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Design of interactive diagrams structured upon generic animations.

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Summary: In an attempt to study the emerging questions about the design of mathematical tasks that could support the solving of challenging problems, we designed two settings of interactive diagrams that share an example represented as an animation of multi-process motion but differ in their organizational functions. The interactive settings, each comprising of one task, were designed to support investigation in which the embedded animated example was expected to offer representative and general views. We analyzed the inquiry processes of 13- and 14-year-old interviewees and hypothesized whether these cases could represent more general considerations for the design of animated examples within a setting of interactive diagrams. We argue that self-controlling the number of representations, self-controlling the appearance of simultaneous information, flexibly using links between dynamic and static representations, and establishing links or completing partial links between representations are valuable inquiry processes in solving a problem that includes animated examples to enable viewing the representativeness of a given example.

Classification: R23 U53 D53
Keywords: interactive diagrams; inquiry learning; motion representations; organizational functions; representativeness of example; animation; algebra
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