

Main theme: Educational Research
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The role of embodiment in flexible use of mathematical symbols

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Abstract This paper investigates the dual nature of symbols which represent both processes and mental objects. Giving meaning to symbols is crucial to de-encapsulate an object into its processes. This paper investigates the difficulties in using symbols in the case of functions and the use of embodiment in overcoming these difficulties. The word embodiment is not just used to refer to physical embodiment, but in a broader sense to refer to the “sense making which are ultimately grounded in bodily experience” (Núñez, Edwards and Matos, 1999, p. 49, see [1]). Results indicated that participants (pre-service mathematics teachers) had great difficulties with symbols and used two types of embodiments: the use of colloquial definition and the use of pictorial diagrams to give meaning to symbols when de-encapsulating the object into its processes. Although some of the participants used the physical embodiment, the pictorial diagrams became too complex for them to handle.

Key words: Process, object, procept, embodiment.