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Cabassut, Richard; Conner, AnnaMarie; İsgimen, Filyet Ash; Furinghetti, Fulvia; Jahnke, Hans Niels; Morselli, Francesca

Conceptions of proof – in research and teaching.

Hanna, Gila (ed.) et al., Proof and proving in mathematics education. The 19th ICMI study. Berlin: Springer (ISBN 978-94-007-2128-9/hbk; 978-94-007-2129-6/ebook). New ICMI Study Series 15, 169-190 (2012).

Summary: This article first analyses and compares mathematicians' and mathematics educators' different conceptualisations of proof and shows how these are formed by different professional backgrounds and research interests. This diversity of views makes it difficult to precisely explain what a proof is, especially to a novice at proving. In the second section, we examine teachers', student teachers' and pupils' proof conceptions and beliefs as revealed by empirical research. We find that the teachers' beliefs clearly revolve around the questions of what counts as proof in the classroom and whether the teaching of proof should focus on the product or on the process. The third section discusses which type of metaknowledge about proof educators should provide to teachers and thus to students, how they can do this and what the intrinsic difficulties of developing adequate metaknowledge are.

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