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Student noticing in classroom settings: a process underlying influences on prior ways of reasoning.

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Summary: This study examines the degree to which individual and social aspects of student noticing in classroom settings during new learning influence students' ways of reasoning about previously-encountered concepts. Seventh- and eighth-grade students ($N = 7$) participated in an instructional unit on quadratic functions (the new concept) and clinical pre- and post-interviews examined students' ways of reasoning about linear functions (the previously-encountered concept). Qualitative analysis of the interview and classroom data revealed that (a) five of seven students' ways of reasoning on linear function tasks were productively influenced from pre- to post-interview, and (b) all seven students came to notice covariation during the quadratic functions instructional unit by way of particular social processes. Furthermore, the changes in ways of reasoning about linear functions were conceptually connected to what students noticed about quadratic functions. This study serves as a proof of concept that the process of noticing during new learning about quadratic functions can be leveraged to productively influence students' ways of reasoning about linear functions. This study could also serve as a model for how to enhance instruction for other mathematics topics to similarly achieve productive influences on ways of reasoning about previously-encountered concepts.

Classification: C73 E53 I23

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