

ONE TEACHER'S STRUGGLE TO TEACH EQUIVALENT FRACTIONS WITH MEANING MAKING

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Change in teachers' beliefs and practices is a “process rather than an event, it must be considered in terms of continuous growth over time” (Sowder, 2007, p.97). In this light it is important to understand the challenges that arise for teachers as they attempt to change their teaching. Adopting a case study approach, we report one teacher’s struggle (Mrs. A) to teach equivalent fractions to fifth grade students after expressing an intent to teach conceptually following a professional development workshop. The findings being reported here are part of a larger study (2009-11) on collaborating with teachers to develop classroom practices aimed at teaching mathematics for understanding having the components of professional development workshops and collaborative follow-up of classroom teaching by the first author. Audio records and researcher notes of the 14 classes of 35 minutes each (10 in 2009 and 4 in 2010) and teacher-researcher post teaching discussions focusing on the topic of equivalent fractions were analysed.

The initial challenge was for evaluating student understanding since Mrs. A tended to ask leading questions in response to wrong answers and then accepted correct answers without probing into students' thinking. Eventually she realised that student responses to fraction representations in terms of whole numbers (“Two” instead of “Two-fifth”) as a conceptual problem and tried to address it. Secondly she focused on perceptual similarity to establish equivalence among different representations which she later overcame by using a linear model like fraction strips that allowed student to make conjectures after overlapping strips of different sizes. Her initial choice of representations were based on what she thought would be interesting to students like a colored wheel but later she used representations that allowed students to make meaning. Since some students were already aware of procedures for operating fraction through coaching classes, she made attempts to connect procedures with representations but was not able to do justice because of her lack of adequate pedagogical content knowledge. We argue that as a result of engaging with these challenges the teacher developed sensitivity towards mathematics as well as sensitivity towards student understanding.

References

Sowder, J. (2007). The mathematical education and development of teachers. In F.K. Lester (Ed.), *Second handbook of research on mathematics teaching and learning: A project of the National Council of Teachers of Mathematics* (pp. 157-224). Charlotte NC: Information Age Publishing.