

Program Development Grant Final Report Cover Sheet

DR# 060

Project Title: “Ready! Set! Take Off for Engineering!”

Date: Oct 28, 2001

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Deliverables: Indicate type (i.e. document, web page, brochure, etc.), title, and media (hard copy, email file, disk, etc.)

Web Site, pens for advertising site

Select¹ the one primary Strategic Priority this project addressed:

Leadership Education Diversity Visibility Vitality

SWE Committees to which this report and deliverables would be of interest:

Career Guidance Public Relations MultiCultural Committee
 Continuing Devel. Publications Other: _____
 Membership

Project Audience (age, sex, diversity) Female: Yes Male: Yes

<i>Age Group</i>	<i>No. Actual/Proposed</i>	<i>Diversity</i>	<i>No. Actual/Proposed</i>
<input type="checkbox"/> Elementary	<u> / </u>	<input type="checkbox"/> Caucasian	<u> / </u>
<input type="checkbox"/> Middle School	<u> / </u>	<input type="checkbox"/> African American	<u> / </u>
<input type="checkbox"/> High School	<u> / </u>	<input type="checkbox"/> Hispanic	<u> / </u>
<input type="checkbox"/> College	<u> / </u>	<input type="checkbox"/> American Indian	<u> / </u>
<input type="checkbox"/> Professional	<u> / </u>	<input type="checkbox"/> Pacific Islander	<u> / </u>
<input type="checkbox"/> Other _____	<u> / </u>	<input type="checkbox"/> Asian	<u> / </u>
Contact Hrs: _____	per_attendee	<input type="checkbox"/> Other _____	<u> / </u>

¹ To enter an "X" in any of the boxes on this page, type a "6" in place of the box.

SWE Volunteers (No.)	<u>12</u>	Estimated Total Hours:	<u>130</u>
Non-SWE Volunteers (No.)	<u>10</u>	Estimated Total Hours:	<u>20</u>

Executive Summary: A short summary of what the Project was and what it accomplished. The “Ready! Set! TakeOFF for Engineering” web site educates students, teachers and guidance counselors about what engineers do and how to become an engineer. The colorful graphics and video interviews of real engineers on the job is attractive to young people. Teachers, guidance counselors, and SWE career guidance committees can use the site as a tool when talking to students about engineering. Nine educators and 225 students were surveyed and provided input to the design and content of the web site. The site is dynamic, i.e. the main page features changes every month, so it is a site that is interesting to come back to time and time again.

2) Narrative Description, including program goals, schedule, program conduct and content

a) Program Goals

The Pikes Peak Section delivered a web site located at <http://www.swe.org/takeoff/> that educates students, teachers, and guidance counselors about what engineers do and how to become an engineer.

The goals of the project are best stated in the Executive Summary in the Initial Proposal:

The Pikes Peak Section is submitting a grant proposal for the project “Ready, Set, Take Off for Engineering!” “Take Off for Engineering!” would be a FUN web site that is designed by and for Junior and Senior High School Students. The web site would be a single resource where students and guidance counselors can find out about careers in engineering, engineering degrees, and what students can do to prepare themselves to enter into an engineering degree. The web site would contain video, sound bites, young people’s language, and lots of “flash” so it is an interesting place for students to visit. The site would focus attention on the positive and interesting aspects of engineering and show engineers in such a light as to debunk unflattering myths such as “engineers are nerdy” or “all they do is sit at a desk all day.”

“Ready, Set, Take Off for Engineering!” would demonstrate all five of the Society’ s strategic priorities:

- Leadership - PPS members would be accountable for all aspects of the project with opportunities to develop leadership and management skills.
- Education - The project would debunk unflattering myths about engineering, educate students about engineering careers, and suggest how students can prepare themselves to pursue engineering degrees.
- Visibility - The web site would be located on national SWE’s web server with links to the SWE main page and career guidance pages.
- Diversity - Videos would reflect the diverse population in the field of engineering.
- Resources - This high quality web site would be available to all of SWE.

There were also secondary goals that are described in the project proposal. The following list describes the goals and what was accomplished.

Goal	Accomplished	Notes
Create a web site that describes engineering	yes	
Web site is dynamic, i.e. changes every month, and is low maintenance once developed	yes	
FUN site designed by Jr. and Sr. HS students.	partial	We received input from 255 students during the concept stage, but they did not design the web site in entirety.
Resource where students and counselors can find out about careers in engineering	yes	
Resource where students can find out about engineering degrees	partial	Only ABET accredited Colorado schools are listed
Resource where students can find out how to prepare to become an engineer	yes	

Goal	Accomplished	Notes
Web site contains video, sound bites, and young people’s language so it is an interesting place for students to visit.	partial	Site contains the elements mentioned, but there has been no measurement of students’ interest
Site shows engineers in such a light to debunk unflattering myths “nerdy” and “sit at a desk all day”	partial	Video interviews shows engineers don’t sit at a desk all day but there is no measurement of whether unflattering myths are debunked
Project would create inroads to schools and allow the section to work more closely with students and teachers	yes	Definitely. Our small section spoke to over 800 students and teachers during the project.
Project would be a “team building” event for the section	partial	Initially, this was true.

b) Program Conduct and Content

At the initial Kick-Off meeting, the project tasks were divided into 6 areas and committees were formed to address the tasks. The following describes the committee’s responsibilities and results

University Engineering Information

This committee was comprised of 3 people and had the responsibility for gathering engineering majors, listing ABET accredited schools in Colorado, describing how to prepare for a degree in engineering if starting in Jr. High School, describing how to prepare for a degree in engineering if starting in Sr. High School, and identifying other related links on the world wide web. This committee put all findings and information into electronic form and delivered content to the web developer.

University Career Information

This committee was comprised of 3 people and had the responsibility of identifying and describing the various engineering career fields. This committee got permission to use the text in the Engineering pamphlet that was created by SWE and Ford. They put the text into electronic form (using text recognition software and proofreading results) and delivered the content to the web developer.

Teacher and Guidance Counselor Liaison Team

This team was comprised of three SWE members and had the responsibility of surveying teachers and guidance counselors for information that they would like to see on an engineering web site. This committee surveyed 11 people and conducted a focus group luncheon for further inquiry into the survey questions. The results of the survey are provided as an attachment.

Student Liaison Team

This committee was comprised of three members and had the responsibility of surveying students for their impressions of engineers, what kind of web sites they find interesting, and generally to get an understanding of the target audience. This committee organized section members to visit several schools and a girl scout group. The team collected 255 surveys from the students and summarized the

results. They presented the results at a Web Design Workshop and had the majority of the influence to the design. The results are provided as an attachment.

Web Page Contract and Contact

One person lead this effort and had the responsibility of organize the choosing of a professional web developer and be the primary contact between the committees and the web developer. A Request for Proposal was distributed and three proposals were submitted. Alpine Studios was chosen, by committee, as the web developer. This person notified the web developer of design meetings, coordinated the content that was delivered to the developer by the various committees, and handled payment to the web developer based on deliverables. One-third of pay was submitted to the developer initially, one-third at delivery of beta, and one-third after final changes resulting from beta testing.

This team also coordinated the beta testing by finding 7 volunteers to test the site, gathering their comments, sending comments to web developer, and checking that changes were made.

Finally, this team worked with SWE-ECC in delivering the web site to be hosted at www.swe.org.

Video Team

Three people comprise this committee and they have the responsibility of interviewing engineers who are excited about their careers and getting the video content to the web developer. To accomplish this, the team coordinated hiring a video production person and a video editor to get professional quality video into digital format. The team also obtained 7 engineer volunteers from a diverse background of fields who agreed to be interviewed. They supplied the volunteers with a list of questions that were to be asked, the questions being designed in such a way to be interesting or fun for kids. The team also coordinated the delivery of 4 of the interviews to the web developer, 4 being the number of interviews that the web developer can handle within budget due to the formatting needed for each one.

Advertising Team

This team was initially comprised of two people, but due to circumstances of the members involved, the project manager has taken on completing the deliverables. This team has the responsibility of advertising the web sites to students, teachers, guidance counselors, and SWE members. In order to accomplish this, two efforts are being undertaken. First, 3750 pens with the web site URL have been ordered. A majority of these will be sent to Detroit for the next national conference to be used as a give-away. Some pens are retained for use by SWE-PPS to be used as hand-outs when visiting schools in career guidance capacities.

The other effort is to coordinate a media blitz on the main www.swe.org page to point SWE members to the TakeOFF for Engineering site. This includes sending email notifications to swe-all and to swe-cg. This 2nd effort is underway.

c) Schedule

The following schedule shows the major deliverables per committee.

Task/Committee	SubTask	Target Date	Actual Date
Web Development Web Developer Liaison	Site Available at National	March 15, 2000	November, 2000 ²
Web Developer Liaison	Coordinate contract with web developer	Jan 10, 2000	Jan, 2000
Interface with Teachers and G.C.	Prepare for Survey Luncheon	through Nov 19, 1999	December, 1999
“”	Summarize Surveys for WS	Jan 8, 2000	Jan, 2000
Interface with Students	Summary of Student Surveys for Web Page Design WS	Jan 8, 2000	Jan, 2000
University Eng. Info	Engineering Schools web site resource list	Jan 31, 2000	Feb, 2000
Engineering Careers	Content written for each disc.	Jan 8, 2000	Feb, 2000
Video & Sound Bites	Interview 5 or 6 Eng.		November, 2000 ³
Advertising	Hand outs and WWW ads		current

² Program schedule delay, mainly due to video undertaking.

³ Video work was under-estimated in both time and dollars. SWE-PPS received additional funding from Honeywell to complete video work professionally (see Budget).

3) Measured results (number and mix of attendees, surveys, other measures of impact, etc.) including comparisons to prior data or prior expectations, what constitutes success, use charts where appropriate.

- a) Result 1: Web site at <http://www.swe.org/takeoff/>
- b) Result 2: 255 students surveyed about their impressions of what engineers do and how to become an engineer.
- c) Result 3: SWE-PPS members spoke to over 800 middle school and high school students about engineering as a result of the project.
- d) Result 4: SWE-PPS members surveyed 11 of teacher and guidance counselors about engineering.
- e) Result 5: Brenda Wolfe, SWE-PPS member, was interviewed in article in Colorado Springs Gazette-Telegraph, Jan 29, 2000. The article was about SWE-PPS efforts in talking to students, especially girls, about engineering and mentions the TakeOFF for Engineering web site.
- f) Non-Result 6: A measure of success would be to measure web site hits, track where the hits come from (e.g. school domains), measure the number of repeat hits, include ability for students to supply feedback about the site, etc.
- g) One unexpected result is we obtained a \$1,000 donation from Honeywell which we were able to use toward video production and advertising.

4) Publicity or other public attention. (Attach copies of press clippings, list of dates and stations of TV radio publicity with short description.)

Electronic abstract of newspaper article discussing SWE-PPS member, Brenda Wolfe, which mentions this web site project:

Woman helps break mold of engineering profession

Colorado Springs Gazette - Telegraph; Colorado Springs; Jan 29, 2000; Joanna Bean;The Gazette;

Abstract:

(Brenda) Wolfe is passionate about engineering - and about turning girls on to a profession that's often the butt of jokes and not necessarily a career track for girls.

As a founding member of the Society of Women Engineers Pikes Peak Section, Wolfe has a forum for her message. The local section has made outreach to girls and boys a focus of its work.

5) Description of deliverables. If not included in this file, describe format, title, etc. (i.e. a video titled "xyz" or a series of web pages at http://www....)

- a) Web site is at <http://www.swe.org/takeoff/> : This web site consists of 10 web pages, 4 of which are bios of real engineers and links to their video interviews. The main page is dynamic, and changes from month to month to display different features.
- b) Hand-outs – pens with the web site URL to be distributed at Detroit National Conference
- c) Digit interviews of 7 engineers, examples of the digital interviews can be found on the web site for 4 of the engineers.
- d) Survey of student’s impressions of engineers (see attached)

6) Lessons learned, problems encountered and future plans (what you would do differently if you did this again.) If the project design you followed differed significantly from the original plan describe the nature of and the reasons for the changes.

- a) Keep people (volunteers) engaged and manage the project better over time. Most committees, especially the ones that had early project tasks, made their deadlines and produced good work. As the project went on, committees fell apart and the job fell onto one or two people in order to complete. Not a strong finish.
- b) Appoint a non-section officer to oversee the project. As it was, the project manager was section president and priorities of being president eclipsed the project priorities.
- c) Keep the video and web services professional. This is something we did and it made a difference. The video is smooth, well produced and well-edited. The web services are very professional. Unfortunately, these professional services are major costs (see budget expenses).
- d) The video production piece was under-estimated in terms of both time and money. This includes the effort needed to capture the video and frames into a web page per interviewee. We were able to make up some of the cash deficit from a donation by Honeywell.

7) Budget and actuals, include all funding sources for income and expenses and show amount paid by the Grant and the balance due. The financial data required for final payment must contain, at a minimum, the following breakdown of expenses:

a) Income

Initial (90%) of grant:	\$4680
Donation from Honeywell:	<u>\$1000⁴</u>
Total Funds Collected:	\$5680

⁴ Funds donated by Allied Signal was applied to video production, advertising (pens), and video-web work.

b) Expenses

The following table shows the final approved budget and the actual expenses. The budget was created before the \$1,000 donation from Honeywell was obtained. The overages on activities 5, 7, and 10 reflect the money that was applied from Honeywell.

Activity	Description	Items	Budget	Actual
1.	Kick-Off Meeting	Refreshments	30	25.69
2.	Five focus group meetings with high school students	Food	25	22.89
3.	Guidance Counselor lunch focus group	5 Participants Lunch	55	54.01
		Engineering career reference give-aways	100	88.57
4.	University Educational Requirements Data Collection	Administration costs (postage, phone, copies) for gathering university requirements	30	
		University and College Catalogues	40	0
5.	Video production and editing for web site	Tape Stock: 3 cases for approx. 12 hours of video.....	200	155.97
		video production	75	643.33
		video editing for web.....	500	512.50
6.	Three quarter day workshop to define web page requirements	Lunch for participants	60	50.60
		Workshop supplies	25	13.69
7.	Professional Web page development	80 hours at \$45/hour	3600	3797.51
8.	Usability test	Food for student participants	25	0
9.	Web site unveiling and recognition event at Engineering Week dinner	Dinner for 3 key student participants @ \$25.....	75	0
10.	Advertising	All forms of advertising of site (3750 pens with URL printed)	250	787.50
11.	Misc.	e.g. mailings to committee and student participants, certificates of participation to students, etc.....	110	46 ⁵
		TOTAL	5200	6,198.26

c) Total Due = Total Expenses – Funds Collected

Total Due to SWE-PPS = 6,198.26 – 5680 = \$518.26

⁵ This number includes an estimate of \$30 for shipping 3000 advertising pens to the 2002 Detroit National Conference.

Attachment 1: Teacher and Guidance Counselor Survey

Guidance Counselors/Teachers Website Requirements

Part A Teacher/Guidance Counselors Survey Background information:

11 surveys returned: 8 from science/math/MESA teacher, 3 from guidance counselors

2 Middle Schools responded: Eagleview & Gorman

5 High Schools responded: Coronado, Manitou Springs, Palmer, Pine Creek, Ellicott

Part B Website Use Requirements :

(number after items indicates total responses for that feature. If no number is listed, then there was only 1 requests for that feature)

Appealing colors, colorful 4

Links to other sites

User friendly, easy to navigate 4

Small sections of text

Graphics, visually stimulating to kids 3

Catchy Icons

Fast loading 3

Current

Pictures 2

Catchy Icons

Easy to read lettering 2

Part C Website Content Requirements:

(Number after item indicates total requests for that item. If no number is listed, then there was only 1 request for that feature)

College preparation for engineering careers 11

College requirements for various career fields

Best schools to attend, mentioning size, location

List of colleges with accredited engineering programs

Links to other colleges, local colleges, engineering universities

Links to other engineering type sites

Tuition information

Engineering career information 10

Types and description of individual engineering career fields

What they do in each career field

Type of responsibilities for each field

Employment outlook for each career field

Pay and salary ranges for each career field

Examples of engineering problems and solutions in each area of engineering

High school course requirements for various engineering fields 5

Scholarship offerings and information 5

Video of personal stories of women engineers & real life interviews 3

Two-way email link for student-engineer dialogue 3

^ Students have capability to ask engineers in various field questions

^ Email capability for long term mentoring process between student & individual

engineer

^ Discuss societal demands and how engineering industry demands are rising

^ Discuss specific opportunities for females & minorities

- ^ Get site listed on several search engines like YAHOO
- ^ Engineering puzzles to pique interest with solutions on a separate page

Part D: Publicizing the SWE Website after it is Operational

^ Ways to publicize Website to **educational professionals** in your district?

Do booth or presentation at annual state wide MESA fall meeting at University of Colorado at Denver; Gloria Nelson state contact
Email information to counselors and math/science teachers 4
Provide posters and/or flyers for school with Website email address visible 4 very
Send information to individual School Newsletters 3
Do demo or provide information to schools' math & science chairs 3
 Provide guest speakers to classrooms to discuss site Provide
 individual school libraries information about the Website content and
 address
 Provide a short video which could be viewed by a building
 Letters to educational professionals

Ways to publicize this Website to **students** in your district?

Flyers and posters for School bulletin boards 4
Through math/science teachers and counselors 3
 Brochures for students
 Bookmakers for students
 Demos to student groups
 Through school's Talented & Gifted coordinator or technology coordinator
 Through MESA coordinators
 Through librarians
 Through district Office and Community Relations - District 11

Schools interested in having students test our Website

Coronado High School - Bill Lehman, Dora Gonzales
 Eagleview Middle School - Dean Thruston
 Ellicott High School - Sue Smith, Steve Delpino
 Gorman Middle School - Carolyn Dickerson
 Palmer High School - Nancy Galvin , Larry Burtel
 Pine Creek - Scott Aqodaia

Attachment 2: Student Survey Results

Students' Responses to Ready, Set, Take Off for Engineering! Surveys

by Connie King and Carrie Kessler

January 4, 2000

Students' responses to our Ready, Set, Take Off for Engineering! surveys have been informative -- and some have been quite entertaining!

Q: What do you think engineers study in college?

A: Most students know that engineers study math and science in college. Students listed the following courses: physics, quantum physics, design, a ton of math, geometry, statistics, mechanics, architecture, computers, economics, problem solving, political science, technology, electronics, how things work, building, computer programming, cars and how to fix them, applied math, business, people skills, communications but all depends on the kind of engineering.

Q: What do you think engineers do in their careers?

A: We reviewed responses from 255 high school students (Cheyenne Mountain HS - 20; Harrison HS - 147, Palmer HS - 73 and Girl Scouts - 15). Listed below are the number (and percentage) of students who circled each of the following descriptions of what engineers do in their careers.

<u>Description</u>	<u>Number of Students</u>	<u>Percentage of Students</u>
Design projects	241	94.5%
Manage people	131	51.4%
Work for government	160	62.7%
Teach students	133	52.1%
State senators	40	15.7%
Market products	135	52.9%
Communicate w/ co-workers	184	72.2%
Work for industries:	224	87.8%
Become lawyers or MD's	42	16.5%
Become famous cartoonists	38	14.9%

Q: What high school courses should be taken by students planning to major in engineering?

A: Students listed the following courses:

- 4 years science, physical science, geology, biology, chemistry, physics, Advanced Placement (AP) physics, geology, environmental sciences
- 4 years math, algebra 1, 2, 3 & 4, geometry, trigonometry, pre-calculus, calculus
- computers, keyboarding, computer lab, computer programming
- business, economics, marketing, accounting
- English, foreign language
- history
- speech communication, communications
- architectural and technical drawing, drafting, computer aided drafting
- applied technology
- Marketing, People skills
- Mechanics

- AP classes

Q: Which websites do you like? What do you like about these websites?

A: Students' responses are listed below:

- The ones that keep adding more info
- Websites that are colorful and easy to "travel"
- Geocities
- Mycomputer.com -- ideas for websites
- NASA website
- Videogames
- Paintball websites
- Adventure sites about outdoors and science
- Nsync.com
- TV websites
- Horoscope websites
- Cybertown.com -- chat site
- Shockwave.com -- games, cartoons and music
- Zone.com -- games
- Foxkids
- Geography site
- Teenmag
- WCW.com
- WWF.com
- Bet.com
- Rock.com
- MTV.com
- Stores (?)
- Interactive
- Comic websites
- Sports
- Architecture.com
- Earthbound.com
- Bored.com
- Emsonline.com -- camping gear
- Gear.com -- camping gear
- ESPN
- SportsIllustrated
- Hampsterdance.com
- About the environment
- WWW.IGN.com -- gaming
- Hotmail.com -- email
- Infoseek.com -- find anything
- Lotsofjokes.com
- Animalplanet.com
- Yahoo.com
- Altavista.com
- Starwars.com
- Theforce.com
- NorthFace -- gear
- LoweAlpine -- gear
- SierraTradingPost -- gear
- Sport sites
- Teen websites with chat rooms
- Airforce and other military websites
- Car sites
- Bright colors, interesting , sounds attract attention
- CDNow.com -- entertainment sites
- Yahoo, Excite -- pictures, to find things, fun games to play
- Gamecenter.com -- game answers
- Music related -- MSBET, song lyrics
- Ebay
- Reel-Big-Fish.com - band
- Anything fun to read
- Artbeats.com and wavecentral.com -- visual and audio clips, lots to see
- Cartoonnetwork.com
- Final Fantasy VIII - game
- MP3.com -- download music
- Marrowsnowboards.com -- has animations using flash
- Famous Cute people's websites

Q: What interesting information could a website on engineering careers provide?

A: Students' responses include:

- What classes to take
- Supplies needed to go to engineering college
- What to study

- Info on becoming an engineer
- College preparation
- What skills you need to have
- Good school ideas
- Good engineering colleges/Solid engineering-oriented colleges could be listed and how much each costs
- How many years of college is normal to attain engineering degree
- Statistics about engineering students (% male, % female, % minorities, average and range of number of job offers and starting salary amounts received by students of each engineering major)
- Scholarship info
- Financial aid
- What engineers do
- Products that engineers produce
- What an engineering career is like on a personal level
- Info on types of engineering
- Info on engineering careers
- Practical applications
- Salaries and benefits
- Job opportunities
- Major projects
- Things that have been accomplished by engineers, discoveries they have made
- Names of companies that hire engineers, the kinds of products they make, where they are located
- What kinds of engineers are working today, what do they do
- How engineering is related to our lives
- Time spent at work (hours/week)
- Besides college other ways to learn about engineering
- Help you to decide what to do (even if it is not engineering related)
- Different career choices
- How engineers relate to real life
- History of engineering
- Frequently Asked Questions (FAQ)
- How put something together and its use
- Help in finding a job
- Example of projects they do
- Pro and Cons of being an engineer
- Simulations
- Contests
- Example of what need to know

Q: Do you think there is a stereotypical image of an engineer? What do you think it is?

A: Students described the stereotypical image of engineers as:

- geeks, nerds, secluded, dorky, wearing a white lab coat, glasses and a pocket protector, kinda geeky people with big glasses (goggles), plain, boring, lazy, old, skinny, uninteresting, they don't do anything important
- they don't dress fancy, not fashionable
- no common sense (student commented "it is true")
- nerdy men working on math all day, carries blueprints, they all work with computers, people always working and doing math, a person who sits in a cubicle all day typing away
- "Have you ever been to one of those places where they work? It's a bunch of nerdy men hiding in cubicles with women secretaries."
- a smart person able to understand abstract facts people who improve or invent things, it would be hard to be one, work with hands and solve problems, a person with tools fixing things, smart and professional smart people that make cool stuff
- one student responded that our image is geniuses who make a lot of money (this intelligent student deserves a scholarship!)
- Engineers only work on engines or machines
- Does nothing in life but work
- Goodie - Goodie
- Work with cars
- Man, that works in hot places
- Man, in nice shirt and pants
- Rich people
- Very educated
- Small man wearing pocket protector and has a gut
- Computer nerd
- Always has a computer or calculator
- Smart
- Someone covered in oil
- Work in factory
- Must like math
- Stuck up
- MEN

Q: Describe engineers that you've met.

A: Some students provided descriptions: smart looking, kind of rich, smart people that make cool stuff, nice and considerate, nice and knowledgeable in their field, brown hair, brown eyes and glasses, I've never met one, nice, anti-social and foreign (not American), normal people, nicely dressed, hardworking, most are nice, a few are arrogant, very intelligent, very analytical, very pleasant, nice and funny, very bright, extremely creative, outgoing, regular people like me and you, down to earth, well dressed, sophisticated, normal, rich, funny, cool and happy, work on army vehicles, older, wide but not very fun.

Some students named relatives: my mom, my dad and his friends, my dad who is my greatest role model, Sam's dad, my dad is an electrical engineer working on the new Mariners stadium (I helped a little bit!), my dad is a EE and a nice neighbor who is an environmental engineer, my dad and my mom along with aunts and uncles are engineers -- essentially normal people, intelligent and love experimenting and engineering, my uncle who has grey hair, is really funny and lives in a big house, my cousin who is 6'4", blond hair and nice, my brother-in-law, my

uncles -- successful and happy but hard workers, friends' parents and parents' friends -- intelligent, hard working, nice, lots of good stories.

Some students claimed we were the only engineers they had ever met, specifically: women engineers who teach about engineering, none besides you guys, only the ones here at career day

Q: Name famous people that are engineers.

A: Many students named Bill Gates. Some students named Albert Einstein, Thomas Edison, Ben Franklin, Neil Armstrong, John Glenn, Frank Lloyd Wright, Scott Adams, Cindy Crawford, Steve Jobs, Steve Wosniak, Jimmy Carter, Seymour Cray, Gerald Ford, Alexander Graham Bell, Carrie Kessler and Dilbert. One student asked, "There are famous engineers?"

Q: How could engineers change their stereotypical image?

A: Students commented that engineers could change their stereotypical image by:

let people know more about them, get more public, wear contacts instead of glasses, dress better, advertise more, cancel Star Trek, educate people, take Dilbert out of syndication, create a good movie about engineers, don't wear suits, actually show people what they do, have more of a variety of people in this business, not be nerdy, kill Dilbert, not be so bright, have a sense of humor, be women, be social, get out and promote yourselves, they're stuck, make known there is more to engineering than computers, be more active in the community, commercials, change the name, because it makes people think of engines, let people know what they do, let in different kinds of people, visit younger people, show more people what they do, talk to more classes (get younger kids involved), advertise, publicize pictures, broaden field of study.

One student said engineers couldn't change their image because they have to look business oriented and civilized and they have to be smart.

Q: What do you see as the benefits of becoming an engineer?

A: Students cited benefits of becoming an engineer as: making a lot of money, fame, respect, get rich, better human life, being involved in technology of the future, good places to work, more jobs to choose from, get to build things, in demand, work with different people, knowledge, solve problems, interesting job, make life easier for others to live, always learn new things, never get bored and helping the world, fun job, work in cool places, stable life and career, not many people in the field, earn more money and help people, money and a good education, working with others, ever-changing job, an awesome job that will always be there to earn you money, guaranteed a job (just about), you are the leader of technology, you get to create things, work outdoors, learn a lot, upgrade the quality of life, more jobs to choose from, get money and respect, change things in the world and make things easier for mankind, knowledge of many different things, learn how to build stuff, meet more people and share ideas, knowing you can make something the world needs, make a difference in how we live, discover things no else knows, help society, have fun, hands on experience, travel, own a business, respect by the community, change the world and work in a daily challenge, engineering is not a lazy job, you get to work on airplanes, social prestige and meeting new people.