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Measuring conceptual understanding: the case of fractions.

Lindmeier, Anke M. (ed.) et al., Proceedings of the 37th conference of the International Group for the Psychology of Mathematics Education "Mathematics learning across the life span", PME 37, Kiel, Germany, July 28–August 2, 2013. Vol. 3. Kiel: IPN–Leibniz Institute for Science and Mathematics Education at the University of Kiel (ISBN 978-3-89088-289-5). 113-120 (2013).

Summary: Developing measures of the quality of understanding of a given mathematical concept has traditionally been a difficult and resource-intensive process. We tested an alternative approach, called comparative judgement (CJ), that is based not on psychometric instruments or clinical interviews but collective expertise. Eight mathematics education experts used CJ to assess 25 student responses to a test designed to probe conceptual understanding of fractions. Analysis revealed the CJ assessment process yielded high internal consistency, inter-rater reliability and validity. We discuss the implications of the results for using CJ to measure mathematical understanding in a variety of domains and contexts.

Classification: D20 C30 F40
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