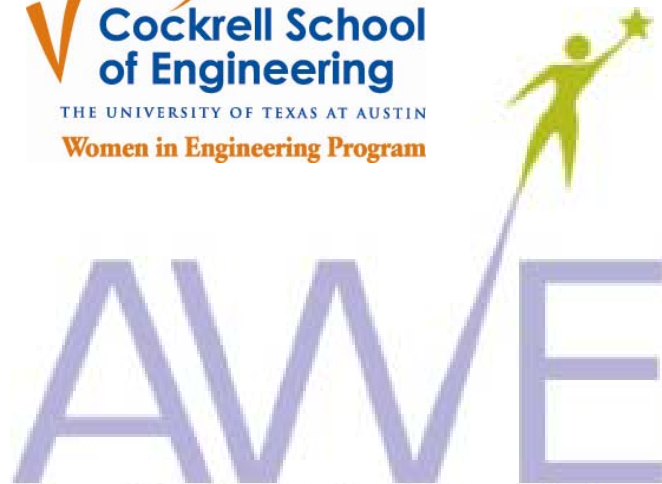
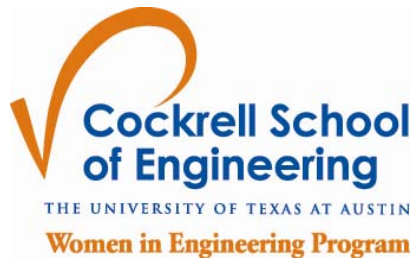


Building Effective Program Assessments:

Adapting and Using Tools from the Assessing Women and Men in Engineering (AWE) Project



Assessing Women
and Men in Engineering

In Partnership with the Society of Women Engineers

Tricia Berry

AWE Training Consultant

Director, Women in Engineering Program

Director, Texas Girls Collaborative Project

The University of Texas at Austin

Overview

- AWE Background
- AWE Web Tour
- AWE Product Overview
- A Real World Example
- Words of Wisdom



AWE Background: What is AWE?

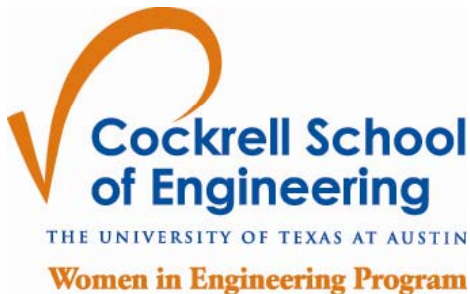
- National Science Foundation funded project to develop exportable assessment tools and methods
- Tools tested and validated in tests with students at AWE partner institutions including...
 - Pennsylvania State University
 - The University of Texas at Austin
 - Georgia Institute of Technology
 - University of Louisville
 - University of Arizona
 - Rensselaer Polytechnic Institute

Co-PI's on original grant:

- Barbara Bogue,
Pennsylvania State
University
- Rose Marra,
University of Missouri

AWE Background: AWE Goals

- Provide the tools and researched knowledge base to create an assessment-based culture
- Create exportable assessment tools for typical engineering pre-college and undergraduate retention activities
- Develop capacity building tools for program directors, organizers and implementers



AWE Background:

AWE Addresses Real World Problems

- Lack of time and money to develop and conduct good assessment
- Lack of easily accessed expertise to conduct good assessment
- Bad habits such as recycling of borrowed or current assessment practices and resulting data that are not necessarily relevant to objectives and goals
- Practitioner orientation of most program directors/activity coordinators and developers
 - Judged on fundraising or participation
 - Small or volunteer staffs
 - Understandable focus on well run outreach and support activities

DANGER!

Typical Happy Face Survey

Improvements in delivery of activity

Did you enjoy this activity?

Missing: Have the Objectives Been Met?

Yes, but...

Talks are boring; I like action

Closed Feedback Loop

Justification for Assessment

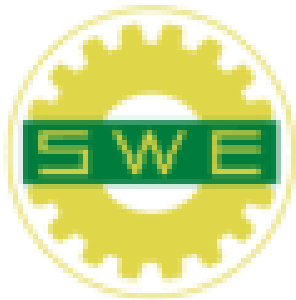
- Determine if we actually accomplish anything
- Objectively evaluate program offerings
- Identify opportunities
- Compare initiatives across program/institution
- Drives allocation of resources
- Elevate program value
- Justify existence to administration
- Report to funders; attract and secure funding

Steps to Assess and Evaluate

1. Determine fit with mission
2. Set goals
3. Define measurable objectives
4. Develop/modify/implement assessments
5. Analyze and evaluate the data
6. Do something with the results

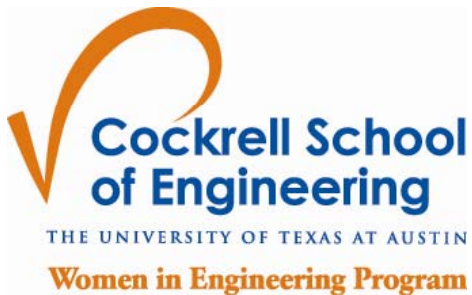
**STEM Equity Pipeline Archived Webinar:
Assessing Effectiveness: Do Your Program Activities Make a
Difference? Insights Learned from the Assessing Women and Men in
Engineering (AWE) Project - www.stemequitypipeline.org**

AWE Web Tour: www.aweonline.org



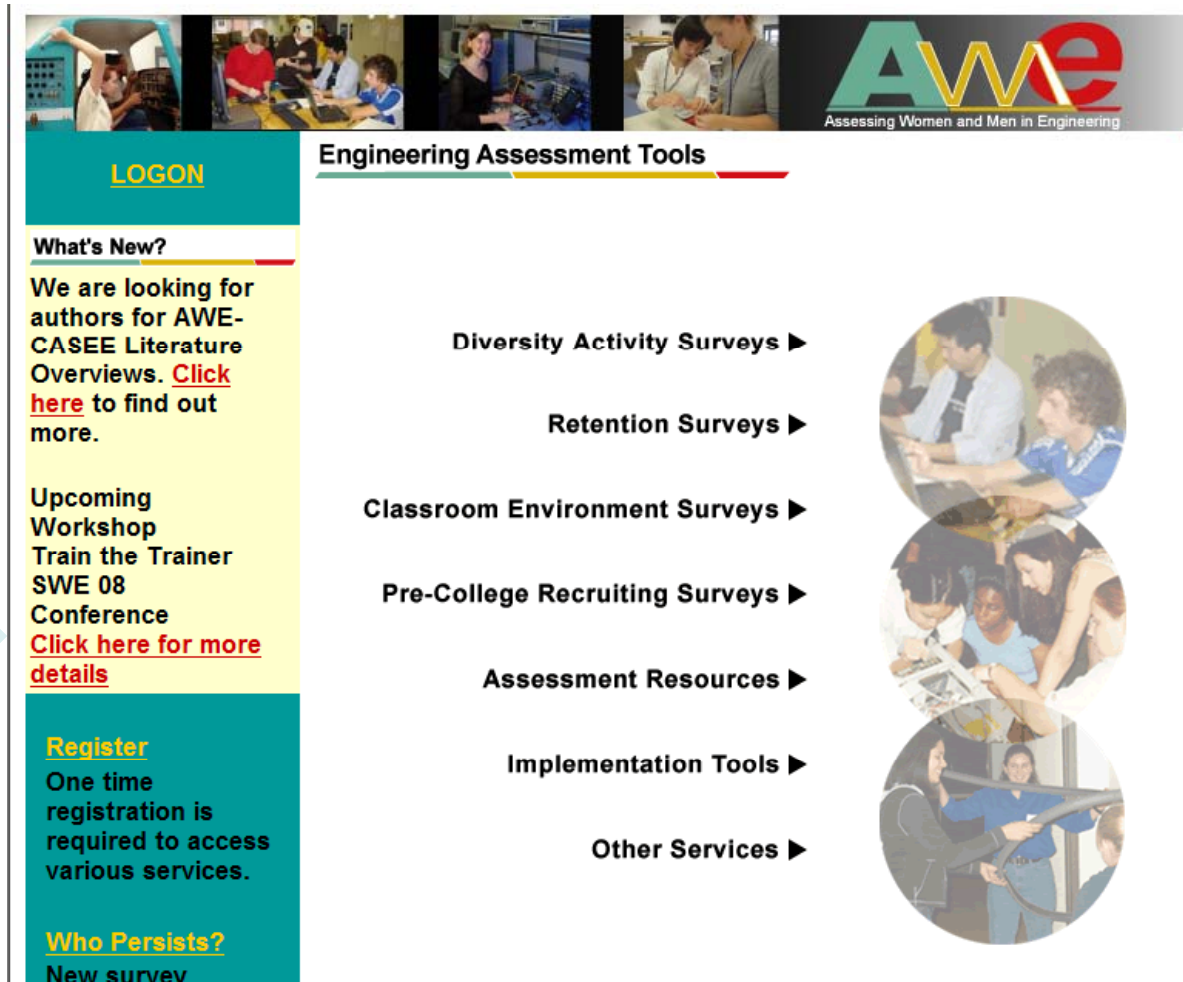
Society of
Women Engineers

ASPIRE • ADVANCE • ACHIEVE



AWE Web Tour: www.aweonline.org

Registration is free



The screenshot shows the AWE website interface. At the top, there is a navigation bar with the AWE logo and the tagline "Assessing Women and Men in Engineering". Below the navigation bar, there is a "LOGON" button. The main content area is divided into two columns. The left column contains a "What's New?" section with a yellow background, an "Upcoming Workshop" section, a "Register" section, and a "Who Persists?" section. The right column is titled "Engineering Assessment Tools" and lists several survey and resource options, each with a right-pointing arrow. To the right of the list are three circular images showing people in engineering settings.

LOGON

What's New?

We are looking for authors for AWE-CASEE Literature Overviews. [Click here](#) to find out more.

Upcoming Workshop
Train the Trainer
SWE 08 Conference
[Click here for more details](#)

Register
One time registration is required to access various services.

Who Persists?
New survey

Engineering Assessment Tools

- Diversity Activity Surveys ▶
- Retention Surveys ▶
- Classroom Environment Surveys ▶
- Pre-College Recruiting Surveys ▶
- Assessment Resources ▶
- Implementation Tools ▶
- Other Services ▶

AWE Web Tour: www.aweonline.org



Engineering Assessment Tools

[Home](#)

[Diversity Surveys](#)

[Retention Surveys](#)

[Classroom Environment Surveys](#)

[Pre-College Recruiting Surveys](#)

[Assessment Resources](#)

[Implementation Tools](#)

[Other Services](#)

Pre-College Recruiting Surveys

[Description](#) | [What do the instruments measure?](#) | [Sample Survey Items](#) | [Optional Pre-College Question Modules](#) | [Outreach Activity Observation Form](#) | [Adapting Surveys](#) | [Implementer Guide](#) | [When is it best to administer the surveys?](#) | [IRB approval](#) | [Using the Results](#) | [Data-Entry Templates](#)

Downloads: [High School Surveys](#) | [Middle School Surveys](#) | [Optional Pre-College Question Modules](#) | [Outreach Activity Observation Form](#) | [Implementer Guide](#)

Description

AWE pre-college surveys comprise **core**, or basic, surveys that address typical objectives of pre-college activities and **modules** (optional sets of objective-based questions) that can be added to the core survey to fit the specific objectives of your activity or program. The objectives upon which the AWE surveys and modules are based were identified through a needs assessment and literature review of STEM outreach activities.

AWE Core Instruments address “core objectives” that appeared in almost all of the activities surveyed.



AWE Web Tour: www.aweonline.org

AWE Products: Instrument Web Pages

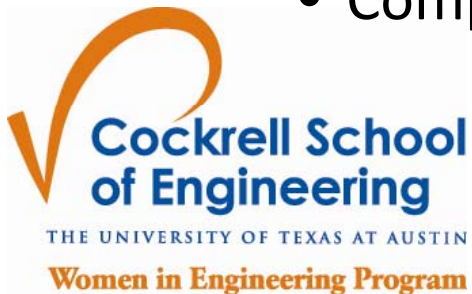


- Description
- What does the instrument measure?
- Sample Survey Items
- Can the instrument be modified?
- When is it best to administer the instrument?
- IRB Approval
- Using the Results
- Download the Instrument

AWE Web Tour: www.aweonline.org

AWE Products: Pre-College Participation Instruments

- **AWE Core Instruments** address “core objectives” that appeared in almost all of the activities surveyed.
- **AWE Survey Optional Question Modules** measure objectives not included in the core instruments. These modules can be added at any point in the survey.
- There are three versions of each pre-college survey:
 - Engineering
 - Science
 - Computer Science



Description

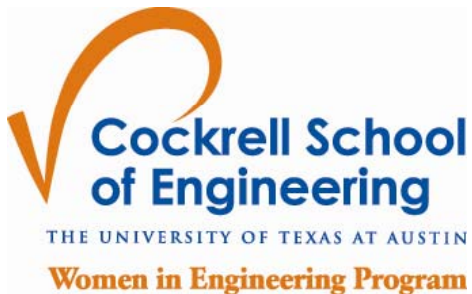


AWE Web Tour: www.aweonline.org

AWE Products: Pre-College Participation Instruments

Tools available are:

Tool	When to Administer
Pre-Participation	Prior to student's participation.
Immediate Post-Participation	At the end of the activity.
3-6 Month Post-Participation	Three to six months after activity to see if activity's impact is lasting.
Optional Question Modules	When activity objectives are not addressed by core surveys
Outreach Activity Observation Guide	During activities.
Pre-College Implementer Guide	When planning activity.



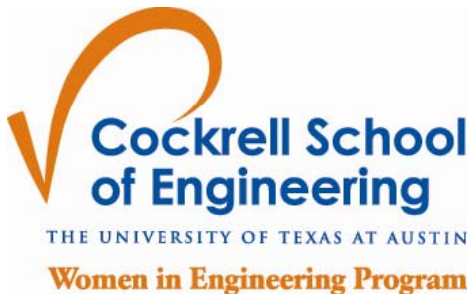
Description



AWE Web Tour: www.aweonline.org

AWE Products: Pre-College Participation Instruments

- Course-taking plans for high school.
- Whether participant intends to study science or engineering.
- What participant knows about what engineers, scientists, or computer scientists do.
- Participant skill and confidence level in areas that are important for successfully completing a science or engineering degree.
- Her/his satisfaction with the quality of the activity in which she/he has participated.



What do these instruments measure?



AWE Web Tour: www.aweonline.org

AWE Products: Pre-College Participation Instruments

Enter your welcome statement here, or use example text below:

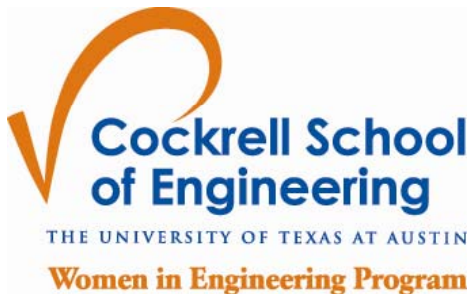
Welcome to **<name of activity>**

Thank you for taking the time to fill out this survey, which will take about 10 minutes to complete.

Please be sure to have your parents fill out the attached consent form and return it with your survey. If you have questions about the survey, ask any of the people administering it or **call/email xxx at xxx.**

FOR PRE-MAILED SURVEY ONLY
Please return this survey to the address below by **<date>**
Name & Institutional Address

Name:	(Please PRINT your first and last name)
Participant ID Number:	(Participant ID # provided by or completed by activity organizer)
Email:	



**Core MS Pre-Activity
Survey - Engineering**



AWE Web Tour: www.aweonline.org

AWE Products: Pre-College Participation Instruments

Tell us about you

1. **Gender:**

<input type="checkbox"/>	Female
<input type="checkbox"/>	Male

2. **Ethnicity:** (You may check more than one, as appropriate).

<input type="checkbox"/>	African/Black American
<input type="checkbox"/>	American Indian/Alaskan Native
<input type="checkbox"/>	Asian & Pacific American
<input type="checkbox"/>	Latina/Latino/Hispanic American
<input type="checkbox"/>	White American
<input type="checkbox"/>	Other: _____

3. **Education:** Check the grade that you are in now or, if it is summer, check the grade you will enter next fall.
Directions: Check one

3a.	<input type="checkbox"/>	6 th	<input type="checkbox"/>	7 th	<input type="checkbox"/>	8 th	<input type="checkbox"/>	9 th		
-----	--------------------------	-----------------	--------------------------	-----------------	--------------------------	-----------------	--------------------------	-----------------	--	--

3b.	Name of Middle School:									
-----	------------------------	--	--	--	--	--	--	--	--	--

3c.	Year You Graduate From Middle School:									
-----	---------------------------------------	--	--	--	--	--	--	--	--	--



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AWE Products: Pre-College Participation Instruments

Consider Every Option (CEO) Post Survey
June 17-20, 2008

Please answer the post survey completely. Your answers help us understand what you think about this program and how to improve it.

PLEASE PRINT

Name (first and last): _____ UT EID: _____

Birthdate (including year): _____ Grade (in Sept. 2008): _____

Address: _____ City: _____ Zip: _____

Which days did you attend? (Select all that apply)

<input type="checkbox"/> Day 1: Body, Mind & Medicine	<input type="checkbox"/> Day 2: Accessories, Games & Music
<input type="checkbox"/> Day 3: Energy, Earth & Beyond	<input type="checkbox"/> Day 4: Communities, Environment & Forensics

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AWE Products: Pre-College Participation Instruments

What are your goals?

12. The table shows statements about attributes of work that are may influence you as you think about your future career. For each sentence below check the appropriate box to tell us how what level of importance you place on each attribute:

How important is it to you to do . . .	<i>Not Important</i>	<i>Somewhat Important</i>	<i>Very Important</i>
a) Work that makes me think	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Work that allows me to make lots of money	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Work that allows me to use math, computer, engineering or science skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Work that allows me to tell other people what to do	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Work that allows me to help solve problems and create solutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Work that is fun to do	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Work that allows me to have time with family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Work that allows me to help my community and/or society	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Work that makes people think highly of me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Work that is satisfying to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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Tell us why you are here

18. Why are you attending this activity? Directions: Check all that apply.

<input type="checkbox"/> Have fun	<input type="checkbox"/> Have something to do
<input type="checkbox"/> Learn more about <name of offering college or organization>	<input type="checkbox"/> Learn more about different majors in college (e.g. engineering, science, computers, etc.)
<input type="checkbox"/> Learn about what engineers do	<input type="checkbox"/> Make my parents/guardians happy
<input type="checkbox"/> Meet others with interests similar to mine	<input type="checkbox"/> Prepare me to do well in school
<input type="checkbox"/> Not sure	<input type="checkbox"/> Other: _____
<input type="checkbox"/> Add additional question here if needed	<input type="checkbox"/> Add additional question here if needed

19. How did you hear about this activity? Directions: Check all that apply.

<input type="checkbox"/> A guidance counselor at my school told me about it	<input type="checkbox"/> I saw a newspaper or other advertisement
<input type="checkbox"/> A teacher at my school told me about it	<input type="checkbox"/> My parents told me about it
<input type="checkbox"/> I or my parents did a web/internet search	<input type="checkbox"/> I received something in the mail
<input type="checkbox"/> Someone from this college or organization told me about it	<input type="checkbox"/> Other: _____

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1. For items listed below indicate whether you **Strongly Disagree (1)**, **Disagree (2)**, **Neutral (3)**, **Agree (4)** or **Strongly Agree (5)** by circling the appropriate number.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
a) The information I received <u>before attending</u> CEO was clear.	1	2	3	4	5
b) If I needed help or had a question during CEO, someone was always nearby to help me out.	1	2	3	4	5
c) It was easy to get to know the other participants at CEO.	1	2	3	4	5
d) CEO volunteers were prepared.	1	2	3	4	5
e) CEO volunteers were approachable.	1	2	3	4	5
f) I understand engineering better after attending CEO.	1	2	3	4	5
g) I understand my career goals better after attending CEO.	1	2	3	4	5
h) My interest in math/science/engineering increased after attending CEO.	1	2	3	4	5

Logistics

Content

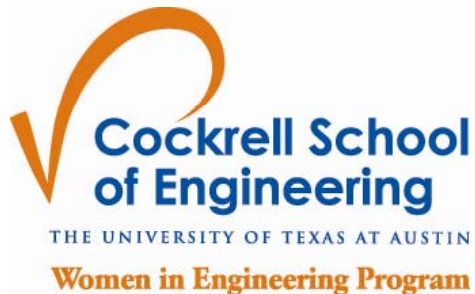
Customized Version

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SWE AWE Project Pre-College Objective-based Question Modules

- The **AWE Core Pre-College Instruments** address the most typical objectives of STEM outreach activities, identified through needs assessments and literature reviews.
- **AWE Pre-College Question Modules** provide *optional* sets of questions to address objectives that are frequently used and not covered in the core AWE Instruments



Optional Pre-college
Question Modules

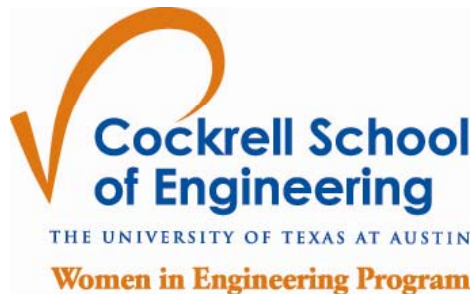


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AWE Products: Pre-College Participation Instruments

SWE AWE Project Pre-College Objective-based Question Modules

- Select questions or sets of questions below that match your activity or event objectives and data needs. (The objectives are stated before each set.)
- Customize by adding information related to your activity or event. (Recommended customization indicated by yellow highlighting).



Optional Pre-college
Question Modules



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AWE Products: Pre-College Participation Instruments

II. Rating Scales for Hands-on Activities/Projects

These questions measure the impact of hands-on activities and projects. The questions are designed to measure objectives related to developing hands-on skills, teaching problem solving, providing participants with experience in hands on activities and developing confidence in their ability to manipulate the physical world.

Qu # Circle a number to indicate your level of agreement with the statements below:

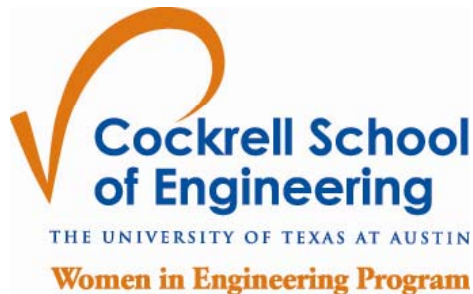
	1 = Strongly Disagree	2= Disagree	3 = Agree	4 = Strongly Agree
The activity helped me understand how to approach problem solving.	1	2	3	4
If I have the right equipment, I can teach someone else how to do this activity.	1	2	3	4
When I am working on a <type of project> project in the future, I will use what I learned in this activity.	1	2	3	4



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AWE Products: Pre-College Participation Instruments

Customized
Version



<p>From this session, I learned about engineering</p> <p>Not a lot 1 2 3 4 5 A lot</p> <p>Some</p>	<p>This session increased my interest in engineering</p> <p>Not a lot 1 2 3 4 5 A lot</p> <p>Some</p>	<p>I thought this presenter / engineer was</p> <p>poor 1 2 3 4 5 excellent</p> <p>good</p>	
	<p>Additional comments may be written on back</p>		
	<p>Fun Meter</p> <p>boring 1 2 3 4 5 awesome</p> <p>ok</p>		

AWE Web Tour: www.aweonline.org

AWE Products: Pre-College Participation Instruments

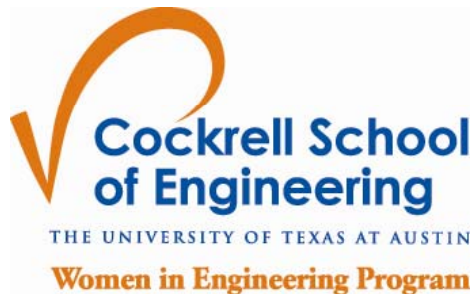
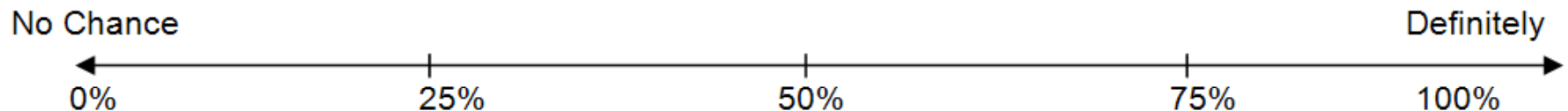
V. Rating Scales for Recruiting

These questions measure the impact of programs designed to recruit students into STEM disciplines and encourage them to go to college. Section VII (Recruiting & Branding) has similar questions and also addresses recruitment to a specific institution.

Qu # Have you visited a college or university? Yes No

Qu # What is the chance that you will go to college?

Indicate by marking an "x" on the line below. *If you do not know, check here*



Optional Pre-college
Question Modules



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I have a good understanding of engineering:

Please make your selection

I have a good understanding of what it takes to apply to engineering at The University of Texas at Austin:

Please make your selection

Please make your selection

- 1-Strongly Disagree
- 2-Disagree
- 3-Neutral
- 4-Agree
- 5-Strongly Agree

How likely do you think you will apply to The University of Texas at Austin?
Please answer with a percentage between 0% and 100%.

What is the chance that you will choose engineering as a major in college?

Please answer with a percentage between 0% and 100%.

What is the chance that you will choose engineering as a major at The University of Texas at Austin?

Please answer with a percentage between 0% and 100%.



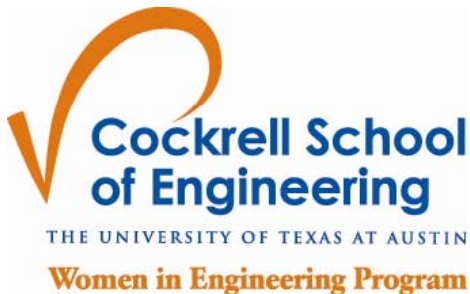
Customized Version



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3. What other interests do you have **outside** of engineering?
4. What is the chance that you will apply to UT-Austin? *Please answer with a percentage between 0% and 100%.*
5. What is the chance that you will choose engineering as a major in college? *Please answer with a percentage between 0% and 100%.*
6. What is the chance that you will choose engineering as a major at UT-Austin? *Please answer with a percentage between 0% and 100%.*



Customized Version



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AWE Products: Pre-College Participation Instruments

AWE Data Entry Template for AWE Pre-College Survey Instruments

AWE Copyright 2005, A Product of AWE-Assessing Women in Engineering (www.aweonline.org), NSF Grant #0120642

The **AWE Data Entry Kit** includes two EXCEL spreadsheets:

- 1) AWE Data Entry Instructions and Template** (this spreadsheet) is designed to facilitate data entry, management and reporting. See instructions for use below.
- 2) AWE Participant Spreadsheet Template** (a separate spreadsheet) is designed to allow you to separate individual names from the data and maintain the confidentiality of respondents. This spreadsheet should be stored separately, on a secured server, and available only to those named in your IRB approved proposal.

NOTE: Data Entry and Example worksheets are fully adjustable. All other worksheets are frozen to maintain the integrity of the surveys.

AWE Recommends:

- * Save the template as an EXCEL document with your activity name before you begin data entry and keep the original for future reference.
- * Each time you want to record data remember to open the template and resave for your new survey data.
- * AWE pre-college instruments are based on typical objectives and designed so that you can tailor the survey to fit your activity objectives. When you do this, remember to also adjust the data entry worksheet.

Data Entry Template

How To Use / Pre Survey Questions / Pre Data Entry / Imm Post Survey Questions / Imm Post Data Entry

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AWE Products: Pre-College Participation Instruments

B	C	D	E	F	G
---	---	---	---	---	---

AWE Middle School Pre-Activity Survey

Name of Middle School:

Enter answer in column C

Graduating Year:

Enter answer in column D

Gender:

- 1. Female
- 2. Male

*Save gender as follows in column E:
female as '1', male as '2'*

Data
Entry
Template

(Enter a maximum of two)

- 1. African American/Black American
- 2. American Indian/Alaskan Native
- 3. Pacific & Asian American
- 4. Latino/Hispanic American
- 5. White American
- 6. Other:

*Save ethnicity as numbers in column F
African American as '1', American Indian
If student checked two ethnicities, save s*

If student filled in 'other', type answer in c

1. Check the grade that you are in now or will enter in Fall 2004. Directions: **Check one**

<input type="checkbox"/>	6th	<input type="checkbox"/>	8th
<input type="checkbox"/>	7th	<input type="checkbox"/>	9th

Save as numbers: 6, 7, 8, or 9 in Column

2. What do you expect to get out of this activity? Directions: **Check all that apply.**

How To Use	Pre Survey Questions	Pre Data Entry	Imm Post Survey Questions	Imm Post Data Entry
------------	----------------------	----------------	---------------------------	---------------------

AWE Web Tour: www.aweonline.org

AWE Products: Pre-College Participation Instruments

**Data
Entry
Template**

A1		Possible Answers									
	A	B	C	D	E	F	G	H	I	J	
1	Possible Answers	Any unique number	(open ended	(open ended	(1,2)	(1-6)	(1-6)	(open ended	(6-9)	(blank or 1)	(b
2	Question	Unique Student Number (not SSN)	Name middle school	Graduating year	Gender	Ethnicity 1	Ethnicity 2	Ethnicity-other	grade enter in fall	interests same as mine	le at
3	Question #	ID							Q1	Q2a	C
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											

AWE Web Tour: www.aweonline.org

AWE Products: Pre-College Participation Instruments

1	EID or Birthdate	Grade	Day 2: Accessories Games & Music	First Choice:	Good Understanding of Engineering	% chance you will apply to UT?	% chance you will major in engineering?
41	6/3/1992	10th grade	Not Attending	Electrical & Computer Engineering	3-Neutral	50%	75%
42	ncb432	12th grade	Not Attending	Biomedical Engineering	3-Neutral	100%	75%
43	amm4337	12th grade	Not Attending	Chemical Engineering	3-Neutral	100%	95%
44	8/25/1992	11th grade	Attending	Electrical & Computer Engineering	3-Neutral	80%	40%
45	pmd463	12th grade	Attending	Chemical Engineering	3-Neutral	5%	0%
46	10/11/1992	10th grade	Attending	Architectural Engineering	3-Neutral	100%	100%
47	10/11/1992	10th grade	Not Attending	Biomedical Engineering	3-Neutral	100%	80%
48	4/2/1992	11th grade	Attending	Biomedical Engineering	3-Neutral	95%	50%
49	11/2/1991	11th grade	Not Attending	Chemical Engineering	3-Neutral	50%	50%
50	12/12/1991	11th grade	Attending	Architectural Engineering	3-Neutral	100%	80%
51	1/29/1991	12th grade	Not Attending	Biomedical Engineering	1-Strongly Disagree	50%	80%
52	3/1/1991	12th grade	Not Attending	Civil Engineering	4-Agree	100%	90%
53	2/18/1992	11th grade	Attending	Biomedical Engineering	3-Neutral	50%	50%
54	2/10/1992	11th grade	Attending	Electrical & Computer Engineering	2-Disagree	50%	50%
55	mmk743	12th grade	Attending	Biomedical Engineering	2-Disagree	100%	20%
56	5/8/1991	12th grade	Not Attending	Architectural Engineering	3-Neutral	100%	50%

Words of Wisdom: Steps to Success

1. Select an AWE instrument and optional modules based on your program objectives.
2. Minimize modifications in beginning.
3. Optimize with time and based on results.
4. Use it or lose it. (*Use the data or don't do the assessment.*)



Words of Wisdom

- Start small and focused in your assessment
 - Don't try to measure everything
 - Think about the use of the results first
- Don't reinvent the wheel
 - Use the AWE products
 - Use other's assessments with modifications
- Keep at it...*it will eventually become a part of your program's culture*



For More Information...

- Tricia Berry (tsberry@mail.utexas.edu)
- AWE Project
 - Dana Hosko (dhosko@engr.psu.edu)
 - Barbara Bogue (bbogue@psu.edu)
 - Rose Marra (rmarra@missouri.edu)

