

## PROGRAM EVALUATION: HELPFUL HINTS FROM THE SOCIAL SCIENCES

Lisa M. Frehill, PhD

New Mexico State University  
Las Cruces, New Mexico

Over the past several years, as more Women in Engineering (hereafter, WIE) and related programs have been initiated at college campuses across the country, program directors and those to whom they report have become increasingly interested in evaluating the efficacy of these programs. Emily Wadsworth has recently begun compiling information on a "Cadre of Evaluation Experts" for use by WEPAN members.

Program evaluation has become a separate activity - a sort of profession - within the social sciences due to the increased need for program evaluation since the 1960s. The methodologies of program evaluation are standard research practices from the social sciences, but with an emphasis on the special problems faced by applied researchers who must work in the "real" world rather than the "ivory tower" world of academia.

Although there are a few graduate level programs in program evaluation in the U.S., most program evaluation experts are drawn from the ranks of the social sciences or from education and business schools. There are several professional journals dedicated to program evaluation as well as a professional society. Although comparatively speaking program evaluation as a discipline is still quite young, program evaluators have recently (within past 15 years) turned more attention to program evaluation theory.

Table 1 gives an overview of approaches to program evaluation. Today's workshop, based upon an extensive review of the program evaluation literature, will not review theories of program evaluation. Instead, the focus today is upon methods of evaluation, with ideas about how to incorporate evaluation into your programs.

### Summative and Formative Evaluation

A major distinction within the program evaluation literature concerns summative vs. formative program evaluation. Summative evaluation is when a program is evaluated after clients have been served and some number of program cycles have been completed. "Summative evaluation relies on retrospective findings that test deductive hypotheses about program interventions and outcomes and yield findings that can be generalized to other comparable programs."<sup>5</sup>

Formative evaluations, which often bear a variety of rubrics (developmental evaluation is another common term used in the literature) are mechanisms incorporated into the framework of a program. Formative evaluation "is a more inductive, program-based, theoretical approach that is concerned with findings while the program is in operation, primarily for the purpose of modifying and improving program efforts, effectiveness, and efficiency."<sup>5</sup>

### Tools for Evaluation of Women in Engineering Programs

According to an evaluation of women in engineering programs in the U.S. conducted by Brainard et al (1993), there were four basic kinds of services offered by the 26 women in engineering programs surveyed: counseling/advising, seminars, support group meetings, and scholarships/fellowships. Furthermore, the WIE programs reviewed by Brainard et al indicated a range of target populations, from students of various ages through faculty. Given this information, evaluation of WIE program effectiveness needs to:

- be tailored based on the kinds of programs offered.
- reflect the target audience of the programs.
- assess multiple levels of stakeholder goals.
- provide reasonable proof that various indicators of success are a result of the program rather than some outside factor.

Table 2 gives some ideas about methods of evaluating the services provided by WIE programs.

### Formative Evaluation and WIE Programs

By incorporating program evaluation into your programs, many questions can be answered that will help you in making continuous improvements to your program and provide necessary quantitative and qualitative data that can be included in a summative evaluation.

#### Referral:

How do people learn about the program?  
Are we able to attract the people who really need help?  
Are there people who could benefit whom we miss?

#### Intake:

Who seeks our assistance and why?  
Who does not seek our assistance? Why not?  
What are our clients' "baseline" measures on key features we hope to improve? (Study habits, grading, self esteem, etc.)  
What are our clients' expectations about the program?

#### Intervention:

How do our clients experience our program?  
What do program staff think about the merit of the program for clients?  
Are clients' features changing relative to the "baseline" measures?  
Why or why not?

#### Program Completion:

Have our clients gotten out of the program what we had hoped?  
How do we measure success? Failure?

#### Follow-Up:

After some period of time are our clients still able to \_\_\_\_\_? (Fill in the blank with some desired behavior you wanted clients to learn or improve by participating in your program.)



### Quantitative Methods: Surveys

There are several common mistakes in survey research. In short, use of non-random samples and poorly constructed survey instruments are the two top problems. Just as there are accepted standards for conducting research in science and engineering, so too in the social sciences are there accepted ways of conducting surveys. The primary difference is that because people feel like they are more familiar with surveys - they have often completed surveys or read of them - they think they know how to do surveys. Hence, there's quite a bit of survey research that is very poor in quality. Because of poor quality surveys, it is often difficult to convince people of the results of well-constructed surveys. A brief list of "Survey Do's and Don'ts" follows the text of this paper.

### Qualitative Methods

Qualitative researchers trade off breadth for depth. Sampling, for example, is often purposive rather than random. Instead of choosing a random sample of respondents for a brief questionnaire, qualitative researchers are more likely to select a few cases. There are a variety of schemes about how to choose cases reviewed in this literature.

### Ideas for qualitative information to maintain:

- Request that students write a paragraph about the session after each counseling session.
- Use peer debriefing after seminars or advising to do qualitative interviewing.
- Use focus groups to evaluate seminars and other services.

### Client File Maintenance

An important lesson you can learn from social scientists concerns maintenance of client files. The key question is then: what do we keep in client files? Analysis of client files can be very useful in program evaluation. However, it is essential that information from various sources be included to make this technique effective. Hard copy files or a computer database can be maintained.

1. Intake form.
2. Section for comments from counselor/advisor.
3. Periodic documents: eg. grade reports.
4. Baseline measures.
5. Client paragraphs about services.
6. Follow-up measures: additional contact with client after "completion."

### Program Evaluation: Using Outside Consultants

First, decide whether or not you need an outsider. For example, there may be political/organizational reasons that make it preferable to get an outsider or you may not feel comfortable with the methods to do the evaluation yourself. However, since ethical issues can sometimes be a source of contention between evaluators and the social service agencies that contract for their services, you should familiarize yourself with the procedures on your campus for using human subjects in research.

If you use a consultant, solicit bids via formal request for proposals or request for contracts and make sure you get an explicit contract that specifies the work to be done, deadlines and report format. Also, the program evaluator should keep you informed of the progress (s)he is making in evaluating your program.

**Survey Do's and Don'ts****DO**

Select a random sample.

Pre-test your survey.

Assure better response:

- \* Include a cover letter.
- \* Include a SASE.
- \* Follow-up - twice.
- \* Phone rather than mailed surveys.
- \* Keep survey short & uncrowded.
- \* Avoid embarrassing questions.
- \* Assure respondents' confidentiality.
- \* Survey purpose clear to respondents.

Set up your survey form for ease of computer entry of data.

Analyze effects of non-response.

Know when to consult "experts" on a survey. Seek out free advice.

**DON'T**

Use convenience samples.

Let respondents choose themselves.

Write up a survey and administer without any regard to question wording, ordering effects, clarity, etc.

Send a questionnaire w/out an i.d. number. You must track for proper response rate info.

Wait to receive completed surveys to pay attention to coding.

Assume that your respondents are representative.

Stakeholders	Questions to be Answered in Program Evaluation	Preferred Methods of Evaluation
High-level policy and decision makers	Are desired outcomes attained and attributable to the program? Is this program the most efficient alternative?	Quantitative: experiments and quasi-experiments, causal modeling, cost-benefit analysis.
Mid-level program managers, administrators and other decision makers	Which parts of the program work well and which need improvement? How effective is the program with respect to the organization's goals? How effective is the program with respect to the clients' needs?	Eclectic, mixed: structured and unstructured surveys, questionnaires, interviews, observations.
Program directors, staff and clients	How is the program experienced by various stakeholders?	Qualitative: case studies, interviews, observations, document review.
Clients, client communities and other "powerless" groups	In what ways are the premises, goals, or activities of the program serving to maintain power and resource inequities in the society?	Participatory: stakeholder participation in varied structured and unstructured designs and methods, historical analysis.

Table 1. Approaches to Program Evaluation (Source: [6])

Type of Service	Evaluation Questions	Some Recommended Methods
Counseling/ Advising	<p>1. Does the client feel that the advice/counseling received was helpful?</p> <p>2. Does counseling and advising improve the chances that a student does stay in engineering? (A more general question: does the advising meet the goals specified?)</p>	<p>Quantitative: client file review and collation with registration records.</p> <p>Qualitative: client file review.</p>
Seminars	<p>1. Does the target audience attend the seminar?</p> <p>2. Does the seminar produce the desired behavior in the target population?</p>	<p>Quantitative: phone surveys.</p> <p>Qualitative: focus groups of seminar participants.</p>
Support group meetings	<p>1. Do support group participants feel that the group experience was helpful?</p> <p>2. Does participation improve the chances that a student does stay in engineering? (A more general question: does the advising meet the goals specified?)</p>	<p>Quantitative: longitudinal comparison study.</p> <p>Qualitative: semi-structured interviews or surveys; observation; etc.</p>
Scholarships /Fellowships	Does the scholarship or fellowship produce the desired effect?	Quantitative: longitudinal comparison study.

Table 2. Recommended Methods of Program Evaluation for WIE Programs

**Program Evaluation: Partial Bibliography**

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