STRENGTHENING WOMEN IN ENGINEERING PROGRAMS

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In this age of Total Quality Management (TQM) and quality circles, the concept of *strengthening* a Women in Engineering Program (WIEP) means to continue, maintain and enhance the program's quality in the midst of an uncertain economy, increased competitiveness for funds, and decreased institutional support. To strengthen a WIEP means to continually assess student needs and to modify programs and services to address those needs. It does not necessarily mean to add new programs or expand existing programs. To strengthen means to build a firm foundation of quality service in those programs already in operation.

Strengthening programs includes a focus on realistic and measurable expectations. It means attention to cost-effective human resource and financial management. To facilitate the ongoing process of strengthening a WIEP, this paper will outline specific strategies for optimizing the resources currently available to you. Specific attention will be given to the following topics: 1) Increasing visibility by building on-campus and off-campus support; 2) Increasing funding through collaborative efforts; 3) Developing training seminars and empowering student program assistants; 4) Maximizing available resources; 5) Establishing an advisory board; and 6) Evaluating the effectiveness of a WIEP and using it to strengthen your program.

INCREASING VISIBILITY AND BUILDING SUPPORT

I.   **On-Campus -** *Students, Faculty, and Administration*

    A. Involve members of the faculty and administration i.e. Dean, admissions staff in WIE conferences as speakers, session leader, greeters.

    B. Announce WIE activities in campus newspaper, newsletter and other publications.

    C. Co-sponsor events with student groups such as Society of Women Engineers, Alumni Office and Admissions Office.

    D. Circulate information on program evaluation and successes among participating staff, faculty, and students as well as other appropriate individuals.

II.   Off-Campus - *Corporations, Community School Districts*

    A. Write press releases to send to local newspapers about WIE activities and participating students.
    B. Publish articles in professional journals and magazines.
    C. Place announcements about WIE activities in newsletters published by professional organizations.
    D. Publish a newsletter to distribute to students, teachers, faculty and sponsors.
    E. Include WIE program evaluation in publications or letters to sponsors.
    F. Publish a brief annual report summarizing WIE activities and budget to use as fundraising and information piece.

INCREASING FUNDING THROUGH COLLABORATIVE EFFORTS

I.   Partnerships

    A. Collaborate with colleagues from other colleges and universities and submit joint proposals.
    B. Identify industry interested in developing WIE programs such as internships, mentoring programs and pre-college efforts.
    C. Identify school districts interested in developing programs for pre-college students.
    D. Develop programs with community colleges to encourage women with two year degrees to study engineering.
    E. Consider professional organizations and museums as co-sponsors of programs or research in support of WIE.

II.   Benefits

    A. Collaborative efforts often broaden the scope of activities.
    B. More resources are available when more than one institution is involved in programs.
    C. Wider impact is often the result of a partnership i.e. geography, number, target group.

III.   Liability

    A. Select your partners carefully.
    B. Specify scope of work for each partner.
    C. Determine if you can work well together.

CONDUCT TRAINING SEMINARS

I.   Develop More Effective Speakers, Mentors, Role Models

    A. Role play an effective presentation for potential speakers and mentors.

B. Provide list of discussions topics for speakers, mentors etc.
C. Create scripts on specific topics which speakers can edit.
D. Make videos available to speakers.
E. Provide background on participants, national statistics, and highlight research issues pertaining to WIE.

II.   Develop More Effective Instructors (Pre-college programming)

A. Provide background on participants i.e. academic background, stereotypes.
B. Assist in development of labs for pre-college students.
C. Provide specific format of lab and discussion for instructors.
D. Review program evaluations with instructors.

DEVELOP STUDENT PROGRAM ASSISTANTS

I.   Tasks

A. Students can write articles for WIE newsletter and campus newspaper.
B. Students can assist in data collection i.e. surveys, program evaluation.
C. Events can be co-sponsored with Society of Women Engineers.
D. Students can advertise upcoming events.
E. Students can be trained to be excellent speakers and role models.
F. Students can be employed as resident assistants for pre-college summer programs.
G. Students can learn how to conduct labs for pre-college students.

II.   Benefits

A. Students learn a variety of skills.
B. Involving students in WIE activities reinforces their own career decision.
C. Expands WIE staff at low cost.
D. Results in more effective WIE programming.
E. Builds support for WIE on-campus.

MAXIMIZE THE RESOURCES AVAILABLE TO YOU

I.   Development Office

A. Work with development office to establish contacts for funding.
B. Establish strategies for fund raising.

II.   Admissions Office

A. Assist in recruiting students for WIE pre-college programs.
B. Build support for WIE activities on campus.

III.   Marketing/Public Relations

    A. Press releases can be developed by public relations office.
    B. Contacts with media can provide visibility for WIE program.

IV.   Alumni Office

    A. Identify speakers through alumni contacts.
    B. Assist in identifying funding contacts.
    C. Co-sponsor programs to develop interest among women alumni.

V.   Placement and Co-Op Office

    A. Assist in developing corporate contacts.
    B. Assist in building external support and marketing WIE program.

ESTABLISHING AN ADVISORY BOARD

I.   Types of Advisory Boards

    A. Corporate representatives (external)
    B. Faculty representatives (internal)
    C. Combination of corporate and faculty
    D. WIE Program administrators (external)

II.   Benefits to a Women in Engineering Program

    A. Serve as external advocates for the program.
    B. Provide potential sources of funds.
    C. Suggest potential source of contacts to other companies.
    D. Serve as outside program evaluator.
    E. Assist in financial planning.
    F. Serve as internal advocate for program.
    G. Serve as mentors or be a source of mentors.

III.   Goals of a Women in Engineering Advisory Board

Corporate Board

    A. Provide guidance in programmatic goals.
    B. Evaluate the effectiveness of the program.
    C. Identify potential funding sources.
    D. Provide funding for the program.
    E. Serve as an advocate to other companies in seeking funds.
    F. Provide a perspective on industry needs and expectations.
    G. Serve as a credibility link to the Dean of Engineering.

Faculty Board

A. Provide guidance in programmatic goals.
B. Evaluate the effectiveness of the program.
C. Serve as an advocate to other faculty to increase participation.
D. Serve as advocate and credibility link to the Dean of Engineering.
E. Provide guidance in establishing programs to increase the number of females attending graduate school and pursuing academic careers.
F. Serve as mentors to students.
G. Disseminate information about the program.
H. Refer problem cases to the Director.

IV. **Selecting Advisory Board Members**

A. Identify companies that are recruiters of students from your institution.
B. Identify companies that are current or past contributors to the College of Engineering.
C. Identify companies in your local community and state.
D. Identify and select individuals to serve on the Board who have decision-making and budgetary authority.
E. Select both males and females and culturally diverse individuals to serve on the Board.
F. Identify individuals out-of-state who have the skills or experience to provide guidance in the operations and evaluation of the program.

V. **Activities of an Advisory Board**

A. Review and evaluate the program objectives, accomplishments, and future needs.
B. Assist in the preparation of strategic plans.
C. Provide and encourage the Dean to provide adequate funding for the program.
D. Meet with students to assess their needs to serve as role models, and to serve as contacts with industry.
E. Meet with faculty to encourage increased faculty participation in the program.
F. Provide advice on fundraising techniques as well as potential sources.

EVALUATING A WOMEN IN ENGINEERING PROGRAM

I. **Rationale**

A. Why is this evaluation being done?
B. What are the expected outcomes of the evaluation?

II. **Objectives of the Evaluation Study**

A. What will be the product(s) of the evaluation study?
B. What audiences will be served by the evaluation study?

III.   Description of the Program Being Evaluated

    A. Philosophy behind the program
    B. Content of the program
    C. Objectives of the program
    D. Program procedures (strategies, media, etc.)
    E. Students/Faculty
    F. Community (federal, state, local) and instructional context of program

IV.   Specify Measurable Criteria for Success

    A. Refer to your overall goal(s), e.g., to increase the retention of women in engineering.
    B. Refer to your specific objectives and timeline, e.g., to increase the retention rate of female freshman engineering students from 3% to 10% by 1995.
    C. Demonstrate that the objectives were:
        1. Realistic, in terms of time, money and community support;
        2. Cost-effective, i.e., worth the investment.

V.   Evaluation Design

    A. Constraints on evaluation design
    B. General organization plan (or model) for program evaluation
    C. Evaluative questions
    D. Information required to answer the questions
    E. Sources of information; methods for collecting information
    F. Data collection schedule
    G. Techniques for analysis of collected information
    H. Standards; bases for judging quality
    I. Reporting procedures
    J. Proposed budget

VI.   Description of Final Report

    A. Outline of report(s) to be produced by evaluator
    B. Usefulness of the products of the study
    C. Conscious biases of evaluator

       In conclusion, the concept of *strengthening* a Women in Engineering Program focuses on maximizing the utilization of resources currently available. It focuses on increased fundraising, on-going evaluation, networking, collaboration, quality services, empowering staff and student assistants, and cost-effective strategies for enhancing existing services. Strengthening a WIEP means total quality management and ultimately increased numbers of degrees granted to women in engineering.