

GEORAPHY EDUCATION THROUGH MAPS

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Abstract. Geography studies the relationship between human and the earth and pay attention to space, place and environment. In its simplest definition, maps are language and communication tools in transferring knowledge of an area in the science of geography which studies the space. Thus teaching and teaching how to use maps is quite important. This is not valid just for all matters of geography education; they can be used at any point, level, age or grade in teaching. This is because map reading involves transferring a piece of information by coding it on a platform and the users to read and interpret the information by encoding it according to their needs. Thus, we can say that teaching maps and teaching how to use maps is the transformation or translation of a piece of knowledge from life, with the appropriate language. In order for this kind of teaching and learning to be accomplished it is a must that the map maker and the map user to know the common language of maps, which is map language, and for them to know qualities, types and limitations of maps. To gain this kind of knowledge, students must see every type of map from the simplest to the most complicated and study and analyse them, as well as get to know their different usages.

Keywords: maps, teaching maps, teaching how to use maps, Geography Education, Geography

Maps as Tools of Communication

Geography's base and development, consists of maps. Özgüç and Tü-mertekin (2000, p. 57) evaluate the situation like this: „In fact the development of geography was made possible with cartography, and dependant on

it, as 'to show that space on a platform' have always been the core of geography. Ever since the maps were invented, they have been strong metaphors that reflect and shape our perception of the world. Ones who wrote the history of geography go back to the ancient Greek times and sometimes to the ancient Egyptian periods, and in both the things that were remembered as geographical items have always been maps“.

It is known that maps are the central communication tools in the axis of geographical studies and geography education. Transformation of data, information, idea, spatial patterns and area information are possible with maps that are created with different methods and different forms. However, in communicating the geographical information, evidence and presenting materials, maps are not the only tools. Daugherty (Weeden, 1997, p. 168) too states that maps are not the only tools that geographers see to communicate and that while analysing a place various literature, statistics and cultural data should be considered.

Maps can hold a lot of information in their structures. However, only when the message of the map is clear and understandable, can the map be a right communication tool. Thus the maker of the map and the reader of the map, in other words, the one who codes the map and the one who decodes it should know and be able to use the 'map language'. Weeden (1997, p. 169) states that an understandable of the message of the map depends on the skills of the map maker and the interpretation of the map reader.

For the messages to be understood, just like in language teaching, map language should also be taught within its principles and structure. This is possible with activities and applications which involve the analyses of each item in the map aspect one by one, and their synthesising them with other aspects. Weeden (1997, p. 169) explains that understanding a map requires to know how to read the map: „Unlike reading a book, there is no conventional method for reading a map (e.g. from left to right across the page), so skilled map-readers may use strategies such as initial random scanning to identify features or familiar name and then focus on their area of interest or they may look for larger recognisable patterns. Beginner map-user need clear guidance on where and how to start reading the map.“

Students need to know where and how to begin to be a literate map read and to uncover the map language.

How and Where to Begin to Confront Students With Maps and Making Maps from Simplest to the Most Complicated?

All maps are prepared to meet an aim and have different qualities and limitations because of that aim. In other words, it is not possible to all aspects of an area or a space on a map or find out all the information there is to know about that piece of land. For students to realise this they have to be using maps. Here the main questions should be „Where should we begin to confront students with maps, to get them to make, use, teach and learn through maps? How should we direct and encourage them?“ Just as we have a lot of ways to achieve this, one of the best ways may be to start with their daily lives. As a first step and a starting point, the place they live, their daily habits, and the activities they do most can be taken. For example they can be asked to roughly map out their rooms in the house or their furniture in their rooms, as well as the route they follow from home to school or the market. Using maps in parts of the activities that take place both in class and in the local area, will encourage students and it will also make them realise that maps are natural tools that we can use quite often. For instance using a simple map to find a lost object or a person in a drama, a story or a game will both be encouraging for students and will make them realise that maps are one of the natural resources that they can easily refer.

Another way is to confront students with maps or with sketch maps, made by them, in a project or a study and to motivate them to solve problems by using these maps. For example: to determine the green fields in their own neighbourhoods, to show their distributions, to discuss how and where the new green fields can take place and to show their suggestions on a sketch map will make it possible for students to see more than one plan and map and it will guide them through making their own sketch maps with their own inputs and involvements. Displaying students' works in the class or anywhere in the school will demonstrate different uses of maps and that there can be many types according to the aims.

The Relationship between the Real Space and the Map

When the students meet with maps for the first time, almost all of them have to problem of understanding the relationship between the real space and the information on the map. Bailey and Fox (1996, p. 110) point out the fact that young children have the problems in understanding the perspective

of the map and relating it to the reality, and in fact even 4th grade students can not draw an area in two dimensions when looking from above.

This is why it would be useful to introduce students with maps of familiar and known places, in order for them to understand the maps perspective and its relationship with reality. Especially big scaled plans of classroom, school, play ground or the gym are good starting points. In fact it is possible to take students on a field trip to a local area and getting them to draw a very simple map can also be an effective starting point. Thus students will ask questions to themselves while drawing, like „How can I draw such a big area on to a paper? Why can't I draw that hill correctly? How am I supposed to symbolise a hill? How will I show the trees? Why can't I exactly draw the width and the length of the road? How will I symbolise the lamps by the road side? Actually, students are trying to create and understand the relationship between the reality and transferring the knowledge on to a map by asking these questions. Moreover students will begin to understand the need of certain aspects of maps like scale (time, distance and cost etc.) and direction indicator, and the need of symbols that are used to show settlements, roads, vegetation and natural and human aspects of the environment.

Students' defining the maps and map aspects, their usage and coding of the knowledge or data on to a platform, encoding the code on the map, and interpreting the map with synthesising information with the previous geographical knowledge are the main aims of geography education and geography education programmes. In teaching and learning maps and how to use maps, the students must understand that, both in studies made in the class and in the field, the maps are selective and are made according to their aims. They should also understand that no map can ever represent the reality exactly and clearly and the reasons for it to be this way.

Studies about Map Drawing

What we are trying to express here with the term map making is to code a piece of knowledge, data or idea on to a platform in the shape of a map. As a first step for this, is to familiarise students with the basic aspects of the maps.

The main qualities of maps and the main aspects that it must have can be explained to students quite clearly by showing and using sketch maps or plans (plans are not drawn to scale). Although this may sound like a very easy step to take, it will be seen that most of the students will struggle to understand. The

reason for this is the fact that gaining the basic knowledge about map drawing and applying this knowledge is in fact a very complicated whole. This will be achieved through drawing the basic aspects and principles of map drawing from simple to complex, and by analysing different types of maps. Within this process, the problems that came up at first will be overcome slowly and an upper level of knowledge and the skill of coding data correctly and fast on to the maps will be achieved.

Aspects of Maps

Basic aspect that should be present in a map:

1. A title to show the maps aims (name of the map);
2. Scale;
3. Direction of the map;
4. Map indicators and symbols (key);
5. Geographical co-ordinations (parallels and meridians).

The basic aspects of maps are present in almost all maps from large scaled plans to commonly used atlases, and wall maps. The basic aspects of maps can be prepared according to map drawing principles with different aims and different difficulty levels. The maps that the students will do can range from the simplest level of sketch maps or plans that show where we are and where we want to go and the connections in between these two, to complex maps that show the distribution of the population of Turkey according to the year 2000.

1. A title to show the maps aims (name of the map)

For a map to be useful, practical and clear, it has to have the basic aspects. One of these is the aspect that tells us the aim of the map, which we information is presented and where the map belongs to, that is the aspect of map title. For example; the title of „The Distribution of Population of Turkey (2000)“ tells us that this map belongs to Turkey, gives us the information about the population distribution in 2000 and shows that it has been aimed to be used in studies regarding population.

2. Scale

First of all maps should inform the user of the distance between point A and point B. This information can be given in the form of kilometres to show

distance or in the form of time to show how long it takes to get to a point. If required the type of transport (bus, train, plane, ferry etc) and the cost of transport can also be added to the map. In short a map should be drawn to scale and the scale should be shown on the map. As it is known drawings without a scale are named as a sketch or a plan.

3. Direction of the map

The map should show the route from point A to point B in general. The user should know where he is in a larger area; he should know where he stands in the world, country or a city. If the user is looking at a city map he should be able to see which route to follow from home to the cinema, he should know whether he will turn right or left. In order to answer these questions the direction of the map should be given, which is generally done by a compass rose or a direction indicator that shows north.

4. Map indicators and symbols (key)

The aim of the A and B points should be clearly shown on the map. What do they represent? As there are no dots on the surface of the earth the dots on the map are a symbol for either a house, a mosque, a gym a cinema or a city like Istanbul etc. Thus maps should have a key in which they explain what the symbols mean. Meanwhile it should be noticed that every map uses symbols that are appropriate for their own aims. In a map about population, symbols that indicate population and in a map about vegetation, symbols that represent the flora of the area should be used.

5. Geographical co-ordinations (parallels and meridians)

The location of a place or the geographical co-ordinations look for the answers to the question of „Where is this place“, plus the concept of place and space are also important in getting to know where something is located. Jacobson (2004, p.8) highlights the point that the maps we use in field works cover only a very small part of the landscape, however in order to know this place stands on the earth we need to know the latitude and the longitude of the area. According to Michaelis et al. (1988, p.333-334) considering an area's special and mathematical location the related subjects have been set out as; the main cities of the area being studied, capital cities, sources, other aspects that take place in the regional studies and recent events, the latitude and longitude of the area, the aspects of field in low, mid and high latitudes,

comparison of the cities and countries that are in the same and different latitudes, prime meridian, international time line, time zones, the history of the place being studied and their present states, natural and cultural aspects, analyses of population distribution, natural resources and their distribution.

Colours

If maps are to be colourful which colours should be used? The colours on the map are a principle of the map just like the others and have certain rules, which should be obeyed; otherwise it may lead to misunderstandings and complexities. In teaching and learning through maps, another aim of the sketches and the plans that the students draw is to introduce the atlas and wall maps. Thus the standard colours should be used in students' maps in order to help understand the atlases and wall maps in a later stage. Students should be explained what the standard colours are, what they represent and how these are used in atlases and wall maps. For example; starting from the sea level the altitude is shown in green, yellow and brown colours. These colours only indicate the altitude levels and not any kind of landscape aspect. Also the depth levels in the seas are shown in tones of blue from darkest to lightest. This kind of rules should be explained to the students with examples where the colour tones are given at the corner of the map.

Studies on Creation and Usage of Maps in the Classroom

Ideally, the sketches and plans should be done during the lesson and each point added on to the map should represent and explain a unit studied. This method shows students how maps are drawn (Bailey and Fox, 1996, p. 112). The creation of maps step by step within the lesson hours lets students see and understand how maps are developed, unlike showing them a drawn atlas, a wall map or maps from the internet, which do not teach how students can draw a map by themselves or how they will transform the information on to the map.

The maps that the students made for different units in the lesson, involves in transforming many types of information, which have innumerable uses. It is beneficial to start making these maps from the local and familiar areas. Later they can move on to making location, distribution or spatial changes maps. For example; maps to show the historical development of the capital Ankara or the settlement distribution within periods of 20 years can be drawn. It is also possible to make comparison between two things, using

the maps that the students drew. For example; the incoming and outgoing products of the ports of the Black Sea and the incoming and outgoing products of the Izmir port in the Aegean region of Turkey.

In all levels of education, it is possible for a map to be drawn and combined with different visuals. As it is in many different educational programmes, the geography education programme prepared in 2005 in Turkey¹⁾ states that students should invent classroom materials (like maps) using the available technology which will achieve long lasting learning.

Studies that are done in class should provide students a place where they can discuss and make a lot of different maps, as students need to question what each map expresses for them. Especially in geography lessons, nearly all things learned and nearly all map aspects should be transferred on to a map at any stage of the course.

Exaggeration and Projections on Maps

In evaluating the maps' application sources, aims of use and evaluating as a visual material, exaggeration and projections should be taken into consideration. For example; on a 1: 50 000 scaled map, the main road should be drawn like a hair line, however, as this will not be according to the aim of the map, it will not be able to create a visual effect and it will not make the map useful as a reference map, the width of the road should be exaggerated. Exaggeration also helps to improve visual impact as well as highlighting familiar objects and aims of the map.

In fact what the students should understand, at this point, is that no matter how exaggerated or how the projections are used, all maps are strained materials of the reality. Seeing that the world is round and the paper is flat, it should be known that a landscape can never be mapped out with all its aspects and qualities. Thus no map can ever reflect the reality. For many years of study map-makers have tried to invent different projections and geometric shapes in order to solve this problem, however, they could only reduce it.

Mental Maps

These maps under the name of mental, cognitive or mind maps are just as important as any other type of map and maybe more. These maps emerged at the end of 1960's and the beginning of the 1970's as one of the ways of mea-

asuring spatial perception. Gale and Golledge (Özgülç & Tümerterkin 2000, p.282) evaluate the mental mapping as „a structure that makes it possible for people to create their own knowing-learning processes, which involves people to gain knowledge about their own spatial environment, stacking this information, recalling and changing this information.“ Baileys and Fox (1996, p.113) evaluate how the relationship between reality and our mind is established by mind maps: „We are probably more influenced by the world as we believe it to be than by the world as it really is; and we certainly need to know how maps can be used to manipulated our perceptions of ‘real space’ as, for example, in the case of maps which are used to persuade invertors that a particular location is ‘central’ and therefore unmatched in its attributes as a potential site for a new factory or office. Many of the maps we use are not necessarily of places or fixed layouts where things happen or where people live, or related to first-hand experiences we have about places. Time and cost, for example, are often more important to us than the measured distance between places, or information about the traffic densities on selected route.“ As it is in Istanbul, rather than the 5 kilometre distance between point A and point B, how long it is going to take to get from point A to point B is more important. Another example is the people who want to move from point A to point B for better employment opportunities while buying a house. However they usually perceive that the line between the two points is too much, as they think the houses are too expansive in the area they want to move to, and thus avoid the subject. In actual fact, there maybe cheap properties in point B that the person in point A doesn’t know about; thus the incomplete information about the real space, the maps we create in our minds have always led us to misunderstandings.

Mental cartography is a wide subject and there are a lot of things written about it. However, the aim of this is to express that he mental maps concept is easy and that we can learn about students’ mental maps even at the beginning of geograpy education with sketches and easy drawn maps. We all have private or shared mental maps. Students’ mental maps are rich sources for learning and the main base for map teaching that is open to discussion. Our role here as teachers, is to learn the mental maps of students at every level of teaching and to ask them the right questions to achieve learning. And later on to use what we have learned to improve both our and their perspectives of the world.

Conclusion

The skills that are need to transform geographical knowledge and ideas on to a map should be improved like a language and both the teacher and learners should be encouraged to use it. This language should be improved with sharper and clear ways with certain application when compared to other languages. Drawing an effective map with various kinds of geographical information, ideas, and complex relations will be an upper level activity that will improve the students' creativity and map skills.

In studies of teaching and learning through maps, mostly computer technology is used. With the help of this technology, students will be able to see the basic aspects of maps (scale, direction, symbols etc.) and create a three dimensional mental image. However the mapping programmes can be used effectively by students who know the maps, their aspects, limitations and principles. Ultimately there is nothing to take the place of field works, where students perceive the three dimensional objects and transform it on to a paper with two dimensions.

Notes

¹ Coğrafya Dersi Öğretim Programı, 2005 Programı (2006) Gazi Kitabevi, Ankara.

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