Summary

This paper reports the results of a design research experiment in professional development for teachers of middle school mathematics. Design research is a methodology that combines the design of programs/ interventions and research into how the designs are working. Designs are continually adjusted as research reveals how they might work better. The goal of design research in education is to improve educational designs, using authentic (and complex) settings and events to inform the process. The authors report on how they developed their programs to account for three underlying conceptual challenges to their efforts: (1) the institutional contexts that teachers worked in, (2) the ways in which the learning developed in and through the community of practice, and (3) the relationship between teacher learning in the program and teacher’s teaching in their classrooms. Because of the different institutional cultures found in ISE versus school settings, this paper could be highly informative for designing ISE-based programs for teachers.

Research Brief

The authors report that an initial challenge was to develop a community of practice from which a shared and collaborative vision of high quality mathematics could be developed. They report that the professional culture of teaching works against a collaborative learning culture, and that developing a community of practice, while ultimately successful, was “a protracted process” (p. 173). Three important lessons were learned that ultimately affected the design of the programs, and may be of interest to ISE educators:

First, the study sought to document the institutional culture that teachers worked in along the lines of Wenger’s community

Why It Matters to You

This paper highlights some of the deep seated social and institutional norms from which teachers operate – feeling powerless and unheard in their institutional settings, operating from privatized instructional practices, and working with objects like student work almost always for purposes of assessment. ISE educators who seek to support teachers, and especially to support them in the adoption of inquiry-based strategies for the classroom need to understand and relate to the classroom cultures that teachers work in. Other reports have noted the potentially powerful opportunity ISE settings have to provide a “professional home” for teachers. By taking into account some of the features discussed here, ISE educators may be helped to build the culture and community that can support the development of such a professional home.
of practice, analyzing the schools as “lived organizations” (as opposed to “designed organizations”), i.e., to understand the nature of the life of the school and life in the school that was a reality for teachers. The researchers report that when they asked probing questions of teachers about daily life in their schools, teachers responded positively seeing that the researchers were taking their school lives seriously, and together they were able to negotiate joint agendas that took into account the teachers’ priorities and interests.

Second, researchers conceptualized the teacher learning community around three features: (1) a shared purpose, (2) a shared repertoire of ways of reasoning with tools and artifacts, (3) norms of mutual engagement. To develop these shared features they found they had to engage in a process of “de-privatizing” the teaching practices of the participants, that is of developing a community in which teachers’ practices became public, shared, and sharable within the learning community they were creating. This process took time as the culture of schools and classrooms often stresses the individualism of teachers, which in turn does not support a positively critical culture of reflection on one another’s practices and the practices of the profession.

Third, although there is a substantial literature documenting the need to ground professional development in classroom activities, the researchers found that using student work as a bi-directional “boundary object” – an object that has an authentic use both in their classrooms and in their professional development workshop, in other words, an object that crosses the boundaries dividing the two settings -- in and of itself did not help to bridge the professional development setting and the classroom. The researchers had used student work with the assumption that it was a familiar classroom artifact that represented student thinking which could inform instructional practices. They found that the teachers saw the student work as manifestations of outcomes of instruction, and therefore not as helpful in terms of proactively planning instruction. This led the researchers to reconceptualize how they were relating the professional development setting and the classroom to ensure that what was used in the PD setting was used in the same way it would be used in the classroom.

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