Building a STEM Pipeline for Girls via a University-School Partnership

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Abstract

For the past 5 years, the STEM for Girls outreach program has connected and invigorated the STEM community in rural Abilene, Texas. STEM for Girls is designed to inspire and inform middle school girls (6th-8th grades). The goals for the program are to increase exposure of STEM careers to middle school participants, introduce participants to successful female STEM professors, and encourage participants to remain interested in STEM fields. The program utilizes a partnership between a university, Abilene Christian University, and a local STEM high school, ATEMS, to host middle school girls for a day of hands-on activities in STEM fields. At the event, each faculty member or student group designs a learning experience for a group of 10-12 middle schoolers. Participants rotate through several stations, each with a different focus. This event is designed to target students at an age where many transition from showing interest in STEM fields to losing interest. STEM for Girls also brings together female faculty members in STEM from across the university campus, facilitating networking opportunities among this relatively small group that is separated into three different academic colleges. It also connects the middle school participants with undergraduate students majoring in STEM fields and with ATEMS High School teachers and students.

Primary Goals

1) Increase exposure of STEM careers to middle schoolers, and help students recognize career-relevant skills
2) Introduce middle schoolers to female scientists and undergraduate students with STEM majors
3) Encourage middle school participants to remain interested in STEM fields
4) Introduce participants to the local STEM High School, the Academy for Technology, Engineering and Science (ATEMS)
5) Connect female STEM faculty at ACU

*Goals are based on recommendations found in this 2010 report from the American Association of University Women.

The Program

- Middle Schools (6-8th grades) are provided with flyers, science teachers are encouraged to distribute to all students
- Participants register online, www.acu.edu/stem-for-girls
- Program directors recruit faculty from ACU and the local STEM High School (ATEMS) to run hands-on stations in a variety of STEM fields

Schedule for day of event (a Saturday in January):

Registration / Meet your group leader / Pre-survey 8:30-9:00
Station 1 (Biochemistry) 9:05-9:30
Station 2 (Microbiology) 9:35-10:00
Station 3 (Speech Pathology) 10:05-10:30
usually run by ATEMS High School faculty and students
Station 4 (Robotics) 10:35-11:00
Station 5 (Coding) 11:05-11:30
Station 6 (Physics) 11:35-12:00
Wrap-up and Post-survey 12:05-12:15
Lunch in university cafeteria 12:15-1:00

Conclusions & Challenges

- Middle school is a great target, the students are excited about STEM and want to participate
- Finding collaborators is key, utilize existing campus and/or community resources for help
- Give partners autonomy in decision-making
- Ensuring quality, hands-on programming can be a challenge
- Online registration process simplifies the process (Google form)

Outcomes

Have you met any female scientists?

*This data was from the January 2016 event. Similar results have been obtained each year we distributed surveys.

Do you have any suggestions for us concerning the event?

Participating in STEM for Girls was a very positive experience for me. As a new faculty member, it accelerated my ability to make purposeful connections with both colleagues and students. I also benefited from experiencing first-hand the positive impact from an effective (and fun!) collaboration with a school in our community.

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- Give partners autonomy in decision-making
- Ensuring quality, hands-on programming can be a challenge
- Online registration process simplifies the process (Google form)
- Advertise program to schools in the area early and often
- Schedule event for maximum involvement (ask schools about testing schedule)
- Involve undergraduates at your university
- Seek funding from a variety of sources (academic departments, college, recruiting department, admissions department, community)

Feedback

Do you have any suggestions for us concerning the event?

ACU faculty member

Dr. Rebecca Hunter

(Biology) guides participants in using a microscope.

Acknowledgements & References

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ATEMS High School Teachers and Administrators who participated in the program

For more information about our program: