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Student difficulties in solving equations from an operational and a structural perspective.

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Summary: In Indonesia, as in many other countries, mathematics teachers, educators and researchers are confronted with student difficulties in initial algebra. To investigate and understand these difficulties, we carried out a pilot study involving 51 Indonesian grade seven students who use a digital mathematics environment for algebra. The notions of operational and structural conceptions offer a framework for explaining student difficulties in solving equations. These include difficulties with arithmetical skills, the use of the equal sign, understanding algebraic expressions, and understanding the concept of variable. The operational and structural perspectives provide guidelines for future task design and research.

Classification: D73 H23 H33

Keywords: elementary algebra; teaching; research; error identification; misconceptions; learning problems; arithmetic; variables; terms; manipulation of expressions; equal sign; linear equations; solving equations; computer as educational medium; web-based electronic learning environment; mathematical software; reverse strategy; cover-up strategy; operational and structural view
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