

ENACTIVE METAPHORING IN THE LEARNING OF MATHEMATICS

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In our view the main problem in mathematics education is the fact that millions of schoolchildren worldwide are exposed to mathematics in a way that turns out to be an inescapable torture for most of them (a phenomenon acknowledged as cognitive abuse or cognitive bullying nowadays in the literature). Unwittingly or unwillingly under systemic pressure, many teachers are functional to this situation. We claim that there is an urgent need to democratize, even humanize the learning of mathematics, and we argue that an approach based on metaphoring and enacting may significantly help in alleviating this cognitive abuse.

After recalling the basics of (conceptual) metaphoring (Soto-Andrade, 2014) and enaction (Varela, 1987) in mathematics education and cognitive science, we present some down to earth classroom examples of metaphoring and enacting in the context of problem posing, problem solving and modelling in mathematics education. Mathematical contents involved are mainly related to geometry and randomness, two often neglected subjects in school mathematics. In particular we show to which extent the way a mathematical situation is metaphORIZED and enacted by the learners determines the ideas and insights that may emerge in them and how this may help to bridge the gap between the “mathematically gifted” and those apparently not so gifted or not mathematically oriented. Our experimental background includes a wide spectrum of elementary and secondary school students, university students majoring in social sciences and humanities, besides hard science oriented students, prospective and in service primary and secondary teachers, artists, craftspersons, social scientists, laypersons and juvenile offenders engaged in social re-insertion programmes.

References

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