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Didactic effectiveness of mathematical definitions: the case of the absolute value.

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Summary: Quite often a mathematical object may be introduced by a set of equivalent definitions. A fundamental question is determining the “didactic effectiveness” of the techniques for solving a kind of problem associated with these definitions; this effectiveness is evaluated by taking into account the epistemic, cognitive and instructional dimensions of the study processes. So as to provide an example of this process, in this article we study the didactic effectiveness of techniques associated with different definitions of absolute value notion. The teaching and learning of absolute value are problematic; this is proven by the amount and heterogeneity of research papers that have been published. We propose a “global” study from an ontological and semiotic point of view.

Classification: E40 D20 C30

Keywords: definition; partial and holistic meanings; cognitive effectiveness; absolute value; implicative and hierarchic statistical analysis; ontosemiotic approach to mathematics cognition; theory of mathematic education