

ON THE NOTION OF MATHEMATICAL COMPETENCE

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Over the last years, educational, political and economic institutions are urging for assuming a holistic approach in education, not limited to the contents of the individual disciplines. In this context, the notion of competence, with the perspective it seems to suggest, is presented as the key to a general rethinking on teaching, and is often used with the aim of triggering and informing curriculum reforms or framing the assessment of the quality of teaching and learning. Such an approach poses new professional challenges to teachers concerning the design, enactment and assessment of educational activities focusing on the development of competences, and to research in education as well.

Beyond the prominent role that the notion of competence has acquired in the debate on education; it remains “one of the most elusive in the educational literature” (Kilpatrick, 2020, p. 110). In fact “the notion of competence in educational sciences often gives rise to uncertainty and lexical disputes due to the difficulty of clearly identifying the phenomena it seeks to objectify” (Dolz and Ollagnier, 1999, p.7, author’s translation). In mathematics education many expressions have been coined to refer to the idea of competence: mathematical competence, mathematical literacy, mathematical proficiency, numeracy, mastery of mathematics..., some of these introduced before the term competence conquered its current diffusion. Beyond this variety of approaches, all share and are meant to convey the view that “mathematics is more than acquiring an array of facts and that doing mathematics is more than carrying out well-rehearsed procedures” (Kilpatrick, 2020, p. 112) and that a number of more sophisticated abilities is needed to be proficient in this field.

This contribution will analyze the origin of the competence construct, its evolution and how it is conceptualized by different authors in different fields, drawing particularly on the works of Marzano and Iannotta (2001), Mulder (2017) and Weinert (2001). The objective is to reveal all the complexity of the idea that the construct is meant to capture; in fact, only by bringing out this complexity can we hope to make the construct truly operational and useful for practice and educational research; and can the discussion between the different stakeholders become fruitful. In particular, we will discuss the multidimensional character (Edwards, 2001) of the construct of competence trying to reveal the several distinct related dimensions which contribute to form this single theoretical concept.

References

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