A look back on the 2009-10 academic year and a glimpse of what’s to come...

Program for Women in Science and Engineering

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Corporate Sponsors
Alcoa Foundation
Emerson Process Management
John Deere Foundation
Pioneer
Rockwell Collins

Services Provided
K-12 and Community College Outreach
Taking the Road Less Traveled Career Conferences
Student Role Models
GirLinks e-mentoring
Scholarships
Special Transfer Visits
Individual group visits with prospective students

Success/Retention
WISE Learning Communities
Sophomore Success Seminar
Scholarships
Undergraduate summer research program
Support for student organizations
Academic support programs (help sessions, tutoring)
Leadership development programming

Resource to Others
Leadership on committees for other STEM or gender issues on campus and statewide
Involvement with other programs/grants on campus: NSF Advance, Women’s Leadership Consortium, Learning Communities, etc.

The Program for Women in Science and Engineering (PWSE) will enrich science, technology, engineering and math (STEM) fields by engaging more women, creating the opportunity for a more competitive and diverse state, national, and global workforce.
A Word from the Director

The past year in PWSE can be summarized by the phrase “Progress in the face of change and adversity.” If you were to ask the staff members to describe the last year, the first comment might be “whew, we survived.” However, when you take the time to reflect, we really did continue to make progress in spite of many challenges.

So, first, some of the challenges during 2009-2010:

- Mid-year budget reversions that caused faculty/staff to take furlough days.
- The mid-year retirement of our support staff person, with a hiring restriction of not being able to replace the person.
- Difficult planning and decisions made for upcoming years, when it is anticipated that the budgets may be even tighter than this past year.
- The first year of lowered career conference fees, due to the Iowa Court ruling related to students paying for field trips.

In spite of all this, we continued to make progress on our overall mission and strategic plan. Exciting items from 2009-2010:

- Fall 2009 – we once again set records for highest percentage and total number of undergraduate women in STEM
- Demand for WiSE Learning Community Learning continues to grow; program reputation is drawing students in at record numbers with minimal marketing.
- Demand for K-12 outreach programs remains very strong – thousands reached via career conferences and student role model visits.
- Tremendously strengthened many partnerships and offered new programming from these partnerships:
  - Partnered with Iowa Department of Education to offer gender equity programming for community colleges and instructors of Project Lead the Way
  - Partnered with Western Iowa Tech to offer a Taking the Road Less Traveled career conference in Sioux City for 294 participants, with funding received from the Iowa Math and Science Education Partnership (IMSEP)
  - Partnered with the College of Engineering to develop and offer training with diversity focus for peer mentors in College of Engineering and PWSE learning communities.
- Partnered with the Iowa Department of Education and the Women in Science and Engineering Program at the University of Iowa to submit an NSF research proposal related to transfer women in STEM. (Still don’t know if we will be funded, but even pulling together the group/ideas will start us down the right path.)
- Raised awareness among other groups/organizations/individuals about the importance of continuing to focus on the issue of increasing participation of women in STEM
  - Participated in the development of a statewide STEM strategic plan for the governor’s office
  - Partnered with IMSEP to highlight female engineer in (non-traditional) role in their poster series
  - Provided input into the annual report to the state legislature on the status of women and minorities in STEM

Our ability to continue to make progress in very trying financial times is a testament to the staff members of PWSE and our many partners. It would have been easy to say, ‘we just can’t do anything new/more’ given our staffing and budget issues. Instead PWSE had another amazing year of progress and service to students. It is truly an honor to work with the faculty, staff, students, partners, and advocates associated with PWSE.

Karen Zunkel, PhD
Director

2009–10 by the Numbers….

- 3177 registrants for Taking the Road Less Traveled Career Conferences for 6-12 grade girls, parents, educators
- 225 first-year students participated in the WiSE Learning Community
- 8,945 individuals reached by outreach programming during the year
- 31 students participated in the Sophomore Success Course (U ST 201x) with many more participating in second-year activities, including job shadowing, etiquette training, and industry tours
- $25,200 in scholarships for women in science and engineering
- 31 undergraduates involved in summer research program
- Over one-third of STEM bachelor degrees awarded at ISU in past year awarded to women
- 60 Learning Community students and peer mentors participated in the annual WiSE Leadership Conference
- 5,518 K-12 students reached by Student Role Model program with an addition of 21 new teachers and 10 new schools
- 3482 students receiving updates from PWSE
- 33.0% of the undergraduates enrolled in STEM fields at ISU were women
- PWSE staff met with 210 prospective students (total of over 520 visitors including family members) during the year.
- Over $800,000 – largest single gift in PWSE history received this year – will be used for student scholarships
Outreach Programming Highlights

Outreach Partnerships
PWSE continues to collaborate with programs across the state to offer experiential activities to stimulate the interest in STEM fields among Iowa youth. Examples of program partners and resulting programs include:

- Iowa Mathematics and Science Coalition -- develop, plan, and coordinate the Iowa Student STEM Conference.
- Iowa Commission on the Status of Women - a statewide essay contest about historical women in STEM.
- Technology Association of Iowa – statewide recognition of women achieving excellence in innovation in technical fields via the Women of Innovation awards program.
- Moingona Girl Scout Council to provide day-long experiences for Girl Scouts and Brownies (GEMS and BEST).
- Girl Scouts of Iowa, Linda Bisgaard, Director of Collaborations and Advocacy – discussions on developing an Iowa component of the National Girls Collaborative Project.
- State Science and Technology Fair of Iowa – awards highlighting innovation and creativity.
- NW Iowa Extension - Robotix train the trainer program facilitated by our Student Role Models.

Career Conferences
PWSE has been sponsoring Taking the Road Less Traveled career exploration conferences for girls in 6-12 each year since 1987. Seven conferences were offered during FY10. The conference format includes career exploration workshops led by women working in science, engineering, and other technical fields; tours of ISU labs and facilities; and special sessions for parents and educators. This year 3177 participants attended the conferences. In response to addressing the overwhelming number of participants wanting to attend the conferences and our commitment to collaborating with community colleges, we had applied and received an Iowa Math and Science Education Partnership (IMSEP) Grant to partner with Western Iowa Tech Community College (WIT) to host a Taking the Road Less Traveled Conference in Sioux City, Iowa at the Sioux City Convention Center on November 3rd. Two hundred and ninety-four students attended the NW Iowa TRLT in November resulting in the total number of overall participants reached since 1987 to 50,378. Based on participant feedback, we are looking into the feasibility of changing the format of the conferences slightly to include four – 45 minute sessions rather than five – 35 minute sessions. Each presenter will include some aspect of a hands-on or interactive component.

Student Role Model Program
Created to encourage K-12 students’ interests in science, technology, engineering, and math (STEM) fields, the Student Role Model program offers exciting challenges through hands-on activities facilitated by ISU undergraduate student role models. Through this program, undergraduate students majoring in a STEM degree program visit classrooms, community centers, and school fairs across the state. The role models visited 109 schools during the 2009-2010 year and reached 5518 students (including 2823 female (51%) and 1033 (19%) minority students). There is no fee for the requesting school or organization, but the teachers are encouraged to complete a short evaluation of their experience with the ISU student role models.

GirLinks@iastate Mentoring
GirLinks has historically been an online, e-mail-based mentoring program that matched high school girls or female transfer students interested in science, technology, engineering, and math to ISU undergraduate students majoring in similar fields. Realizing that high school students communicate more via Facebook than e-mail, we added a safe, secure Facebook option for students last year. During the 2010-2011 year, we will be evaluating Girlinks to determine if we are using the most effective means to answer questions posed by the high school and transfer community students, and if not, what that method of communication and/or response might look like.

PWSE Ambassador Program
The PWSE Ambassador Program began last year and included 13 undergraduate WiSE women who volunteered time to participate in Experience Iowa State (EIS) days, were an integral part of prospective student visits, and represented PWSE at events and conferences. The Ambassador coordinator was a paid position and led by a senior WiSE student who also had experience as a peer mentor. Both the PWSE staff and the ambassador volunteers felt that the inaugural year for the program went very well. It was of tremendous benefit to have a current student share their experiences in WiSE and as an Iowa State student during a prospective visit. The plan is to continue with the PWSE Ambassador program during the next academic year – minus the paid undergraduate coordinator position.

Community College Initiatives
PWSE continued to develop initiatives and connections with Iowa community colleges, to better serve transfer students and also have a greater impact across the state. Developing relationships with students and faculty/staff in community colleges is key to the success in these efforts.

- PWSE staff members were once again key partners in the National Science Foundation SEEC grant that has created a partnership between ISU’s College of Engineering and Des Moines Area Community College (DMACC). PWSE staff and students visited classrooms and events on multiple DMACC campuses this year as a part of the program.
- PWSE continued to offer special sessions for female STEM transfer students who attended campus visit programs hosted by the Office of Admission (for transfer days and APP program days).
- PWSE staff visited Marshalltown Community College in fall semester 2009, meeting with all the science and math faculty and staff members.
- PWSE partnered with Western Iowa Tech to host a career conference in Sioux City in November 2009.
- PWSE partnered with the Iowa Department of Education, Community College Division, to offer training at Kirkwood Community College as a part of the NAPE STEM Equity Pipeline Project.
- PWSE submitted an NSF research proposal, in partnership with the Iowa Department of Education, the University of Iowa Women in Science and Engineering program, and the Research Institute for Studies in Education at Iowa State, to study the needs of female transfer students in STEM from Iowa’s community colleges.
NAPE/Iowa Department of Education Grant
PWSE is a strategic partner with the Iowa Department of Education on the STEM Equity Pipeline Project, a program coordinated by the National Alliance for Partnerships in Equity (NAPE). Through a strategic planning process, the Iowa Leadership Team developed an Implementation Plan and prioritized professional development to high school and community college faculty teaching STEM classes that are nontraditional for female students. In particular, the Leadership Team encouraged the STEM Equity Pipeline to partner with Iowa’s Project Lead the Way (PLTW) educators. Carol Heaverlo, PWSE Outreach Coordinator, worked with staff of NAPE and the Iowa Department of Education to offer a pilot training session in Fall 2009, providing research-based professional development to a team of PLTW secondary school and community college faculty/staff at Kirkwood Community College in Cedar Rapids.

The six-hour training workshop helped participants develop gender-equitable strategies for use in their PLTW programs. Attendees included five high school PLTW educators, five middle school PLTW educators, and 2 faculty/staff members from Kirkwood community college.

Midwest Transportation Summit
Carol Heaverlo, PWSE Outreach Program Coordinator presented at the Midwest Transportation Workforce Summit on April 27th. The purpose of the summit was to assess the educational training needs of the future transportation workforce in Iowa and identify strategies to address those needs across various career paths. The conference addressed a broad spectrum of topics including strategies to attract women and under-represented minority groups (UMG). PWSE was considered a key partner in sharing information and strategies on encouraging and engaging women and under-represented minorities in STEM degree programs and professional environments. Attendees included leaders from business, industry, and Midwest institutions of higher education (ISU, Kansas State, UNI, DMACC, Michigan Tech, UW-Madison, and NDSU).

Feedback from Educators on Taking the Road Less Traveled Career Conference Participants and Student Role Model Visits:

Taking the Road Less Traveled – student comments:

• I really enjoyed this conference. I really hadn’t considered Iowa State for college until today – it’s beautiful!
• I liked going to see the biomechanical lab and talking with people who were involved in the career areas I am considering and their opinions on schools and paths
• I’m really looking forward to exploring the difference careers that involve math and science. Iowa State is a beautiful college. I will definitely be applying in high school
• I really enjoyed learning about how science and math careers can be fun! P.S. lunch was great I loved the cookies!
• Overall quality of sessions: it was pretty awesome

SRM classroom visit – student responses:

• “The presentation was an excellent experience, and I loved the vinegar tests.”
• “I loved having the ISU students come. I thought the experiment was really cool.”
WiSE Learning Communities
The Women in Science and Engineering (WiSE) Learning Communities offer living and learning opportunities for women majoring in science, technology, engineering, and math (STEM). WiSE Learning Communities began in FY96 with 52 first-year students and has grown to 225 first-year students, a second-year learning community centered around a career development course, as well as an option transfer students living in Frederiksen Court apartments.

First-Year Learning Communities
Working in conjunction with the ISU Department of Residence, WiSE sponsors nine first-year residential learning communities in six residence halls across campus. Each learning community is comprised of twenty to twenty five women STEM majors that help to create a unique environment. Each learning community is led by two peer mentors, who are upper division women STEM majors. Peer mentors play a large role in the planning and implementation of programs and activities for their individual learning community, as well as initiatives for every member of WiSE. Members of the learning communities have the opportunity to participate in a variety of social, academic, and leadership programs. In order to meet the high demand among students, the Department of Residence continues to increase the number of spaces allocated to WiSE first-year learning communities. The WiSE staff continues to strive to go above and beyond in all aspects of the learning community by providing programs and resources that set a standard for all learning communities at ISU. In 2009-2010, the staff introduced numerous initiatives that have promoted collaboration with other units on campus, leadership, sustainability, and social justice. These efforts include involving faculty, staff, and student leaders to put on the 2010 WiSE Leadership conference; sponsoring two events for Sexual Assault Awareness Month (SAAM); developing an initiative called the ‘Team Challenge’ to encourage academic and social involvement among the women in the learning community; and the use of WebCT to share information as a way to promote sustainability and almost eliminate the use of paper for printing. Examples of units or departments on campus in which the First-year Learning Community created partnerships this academic year include: the Margaret Sloss Women’s Center, the Department of Residence, Sexual Assault Response Team, ISU Athletics, SUB, ISU Police Department, Student Counseling Services, and Alpha Kappa Lambda Fraternity, and administrator and lecturers from the College of Engineering and the departments of Sociology and Women’s Studies. By creating new opportunities for the women in the WiSE Learning Community, the Curriculum and Faculty Development Committee awarded the staff the Outstanding Innovations Award.

In the fall of 2009, WiSE sponsored seven “learning teams” for over 110 students within the overall WiSE Learning Community. The teams include:

- Two Calculus I/General Chemistry teams
- Two Calculus II and Chemistry teams
- One General Biology/General Chemistry team
- One Calculus/Chem for Engineering team
- One Biology/Math team for students in life sciences/pre-health programs

Transfer Learning Communities
Begun in the fall of 2005-06, the WiSE Learning Community expanded to include transfer students. In 2009-2010, there were 8 transfer students who chose to live in Frederiksen Court apartments with other transfer women in STEM. Three transfer students participated in the University Studies 201x seminar course, attended WiSE events, and participated in the Job Shadow Program. PWSE was able to involve current transfer students as leaders for the APP student visits as prospective students made the transition to Iowa State.

Second-Year Success Learning Communities
Through support from Alcoa, PWSE continued the learning community for our sophomore students. The Second-year Success Learning Community offered a seminar course focusing on professional and leadership development, targeted tutoring, and a Job Shadow Program in order to better meet the needs of second-year students. A total of 31 students participated in the course (U ST 201x) and learning community. These students participated in a series of optional events exclusively for second-year students which included:

- Attending cultural events and discussions
- Professional development luncheons
- Job Shadow Program at Rockwell Collins
- Job Shadow Program at General Mills
- Job Shadow Program at Pella
- Networking opportunities and development with each other through learning community events

Leadership Development
The WiSE staff began preparation for the 2010 WiSE Leadership Conference during the Fall, 2009 semester. Each peer mentor worked in collaboration with graduate assistants and the on-campus coordinator of the Program for Women in Science and Engineering. The vision was to develop a conference for WiSE women to explore and develop their contribution as student leaders at Iowa State University. Faculty, staff, and students were selected to present sessions on a variety of topics of interest to the women in our learning community (i.e. Study Abroad, the Sophomore Experience, Discrimination in the Workplace, Difficult Dialogues, etc.). Faculty collaboration included an administrator and lecturers from the College of Engineering and the departments of Sociology and Women’s Studies. Overwhelmingly, the 40 students that participated indicated in a post-conference assessment that the conference had been a positive and beneficial experience.

- “Overall, this was a great experience! I learned a lot of things and recommendations I should know for my upcoming year!”
- “I loved it all!”
- “Overall, I enjoyed this conference immensely. I was a bit apprehensive that I wouldn’t find the session relevant, when in thought I was wrong. The sessions I attended were very relevant for anything I did in the future.”
Summer Research Internships
The PWSE Summer Intern Program allows students to work on a variety of projects and gain hands-on research experience under the supervision of ISU faculty and staff. In addition, they attend seminars, write research reports and summarize their research in poster presentations. Funding to provide stipends to the interns comes primarily from ISU colleges and other administrative units and from faculty grants. During summer 2010, 31 undergraduate students participated in the intern program. Interns worked for eight weeks and were paid a stipend of $3,500. The total number of students that have participated in the program now totals 1074 students since 1987.

Academic Support
PWSE organizes group study sessions for key introductory courses (such as calculus and chemistry). These sessions, which are typically facilitated by female graduate students, are open to all interested students. Attendance at the weekly sessions ranges from 5 to 25 students per course. In addition, WiSE Learning Community Students have the opportunity to receive additional small group or individual tutoring funded by WiSE. PWSE also coordinates the tutoring support provided by the College of Engineering for women undergraduates enrolled in that college.

Scholarships
During FY10, 25 scholarships totaling $25,200 were awarded to female undergraduate science or engineering students through funding provided by external gifts. This brings the total amount of scholarship money awarded by PWSE to $428,615 since program inception. Scholarships awarded this past year included Endowed scholarships for Janice L. Davison, Sylvia Stoesser, Laurel Ann Crowe, and Charlie Wright, Jr. Non-endowed scholarships awarded by PWSE to support first year and returning students in STEM fields.

Congratulations WiSE Peer Mentors!
Recipients of the 2010 Learning Communities Outstanding Innovations Award

This award honors members of the Iowa State community who have made new and creative contributions to learning communities. The primary criterion for the award is innovation; i.e., the introduction of new developments that have extended the horizons of learning communities at Iowa State and enhanced learning for our students. Areas of innovation include novel curricular plans, effective cross-disciplinary collaborations, creative integration of students’ social and intellectual lives, imaginative responses to student needs, effective coordination of multiple facets of the learning community experience, or any other contribution that have extended the boundaries of learning communities at Iowa State.
In 2010-11, the Program for Women in Science and Engineering will be in the fourth year of our five year strategic plan. We have made significant progress on the plan in the first three years. Given staffing size and funding and where we are at with our strategic plan work, we don’t anticipate large, new programs or initiatives this coming year. This will be a year to improve through modifications based on program assessments. Anticipated activities for the coming year include:

- **Refinement of new initiatives implemented in recent years**
  Many of the new initiatives of the strategic plan have proven to be successful. However, there is always room for improvement, new methods to try, etc. As an example, the sophomore year success course, that didn’t exist when the strategic plan started, is now in its third year. Each time the course is offered, we are assessing to determine how we should be refining/adjusting the course to meet student needs and expectations. Other initiatives, such as efforts to serve community college transfer women, will require attention as we continue to try to identify best practices.

- **Implementation of changes based on K-12 Needs assessment**
  As soon as we started getting feedback from the needs assessment report, small adjustments to programs have been made. This year, PWSE will be taking a broad look at what the needs assessment means to our programming efforts and implementing programmatic changes based on the report.

- **Transitioning to "collaborating" rather than “providing” some programs**
  Two key programs that have been a part of PWSE for several years will not exist as PWSE programs in the coming year. There will not be a PWSE Summer Intern Program or a WISE Leadership Retreat. In their place we will be partnering with others across campus to try to achieve similar outcomes without actually hosting our own programs. PWSE staff will need to be flexible and responsive to a variety of constituents as we work through these transition issues.

- **Long-term financial and staffing plan**
  Not surprisingly, another focus of PWSE in 2010-11 will be to monitor the financial health and well-being of the program. This year we are receiving support staff time from the Office of the Executive Vice President and Provost, rather than having a dedicated support staff person. Assessment of this ‘trial’ staffing arrangement and determining the long-term staffing and financial needs of the program will be an ongoing issue during this academic year.

- **Preparation for review and next strategic plan**
  As the five-year strategic plan enters its fourth year, we will begin to turn our attention to the next strategic plan. In conjunction with this, PWSE will be preparing for an overall program/external review that will occur in the 2011-2012 year to inform this next plan.

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**Financial Summary**

**Revenues**

- PWSE General Fund Budget: 305,752
- External Grants: 87,763
- Iowa State University Foundation (Gifts, Grants, Earnings): 77,172
- Internal ISU Grants/Reallocations: 54,023
- Greater University Funds for Excellence: 53,500
- Participant Fees: 36,243
- **Total Revenues**: 614,453

**Expenditures**

- Salaries: 287,579
- **On-Campus Programming**: 191,045
  - Summer Intern Program
  - Learning Communities
  - Scholarships
  - Leadership Initiatives
  - Second-Year Programming
  - Academic Support
  - Other On-Campus Programming
- **Outreach Programming**: 109,656
  - Career Conferences
  - Student Role Models
  - Outreach Initiatives
  - Community College Initiatives
- **Administration**: 26,173
  - Computers and Phones
  - General Administration
  - Supplies
  - Marketing
  - Staff Development/WEPAN
- **Total Expenditures**: 614,453

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*We value people as individuals, integrity and accountability, inclusion, collaboration, leadership, and excellence in all we do.*
Overall Distribution Map for Taking the Road Less Traveled Career Conferences
Iowa Counties Reached Spring 2004 - Spring 2010

*Dots on the map represent a specific school attending the conferences not overall number of attendances/school
WiSE Learning Community
First-year Participants 2009-10

College of Agriculture & Life Science
Total
Agriculture and Life Science Exploration 2
Animal Science 23
Animal Ecology 3
Dairy Science 2
Environmental Science (See also LAS) 1
Food Science (see also H Sci) 1
General Preventative Medicine 5
Genetics (See also LAS) 4
Microbiology 1
Nutritional Science 2
Total 44

College of Engineering
Total
Engineering - Undeclared 43
Aerospace Engineering 10
Agricultural Engineering 4
Biological Systems Engineering 1
Chemical Engineering 16
Civil Engineering 13
Computer Engineering 2
Construction Engineering 2
Electrical Engineering 6
Industrial Engineering 3
Materials Engineering 3
Mechanical Engineering 13
Software Engineering 2
Total 118

College of Human Sciences
Total
Nutritional Science (See also Ag LS) 2
Kinesiology and Health 7
Total 9

College of Liberal Arts & Sciences
Total
Open Option - LAS 10
Biochemistry 7
Biology 12
Chemistry 3
Computer Science 1
Genetics 4
Mathematics 3
Meteorology 1
Pre-Biological/Pre-Medical Illustration 1
Prep. for Human Medicine 10
Pre-profession. Health Programs 2
Total 54

Overall Participation 225
Janice Davison Memorial Scholarships

In December 2009, PWSE was notified that Janice Davison, a retired science and mathematics teacher who taught in the California public school system for 40 years, left a $1 million bequest in the form of a trust and insurance policies to the Program for Women in Science and Engineering. The bequest will be used to create scholarships for students in PWSE. When Davison established the scholarship in her will, she indicated she wanted to support young women so they wouldn’t have to work as hard as she did to get through college.
Program for Women in Science and Engineering

View the complete strategic plan and follow our progress at www.pwse.iastate.edu