



## WHAT WORKS - AN ESSAY FROM THE COMMUNITY

# CHARACTERISTICS OF SUCCESSFUL STEM EDUCATION INNOVATORS

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Certain general personality features stand out as common to the successful STEM education faculty innovators... they are risk-takers and very hard workers. They make commitments and stick with them to the end. Many are inspired by a sense of mission. And they are savvy and persistent about obtaining resources, including moral and material support from proactive administrators and external funding agencies. They take pride in doing a good job for their students and often for their departments, disciplines and/or institution as well.

### Attitudes & Habits of Interpersonal Interaction

Many people... can, however, be described by the general characteristics listed above. Thus, while perhaps necessary, these general features certainly are not exclusive to successful STEM education innovators. That is, they are not defining characteristics. By contrast, I believe that unless a person has the characteristic attitudes and habits... discussed below, they will not be in this group of successful STEM innovators.

- ◆ Their identity as a scholar does not depend on placing themselves above other faculty members, academic staff, graduate students or undergraduates (Wilshire, 1990). Accordingly, they listen respectfully to students (“there are no dumb questions”), [they] strive to build on students’ questions and ideas, and quickly recognize and are delighted by the occasional startling insight that a student presents.
- ◆ These faculty not only are comfortable admitting to students when they don’t know something or made a mistake, but also value these situations as opportunities to engage their students in the kind of problem-solving that is central to the scientific process. These educators are at least as interested in teaching the process by which discoveries are made as the outcomes of those discoveries.
- ◆ They view students not as “outsiders” but as less experienced potential peers. That is, they trust students. Accordingly, they design their courses and interact with students with a “we’re in this together” attitude.... Viewing students as novice potential members of their communities, they include them in the real talk and real work of these “communities of practice” (Lave & Wenger). They therefore do not view maintaining constant control of the classroom as a virtue, but rather seek out ways to give students at least some decision-making power.
- ◆ In contrast to faculty who consider teaching a burden (“teaching load”) to be accomplished in the least amount of time possible, these individuals feel genuinely excited about students and teaching. They enjoy seeing their students learn, and take a certain pride in their students’ accomplishments. ■

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