Teacher Learning of Technology Enhanced Formative Assessment (TEFA-TL)

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Overview / Timeline

TEFA-TL is a five-year research project studying how secondary science teachers learn to use an electronic "classroom response system" to implement formative assessment.

Formative Assessment (FA) has been demonstrated to be effective in improving student achievement, but FA is difficult for teachers to implement.

A classroom response system (CRS) helps make FA more efficient and also helps make the classroom more active.

The TEFA-TL project began in June 2005, and we have started collecting baseline data from the first cadre of teachers. We will be following these teachers for 3 years.

Teachers in the first cadre will begin a professional development course in August 2006, which will continue until May 2007.

The baseline year for the second cadre of teachers is AY06-07, and their PD course will start in August 2007.

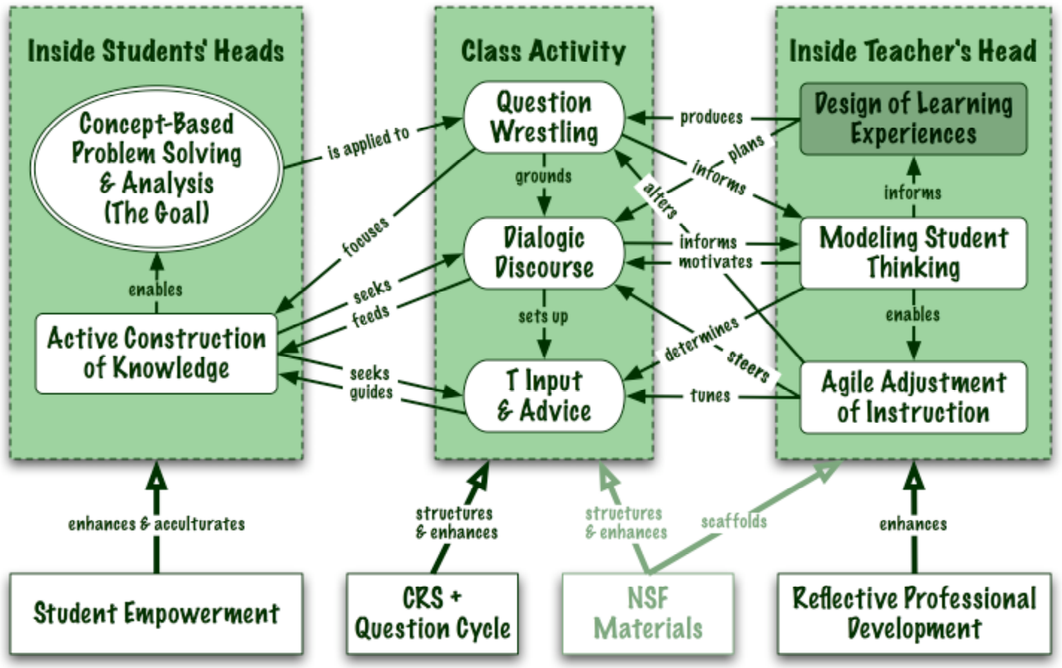
Project Goals

1. To better understand teacher learning of TEFA-based pedagogy.
2. To better understand effective and efficient methods of teacher PD in TEFA.
3. To develop tools and techniques for the evaluation of teachers' TEFA mastery, of suitable design and quality to use in a controlled, randomized study of the effects of TEFA on student learning.

Collaborator

SRI International is the subcontractor of TEFA-TL. They are developing most of the instruments needed to monitor teachers' attitudes and fidelity to TEFA practice. They also provide valuable advice on many other facets of the project.

Active Engagement via Real-Time Formative Assessment



Our Model of Professional Development

Single site
- all teachers in PD course are in one building
- increases administrative support
- makes scheduling easier

On-site PD
- no traveling to PD course
- course starts soon after school day ends
- teachers are in a familiar setting for PD

Frequent meetings
- course meets almost every week
- teachers get frequent feedback
- PD becomes part of each teacher's weekly routine

Year-long
- course starts with a 3-day workshop in August
- course ends in May of the following year
- enables greater depth of coverage
- encourages reflection and growth

Total involvement
- 100% of science teachers are participating
- changing the way science is taught in a school
- more than 80% of students affected every year
- reduces isolation of teachers trying new approaches

Administrative support
- highly centralized
- facilitates many facets of research
- principals, technology specialist, curriculum coordinator, and staff are all engaged and supportive
- makes it even easier for teachers to participate fully

A community of learners
- teachers know each other already
- teachers are more likely to work together and talk about PD issues

Collaborative Action Research: A community of researchers
- teachers are actively seeking information about their classes
- teachers are working together to design experiments
- augments PD course so that it can be more effective

TEFA used to teach TEFA
- approach being taught is used to teach PD course
- formative assessment, technology, modeling, moderating, managing, meta-communicating, etc. are all central to PD course

Model-based design
- we have an explicit framework for how TEFA should be implemented
- provides structure to PD course

Classroom Response System

A network for presenting questions, collecting answers, and displaying histograms

Instructor's console
- controls operation of CRS
- manage time remaining, histogram display, etc.

RF transmitters

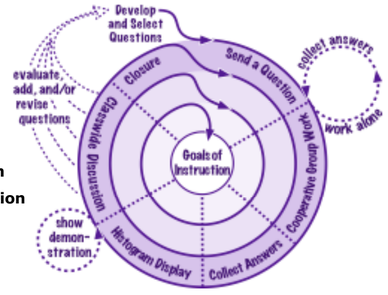
- numerical or text answers
- confirmation when answer is received

RF receivers
- more reliable than IR receivers
- more compact and easier to use

Projector
- displays question, timer, class histogram
- lets students see the results too!

Question Cycle

Typical Question Cycle (7 stages)
- Choose Item
- Present Item
- Group Work
- Collect Answers
- Display Histogram
- Classwide Discussion
- Closure



New skills/roles for teachers
- developing and adapting meaningful items
- modeling students and student learning
- moderating class discussion
- managing classroom via CRS
- adjusting instruction to meet students' needs
- meta-communicating

New skills/roles for students
- learning from classmates
- using feedback to adjust their own learning
- taking more responsibility for learning
- focusing less on getting the answer "right"
- focusing more on thinking and process skills

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