

## STAYING ALIVE: HOW TO INSTITUTIONALIZE YOUR PROGRAM

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Conceptualizing a Strong Program by "Redefining Reality"

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We were invited to give a session on Iowa State University's Program for Women in Science and Engineering because it presents a different model from the more typical engineering-based program. Because our program reaches across disciplines and colleges within the university, encompassing both engineering and the sciences, and also reaches across the state of Iowa through our advisory board and programs, we have become institutionalized at the university level. This proximity to public relations and media professionals has increased our visibility and has made us less vulnerable to budget cuts and other political changes that often occur within colleges.

We will tell you how we built our program, which is dependent on the contributions of many persons and both internal and external funding. Before we do that, however, I hope you will allow me a few minutes to discuss our program from a theoretical framework. I believe it will help us look at our programs from a broader perspective.

I have an M.S. in industrial engineering and am currently a Ph.D. candidate in sociology. I find one particular sociological theory very useful in conceptualizing our program. The theory—phenomenology, or the sociology of knowledge—is based on the work of Peter Berger. The basic tenet of phenomenology is that reality is socially constructed. People and groups act on the basis of their subjective interpretations of events.

The socially constructed reality that we all deal with every day is that "girls can't do science and math." This perceived reality confronts us as we try to recruit female students into our science and engineering programs and as we see them treated inappropriately in our institutions by students, faculty, and staff who also believe that girls can't—or shouldn't—do science and math.

That perception is the basic problem that we are all dealing with every day. Fortunately, phenomenology posits that at some points, dominant interests, those ingrained in our social structure, can be challenged to the extent that alternative definitions of reality may be put on the agenda to motivate new patterns and actions. And that is basically what those of us here are all about: we are trying to redefine reality.

It takes a lot of people and a lot of actions to redefine social reality. We must accept the fact that none of us can do it by ourselves. We must act like we believe the new reality, we must publicize it continuously, and we must build alliances. We are doing that on the national level as we network here. But we

have to do it within our own states and on our own campuses. And that is what we have done at ISU that is helping us institutionalize our program.

Here are a few general strategies that have worked for us:

1. **Identify those people on your campus and within your state who are in philosophical agreement with you.** Give them ownership of your program by asking for their help and giving them credit for their successes. Sometimes this means letting them try things that you don't think are really good ideas. It always means giving up some control.
2. **"Entice" people who are "trainable" to participate in your programs and then publicly acknowledge them when they do participate.** At ISU a small graduate student scholarship program helps faculty recruit new female students. Faculty nominate students and if their students are selected for scholarships, both faculty and students attend an awards luncheon where they are recognized in front of our provost and deans. After they have been recognized, they are more likely to participate in other programs.
3. **Project the image of a successful program because success gets rewarded.** Here's how:
  - Sponsor good, solid programs both on and off campus.
  - Define your constituencies broadly to include students, parents, community leaders, and educators. Define educators broadly to include those at universities, those at four-year and community colleges, those within the K-12 system, and educators within your state department of education.
  - Generate lots of publicity.
  - Recruit good students.
  - Have people external to the university tell university administrators how good your program is.
  - Bring in external funding.
4. **Build a program that is curricularly broad based.** By including the sciences as well as engineering, we have access to resources from other colleges and from the university administration. We also can work with allies across the entire university. Our program also focuses on providing services, rather than recruiting students, which enables us to expand our sphere of influence on campus.
5. **Expand your sphere of influence beyond the campus.** This means developing a formal and informal political base within your college, at the university level, and within your state.

#### Program Initiatives at Iowa State University

Myrna Whigham

Coordinator of Women's Programs in Science and Engineering (ISU)

Now that Mary Ann (Evans) has us thinking about some of the theory and strategies involved in a successful program, I would like to give you some of the specifics about our program at Iowa State. First I will discuss our organizational structure and how we utilize the expertise of people in each of those divisions. Next I will briefly discuss some of the programs we have implemented to try and reach our goal of "changing reality."

We have a committee for women in science and engineering on our campus. This committee has a diverse composition: faculty, academic advisors, research assistants, an associate dean, a retired dean emeritus, editors, administrative assistants, a budget analyst, and others. They come from all over the

university but are all interested in "changing reality." How does this group help us? I cannot begin to tell you the ways. By having writers and editors on our committee, suddenly our program started getting publicity in all the university publications; women engineering faculty are getting featured in an alumni publication, and women student scientists are pictured in the newsletter to prospective students.

Let me tell you about one woman research assistant and how she has helped us. She contacted an excellent private college in our state. She arranged for three of our women faculty to go and give seminars on their campus and host a meeting after the seminar for the women students on that campus. The goal was to attract the women students from the private college into our graduate programs. Our office was contacted only to pay the mileage expenses. All the arrangement work was handled by this committee member.

Committee members are constantly involved in many activities such as reviewing scholarship applications and summer intern applications. It would take a large staff to accomplish all the things that this committee does so well on a volunteer basis. The networking that occurs among these women is also very gratifying and productive.

We also have an external advisory board composed primarily of corporate and educational leaders in the state. (Mary Wiberg will discuss the importance of external involvement in a program.) This board gives us suggestions and directions for our programming. They are valuable in our fundraising effort. The governor's press secretary is also our publicity chairperson. We read and hear about ourselves constantly in the state of Iowa. The chair of our advisory board is also vice chair of the Iowa Economic Development Board and is very involved in the Iowa Small Business Association. She has given us access to political leaders and business leaders throughout Iowa. The advisory board has been very important to us.

We also work with the Iowa Department of Education staff. (Mary Wiberg will explain how we interact with her program, the math and science consultants, the vocational technical people, the community colleges, and the area education associations.)

The actual program office staff consists of me, one full-time secretary, one half-time graduate assistant, and three students who work approximately 12 hours per week (more when class is not in session.) Mary Ann Evans is an Assistant to the Provost at ISU; I report to the provost through her. (She is budgeted to the program for 15% of her time.) My salary and that of a clerical person are paid by the Provost's Office, which provides current expense money. The engineering college provides current expense money and office space. I also report to the Associate Dean of the College of Engineering.

This is a sampling of our activities since the program began:

- Career conferences on our campus are held each spring for approximately 1,000 students, parents and educators. In addition to career speakers, special sessions are held to inform parents about the underrepresentation of women and minorities in science and engineering and about some of the strategies they can employ to assist with the problem. In addition, we sponsor similar conferences on two community college campuses.
- In January 1990, the Program for Women in Science and Engineering held, for the first time, the Governor's Conference on Women and Minorities in Math and Science. This conference attracted more than 400 participants including K-12 teachers, school administrators, legislators, post-secondary educators, business and industry leaders, and science and engineering professionals.
- During the morning of the one-day conference, the problem was defined. Jacquelynne Eccles discussed the psychological factors that contribute to women's underrepresentation in scientific careers. Betty

Vetter spoke of how we must start using more than half of America's talent pool to meet our technological needs in the workplace. Shirley Malcolm spoke about the need for intervention programs for women and minorities. I analyzed technical courses and curricula by gender enrollment in Iowa's K-12 and post-secondary schools.

- The afternoon sessions addressed the programs that work in schools to solve the problem. Special sessions were held for practicing professional scientists and engineers. They became very excited about assisting with our efforts in their own communities. The problem of underrepresentation of women and minorities in math and science is too complex for one person or program to have an impact. By bringing together a diverse population and making them aware of the problem and solutions, much can be accomplished.
- Two summer internship programs give high school senior girls and undergraduate women from private and public colleges and universities the opportunity to work with mentors in ISU science or engineering research laboratories. The internship experience includes group seminars and activities, the preparation of a final report, and for high schoolers, a presentation to the home high school on return.
- The videotape, "A Job Like Mine: Profiles in Science and Engineering," features seven Iowa women working in widely diverse jobs in non-traditional fields. The 21-minute film is intended to be a career development resource for middle and high school students. Another 17-minute career video targeting parents, educators, and community leaders is titled "The Right Kind of Toys." It was funded by a grant from the American Association of University Women.
- A database directory of Iowa women in the fields of science, mathematics, and engineering identifies resource women who have agreed to serve as mentors and role models.
- A speaker with an exhibit travels to state and education conferences to inform educators on how to encourage and support female students interested in scientific, engineering, and technical areas.
- Staff and faculty development workshops in the area of gender and ethnic equality have been offered and will expand with continued funding. During summer 1989, K-3 educators received activity-based science instruction and gender/ethnic awareness training. Three Gender/Ethnic Student Achievement (GESA) workshops provided three-day programs that examined five areas of classroom disparity and trained educators in research-based instructional strategies to eliminate these disparities. The workshop prepared educators to present GESA training to staff members in their home schools.
- Funding for these programs occurs from a variety of sources. We build programs to do specific things, but we always keep in mind that the goal of any of our programs is *to redefine reality*.

#### External Efforts to Redefine Reality

Mary Wiberg

Vocational Equity Consultant

Iowa Department of Education

How many of you are familiar with the Carl Perkins Vocational Education Act? Passed in 1984, this federal legislation includes set-asides to serve women who are disadvantaged, handicapped, and incarcerated; help adults in need of training and retraining; assist single parents and homemakers (8.5 %); and help eliminate sex bias in vocational education (3.5 %).

Since 1976 the federal law has also specified that each state will have a sex equity coordinator for vocational education. That person is responsible for administering the two set-asides. In Iowa, I am that person. In our small state, this act amounts to \$1 million spent annually on women and girls.

Vocational education is defined as education requiring less than a baccalaureate degree and that prepares one with occupational training. Usually we think of home economics, business education, vocational agriculture, industrial arts—now called industrial technology—and many health occupations. You may also remember when girls took “home ec” and boys took shop, and that they were not allowed to enroll in the other program. That kind of blatant sex discrimination ultimately led to the establishment of the sex equity coordinator position. Today vocational education offers hands-on opportunities that prepare girls for careers in engineering.

While much of vocational education is occupational training, another component of it is career exploration. True career exploration cannot be limited to looking only at the basic vocational education courses. Thus, the kind of program for which ISU has targeted girls in grades 6-12 is an appropriate project to fund with vocational education dollars.

One has only to look at the changing technology at all levels, whether in vocational education, or in science and engineering programs, to see that *all* students preparing for the world of work in these areas need to have a base of math and science in order to succeed.

As you build your program, I would like to stress *inclusivity*. By being inclusive you increase available resources and your sphere of influence. I will illustrate this by describing representation on the ISU advisory board.

The advisory board includes three women who are or have been members of the Iowa Commission on the Status of Women. I serve as Vice Chair of that commission and have just completed three years as President of the National Association of Commissions for Women.

As part of the whole women's movement, I know what we are ultimately concerned about is economic self sufficiency for women. The ISU project and other projects that focus on math, science, nontraditional, and high-wage occupations provide one very important way for more of tomorrow's women to be economically self sufficient.

Women's organizations such as the AAUW and the BPW have a strong interest in helping with math and science initiatives. They are represented on the advisory board and bring back to their local and state organizations support for ISU projects. These organizations are wonderful volunteer resources in helping with programs. Most of their members are college educated and are often willing to invest time and effort on programs that can make a difference.

The Iowa Department of Education is heavily involved in the Advisory Board. Either their science or math consultant serves as a member. They provide links for the program to K-12 math and science teachers statewide. Through them, Myrna (Whigham) has spoken at science and math supervisor/teacher meetings and has gained knowledge about other projects going on in Iowa (and has even had access to free mailing labels!).

Since both the science and math consultants are men, they have benefited from a great deal of consciousness-raising about issues of concern regarding women in science and engineering. The science consultant says he believes this is one of the best programs he is involved with.

An administrator from the Bureau of Instruction and Curriculum also serves on the board. If systemic change is to be accomplished, we must include in the planning for those people who help design statewide curricula. When they buy into what we are doing, they talk about it for us—and they build our ideas into their projects.

Through advisory board members, Myrna has established other links to the Department of Education. Because vocational education funding has been used for part of this program, she has established a good relationship with the industrial technology consultant.

Myrna has made presentations to teachers. (Remember that many of these programs are the most sex segregated in vocational education.) Their response was overwhelmingly positive; they gained a new view of what discourages girls and of what the "chilly climate" is and how to warm it up.

The department consultant thinks it is a coup that Myrna agreed to serve on a technical committee which is working to write guidelines for implementation of new state legislation regarding standards for vocational education. And he is excited that equity will be written in comprehensively.

The various education systems need to be viewed as complementary, not competitive. Iowa's community colleges and private four-year schools not only feed into the university science and engineering projects; they are also resources for students across the state in terms of nontraditional vocational education and solid four-year science and math programs. There is no way ISU could meet the needs of all the students these institutions are reaching. In addition, to further impact girls and young women in the state, the 15-school community college system offers wonderful potential for replicating the non-traditional career conferences.

Without really calling it "politics," much of what I have been talking about is politics. I choose to interpret this as a *good word*. To me it means doing those things that smooth the way to get what we really want done—lubricating the wheel, if you will.

When we are inclusive—whether of other departments, organizations, colleges, or universities—we build great political support for our goals. When we allow people from these groups to *own* part of our project, we increase its impact. From my experience in reviewing, funding, and administering grant programs, I know that those with ownership shared among many people are most likely to be successful in reaching their identified goals.

Thus, while the initial purpose of ISU's project may have been recruitment of women into ISU's own science and engineering programs, by building and promoting wide ownership of the project it has become much more than that.

I support this project because its *real* goal is equity for girls and women. As it unfolded, the recruitment objective became only a small part of a much larger project. We know that ultimately the recruitment objective will be met.

### What Can You Do?

Ask the sex equity coordinator in your state about funding cycles and criteria. What is appropriate for your program? Find out who is currently funded in the community colleges and secondary schools. Contact them and see how you can work with them on nontraditional programs.

And remember that when we are inclusive, we build great political support for our goals.