EARLY EXPERIENCES IN DYNAMIC VISUAL REASONING IN A COMPUTER ENVIRONMENT

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Transformation geometry is considered of great importance for the elementary school by a number of researchers (Williford, 1972; Del Grande, 1990; Edwards, 1991; Johnson-Gentile & Outros, 1994) but there is some controversy about how children think about transformations (Shah, 1969; Kidder, 1976; Lesh, 1976). The learning of transformation geometry is intimately connected to the presence of dynamic visual reasoning. We are interested in the ways technology can enhance the dynamical visual reasoning of pupils. We designed a computer environment, microworld, to try to show ideas like translation, reflection and rotation, through the motions slide, flip and turn, to elementary school pupils. The microworld allows with some ease a number of actions on some visual representations. Two pre - built shapes can be moved (slide, flip or turn), some of its characteristics can be modified, a set of geometric concepts may be explored, discussed and communicated. The microworld will give opportunities to develop the ability to learn to imagine dynamically and to perform mental experiments of spatial reasoning. With this environment to learn mathematics children may combine the practical ways to mathematise those motions with higher mathematical activities.

The poster will: - elaborate on the types of learning sought; - explain the design of the microworld; - describe how the microworld works; - give details of the use of the microworld with pupils of 4^{th} grade and in-service teacher training (grades k-4).

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