

## Research in Assessment Design

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### **Curriculum Development and the Role of Assessment and Measurement**

All too often measurement and assessment practices are not considered until after a curriculum project is completed. That means that assessments become an add-on feature, and as a result may be seen by teachers as not being an integral part of instruction. This project will focus on how measurement and assessment practices can, and should be, an integral part of curriculum development. It will explore and document practices that will lead to a model articulating how curriculum can benefit from measurement and assessment when they are part of development from the beginning of the process.

### **Project Partnership.**

The Full Option Science System (FOSS), a K-8 comprehensive science curriculum program developed by the Lawrence Hall of Science, has been informally working with the BEAR Center for several years to incorporate assessment/measurement into the practices of course development for middle school. FOSS has taken major steps toward incorporating assessment by identifying variables, incorporating them into an iterative process to help refine objectives and instruction, and gathering assessment data during trials that go beyond pre and post testing. But these practices need to be formalized and published for the benefit of other curriculum developers. This project will formalize the partnership between FOSS and BEAR, and document in detail assessment/measurement practices that should be a part of curriculum development in order to reap the greatest benefit for the learner.

### **Context.**

FOSS is about to begin the process of developing a middle school course on Force and Motion. BEAR staff will participate with FOSS staff in all phases of development:

1. Brainstorming sessions with experts in the field about the big ideas that middle school students should know about force and motion.
2. Research into what is known about student learning of these big ideas.
3. Brainstorming sessions about what activities (including hands-on investigations, assessment, readings, and multi-media simulations) will best help students learn these big ideas.
4. Trials of these activities in local middle school classrooms, taught by FOSS staff and observed by FOSS and BEAR staff. These trials will also include interviews and think-aloud protocols for possible assessment items.
5. Preparation of materials for national trials (teacher guide, student assessment materials, student readings, multi-media materials).
6. Data collection from teachers and students from national trials (20 to 30 classrooms).
7. Decisions about commercial publication of the course.

### **Focus of Inquiry—Research Questions.**

1. How can we make formative assessment a more integral part of instruction?
  - Does it need to be focused more toward the student and self-assessment, bringing in the teacher from that angle? (So it takes more class time, and less time out of class for teachers.)
  - Could technology play a part in making formative assessment easier for teachers to incorporate?

2. How can we best use quantitative data as well as qualitative data to review effectiveness of the instruction?

- How can the perspective of "Developmental Assessment" help inform levels of achievement? Set standards?

3. How can we do a better job of helping teachers interpret assessment data?

- How can teachers use this new assessment approach to address traditional assessment issues like grading, lesson planning and planning for individual progress?

**Outcomes/Products.**

The product that will be made available as a result of this project is a model for assessment/measurement/evaluation practices that can improve curriculum development.