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Interactions between teacher, student, software and mathematics: getting a purchase on learning with technology.

Clark-Wilson, Alison (ed.) et al., The mathematics teacher in the digital era. An international perspective on technology focused professional development. Dordrecht: Springer (ISBN 978-94-007-4637-4/hbk; 978-94-007-4638-1/ebook). Mathematics Education in the Digital Era 2, 11-40 (2014).

Summary: In this chapter three examples of teacher-guided use of ICT stimuli for learning mathematics (screencast, animation and applet) are critically examined using a range of distinctions derived from a complex framework. Six modes of interaction between teacher, student and mathematics are used to distinguish different affordances and constraints; five different structured forms of attention are used to refine the grain size of analysis; four aspects of activity are used to highlight the importance of balance between resources and motivation; and the triadic structure of the human psyche (cognition, affect and enaction, or intellect, emotion and behaviour) is used to shed light on how affordances may or may not be manifested, and on how constraints may or may not be effective, depending on the attunements of teachers and students. The conclusion is that what matters is the way of working within an established milieu. The same stimulus can be used in multiple modes according to the teacher's awareness and aims, the classroom ethos and according to the students' commitment to learning/thinking. The analytic frameworks used can provide teachers with structured ways of informing their choices of pedagogic strategies.

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