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van Nes, Fenna; Doorman, Michiel

The interaction between multimedia data analysis and theory development in design research.

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Summary: Mathematics education researchers conducting instruction experiments using a design research methodology are challenged with the analysis of often complex and large amounts of qualitative data. In this paper, we present two case studies that show how multimedia analysis software can greatly support video data analysis and theory development in design research. The software can (a) act as a type of mould for organising large amounts of data; (b) contribute to improving the trackability and reliability of the research; and (c) support theory generation and validation. We propose an integrated model that elucidates the complex process of data analysis by showing how each of the components that are involved in the data analysis procedures feeds into the emerging local instruction theory. The model combines the intricate cycles of coding and analysing raw video data with the cumulative cyclic process that characterises design research in mathematics education. Our experiences with this model may support other mathematics education researchers in the development of thorough and empirically supported local instruction theories from complex qualitative analyses. (Contains 5 figures and 1 footnote.) (ERIC)

Classification: C80
Keywords: educational research; research methodology; computer software; data analysis; researchers; validity; reliability; case studies; research design; models; mathematical aptitude; learning processes; experiments; multimedia materials
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