



Newsletter n. 1

TALETE Project:

Teaching mAthS through innovative LEarning approach and conTEnts

Much of the current teaching of mathematics, particularly in the primary years, focuses on presenting mathematics as something not related to student world and their everyday experiences. Due to this fact many students at the latter years of primary school could have been alienated from mathematics.

The TALETE project aims to support the use of mathematisation and contextualization in the school lesson, because its potentiality is to show students the value of mathematics and to increase their motivation to study it.

EDITORIAL

The project aims at improving the quality and efficiency of education and training as follows:

- identifying and developing teaching and learning method in the field of mathematics with a focus on the geometry;
- improving the quality of learning in order to support the development of students' basic and transversal competences;
- improving attractiveness and efficiency of International Standard Classification of Education levels 2 and 3 of education and training (nearly the end of

compulsory education) through the 3D virtual world;

- supporting high quality teaching and teacher training;
- supporting schools to establish partnerships and improving teachers and pupils' skills favouring the integration of the European dimension in teaching and learning.

The TALETE project is addressed to teachers and students of European schools.

The impacts on the target groups are:

- as to the teachers, to provide innovative contents strictly connected with national school curriculum in mathematics, in order to improve the quality of teaching making it more flexible and fun and reducing the number of low-performs of students;
- as to the students, to improve mathematical literacy skills, contrasting with the interest lack among students for the scientific and technical studies

Under the Spotlight

The mathematisation involves moving from the everyday to the mathematical: it describes real-world context expressed mathematically.

The contextualization involves moving from the mathematical to the everyday: it describes mathematical content expressed in everyday language.

Which is their role in the planning of maths lessons? Can the mathematical ideas be embedded in everyday contexts?

The educational model of TALETE project starts from the concept of the mathematisation: it describes real-world context expressed mathematically.

The mathematisation uses everyday contexts expressed in mathematical language and



concepts for solving real problems and the mathematics becomes the vehicle for this purpose (Ainley, Pratt & Hansen, 2006). The mathematisation is a mental process which produces mathematics: you see the world perceiving relationships, properties and structures. The teacher constructs situations in which the learner can mathematize: perceiving the chains of necessary deductions.

The contextualization is a process in which mathematical ideas are embedded in everyday contexts. The contexts support the learning of mathematical ideas.

Often in the school textbooks, you find artificial problems, while if the teachers use the contextualization and mathematisation, they can offer to students more attractive mathematical problems and ... realistic issue. For example, plan the lesson students in primary school about the proportions. How can the teacher mathematize the process of drawing a face? The students can take measurements in real contexts of the position of various facial features. Using the rules they can measure and calculate the positions and size for the eyes, ears, and calculated the proportions. They can look at the overall shape of faces and noting the variation from a circle or ellipse.

It's important that the pedagogical context must be made explicit to enable pupils to understand the purpose and make sense of the mathematics.

The context is a situation that is familiar to a student. For example, how many cups of water go into a glass of water? The mathematisation is viewed as a constructive, interactive and reflective activity. To begin, the point of departure for education is not learning rules and formulas, but rather working with context. A context is a situation which appeals to children and which they can recognize in theory.

The mathematisation of the nature has to be enriched with the dense spectrum of various mathematical practices. It means that maths can be teach and learned in active and creative process.

For more information:

Nelissen J., Tomic W., Learning and thought process in realistic mathematics instruction, in Curriculum and teaching, Volume n. 8, No 1, 1993 edit by James Nicholas Publishers.

Theoretical background

Mathematization is the process taking place while modeling a real-life situation, i.e. solving a word-problem, by mathematical means: you start from aspects of reality and develop abstract formal structures. The activity of modeling means that you ask cognitive demands, supported by the competences as designing and applying problem solving strategies, and also communication skills.

Treffers (1987) formulated the idea of two ways of mathematising distinguishing "horizontal" and "vertical" mathematisation. In the horizontal mathematisation, mathematical tools are promoted and used to organize and solve a real life problem. Vertical mathematisation, in turn, supposes re-organizations and operations done by students within the mathematical system itself.

The horizontal mathematisation involves moving from the everyday to the mathematical: it describes real-world context expressed mathematically. The mathematising is an active observing, structuring and interpreting the world by means of mathematical models.

For more information:

Grigoras R., Hoede C., *Modelling in environments without numbers*, available in <http://doc.utwente.nl/64950/1/memo1875.pdf>

Blum W., Borromeo-Ferri R., *Mathematical modelling: Can it be taught and learnt?*, presented during "The future of Mathematics Education in Europe, 17 Dec 2007, Lisbon Portugal.



What's Next

MATHEMATIZING EVERYDAY LIFE: LEARNING MATHS AT PRE-SCHOOL

A doctoral thesis from the University of Gothenburg, Sweden, sheds light on mathematics in the everyday life at Swedish pre-schools. Appropriate material and activities can enable more teachers to develop their skills and encourage children's creative mathematical play. The thesis shows how preschool teachers can encourage children in mathematical play. The author, Maria Reis, employed the notion of mathematising, referring to learning by engaging in a variety of creative activities:

"What I mean is that the arranging and ordering that the kids (among 1-3 year olds) do with the material at hand is a way of mathematising," says Maria Reis. Her study is based on 223 episodes from 47 hours of filmed play and activities initiated by the children. The material shows how the children build towers using rings and cups; they are strategic, goal oriented and knowledge driven.

Using the concept of mathematising, the research exploits certain parts of maths present in the everyday life and widens the scope of activities that can help develop children's mathematical reasoning.

For more information:

<http://www.alphagalileo.org/ViewItem.aspx?ItemId=115576&CultureCode=en>

<http://gupea.ub.gu.se/handle/2077/27889>

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BENEFICIARY



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	<p>Burgas Free University Website: http://www.bfu.bg</p>
	<p>Rezzable Productions Ltd Website: http://rezzable.net</p>



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