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Coding teaching for simultaneity and connections. Examining teachers' part-whole additive relations instruction.

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Summary: In this article, we present a coding framework based on simultaneity and connections. The coding focuses on microlevel attention to three aspects of simultaneity and connections: between representations, within examples, and between examples. Criteria for coding that we viewed as mathematically important within part-whole additive relations instruction were developed. Teachers' use of multiple representations within an example, attention to part-whole relations within examples, and relations between multiple examples were identified, with teachers' linking actions in speech or gestures pointing to connections between these. In this article, the coding framework is detailed and exemplified in the context of a structural approach to part-whole teaching in six South African grade 3 lessons. The coding framework enabled us to see fine-grained differences in teachers' handling of part-whole relations related to simultaneity of, and connections between, representations and examples as well as within examples. We went on to explore the associations between the simultaneity and connections seen through the coding framework in sections of teaching and students' responses on worksheets following each teaching section.

Classification: F32 D42

Keywords: simultaneity; connections; additive relations; coding framework; primary mathematics; variation theory

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