

Mathematics in Zeugma

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State of the Problem

The time period we are living in now is the century, where reflections of the pluralist public comprehension is also seen in the education. The changing demographic composition of the society in the last years have carried the education to a multi-cultural point. At this point, the mathematics have also defined a new fields for itself. The Ethno-mathematics is one of them. The fact that the culture is a part of the mathematics lesson, it helps the students to increase their academic successes, (Banks, 1989), it helps with the creation of more equitable learning environment, (NCTM, 2000) and it correlates the mathematics with the other disciplines, (Zaslavsky, 1998; Moses-Snipes, 2005). But, in many times, the mathematics become a field that the students fear and they could not communicate with.

Aim of The Work

The multi-cultural mathematical activities should not be thought to be separate from the mathematics field, it should become a field which is debated within the mathematics education. It has been aimed to help the 6th class students to create the mathematical concepts by using the Zeugma mosaics, to realise the relationship between the mathematics and the culture and to understand the value of the Zeugma as an inherited culture with this work. Zeugma (Greek: Ζεύγμα) is an ancient city of Commagene; currently located in the Gaziantep Province of Turkey in the South East of Turkey. Belkis/Zeugma with its historic, archaeological, strategic importance, is a unique and priceless asset, which had been lying buried in the depths of history and only recently saw the light of day. The writers of ancient times, Pliny and Strabon describe the city of 'Zeugma' in its various aspects and the information gained from their Works forms an important part of today's knowledge of the city. There are a number of exceptional assets that make Zeugma important and valuable in terms of its historical chronology, archaeology and art.

The Method

The sample group of the work are the 6th class students who are studying in the Private Darussafaka Elementary School and the Private Istek Acıbadem Elementary School. The sample groups have been chosen amongst the volunteers. The 6 student of the group of the 18 students are girls and the rest 12 students are boys. The work has been carried out during the education year of 2006-2007 after the school hours. The work, which has been applied, has been prepared in line with the new educational programmes and has been related with the Social Studies, Computing, Art and Turkish teachings.

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Six Zeugma mosaics have been chosen in line with the 6th class mathematic syllabus applications, nine work sheets have been prepared in relation to these and they have been applied. Some of the achievements from the mosaics are to solve and construct the problems in relation to the time measurement units and to determine the relationship between the angles, the sides and the diagonals of the square and the rectangle.

The students have created the two mosaics again, which have been chosen, on the computer medium by using a special computer programme with the help of the computing lessons teachers of the school. The students have enlarged the Demeter mosaic by certain ratio with the help of their art and mathematics teachers and created a Demeter mosaic by using different colour stone pieces. Two excursions have been organised to support the work. As the last point, the “Zeugma” documentary, which has been prepared by the TRT, have been shown to the students in order that they shall recognise the Zeugma Antique City more closely. Research homework in relation to the “Zeugma” have been given to the students after they watched the film. The research homework has been shared with the group and a discussion has been carried out.

Limitations

Since the work has been carried out outside of the school period, it became necessary to go out of the planned timing due to the fact that the students had different works and additional time had been required for.

The coordination with teachers of different disciplines could not have been achieved in the level that it has been required.

Result

It has been observed that the contribution of the students had been high during the work.

Two questions have been asked to the students who have participated at the end of the work:

- a. Did you have pleasure from this work?
- b. What do you think that you have learned/realised with this work?

99 % of the students have answered “yes” to the first question. The following results have been observed from the answers of the students to the questions and from the observations of the administrator as the results of the meetings with the students:

- ☐ They learn the concepts, which they learn in the mathematics lessons, easily,
- ☐ They observe the richness of the mathematical ideas of the traditional public,
- ☐ They realise the relationship of mathematics with the art,
- ☐ They comprehend the applications of the subjects that they learn in the mathematics in the daily life.
- ☐ The requirement of the understanding of the value of the Zeugma have been stated by the students.

Three questions have been asked to the teachers who have participated in the work.

- a. Do you think that the students have taken any advantage from this work?
- b. Do you think that you, as the teachers, have taken any advantages from this work?
- c. Does this work had any additions in your field of work? How?

The following results have appeared after these questions and after the non-constructed meetings with the teachers:

When the work has been studied as the whole, benefits have been obtained not only for the students but for the teachers of the different branches. The teachers who have participated in the work, have found chances to examine and to relate the subjects that they are in their fields in more depth.

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