SimScientists Assessments: Physical Science Links

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RESEARCH DESIGN
ASSessment Development (2012–14)
- Design and development
- Alignment and quality review
- Reflection activities
- Online PD
- Classroom feasibility testing

PILOT & VALIDATION STUDY (2015)
- Two samples of 5 teachers with 4 classes each, 500 students
  - Sample 1: Validate embedded, unit benchmark, pre/post, and year-end signature tasks
  - Sample 2: Post test and year-end signature tasks only

CROSS-VALIDATION STUDY (2016)
- Two samples of 40 teachers with 1 class each, 500 students
  - Sample 3: Full simulation suite
  - Sample 4: Post test and year-end signature tasks only

PHASE 1—ASSESSMENT DEVELOPMENT
DATA COLLECTION
- Alignment and quality reviews
  - Energy and Waves
- Classroom feasibility testing
  - 1 teacher, 5 classes, ~100 students
  - Two embedded assessments
- Benchmark assessment

ANALYSES
- Descriptive statistics
- Data mining
- Classical psychometrics
- IRT

EVALUATION
- Classroom observations

RESULTS AND PRODUCTS
- Evidence of technical quality
- Inform revisions to assessments
- Inform planning for reflection activities

CONTEXT
The SimScientists program is developing a multilevel assessment system for middle school science. This PSL project will create formative and summative assessments and companion classroom reflection activities for four of the most widely taught topics in middle school physical science: Matter, Motion, Energy, and Waves. The project is in the design and development phase that includes feasibility studies of assessments for Energy and Waves, conducted in the classrooms of two teacher co-developers.