

## Research in Classroom Assessment

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### **Work Circles: Developing research sensitive teachers and practice-sensitive researchers**

*Involving: Mark Wilson (BEAR) and Kathy Long (LHS)*

The Lawrence Hall of Science (LHS) and Graduate School of Education (GSE) of the University of California at Berkeley, working with partner schools, will investigate the pilot implementation of an innovative group research and professional development structure called a Work Circle. We will establish one Work Circle and investigate its organization, operation, and accomplishments over time. A flexible Work Circle model, modified and refined based on our research, could become a central component in larger professional development and systemic reform efforts. A Work Circle is conceived as a vital and dynamic small organizational unit, engaging specialists, practitioners, and researchers in collaborative R&D. The partners on this proposal have worked in collaborative, project-oriented environments for many years, and know that focused teamwork can produce results. Within our existing R&D teams, we have experienced how the innovative collaboration of specialists and practitioners working on problems in authentic settings is the most powerful way to achieve solutions and support the mutual professional development of highly qualified people who can bridge the gap between research and practice. At this time, a more formal development of the model is needed, and this proposal describes our plan to research the accomplishments, structure, and dynamics, of Work Circles.

### **Assessment in Middle School Science**

#### **Goals**

This Work Circle has three interdependent goals: (a) to research assessment strategies that are effective and easy to use in middle school classrooms. In particular, the way the Berkeley, Evaluation, Assessment and Research (BEAR) Assessment System (BAS) (Wilson & Sloane, 2000) can be well implemented in middle school classrooms using inquiry-based science curricula, such as the Full Option Science System (FOSS), a K-8 comprehensive science curriculum program developed by the Lawrence Hall of Science. (b) to use this work as a vehicle to strengthen knowledge about how assessment practices and theories can successfully interact with content and pedagogy, and (c) to provide rich professional development for the several types of educational professionals who will be participating.

#### **Context**

This Work Circle begins when an instructional materials developer (Long) has a conversation with an assessment researcher (Wilson). Both are interested in finding ways to improve assessment practices in order to provide teachers with the information they need to improve science teaching and learning. They bring in a science education academic (Black), and a school district science coordinator or assessment/evaluation specialist. These members form the core of the Work Circle. Membership. The Work Circle core team refines the research and development questions that the Work Circle will work on, sets up an initial work scope, plans the curriculum and assessment strategies, establishes tentative meeting times and places, and a host of other logistical matters. Then they begin to recruit the initial team members. Besides themselves, these include a scientist (either from industry or UCB), a second instructional materials developer from LHS, and doctoral or post-doctoral students from GSE (one specializing in assessment or evaluation, another in science education or cognitive development), a school site administrator, and several more teachers from the school district, including

master teachers and their preservice teachers. The specialists and teachers are recruited with several criteria in mind. They are excellent professionals in their own right, with interest and enthusiasm for the sort of activities that are envisioned for the Work Circle, and they are reasonably close to one another geographically, so that meetings are not a burden.

### **Focus of Inquiry**

The core team establishes two central, but general, research questions:

1. How can assessment be better integrated into instruction in ways that provide teachers and students with evidence about student learning?
2. How can teachers and students utilize this evidence to move toward better understandings of complex science concepts? And at the same time as it is working on these directly, the Work Circle is itself a site for researching teacher and specialist professional development, so there is also a meta-research question:
3. How can the Work Circle serve as a site for professional development for teachers and specialists in terms of both content and pedagogical knowledge?

These questions provide the focus of initial discussions in the Work Circle. The questions are eventually refined and put in the specific contexts of the classrooms. Process. At this point the Work Circle begins its research. The anchor team (from GSE/LHS) strives to develop a professional environment of support and self-appraisal. Each member is expected to contribute to and be critical of the work of the group. The work advances based on an iterative work plan set by the group. A sample plan might include:

1. co-development and piloting of integrated assessment tasks in the classrooms of the Work Circle teachers;
2. field trials of instructional units with integrated assessment methods in a small number, say, five schools;
3. analysis of student work, and
4. developing strategies for "next steps" once the assessment information is available.

The assessment materials and associated instructional materials increase in effectiveness with each iteration of the workplan, to the point where the results are ready for dissemination to teachers through workshops and publications.

### **Outcomes/Products**

This Work Circle will produce a number of products (several types of new assessments, implementation approaches, "next-steps" strategies) as well as significant professional development. Major outcomes are as follows:

- Best practices for implementation of an assessment system, based on the principles of the BEAR Assessment System. The concepts and structures of the BAS as applied to FOSS have been tried out in many classrooms, and this has led to tremendous improvements since it was first proposed (1994-5). But there has not been the opportunity for the researchers and developers to work interactively with a group of teachers using the fully-implemented system. We hope to investigate the ways that the system can be made more accessible and

- useful to teachers and students in the classroom. There will also be benefits for continuing FOSS development, and for the schools and teachers involved.
- Each of the types of educational professionals involved in the Work Circle (teachers, specialists and researchers) will have the opportunity (a) to improve their skills in working in multidisciplinary and multi-layered teams, and (b) to understand the different specialist roles that they might themselves decide to move towards, and to try-out some of the activities of those roles. In particular, the researchers and trainee-researchers gain extremely important insights into the real world usage of their ideas and products. The several levels of specialists (including teachers) come to see how the research products are seen by the researchers, and can have a role in shaping them to be more useful in the classroom.