Multiculturalism, Migration, Mathematics Education and Language

M³EaL Project Final International Workshop

Lucca, 11-12 September 2015

M³EaL teaching materials

WHO DID WHAT IN MATHEMATICS IN MY COUNTRY?

(piloted in Austria, Greece, Norway)

The idea of this unit is to use history of mathematics to demonstrate that many cultures have contributed to the development of mathematics as a science.

ORNAMENTS IN TEACHING SYMMETRY

(piloted in Czech Republic, Italy [Pisa] , Austria)

It looks at the potential of multicultural content of ornaments of different culture and their potential use in mathematics classroom. What mathematical structures can be practiced using the cultural content of ornaments? What cross-curricular links does the unit bear? How can it help integration of migrant pupils into the classroom?

INTRODUCTION TO AN ANCIENT MAGIC SQUARE

(piloted in France, Italy [Siena], Czech Republic)

The aim of this unit is to have the students work at the same time on decimal numeration and on the use of the French language, in writing and speaking in mathematics both in terms of vocabulary and explaining one's reasoning. It is also to allow verbal exchanges about written and oral numeration used yesterday and today in various countries and to highlight the input of other civilizations to the construction of mathematics in Europe.

PUTTING BINS IN OUR SCHOOL'S YARD

(piloted in Greece, Italy [Siena and Pisa], Austria)

Through the activity "Putting bins in our School's yard" students were asked to answer to an existing, real life problem that emerged in their school environment. Finding a suitable space in the school yard to place recycling bins constitutes a real and recognizable issue for students' involvement in mathematics and provides them with the motivation to invest in the teaching and learning processes. Therefore, the mathematical situation is expected to make sense for all students; it does not also rely on well-defined mathematical procedures but instead allows for students' agency and collective negotiation of the mathematical notions (e.g. proportionality) and techniques (e.g. measuring).

MASTERING MATHEMATICS, MAINSTREAM AND MINORITY LANGUAGES

(piloted in Italy [Pisa], France and Greece)

Its aim is to provide teachers with a tool to help their pupils overcome the learning barrier represented by the contrast between the simplicity of classroom language and the complexity of mathematics language.

Activities

- Analysis of a textbook (Reading and Writing)
- Analysis of a "word problem" from a National standard assessment test (Reading and Writing)
- Natural language and mathematics language
- Writing a "word problem"
- "Writing a textbook"

A FACTORY OF TRIANGLES

(piloted in Italy [Siena], France and Czech Republic)

The proposal is related to one of the basic themes of geometrical knowledge, precisely it refers to the modality of conceptualization of the triangular shape, with its fundamental properties and relations.

FINGER MULTIPLICATION

(piloted in Norway, Austria and Czech Republic)

The area of study in the unit is Multiplication from different approaches (history, culture, traditions, use of tools and books), the use of concrete tools in calculations, the use of early algebra for formulation of rules for multiplication and for proving mathematical results, different ways of proving in mathematics and mathematical reasoning.