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Generalizing geometric-numeric patterns: Metaphors, indexes and other students' semiotic devices.

Mediterr. J. Res. Math. Educ. 1, No. 2, 63-72 (2002).

The goal of this paper is to offer an overview of some of the results of a longitudinal classroom-based research program concerning the emergence of students' algebraic thinking in generalizing geometric-numeric patterns. Adopting an anthropological viewpoint where thinking is seen as a cognitive praxis and drawing from a semiotic cultural perspective, we pay careful attention to the crucial turning points in the students' initial attempts to grasp the practice of algebra and focus on: (1) the students' first understandings of algebraic generalization and (2) the social means of semiotic objectification used by the students.

Classification: H13 C33 C63

Keywords: algebraic thinking; longitudinal classroom-based research; understanding of algebraic generalization; social means of semiotic objectification; lower secondary