

A Model for Building and Sustaining Communities of Engineering Education Research Scholars

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Source: 2006 American Society for Engineering Education Conference

The Institute for Scholarship on Engineering Education (ISEE) is an intense, interactive, and hands-on approach for impacting engineering education in a scholarly way. Three year-long Institutes, hosted by three different CAEE partner universities, are designed to engage both engineering faculty and graduate students as Institute Scholars.

The primary goal of the ISEE is to cultivate a diverse community of engineering education Scholars who can think and work across engineering and education perspectives with the ultimate aim of improving the engineering student learning experience. An additional goal in designing the ISEE was to develop an understanding of the Scholars.

Implications for Use of this Model

Adoption of the ISEE model has the potential to improve engineering education by increasing the number of engineering educators who can contribute to advancing engineering education scholarship. Given the growth in capacity-building efforts nationwide, a broad and significant impact of the Institute model is sharing what the team is learning from the ISEE about ways to build and support communities of engineering education researchers.

Method and Background

Common themes underlying the ISEE model are building a community of practice, identity development, and interactive feedback. The ISEE implementation strategy focuses on developing and/or enhancing the knowledge, skills, and attitudes necessary for Scholars to investigate engineering student learning, apply research to make a difference locally or nationally, develop community networks for long-term professional success, and contribute to advancing the scholarship of engineering education.

The ISEE cycle consists of five main phases: 1) designing and adapting the Institute model, 2) recruiting Scholars, 3) a week-long Summer Summit kick-off event, 4) academic year activities to support Scholars conducting their studies, and 5) a culminating Leadership Summit event. At various times throughout the cycle, extensive evaluation activities inform an iterative improvement process.

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The location of the Institutes rotates to a different host campus each year, providing opportunities for: robust investigation regarding the strengths of the model, areas for improvement, and flexibility in adaptation. Each implementation of the ISEE is influenced by the local needs and culture of the host university. For example, each ISEE adopted a theme of investigating learning environments as

research laboratories, but with differences in scope and intent. The benefit of the “lab” theme is that it promoted a view that all learning environments are laboratories for understanding learners and the learning process. The theme of the first ISEE was “class as laboratory,” for the second the theme was “campus as laboratory,” and for the third ISEE the theme was “nation as laboratory.”

The ISEE model also includes an evaluation plan designed and implemented by program evaluators from the Office of Educational Assessment at the University of Washington. The evaluators provided feedback for improvement of the Institutes and described the impact of the Institute on the Scholars as well as their potential impact on engineering education. The evaluators drew on a variety of techniques such as surveys, focus groups, observations, interviews and tracking of Scholars’ progress and outputs.

Lessons Learned During Development of this Model

While expanding the national community of engineering education researchers is important, Institute Scholars who were new to the field needed a local community of like-minded colleagues with whom they could give and receive feedback on work in progress. Also, engineering faculty participating in the ISEE often had difficulty with particular aspects of educational research.

Some of the strategies useful in helping scholars move past these barriers include:

- providing structured and formalized interactions throughout the year,
- using project plans as milestones,
- providing just-in-time activities addressing various research methods and educational theories,
- providing templates and guidelines for human subjects processes,
- using work-in-progress meetings to promote accountability and support feedback interactions,
- seeking resources and working with administrators to access resources,
- sustaining continued community building (outside ISEE in particular) to support motivation, and
- implementing activities on how to build social networks and how to communicate ideas to different audiences.

Design principles behind the ISEE model include:

- a tiered waterfall model for recruiting Scholar cohorts and building local community over time,
- a user-centered approach informed by evaluations conducted throughout the ISEE process to identify and address the challenges Scholars experience before or during the ISEE,
- a focus on learning contexts as “laboratories for investigation and impact” where Scholars have or can create the influence to enact change,
- interactive, community-centered and assessment-centered activities,
- creating a safe environment for open communication and feedback,
- both structured and informal activities for building community,
- completing the first phase of activity with a draft study plan, and
- recognizing that a focus on impact is a key motivation for participating in this community.