

# **Pathways To Your Future: Exploring STEM Careers At Penn State York May 2011**

## **A Brief Description of the Program**

Pathways To Your Future: Exploring STEM Careers at Penn State York is a career awareness program for seventh grade girls, their teachers and parents that highlights college major and career opportunities in science, technology, engineering and mathematics (STEM). The program, which is free for participants, brings together young women and professional women from academia, medicine, government agencies, business and industry for a day of learner-centered, hands-on workshops. In addition, Pathways provides participating teachers and parents with information to guide young women toward college majors and career opportunities in science, technology, engineering and mathematics (STEM) related fields.

In 2011, we offered twenty-four workshops (including three new workshops), invited one additional school, continued to improve the registration database and offered a STEM Resources for Math and Science Teachers workshop.

## **Description of the Participants**

All of the middle schools (both public and private) in the Penn State York service area (which includes York County, parts of Adams and Lancaster Counties, as well as 14 schools in Maryland) are eligible to attend Pathways. We also invite established groups of York County home schooled children, one “bricks and mortar” and two cyber charter schools (that enroll York County students) to participate in our program. Each school may send, free of charge, ten girls, one teacher (female mathematics or science teachers are encouraged to attend) and one parent to the conference. Workshop assistants from Penn State York and the York community, workshop leaders, Penn State York alumni and Penn State York faculty and staff volunteer their time and talents to plan, coordinate and facilitate this conference.

Our program continues to grow every year. Pathways 2011 hosted 308 students, parents, and teachers from twenty-six different schools. Fifty-eight (58) workshop presenters, forty-one workshop assistants, conference coordinators/planners and multiple Penn State York staff members contributed to the success of the program.

The middle school participants are chosen by the school (usually by our teacher contact). Teachers use a variety of methods for selecting the girls to attend the conference: grades, lottery, essays, interest in college degrees in math, science, engineering and/or technology, teacher recommendation, etc. We ask the schools to select girls from all ability levels and to encourage girls to participate even though they may not yet show a genuine interest in college and/or mathematics and science. Our hope is that by engaging these girls in meaningful, hands-on activities, we will encourage more young women to consider a science, technology, engineering, or mathematics related (STEM) college major/career.

## **List of the Workshops**

The titles of the twenty-four workshops offered at Pathways 2011 are listed below. Complete workshop descriptions are available in the conference brochure and in the workshops section of our website (<http://www.yk.psu.edu/pathways>).

- Be a Modern Day Galileo
- Can You Keep A Secret?
- Career Choices And Decisions
- Cell-A-Bration!!!
- Dazzling Databases
- DNA Detectives
- Getting “Physical” with Math and Science
- Girls Go Graphic!
- Licks For Bricks
- Makin' Tracks
- Making “Scents” of Biology
- Marine Science Exploration: How Is a Squid Able to Survive in the Ocean?
- Palm Reading: A Look into the Future of Handheld Computing
- RoboGirl
- Sixth Sense
- “Sparkling” With Chemistry
- Spinning The Web
- Taking Stock in Your Future
- Tasty Towers
- The Science of Color in Cosmetics
- “This Is A Hold Up! “
- Tied Up In Knots
- Video Haiku
- Wow! What’s The Chance Of That?

### **STEM Resources Workshop for Math and Science Teachers**

This workshop, presented by Margaret Runkle, Media Tech Specialist - Technology Coach at York County School of Technology, enabled all 34 of our teacher participants to experience free online resources for the math and science classroom. The teachers learned how to enhance the active engagement of students using collaborative Web 2.0 tools and how to expand their professional learning network with social medial tools to keep abreast of trending subject matter and educational teaching methodology.

### **Goals**

- To increase young women’s awareness of STEM (science, technology, engineering and mathematics) college majors and careers
- To encourage young women to take college preparatory mathematics and science courses in high school and to become comfortable with using technology so that the doors to STEM college majors and careers remain open to them
- To provide opportunities for young women to explore career options and to interact with professional women from STEM and related fields
- To provide continuing support and encouragement for young women who have expressed interest in pursuing college majors/career opportunities in STEM and related fields
- To provide teachers and parents with information to guide young women toward college major and career opportunities in science, technology, engineering and mathematics

## **Objectives**

- To expose each participant to a variety of careers, with an emphasis on those careers that are considered non-traditional for women; role models for minority and other under-represented groups are included
- To actively involve each participant in each workshop that she attends through "hands-on" or "role playing" activities
- To provide each participant with the opportunity to speak personally with a workshop presenter, workshop assistant (college student/alumni/professor) or college career counselor at the conference
- To provide participants with tangible mementos of the Pathways conference (e.g. t-shirt, tote bag, pen) with the intent of providing long-term recollection of the experience

## **Measurement of Goals and Objectives**

Most of the conference assessments are qualitative. Before leaving the conference, we ask each participant (student, teacher, parent, workshop leader, workshop assistant) to complete an evaluation form to assess their overall conference experience and workshop effectiveness.

In addition, we ask participants for suggestions to improve the conference and to choose, from a list, which person (for example, parent, teacher, guidance counselor, or friend) has the most influence over their college major/career choice. We ask teacher participants to complete another (follow-up) evaluation after they have returned to their respective schools and have met with the student participants to discuss the benefits of the conference. The responses to all of the forms are tabulated and categorized and are then discussed by the conference coordinators/planners. We use the results of the evaluations to determine the immediate effectiveness of the conference, to provide a workshop assessment to each workshop presenter, and to modify the conference program for the following year.

## **Accomplishments of the Program**

For the past fifteen years, this program has brought together students, teachers and parents from local middle schools; current students, professors, career counselors, administrators and alumni from Penn State; professors from other universities; individuals from Harrisburg and Baltimore area educational facilities; and people from businesses and industries for a most exciting, informative and rewarding day-long conference.

The Pathways program has given our campus an opportunity to reach out to the community with a free educational conference to encourage young women to pursue college majors/careers in STEM (science, technology, engineering, and mathematics) related fields.

Students have commented that, as a result of participating in this conference, they understand how important science, mathematics and technology are to their future success, and they now are considering college majors/careers that require these skills. We feel very strongly that we have "made a difference" and positively influenced the future college/career paths of many of the student participants from the local middle schools by providing worthwhile experiences and excellent female role models.