Engineering Equity Extension
Service Project Overview

2007 EEES Workshop
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Project Goal

To provide national extension services (similar to the agricultural community) to the pre-engineering and engineering communities, bringing together:

- expertise in gender studies
- the research base on science and engineering education
- practical skills in project management
Project Objectives

To increase teacher and faculty familiarity with the current and emerging knowledge bases on gender equity, engineering education, and project management in such a manner that they are inextricably linked in the minds of our target audiences.

Emphasis will be placed on teachers and faculty who may not be actively engaged in/pursuing gender equity activities.
Important Trends of EEES

- Operate in “stealth” gender mode when required
- Engage traditional players in engineering community
- Utilize a variety of tools (workshops, webinars, etc.)
- Work within existing structures and spread gender equity to all programs
Primary Targets

Academic preparation for engineering study for middle school students (grade 6) through collegiate sophomore levels

- The in-class social environment
- The out-of-class social environment
- Curricular content
- Curricular scope and sequence design
- Curriculum delivery and instructional style
Resources Provided to Teachers and Faculty

- Access to education research infrastructure of the National Academies
- Access to recognized Experts in gender studies in science and engineering—both in-person and via a “virtual helpdesk”
- Collaboration with national organizations to provide an infrastructure of Extension Agents on gender equity
Resources Provided to Teachers and Faculty

- Continuing long-term technical assistance via web-based, expert-mediated, and peer-led discussions and access to archived resources
- Development of a new handbook and workshops on the development of education project proposals and project management skills which will be offered at various national meetings of engineering faculty
Elements of EEES

Collaborating Organizations

Established national networks linked to classrooms and educational professionals from middle school through college with a vested interest in enhancing gender equity in engineering education

- ASME
- IEEE
- National Alliance of Partnerships for Equity (NAPE)
- Project Lead the Way (PLTW)
"Train the trainers" by offering equity-based training materials & curricula to member "Extension Agents"

Larger Community Of Early Adopters

Extension Agents

Larger Community Of Expert Researchers And Practitioners

Experts
Consultants on gender equity & engineering education

Clients
Teachers and faculty attending professional development workshops

Instruction that incorporates principles of gender equity

Students

Collaborating Organizations
ASME, IEEE, PLTW

Research

Practice

Virtual Support Network & Expert Consultations

Virtual Support Network & Professional Development Workshops

"Train the trainers" by offering equity-based training materials & curricula to member "Extension Agents"
Collaborating Organizations
ASME, IEEE, PLTW – “Train the trainers” by offering equity-based training materials & curricula to Extension Agents

Extension Agents
Members of Collaborating Organizations that run professional development workshops & activities

Clients
Teachers and Professors (Middle school through sophomore year of college) that have attended professional development activities run by Extension Agents

Students
Receive instruction that incorporates principles of gender equity

Advisory Committee
Project guidance & advice

NAE/CASEE
Project Administration & Coordination

Cambell-Kibler Associates
Develop training curricula based on each Collaborating Organization’s EEES plan

Experts
Gender equity & engineering education consultants provide assistance on a case-by-case basis, in person or online.
Elements of EEES

Virtual Support Network (VSN)

An electronic network linking Experts, Extension Agents, Clients, and EEES staff providing:

- expert knowledge modules--key lessons learned from gender equity, engineering education, and project management research and “best practices” knowledge bases
- periodic live web chats
Elements of EEES

Unified Program of Change and Exemplars

Experts

- Translate research to practice by discussing emerging and established research findings from research on gender equity and engineering education
- Training for Extension Agents/Collaborating Organizations will discuss the implications of findings for project design and implementation
Elements of EEES

Unified Program of Change and Exemplars

Have also sought exemplars that:

- Discourage potential legal or logistical challenges by demonstrating efficacy for multiple demographic populations
- Actively engage faculty as agents of long-term and persistent change through course creation and modification of instructional practices
- Are adaptable to a variety of contexts
Elements of EEES

Unified Program of Change and Exemplars

Initial exemplars identified from bibliographic resources:

- Pre-college activities
- Baccalaureate college bridge activities
- Hands-on team based freshman year activities
- Comprehensive undergraduate academic and academic support activities
Sustainability and Institutionalization

The products and activities generated by the project will be designed to remain useful to the engineering community long after the end of the project’s expiration:

- Extension Agent training manual
- Proposal Writing and Project Management Handbook
- Virtual Support Network which will be maintained for at least 5 years beyond the project’s expiration
Impact, Outcomes and Evaluation

Impact

The immediate impact will be on the professional development volunteers and professionals within the four Collaborating Organizations. Through a train-the-trainers model and provision of Expert services to Clients, we expect near-term measurable impact to encompass a significant fraction of engineering faculty and K-12 teachers who teach pre-engineering classes.
Impact, Outcomes and Evaluation

Outcomes

Ultimate desired outcome is to increase the enrollment, retention, and graduation of women baccalaureate engineers.

Within five-year timeline of project, short-term goals are to increase awareness of engineering careers by pre-college women and foster environments which promote the success of women in undergraduate engineering programs.
Impact, Outcomes and Evaluation

Evaluation

- Regular reporting of activities by Experts and Extension Agents
- Feedback gathered from those receiving advice and guidance
- Periodic site visits to Extension Agents and Clients

Methods consistent with those used in the Evaluation of the NSF Undergraduate Faculty Enhancement Program
Project Management and Oversight

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Catherine Didion, Project Director
Christina Vogt, Manager, Virtual Support Network
Patricia Campbell, Campbell-Kibler Associates, Inc., Curriculum Development
Karen Peterman, Goodman Research Group, External Evaluator
Goals of EEES Workshop

- Workshop should be interactive and collaborative.
- Re-affirm the train-the-trainer model.
- Establish relationships that develop beyond the workshop.
- Discussions are cordial and confidential.
- Take home - Template for Action Plan.
Goals of EEES Workshop
Continued:

- Panels focus on Needs Assessment Survey Results.
- Resources & Evaluation components are critical.
- Feedback survey of workshop will be emailed to you.
Needs Assessment Surveys

- Help Collaborating Organizations determine interests of their members they want to train.
- A starting point of engagement.
- Ideally a win-win situation with application beyond EEES.