

Designing Powerful Digital Environments for Professional Development

Cathy Fosnot, Mathematics in the City

Question(s) for Discussion: How can digital environments be designed to help teachers develop content and pedagogical knowledge?

Session Description: Content knowledge and pedagogical knowledge are multi-faceted in that teachers need to have far more than a deep understanding of the content to ensure powerful learning; they have to understand the development of it. Digital environments can provide opportunities to examine this development. Users can study children over time in exemplary classrooms; they can examine the teacher's didactical employment of context and inquire about and analyze pedagogy. They can clip and paste moments from footage and build learning trajectories (or "landscapes of learning" as we prefer to call them) that show children constructing "big ideas," developing strategies, and/or using mathematical models as tools. Content is developed as users are asked to solve mathematical problems in several ways and anticipate student strategies, which they subsequently examine; design investigations and mini-lessons for the next day; subsequently examine how the teacher in the environment continues; and analyze children's work to assess the effectiveness of the instruction. Users can even add clipped footage as hypertext-evidence to support arguments and provide examples in term papers and literature reviews, or as sample evidence of the NCTM standards.

In this session, we will examine Math in the City (MitC) digital environments, the library of possibilities for PD, and the ways they can be designed to ensure powerful professional development.