implications of Stakeholders' Different Values and Motivations for Scaling

Background Project The Innovative Technology in Science Inquiry (ITSI-SU: http://www.concord.org/projects/itsi-su) is an ITEST scale up of the highly successful ITSI project (ITEST Comprehensive, 2006-2010) where middle and high school teachers prepare diverse students for careers in IT by engaging them in exciting, inquiry-based science projects that use computational models and real-time data acquisition. Hundreds of teachers in Alaska, Kansas, Virginia, and Iowa are working with local support networks to use and build online science education simulation modules. Over 75 hours of professional development includes in-person summer workshops and two five-week online courses (fall, spring of each year).

To Scale ITSI-SU will reach 264 teachers over the first three years by developing master teachers who then recruit and train others. During Years 4-5, fee-based delivery will sustain and grow the project. All models and simulations will be freely accessible from the project website after project end.

ITSI Evaluation The evaluation was designed to focus on 1) efficacy of professional development distribution model and science education content, 2) reach of professional development as it extends through Years 1-3 and then on the local dissemination and training practices by master teachers, 3) adoption and sustainability practices after Years 1-3. Student content growth and career knowledge changes primarily measured by the project research team.

Reflective Changes Assumption 1: what worked during small scale will scale-up by increasing quantity of support to "cover more ground"

Change factor: common values cannot be assumed: value of STEM learning, value of technology education, value of STEM career. One size does not fit all.

Assumption 2: that we would measure quality, methods of delivery, strengths of, and viability of content, technology models, student science content increases and STEM career opportunities on the premise that the response of audience is dependent on the quality of goods sold (this seemed to work for ITSI).

Change factor: response of audience is very dependent on their local interests and needs, not just the developer's notion of value:

- **Alaska**: use of technology to provide online collegial support for STEM studies over extreme distances (PLC, peer review). They've invested heavily in infrastructure; interested in how it's used, not so much develop STEM workforce
- **Iowa**: provide an avenue to introduce core curricular activities in science online, increase overall technology use (recent technology investments)
- **Kansas**: promote and improve STEM education at K-12, undergraduate and graduate levels (big engagement with university pre-service programs, teacher pd)
- **Virginia**: implementation of new state science standards, integrating STEM learning, 21st century skills, and inquiry (technology infrastructure strong, in place for years now, not novel to them)

Result: we now have four lenses for technology integration, STEM learning, career-awareness, professional development

GROUP CONVERSATION

1. What is the central innovation of your project (software, professional development, specific curriculum, online course)?

2. What is the participant's motivation for engaging (local needs, district mandate, stipend, academic needs)?

3. What kinds of underlying research might be necessary to identify hidden motivations?

4. How might evaluation design take into account different values?

5. If you are considering scaling a project, what are the different values and motivations you might consider when designing an evaluation?

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