

TIPS FOR A SUCCESSFUL CAREER SESSION

How do girls benefit from this conference?

One purpose of the Expanding Your Horizons conference is to promote educational opportunities, and thus, career opportunities for girls. Many barriers still remain (gender stereotyping, teacher and parent expectations, peer pressure, media images, etc.) that limit the participation of girls in science and mathematics. Expanding Your Horizons conferences are designed to help break down these barriers by providing girls with encouragement, role models, and hands-on experiences to spark the interest and commitment necessary to prepare for careers that use math and science. We want to motivate girls to take all the mathematics and science courses that they can in high school.

To help with this task, please be as encouraging as possible to the girls who attend your session. Try to spark their curiosity about careers, mathematics and science by being enthusiastic, challenging and interesting.

What do girls want to know?

Last year we asked the participants "what are the most important things for you to know about a job?" We gave them a list of possible answers, and these are the ones most girls picked as important:

- § how to plan my education to prepare for it
- § how much money I would make doing it
- § that it is fun
- § that I can do it and have a family
- § what people with that job do on a normal day

The girls attending your session are looking for practical information that will help them as they consider career choices. It is also important that you share with them your enthusiasm. Let them know about the rewards, challenges and the opportunities for women in your field.

What do the girls want to do? Every year the girls rate the career sessions as their favorite part of the conference. They love doing hands-on activities, even ones they didn't expect to like. They enjoy touring workplaces, and learning about what goes on there. Below are some comments from past evaluations that illustrate the impact Expanding Your Horizons can have on girls:

- § Science at school I hate and this was involving science and really fun.
- § Ordinarily I would never have chosen Biology for a career session but I truly found it interesting.
- § The session was good because we got to touch and watch things.
- § What I liked best was listening to (the presenter) talk about how she has a family and works.
- § Rarely are girls invited to go wild on something like total disassembly of a machine. This was awesome.

What are the girls learning in school? We have learned from past presenter evaluations that many of you would like to have more information about the knowledge and skill levels of the girls. While this obviously varies depending on a girl's school district, there are some things that tend to be fairly consistent:

- § Most girls will already have had sixth grade math. Most girls will be in seventh grade math, algebra, or eighth grade math. A few 8th grade girls may be in geometry.
- § Computer skills will vary the most. Most schools seem to use Apple as opposed to IBM compatible computers. Many girls will have had keyboarding experience and use word processing. Many also have internet access either at home or school.
- § Science curricula also vary greatly from district to district. The state is, however, attempting to make this more consistent through the use of state standards. In the past we found that elementary teachers seemed to teach biological sciences much more completely than the physical sciences.
- § For a much more complete and detailed explanation of standard curricula please see "Wisconsin's Model Academic Standards." This publication is available on the Internet at:

<http://www.dpi.state.wi.us/standards/index.htm>

This will include Standards for both Mathematics and Science. The Standards will include Content Standards for all grades and Performance Standards for fourth and eighth grades.

How are girls selected to attend your session?

When they register for the conference, the girls pick two career areas they would like to explore. They are then assigned to a small group (10-12 girls) with whom they will spend the day. Their group will have a career session in at least one of their areas of interest. The girls in the group attending your session will probably be a mix of some who picked your career area and some who did not. Ideally each girl will learn about at least one career area that she thinks she might want to pursue, and at least one she has never thought about, to expand her horizons.

One thing we have learned is that girls are often not sure what is included in a career area. They may be surprised at what the presenters in a particular career track do for their job. It may not be at all what the girls expected when they picked that track. For example, many girls think that "Health & Medicine" includes only doctors and nurses. It might be helpful for you to point out that there are many types of jobs in a given career area including ones that might be unfamiliar to the girls.

Introducing your Session:

At the beginning of your session, give the girls a preview of what they will do. For example, you might say that you intend to tell them a little about yourself, have them introduce themselves, and then you will answer questions they might have about you or your career. Then describe the activity they will do, and how much time they will have to do it.

You will want to open your session with some information about yourself, what you do and how you got to do it. If you can, tell the girls how your job fits into the career track in which you have been scheduled, and tell them about other kinds of jobs people in your area might do.

Keeping the girls engaged:

Try to divide the time for your session into a variety of activities, including listening, talking, experimenting, acting, etc. Be friendly and personal. You may also want to have the girls tell you a little about themselves. Or you could ask them to take a few minutes to think about what they might like to be when they get older. Encourage them to imagine what they will be doing in five or ten years.

After you ask a question, wait for an answer. This “wait time” allows girls to formulate answers. Define terms that may be new to the girls. Using job-specific jargon will work with this audience if you define the terms that you use. This will also promote an understanding of what you are talking about, and help to develop vocabulary.

The key to success is hands-on activities:

Have the girls do something. Organize an activity related to your expertise (it can be something you actually do on a daily basis or something that demonstrates things you needed to learn to do your job). Encourage the girls to work in small groups or pairs. Too many girls working together may result in detachment, but one girl working by herself may be hesitant to ask for help if she has a problem. Be aware that the girls may not perform the activity as rapidly as you might expect, so give them more time than you think they might need. It's important to get out of the way and let them fumble a little for themselves. Give them the opportunity to accomplish something on their own.

A typical layout for a hands-on workshop may have several different but related activities to do with the girls rotating through each station. Or the workshop may have one activity with two or more phases and the girls stay working on that activity for the entire time. Some activities benefit from having a guide sheet that takes the girls through the process. A good guide sheet makes goals clear and includes questions or steps to follow to reach the goals. As the girls work on the activities, be sure you stop periodically to explain new things that they have seen and to answer questions. Try to interact one-to-one with as many students as possible as you move around the room.

Another option is to give the girls a tour of your workplace. Let them see where people in your field work and what they do. If you can safely let them handle equipment, do so. Make the tour as active as possible, and give the girls many chances to look, touch, do and ask questions.

Be careful not to pack too much into your career session. It's better to have a short and simple activity with more time for questions and discussion. Some general comments from past presenters include:

§ Hands-on activity kept the girls interested and active

§ I did a variety of things during the hour to prevent boredom § Planned too much material; didn't plan enough hands-on time

One more tip:

Enjoy your interactions with the girls!

Samples of Past Career Sessions

(as told by the presenters)

Career session with two graduate students on the physics of light.

We had the girls make their own pinhole cameras and then do some simple experiments with them. My research is in optical and atomic physics, so the principles that we were teaching are related to my work, however the main focus of the session was really not what I do.

We spent about twenty minutes talking and spent the rest of the time on the building and experimenting. We shared a little about what we do for our research and how we ended up in graduate school for physics. We also spent a couple minutes talking about what types of careers require some physics knowledge to try to encourage the girls to think about taking physics even if they don't want to become physicists. After talking about those topics we had about ten minutes to explain the principles of the pinhole camera. Most of that was done through some neat demonstrations using lasers rather than just talking to them. We also tried to get the girls to predict what would happen rather than just showing them. The girls responded really well to that format and asked a lot of good questions during that part.

The last half of the session was spent with the girls making and experimenting with their cameras. I think that having them build the cameras was useful because it was something constructive to do without having to think about physics the whole time. The previous year we did a color mixing experiment, and the girls seemed to be tired out by the end because it was a lot of thinking without much down time.

We wrote up a worksheet with the experiments on it. That gave us a little freedom to help girls who were struggling without having to worry that the ones who were catching on more quickly were waiting for what to do next. Those who finished more quickly had a list of things to try with their cameras and could move on. We also had explanations of how some other optical devices worked for the girls to read about after they left if they were interested.

I have really enjoyed the two years that I spent working with EYH. I have always been impressed by how quickly the girls pick up the ideas that we are teaching. I have tried in my sessions to treat them the same way I treated the college students I had when I was a TA, and I think the girls respond really well to being treated as adults.

Career Session at MATC with an Instructor from the Veterinary Technician Program.

I led a tour with hands on stops and did things like explain how an x-ray is taken. I showed the girls a few x-rays and then asked them to look at one or two and tell you what they see. I was sure to ask them questions like "why do you think algebra in high school is needed to get into this field?" I then gave them concrete examples of how I use math every day then quizzed them. For example: you're in surgery and you are listening to a heart rate. You count for 15 seconds and hear 15 beats. What is that animals heart rate????

I gave them real examples and real problems from my daily job. It's is better for them to have a little hands-on success in your field so that they know they can do it rather than lecture all the info at them. Then they'll be interested and look up all the info on their own.

Career Session at Union South with two engineers from GE Medical Systems.

Our session was on problem solving. We initially had a 5-10 minute discussion on what we did in our jobs and what different types of engineers there were. Then we did the activity for the rest of the time. For our activity we had four

laptop computers and about 3 girls for each one. We had the game "The incredible machine" installed on each one and a set of problems that the girls had to solve.

The key to this game is that it gives a maze that you need to navigate through with tools that are provided.... pulleys, levers, lasers, bouncing balls, candles, hot air balloons, gears, conveyors, etc.... It is somewhat like a "rube goldberg design". There were about 20 short "puzzles" so some groups got further than others, but everyone got to solve

several. Most importantly, we could easily shorten or lengthen this program to fit the time schedule.

We wanted an activity that would stimulate creativity in problem solving. Engineering is very diverse and there are so many things that people do (many of which would seem boring to 7th graders and we didn't want to 'turn them off') The most important thing an engineer learns to do is solve problems.

We stopped the activity in the middle and talked a little about types of problems that engineers solve. However, overall we probably spent no more than 10 minutes in a lecture type format. The rest was interacting with the girls, giving hints when necessary, or explaining how a tool works. The girls also helped each other, and it seemed that they were all participating.

This activity was definitely hands on. With three in a group, all of them were needed to figure out the solution, no one felt left out or just watched. Teamwork is another important aspect of engineering that we wanted to promote. Most didn't want to leave when our time was up.

I think the key was to make learning seem fun, and to keep them busy. Engineering can be a dry subject and we didn't want to make it seem like a lot of work. At their age, most engineering concepts can be overwhelming and we didn't want to scare them. We hope they left with the understanding that Engineers solve problems, and need to be creative and think about things in new ways.

Career Session at the Women's Health Initiative.

We divided our group into two groups of girls. We had four stations that they rotated to -- Nutrition, Lab, Recruitment (numbers), and general overview. They spent about 10 minutes at each station and we tried to have something interactive at each station (there was a WHI staff person representing each area). They also got a "healthy snack" in the nutrition station.

We enjoyed participating in the session, but found it a little difficult to get them to say anything! They seemed interested, but quiet. Also, one girl fainted at the lab station -- we showed them how we process blood (no real blood, of course) so we need to rethink what we do here.

We spent very little time overall lecturing.

Career Session with two graduate students at the Center for Limnology.

Our primary goal was to communicate enthusiasm for what we do, and explain a little about how we got there. We talked about our own interests and how they stemmed from things we had done when we were the students' ages and then talked about where we were headed in our careers. We did give a brief overview of what Limnology and Water Resources are and tour of the building. I think we may have spent 15 minutes or so looking at zooplankton samples taken off the Limnology building dock and showing the girls some of the standard sampling gear we use.

The best part of our presentation for us was that it was informal. We encouraged questions, asked the girls questions, and tried to keep everyone alert.

Thank you for your interest in Expanding the Horizons of middle school girls!