Preparing Mathematics Teachers to Use Whole-class Visualization

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Effective teacher preparation for one-computer classrooms requires dynamic and compelling materials and methods, coupled with appropriate technologies. We have equipped 22 pre-service secondary science and mathematics teachers with Interactive Display Systems (a projector, a tablet or laptop computer, and an interactive Smartboard) and prepared them to use these systems effectively in one-computer classrooms. These pre-service teachers have worked with much of this technology in their subject-specific pedagogy classes and are now implementing it during their student teaching. Our primary corporate partners in this effort include: Smart Technologies, Texas Instruments, Canon, InFocus, and ExploreLearning.

We are currently studying, with support from FIPSE, how our pre-service teachers are implementing these technologies during their student teaching. We are also studying how use of this technology affects pupil learning in several specific areas. Data collected include: observations, teacher and pupil interviews, and teacher and pupil artifacts (e.g., lesson plans, computer files, test results). We have completed the first phase of this project, and are currently analyzing the data. Results are being used to: (1) identify best classroom practices for use of interactive display systems in mathematics and science teaching; (2) develop models and materials for preparing pre-service teachers to implement these practices; (3) disseminate practices, pre-service models, and materials, and (4) provide recommendations to hardware and software developers for improving their products for use in classrooms.

In this session we will present a brief overview of our methods (including teacher preparation model, materials, interviews, tasks, and data management and analysis), along with findings related to mathematics teaching practices, teacher reflections, and student learning. Presentation of materials and tasks will utilize a Smartboard, which we will provide. We will encourage participant questions and comments, and seek input for the next phases of our work.