

## **PROGRAM IMPACT REPORT: Template – Cover Sheet**

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1. County: Fond du Lac
2. Impact Area (s): Economic
3. Division (s): Continuing Education Extension/Outreach and E-Learning
4. UW campus(es): UW-Fond du Lac
5. Program Keyword: Youth development

## **Title: GMSO is a GEM for STEM**

### **Impact Summary:**

**Situation:** Science, Technology, Engineering, and Mathematics (STEM) education plays a critical role in enabling the U.S. to remain an economic and technological leader in the global marketplace of the 21st century. Our nation must improve the way our students learn science, mathematics, technology and engineering and that the business, education, and STEM communities must work together to achieve this goal (STEM Education Coalition, 2007).

Fifteen-year-old students in the United States in 2006 had an average score of 489 on the combined science literacy scale, lower than the Organization for Economic Cooperation and Development (OECD), an intergovernmental organization of 30 member countries, average score of 500. U.S. students scored lower in science literacy than their peers in 16 of the other 29 OECD jurisdictions and 6 of the 27 non-OECD jurisdictions. Twenty-two jurisdictions (5 OECD jurisdictions and 17 non-OECD jurisdictions) reported lower scores than the United States in science literacy.

In 2006, the average U.S. score in mathematics literacy was 474 on a scale from 0 to 1,000, lower than the OECD average score of 498. Thirty-one jurisdictions (23 OECD jurisdictions and 8 non-OECD jurisdictions) had a higher average score than the United States in mathematics literacy. In contrast, 20 jurisdictions (4 OECD jurisdictions and 16 non-OECD jurisdictions) scored lower than the United States in mathematics literacy in 2006 (PISA 2006: Performance of U.S. 15-Year-Old Students in Science and Mathematics Literacy in an International Context).

For girls, this situation is even more complex, as there is “a progressive decrease in women’s interest and participation in science, technological, engineering and math preparation as they move from middle school to high school to college. Something happens to girls in sixth or seventh grade where they think boys can do math and science better” (Faouad and Smith, *Research Looks at Why Women Don’t Pursue Careers in Science and Math Fields*, 2005).

The research is strong. The goal is obvious. The strategies must be: innovative and girl focused, targeted at 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> graders, and feature female professionals in STEM careers.

### **Response:**

#### **Inputs:**

The fourth annual Girls + Math + Science = Opportunities (GMSO) conference was held on November 14, 2008 at UW-Fond du Lac. Resources included: public relations assistance, in-kind brochure design and print, workshop instructors and supplies

contributed by Agnesian HealthCare, and evaluation compilation, workshop instructors and supplies contributed by Moraine Park Technical College. Both Agnesian HealthCare and Moraine Park Technical College are GMSO founding sponsors.

Other event sponsors included: Northeastern Wisconsin Area Health Education Center (NEWAHEC) as a major sponsor, Fond du Lac Area Foundation, Mercury Marine, UW-Extension, American Association of University Women (AAUW), Boys & Girls Club, Doll & Associates, Fond du Lac Public Library, Girls Scouts of Manitou Council, the Fond du Lac Policy Department and Milwaukee School of Engineering. Resources from these partners included: funding, workshop instructors and/or supplies, planning and steering committee assistance, essay contest development, parent workshop instruction, DAST pre and post evaluation, and more. Additionally this year there was funding from the 2008-09 UW-Extension Program Innovation Fund to support the Fond du Lac GMSO and expand the GMSO initiative to three other UW campuses. This initiative is called GEMS (Girls Engineering Math Science).

A call for volunteers was distributed to former GMSO conference participants, now in high school, and the response was overwhelming. Not only were all the volunteer slots filled, we were unable to accommodate the offer of assistance from 14 former participants. Likewise, due to the numerous parent chaperone volunteers, we were unable to accommodate 27 offers of parent assistance.

Lastly, but just as importantly, 15 Girlz committee participants guided the program director and planning committee in its decisions including: workshop ideas, conference logistics, essay contest ranking, and the GEMS website development and evaluation. This committee of middle school girls ensured the educational product fit the needs and desires of this population. Concluding the conference 48 participants volunteered to be on next year's Girlz planning committee.

### **Outputs:**

This Eastern Wisconsin conference attracted 230 middle school participants to attend 49 hands-on workshops offered by female engineers, educators, college students, dieticians, pharmacists, veterinarians, scientists, and physicians. The conference keynote was given by Teale Greylord, a former UW-Fond du Lac student.

The participants enjoyed a social luncheon featuring plenty of time to eat, socialize, win door prizes, and the hour culminated in a style show. The style show not only presented fashions popular to middle school girls but also integrated adult workshop presenters in their engineering, scientist, and veterinarian (complete with puppy) work apparel.

At the closing session, two girls were presented with Judy Goldsmith Young Woman Leadership awards. Each girl received a plaque and a \$500 savings bond.

New to the conference this year were three parent workshops including: Have a Clue: Mood Changes & Other Baffling Mysteries of Middle School Girls; Really! It's Time to Start Thinking about College!; and What You Don't Know Can Hurt Her.

As this is the fourth year of the GMSO conference, the planning committee felt it was time to expand the program. A new initiative started in October, called the GMO (Girls + Math = Opportunities) offered after school math tutoring assistance at the local high school and one middle school. The tutoring assistance is available to any girl.

Twenty full scholarships were provided by the Moraine Park Technical College and UW-Fond du Lac foundations to economically disadvantaged participants.

### **Outcomes-Impacts:**

Since the first GMSO conference in 2005 there have been 786 participants. In 2008 there were 230 participants, a 15% attendance increase from 2007. According to an evaluation completed by 203 respondents, participants agreed or strongly agreed the program made them:

- (70%) – have a more positive attitude towards math
- (80%) – have more positive attitude towards science
- (76%) - more interested in careers in math or science
- (87%) - more aware of the skills and abilities needed in math or science related careers
- (80%) - more aware of women as role models in math or science careers
- (79%) willing to consider careers in math or science that they had not thought about previously
- (86%) think more about their futures
- (83%) more aware of the benefits of a healthy lifestyle

Additionally, 96.4% of the participants indicated they would recommend this conference to a friend.

Of the parents having attended the following workshops and having responded to the parent evaluation, they indicated:

#### Presentation: Have a Clue: Mood Changes & Other Baffling Mysteries of Middle School Girls

100% of 29 respondents indicated they agreed or strongly agreed that they gained:

- A better understanding of biological/hormonal changes related to mood changes and sleep issues.
- A better understanding of how to manager irrational thought patterns and behaviors.

95% of 29 respondents indicated they agreed or strongly agreed that they gained an:

- Increase in understanding of biological changes enough to determine what is worth worrying about and what is not.

Presentation: Really! It's Time to Start Thinking about College!

100% of 28 respondents indicated they agreed or strongly agreed that they:

- Learned key tips and tools to help my daughter prepare for the skills and resources she'll need to acquire in middle school if she is to attend a post-secondary institution.
- Learned how to pick the appropriate high school classes
- Learned how to explore college options
- Learned about options for paying for college

Presentation: What You Don't Know Can Hurt Her

100% of 26 respondents indicated they agreed or strongly agreed that they:

- Gained a better understanding of blogging, surfing, Facebook, MySpace, and other sites my daughter may visit
- Learned how to implement computer and Internet parental controls
- Increased my awareness of the Internet's power and pitfalls

The Girls + Math = Opportunities Center, available to middle and high school girls on 15 days mid-October through mid-December, has provided 53 hours of math, pre-algebra and algebra tutoring to middle school girls and another 12.75 hours of algebra, algebra II, geometry and pre-calculus tutoring to high school girls.

A pre and post DAST:Draw-A-Scientist Test instrument indicated a 14.8% increase from 117 to 143 depicting drawings of female scientists and a 17% decrease from 62 to 29 depicting drawings of male scientists.

**Success story:**

The GMSO conference appears to grow in its appeal to not only middle school participants, but also to female high school students and parent volunteers.

Students who attended the event said:

- 'I learned that girls can do anything!'  
'I learned that just because it has science and math doesn't mean it isn't fun. It is.'
- 'I learned that there are a lot of science/math careers that I didn't know about'
- 'It's not just for boys, it's for girls too'

According to Fond du Lac Continuing Education Director, Leanne Doyle, who directed the event, "The success of the GMSO conference continues to grow as we develop

other programmatic initiatives such as the GMO math tutoring and increase our educational offerings to parents. As a result of the success of the GMSO program many community members, including parents, are now requesting that we develop similar programming for middle school boys. Of course the programmatic goals will be different.

Concurrently I continue to work with the Girlz committee and the UW-Extension Instructional Communications Systems team as we develop a GEMS website to connect all participants and stakeholders at other GEMS locations. It needs to be said this work could not be accomplished without the talents and dedication of so many community partners and individuals.”

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**Photos:** attached