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Learning about the numerator and denominator in teacher-designed lessons.

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Summary: This study concerns pupils' experience of unit and non-unit fractions of a discrete quantity during specially designed lessons. The aim was to explore pupils' understanding of operations such as b/c of a in lessons where the teachers were aware of some pupils' difficulties beforehand and what needed special attention. Five classes were involved in the study and 10 video-recorded lessons and written pre- and post-tests were analysed. Even though the lessons were designed for learning how to operate with both unit and non-unit fractions, we found that more pupils could solve items with unit fractions than with non-unit fractions. We found that few pupils in this study had difficulties with equal partitioning. Instead, it seemed difficult for some pupils to understand the role of the numerator and denominator and to differentiate between the amount of parts and the amount of objects in each part, and some pupils did not differentiate between the numbers of units and the amount of objects within a unit. This study identified some critical aspects that the pupils need to discern in order to learn how to operate with unit and non-unit fractions of a discrete quantity.

Classification: F42 D72

Keywords: fractions; learning; teaching; variation theory; difficulties

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