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The embodiment of cases as alternative perspective in a mathematics hypermedia learning environment.

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Summary: This paper presents a design framework for cases as alternative perspectives in the context of K–12 mathematics. Using the design-based research strategy of conjecture mapping, the design of cases for a hypermedia site is described through embodiments of the learning environment (e.g., tools, materials, structures, practices), mediating processes these embodiments are conjectured to support, and outcomes relating to these processes. Considerations from cognitive flexibility theory and Realistic Mathematics Education are integrated into the framework as well as principles from hypermedia design. Cases are conceptualized beyond the traditional structure of cases as human experience and include phenomena pertinent to understanding complex concepts about space and perspective. In this way, cases are depicted as phenomena to be investigated with the goal of supporting learners' construction of multiple and alternative perspectives. Data are provided to elucidate the design conjecture associated with learners investigating the variability of real-world geometric phenomena by visiting, revisiting, and juxtaposing cases.

Classification: D40 U50 U70 C30

Keywords: cases as alternative perspective; cognitive flexibility theory; realistic mathematics education; hypermedia design; conjecture mapping; design-based research

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