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Classroom engagement towards using definitions for developing mathematical objects: the case of function.

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Summary: For mathematicians, definitions are the ultimate tool for reaching agreement about the nature and properties of mathematical objects. As research in school mathematics has revealed, however, mathematics learners are often reluctant, perhaps even unable, to help themselves with definitions while categorizing mathematical objects. In the research from which we take the data presented in this article, we have been following a group of prospective mathematics teachers studying functions. In the course of learning, the students gradually accepted the definition as the ultimate criterion to identify examples of function. And yet, this use was hindered by the difficulty the students experienced while trying to understand the logical structure of the definition. Our close analysis has shown that the determiners “for every” and “unique” constituted the main source of the difficulty. We propose that a brief introduction to logic and, in particular, to parsing complex mathematical sentences, may be a useful addition to mathematics curriculum.

Classification: E49 C39 I29

Keywords: discourse analysis; sociocultural approach; mathematics definitions; learning processes; commognitive conflict

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