

MULTIMODAL SCENARIOS FOR MATHEMATICS LEARNING

Solange Hassan Ahmad Ali Fernandes and Lulu Healy

Universidade Bandeirante de São Paulo

solangeh@gmail.com, lulu@pq.cnpq.br

In recent years, the education system in Brazil has experienced large changes. One of these relates to the growing influence of political and social movements that defend inclusive education. Inclusive schools treat difference as factor which enriches the educational process and aim to support all learners in overcoming barriers to learning, so that they can become participants in an equitable system. The political policies related to the process of including students with special educational needs have resulted in a significant increase in their presence within mainstream schools, with statistical data from the most recent school census showing an increase of 234% between 2003 and 2010. At the same time, these policies of inclusion have been associated with taking the educational community out of the “comfort zone” and, amongst the many uncertainties, insecurities and conflicts the actors in these communities are facing, questions related to pedagogical actions have a central role.

It is within this context that we began work on a research project aiming to (1) investigate forms of accessing and expressing mathematics which respect the diverse needs of all our students, (2) contribute to the development of teaching strategies which recognize this diversity, and (3) explore the relationships between sensory experience and mathematical knowledge¹. The project involves the development and analysis of inclusive scenarios for mathematics learning, though a collaborative process involving researchers, teachers and students. The proposed poster will bring examples of our work in a number of São Paulo schools, along with the material and digital tools we have developed for the learning scenarios. These tools are designed to facilitate multiple ways of interacting with mathematical objects and involve representing mathematical ideas through colour, sound, music, movement and texture, and hence appeal to different sensory canals, and in particular to the skin, the ears and the eyes. The multimodal nature of the mathematical representations reflects our attempts to offer stimuli appropriate to the particularities of each and every student: for those with visual impairments, the tools enable tactile and auditory stimuli, for deaf learners, tactile and visual approaches are privileged and students who can both hear and see have access to all three modes, allowing even those with specific difficulties in learning mathematics to have a variety of ways to think mathematically.

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