physical maps and historical maps are the most difficult maps to understand. It can be seen from the results of the 8th question. For 6th and 7th grade pupils temperature maps are the most difficult maps to read and to understand. 10-11 age groups were selected for the best appropriate age to learn map use by both groups of teachers (results of 9th question). Pupils are learning map concepts in social studies courses at 10th age firstly. This could have affected the answers of the 9th question. 118 teachers answered this question. Totally 36 teacher thought that pupils could learn map concepts at a lower age (6-9 ages). If there were careful designed maps for pupils' learning level, pupil could learn map use easily they told. 28 teacher thought that upper ages (12 and upper age) were more appropriate. According to the results of the 10th question, all options were selected by teachers although lower rate. But some teachers got angry with this question. "No maps could force me" they said. Some others, especially primary teachers told they had some needs and deficiencies about map use. Each teacher has different training and has different performance about teaching we can say. While majority of primary teachers found maps convenient for each subject, the majority of social studies teachers didn't find. But there were a lot of complains written by teachers for the answers of 11th and 12th questions about current maps. 58 primary teachers and 34 social studies teachers wrote some similar complains and suggestions in 13th question. Here are the summaries of complains and suggestions;

- Poor in print quality,
- Colors aren't distinguishable
- There must be more detailed maps related with themes,
- Maps that includes similar themes, don't look like each other,
- Bad legends (data and legends are incompatible),
- Digital maps can be useful
- Maps must be designed simple and understandable
- Bad symbolization,
- 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
- Some maps are not appropriate for the learning level of pupils and etc.

### CONCLUSION AND FUTURE PLANS

Let's think that there are sufficient materials and careful designed maps for learning level. Beside this if teachers' training and performance is enough, and if pupils show great interest and endeavor to maps, there must not be problem with perceiving map concepts.

To investigate children's imagination and their understanding of maps, we are planning an experimental study with a definite number of pupils. We have selected two teachers after questionnaire. One of them is 4th and 5th grade primary teacher the other is 6th and 7th grade social studies teacher. These teachers showed great interest to our study. We told about deficiencies and necessities related map use. We asked them for their help. By the help of geographers, cartographers and these teachers we are planning to

prepare alternative cartographic products for pupils, and we are planning to give some suggestions depends on our studies to the Ministry of Education at future works.

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