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Kidron, Ivy; Dreyfus, Tommy

Justification enlightenment and combining constructions of knowledge.

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Summary: This case study deals with a solitary learner's process of mathematical justification during her investigation of bifurcation points in dynamic systems. Her motivation to justify the bifurcation points drove the learning process. Methodologically, our analysis used the nested epistemic actions model for abstraction in context. In previous work, we have shown that the learner's attempts at justification gave rise to several processes of knowledge construction, which develop in parallel and interact. In this paper, we analyze the interaction pattern of combining constructions and show that combining constructions indicate an enlightenment of the learner. This adds an analytic dimension to the nested epistemic actions model of abstraction in context.

Classification: C30 E20 D20

Keywords: abstraction in context; combining constructions; constructing action; Davydov's method of ascent; enlightenment; epistemic actions; justification; knowledge construction; theory of mathematics education
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