Practicing Change: Curriculum adaptation and teacher narrative in the context of mathematics education reform (as yet unpublished)
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Abstract

The use of reform-based curricula is one possible avenue for the widespread implementation of mathematics education reform. In this article, we present two urban elementary teachers’ models of curriculum use that describe how each teacher used a reform-oriented mathematics curriculum. In particular, we examine when and how the teachers made adaptations to the curriculum. We find that each teacher had a distinctive pattern of adaptation when using the curriculum. Furthermore, these patterns were related to three key aspects of the teachers’ own experiences with mathematics – their early memories of learning mathematics, their current perceptions of themselves as mathematics learners, and their mathematical interactions with family members. Implications for curriculum design and implementation are discussed.

Synopsis

Big Idea:
How to address teacher learning and teacher needs is the core question of the article, and by looking at experienced teachers and reform curricula the role of teacher interaction with the curricula (as teacher and learner) is examined.

Main Claim:
Teachers both teach and learn mathematics, and their narrative identities in both of these roles showcase how they interact with (use and adapt) reform curriculum (and how it affects their pedagogy).

Methods:
Two female, urban, elementary teachers (Beth and Linda, between 7 to 10 years experience) implement the same reform-oriented curriculum (Children’s Math Worlds, or CMW) are “narrativized” by the authors after interviewing them and observing them teach early on. Differences existed between teacher age, grade taught, number of years using the curriculum and student familiarity with the curriculum. The data collection occurred over three years and included professional development sessions as well as interviews and observations. Differences between the two researchers’ codings were resolved through consensus.

Analysis:
Adaptations in teaching were identified by comparing enacted lessons with teachers’ descriptions of lessons, and content-altering adaptations were the focus of coding. Three structural adaptations (omitting, adding and substituting) were classified at the whole-activity level, while ten inter-activity adaptations were described (changing terminology, changing order of activities, changing materials used, changing participant structures, increasing student control over activity, increasing teacher control over activity, time spent on activity, problem omission, problem adding, problem changing). Themes in the individual narratives were used to examine the observations.
Findings:
Beth changed strategies from controlling students (in terms of content and management) to giving them more freedom with the mathematics. She adapted at all stages, but usually only taught each lesson once.
Linda (new to written curricula) had difficulty with the coherence of the curriculum, as she previously dealt with math as disconnected activities. This difficulty may have been the cause for her use of multiple lesson iterations.
For both teachers, their narratives were related to their practice in three main ways: how they interpret their own past experience is connected to how they think about their students and the types of adaptations they need, adult experiences with math as learners affects how they feel about effectively adapting the curriculum, and personal identities strongly influence professional identities (children, for instance).

Comment

The realization that teachers’ experiences influence their abilities/interests in reading, adapting and gauging the value of curricular materials is nothing shockingly new, yet this study does attempt an interesting examination of past experiences and orientations toward teaching and learning mathematics. It would be especially valuable for those interested in the ways teachers actually develop their approaches to curricular materials, not just how they interact with them in the present tense – naturally to include CM researchers, but also teacher educators and CM creators.

In comparison to the Sherin and Drake article, this contains more detail regarding the content and topics chosen from the material (and what changes were made), as well as a better explanation regarding the classifications of adaptation of the curricular material. Even so, the data within which the classifications are interpolated are questionable. Though the authors attempt to triangulate their data and analyses, the independence of each data type seems quite murky, given the large amounts of interpretation that went into producing the adaptation classifications and narrative constructions.

While engaging an intriguing set of technical issues (a classroom of kids and a curriculum to teach), the way the authors approach them depend on specifically non-technical things (how they feel about themselves as mathematics learners and their relationships with students). It’s an intriguing study, but it doesn’t quite satisfy, leaving the reader with plenty of questions about questionable methods and data analysis procedures. For instance, if one asks about teachers’ conceptions of curriculum material implementation, how can we see what role their personal narratives play in defining/shaping these conceptions? Or, what details from the data clearly show how specific teaching events are acts of interpretation of the content? The authors try to find commonalities within each teacher over time that are stable (and differentiable between the two teachers), like whether they read materials ahead of time and the kinds of modifications they make, and these patterns are clear enough so that additional information on teacher-background permits them to make a mapping of the teachers interactions with the curriculum materials. Yet,
the clarity and strength of the evidence, as well as the connection between the types of evidence, do not seem sufficient warrant much beyond a surface-level claim.

It is also strange that there are stories about both teachers having a “conversion experience” where they came to see the goals of the overall program. It seems that the authors were looking for some kind of turning point (solicited it, even) in the backgrounds of the teachers, and whether these experiences were as profound as they are described is questionable. Yet, there must have been other teachers whose stories did not involve conversions, so the reader wonders whether a comparison with these “unconverted” is needed to make connections between story and practice clearer (and more plausible). Indeed, it is highly likely that the conversion experiences were artifacts of the questions the authors asked. Even so, teaching confronts each individual with complicated, personal demands, and each individual must fall back (to some degree) on the personal resources they possessed prior to facing them. The ways in which teachers conceive of subject matter, work with people (peers and students), and manage their work all depend (again, to some degree) on learned sets of skills, attitudes and knowledge that are historically personal. This study, while not necessarily rigorously convincing, is an interesting attempt to examine such issues.