SYMPOSIUM
LEARNING ENVIRONMENT DESIGN FOR MODELLING ACTIVITIES IN A SOCIAL CONTEXT: THE VENTURE OF MODELLINGSPACE

Angelique Dimitracopoulou, Vassilis Komis, Vitor Duarte Teodoro

Modelling, especially dynamic modelling, for many students of secondary education, is an extremely difficult cognitive activity. Professional tools are too hard for novices to use, user-unfriendly, and do not provide support for learners. Over the last decade, the interest in modeling activities and the possibilities offered by technology have led to the development of a number of systems addressed to young students (e.g. Model-It, SimQuest, Modellus, etc).

The present symposium aims to discuss some central aspects concerning the design of MODELLINGSPACE collaborative learning environment; a modelling environment that aims to be implemented in various European educational systems. Recent issues on technology based learning environments, lead us to consider the fact that the design of learning environments cannot be focused only on the design of the technological system itself. We assume that the whole design must be composed of three interrelated endeavors: (a) the design of a technology based system, (b) the design and development of a core learning activities set, (c) the creation of a human network (including students, teachers, researchers, etc) that promotes thinking in the context of the whole learning environment.

Thus, the design of such a learning environment constitutes a multidimensional task. This symposium presents and discusses some of its implications:

- The main design concepts and principles, for a collaborative modeling environment for sciences and mathematics, which incorporates various representational formalisms, allows collaboration among students and supports teachers. This is the object of the first paper.
- Modelling implicates several aspects related to the representation formalisms and the underlying reasoning. The second paper discusses the case of quantitative reasoning. This kind of considerations is inherent in the design of the system, indicating our vision of the specific nature of modeling as well as on the underlying learning objectives.
- The use of various representation formalisms is also inherent in a modeling environment. The third paper presents a study exploring the appreciation by the

   students of the representational codes, used in the case of semi-quantitative reasoning, in an example of study related to physics.

- The role and the characteristics of a human network supporting the exchanges and development of ideas on the ways to use a learning environment, is the object of the fifth paper. This paper focuses on an appropriate framework that could allow the creation of a vivant human network.

The following papers will support the discussion during the symposium:

1. Design Principles for an Open and Wide MODELLINGSPACE of Modelling, Collaboration and Learning
   A. Dimitracopoulou & V. Komis

2. Cognitive evaluation of a technology based learning environment for scientific education
   Z. Smyrnaiou & A. Weil-Barais

3. Modelling in School Mathematics generating active learning activities
   M. Sakonidis

4. MODELLINGSPACE: The settings up of the human Networks as vital part of the design and implementation of a technology supported learning environment
   A. Strebelle, C. Depover, F. Stylianidou, A. Dimitracopoulou

5. MODELLINGSPACE: Interaction Design and Architecture of a collaborative environment,
   N. Avouris, M. Margaritis, V. Komis, A. Saez & R. Melendez

Angelique Dimitracopoulou

Learning Technology and Educational Engineering Laboratory,

Department of Education, University of the Aegean, Greece
adimitr@rhodes.aegean.gr

Vassilis Komis
Department of Education, University of Patras, Greece
komis@upatras.gr