

Proposal Concept Form

TEEM UP for K-12

Institutions: Arizona State University and Kansas State University and somebody in the northeast? We also plan to partner with a local science museum for each university.

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Area of Focus (in-service, pre-service, student outreach, etc.):
Student Assessment

Project Description:

We will develop and validate an engineering-related concept inventory to assess student preparation for higher education in engineering and technology. We will give these exams at partner schools in conjunction with state mandated tests on mathematics and science. By partnering several different institutions in different states with different demographics, we should get a more reliable and valid instrument than many current exams which are developed state by state. We will use this instrument both to inform students and teachers about student preparation and also to examine the correlation between items on state exams and preparation for science, technology, engineering and mathematics. Since the state exams are currently driving instruction, we hope to improve instruction by providing information to build better exams. We also plan to work with partner schools (or academies) and local science centers to focus on developing an engineering curriculum in the schools, using the instrument developed here to measure our success.

1. Needs Assessment (communities served)

Kansas, including urban and rural communities and also including one community dominated by a military base
Rural and Urban Arizona
Additional locations in other regions of the country

2. Project Background / Rationale / Supporting Research

We have issues with the state assessments that are driving instructions. The two biggest issues we felt were

- Assessments are usually aimed at the 8th to 10th grade level, prompting schools to focus on basics to the exclusion of the slightly more advanced material needed for success in STEM majors.
- Assessments are being developed state by state with insufficient testing for such a high-stakes exam.

3. Project Organization / Management / Partnerships

The project will build on successful partnerships already developed through Title II and NSF projects at Arizona State University and Kansas State University.

4. Specific Objectives

- Design an instrument that passes face validity tests that also overlaps with established psychometrically designed instruments (to generate appropriate probability estimates tied with national samples)
- Give the exam to at least 5000 students (over several years) in multiple communities
- Validate exam based on performance

5. Marketing Plan

Work closely with state education authorities
Work with partner schools
Make local presentations at state teacher meetings

6. Budget / Funding Strategy / Sustainability

Look for federal funding. We think this program is particularly well suited to the new Institute for Education Sciences in the U.S. Department of Education.

7. Timeline

2005 Obtain Funding
2006 Design Instrument
2007-2009 Give Exam
2010 Analyze Data
(Oh let's face it – we really have no idea right now what the timeline should be ☺)

8. Evaluation / Accountability

Statistical analysis of test results
Exam adopted by at least 4 districts per partner university