

Camp Reach 2006 Annual Report Evaluation Addendum*

Table of Contents

Summative Evaluation

| | |
|---|---|
| Effect of Program on Campers | 1 |
| Parent and Teacher Perspectives of Effects on Campers | 5 |
| Staff Development Goals | 7 |
| Effects of Camp Reach on Families | 9 |

Formative Evaluation

| | |
|--|----|
| Discovery Workshops and Other Academic Activities | 11 |
| Design Projects | 14 |
| Evening/Recreational Activities..... | 18 |
| Measures of Overall Satisfaction | 20 |
| Campers..... | 20 |
| Parents | 23 |
| Staff | 25 |
| Staff Training..... | 27 |
| Parents' Feedback on Pre-Camp Communications, Opening and Closing Days ... | 29 |

**Please note that all responses to open-ended questions contained in this document are direct transcriptions from respondents and purposefully have not been corrected for grammar and spelling mistakes.*

EFFECT OF PROGRAM ON CAMPERS

| Comparison of Pre-Program vs. End-of-Program Camper Questionnaires | | | |
|--|-------------|-------------|-----------------------|
| | Mean | | <i>p</i> [^] |
| | Pre | Post | |
| <i>Interest in and Knowledge of Engineering</i> | | | |
| I find engineering and technology to be interesting.* | 3.43 | 3.77 | .002 |
| I have a good understanding of what engineering is.* | 2.50 | 3.52 | .000 |
| <i>Motivation Toward Education</i> | | | |
| I am looking forward to math and science courses in middle school and high school.* | 3.20 | 3.70 | .000 |
| I have given a lot of thought to my future career.* | 2.67 | 2.83 | .258 |
| <i>Confidence, Efficacy, and Self-Esteem</i> | | | |
| I could be an engineer if I wanted to.* | 3.07 | 3.65 | .002 |
| Skills rating [#] | 71.2 | 78.3 | .000 |
| Self-esteem score [†] | 36.9 | 39.6 | .000 |
| <p>[^] Two-tailed values, determined from paired-samples t-tests. The value <i>p</i> is the probability that the observed difference between the means is due to chance alone. In social science research, <i>p</i> values less than 0.05 (highlighted in yellow above) are generally viewed to be statistically significant.</p> <p>* Responses were given on a scale of Strongly disagree = 0; Disagree =1; Neutral = 2; Agree = 3; Strongly agree = 4.</p> <p>[#] Participants rated their “comfort and confidence level” for 22 skills and abilities, on a 4-point scale from 1 = Poor; 2 = Fair; 3 = Good; 4= Excellent. The skills rating is the sum of these 22 responses, for a maximum possible score of 88.</p> <p>[†] Participants were asked “How do you feel about yourself” for 11 paired descriptors such as “Smart—Not Smart”, “Weak—Powerful”, and “Indecisive—Decisive.” Their responses were on a 5-point scale between those extremes, from the less desirable to the more desirable extreme: 0 = Very (less desirable, e.g. Not Smart); 1 = Only a bit; 2 = In between; 3 = Only a bit (more desirable, e.g. Smart); 4 = Very. Maximum possible score is 44.</p> | | | |

| Campers’ Answers to “Describe Engineering in Your Own Words” | | |
|---|---|--|
| | Opening Day of Camp Reach | Closing Day of Camp Reach |
| 1 | Building/designing things | The process of designing and building something |
| 2 | -- | Engineers find a problem and fix it. They figure out problems and try to find a way to solve them. |
| 3 | Building/putting things together | Building, taking things apart, designing, thinking and teamwork |
| 4 | Making technological things | Building mechanical things |
| 5 | When you design something and then make it work | To make something happen, to design something and put it to good use |
| 6 | Learning, discovering, using diff. mats to create something to help a community | Science and math in all different ways. Engineers build and create things that help others in the community or around the world. All diff types of engineers - forensic science, FPE |
| 7 | Person who designs things such as bridges, skyscrapers, etc | Developing technects or objects for someone or something |
| 8 | Don't know | Engineering has many branches: mechanical, chemical, forensic and more |
| 9 | Working with tools and people and using your brain | Working with people, using your mind to solve a problem |

| | | |
|----|---|---|
| 10 | Building things that help others | The design and building of things that help the public |
| 11 | -- | Someone who creates or builds things to make people's lives better and easier |
| 12 | The study of math and science | A study of math and science |
| 13 | Building things | The ability to make things, helping people and thinking up ideas |
| 14 | Building things like construction | A job to help the way of life, building things |
| 15 | Working with materials and tools | Solving problem and making ideas and being creative |
| 16 | Designing and building things | Being able to build, design, fix, take apart or take apart something to make daily living for other people easier |
| 17 | -- | Science and math; involves building things and trying to make things better |
| 18 | Designing things, building things, creating robots sort of | Working with people to help solve problems - building things, mechanical things, designing, and things like that |
| 19 | To be able to run or manage something | To invent and produce a wonderful product |
| 20 | Not sure | Figuring out how to fix problems and making things better |
| 21 | -- | When you have a problem and you follow certain steps to reach a solution or conclusion |
| 22 | -- | Math and science put together with fun and design |
| 23 | -- | Building things or taking them apart/making people's lives easier |
| 24 | Using science to fix problems | Using science to fix a problem |
| 25 | Building things | Building things |
| 26 | Working with technology and science in many different ways | Working with science and technology in many different ways |
| 27 | The way things work / don't work | When people work together to solve a problem |
| 28 | The ability to build and to find how things work by observation, taking things apart and studying - requires math and science | When something is created designed or invented to benefit mankind |
| 29 | A person who solves problems | An engineer is a person who solves problems |
| 30 | The ability to design and build objects | When a person builds things to help people like me every day |

| Wilcoxon Signed Ranks Test* of Engineering Descriptions | | |
|--|--------|---------------|
| | Number | Signif. |
| Pre: Did not mention engineering as a helping profession Post: Mentioned engineering as a helping profession (<i>Positive Change</i>) | 10 | p=.002 |
| Pre: Mentioned engineering as a helping profession Post: Did not mention engineering as a helping profession (<i>Negative Change</i>) | 0 | |
| No change in mention of helping from Pre to Post | 20 | |
| Pre: Did not mention engineers as problem solvers Post: Mentioned engineers as problem solvers (<i>Positive Change</i>) | 7 | p=.008 |
| Pre: Mentioned engineers as problem solvers Post: Did not mention engineers as problem solvers (<i>Negative Change</i>) | 0 | |
| No change in mention of problem solving from Pre to Post | 23 | |
| Pre: Did not mention creating / building / designing Post: Mentioned creating / building / designing (<i>Positive Change</i>) | 5 | p=.025 |
| Pre: Mentioned creating / building / designing Post: Did not mention creating / building / designing (<i>Negative Change</i>) | 0 | |
| No change in mention of creating / building / designing from Pre to Post | 25 | |
| * This test makes pairwise comparisons of two distributions to determine if they differ significantly from each other. These tests show that significantly more participants identified "helping" and "problem solving" and "creating/building/designing" as elements of engineering after the Camp Reach program compared to before the Camp Reach program. | | |

Has Camp Reach changed your opinions about science and engineering? If so, how?

- I think engineering is a great use of creativity and intelligence instead of what people do for a living.
- This camp has given me a new way at looking at things! I have learned so much! I never knew that there were so many kinds of engineers.
- Yes, before I didn't really want to be an engineering and now I really want to be.
- Camp Reach has changed my opinion about engineering and science through all the fun activities we did. I used to think engineering was just for really complicated, hi-tech stuff, but I learned it's used even just for AM radios.
- Yes, I find it so much more interesting. I loved it before but now I look at it in a different way.
- Science and engineering changed my opinion because in school I learned by reading it, now I got to experience it with fun activities. I found out how fun science and engineering can be!
- Camp Reach has changed my desions (sic) opon (sic) what I think of being and engineer and/or what I think about science. I have more interest in both now knowing more about each one.
- It made me realize that there is more to science and engineering that chemicals and mixing stuff together. There is much more in it than that.
- Camp Reach has changed my opinions because when I started this project I didn't really think it was real engineering!
- It has made me to want to be an engineer even more! It is so fun.
- Yes, camp has changed my opinions because now I realize that it is a lot of fun and that it might be something interesting to do in the future.
- Only a bit I LOVE math already and science it is OK but going through this camp has given me more opportunities.
- I didn't think science and engineering could be so much fun!!! It made me think that it is good to be smart and that I should be proud of it!!!
- Not really.
- Yes because before I thought engineering was just with robots but it is more than that it is using your creativity and your mind.
- Science seems more interesting and engineering more fun.
- Camp Reach has made me understand engineering more.
- It has made me more interested in going to WPI.
- No, it hasn't because I have always loved science and engineering.
- Yes, it is more interesting and fun. I used to think it was boring.
- Not really, I always liked it.
- Yes because before I thought it was boring and I now realize that it is so much fun!
- Yes, it has showed me things that I have liked and disliked to make my future easier!
- Not really.
- Didn't really change my opinions it just made it for me better way to understand it. (sic)
- Yes, I didn't know it was so varied.
- Camp Reach has changed my opinion about science and engineering by teaching me more about it.
- Yes, because I thought engineering was just building things and now I see it is more complex. Also, I didn't think science could solve crimes!
- Yes it has. I used to think science was boring. Now it seems fun!
- Well I had my eyes on it. So even more I think about it you science and engineering (sic).

Has Camp Reach caused you to think differently about the type of career you might be interested in? If so, how?

- Yes. I still would like to be an author but it does sound fun to be an engineer. I also realize here that I like teaching people thinks so I might even be a teacher.
- At first I wanted to be a teacher (math) or an author but now I want to be an engineer!

- Yes, now I want to be one because it sounds like the job I'm looking for.
- Camp Reach caused me to think differently about a career I'd be interested in because I really like to sing, but now I want to come to WPI.
- I really think that working at a place like Bose would be fun, but I still want to be a lawyer. Thank you again. This program has changed my view of math and science so much!
- Before I didn't know what I wanted to do as a career! Now I know engineering would be fun!
- I have more interest in becoming an engineer.
- Now, I want to be a number of things. Before I just wanted to be a vet, then I found out that I have to give cats shots, so I was looking for a new idea and now, I think I found what I was looking for.
- No, camp hasn't. I like to design things so this camp was great for it.
- Not that much as long as I am happy I'll be fine!!!!
- I never thought that I would be at an engineering camp at WPI!! Now all my thoughts about careers have changed. Engineering is what I was made to be!!! I ♥ Camp Reach.
- Yes, because first I wanted to be a vet, but then going on field trips, and seeing what engineers do it makes me want to be one.
- Yes, because before I didn't know solving crimes was engineering until now and I might want to do that when I grow up.
- Yes, I am leaning more toward engineering now.
- Camp Reach has made me think about having a career in engineering.
- It's made me want to do certain things more than others.
- No, it hasn't but it has strongly encouraged my interest in forensic science.
- Yes, I might want to become an engineer.
- Not really, though I understand more about engineering now.
- Yes because I want to be an engineer and work at Bose.
- Yes, it has made me think if I really want to be an interior designer.
- Not really.
- Maybe or maybe not. I like when we went to Bose I really like their company so we never know might work there. (sic)
- Not really—I'm not really thinking about my career yet.
- A little bit cause I haven't really thought about it anyways.
- Yes, by letting me see the math and science is the best path for me. Engineering also is now seen as my type of career.
- I wanted to be an engineer or a teacher. But now I want to be an engineer and I'm not hesitant about it!
- No I really want to be an engineer!

Effect of Program on Campers: Parent and Teacher Perspectives

| Parents' Assessment of Daughters' Attitudes and Abilities* (N=21) | | | |
|---|---------------|-------------|-----------------------------|
| | Mean** | | <i>p</i>[^] |
| | Pre | Post | |
| Self-confidence | 4.00 | 4.29 | .083 |
| Interest in engineering, science & technology | 3.98 | 4.19 | .186 |
| Motivation toward education, learning, and achievement | 4.57 | 4.67 | .428 |
| Ability to work with others | 4.62 | 4.52 | .493 |
| Interpersonal communication skills | 4.30 | 4.40 | .606 |
| <p>* Parents completed these assessments on opening day and in a questionnaire completed in October or November (approximately 3 months after the camp.)</p> <p>** Parents rated each characteristic on a scale of 1= Very low; 2= Somewhat low; 3= Average; 4= Moderately high; 5= Very high.</p> <p>[^] Determined from paired-samples t-tests. The value <i>p</i> is the probability that the observed difference between the means is due to chance alone. In social science research, <i>p</i> values of 0.05 or less are generally viewed to be statistically significant.</p> | | | |

| Teachers' Observations of Campers' Attitudes and Abilities * | | | | |
|---|-----------------------------|------------------|---------------------------------|------------------|
| | Initial Assessment** | | Change during Program*** | |
| | Mean | Std. Dev. | Mean | Std. Dev. |
| Interest in engineering, science & technology | 3.75 | 0.54 | 4.10 | 0.96 |
| Motivation toward education, learning, and achievement | 3.98 | 0.65 | 4.17 | 0.83 |
| Ability to work with others | 3.70 | 0.66 | 4.03 | 0.81 |
| Interpersonal communication skills | 3.60 | 0.58 | 4.03 | 0.81 |
| Self-confidence | 3.60 | 0.72 | 4.10 | 0.92 |
| <p>* Each camper was assessed by the Middle School Teacher who was facilitating the work of her design project team.</p> <p>** The initial assessment was completed during the first several days of the program, on a scale of 1= Well below average; 2= Below average; 3= Average; 4= Above average; 5= Well above average</p> <p>*** The assessment of change was made on the final day of the program, on a scale of 1= Decreased during program; 2= No improvement; 3= Small degree of improvement; 4= Moderate degree of improvement; 5= High degree of improvement</p> | | | | |

Please comment on any effects of the program on your daughter, including both positive and negative:

- She was very confident when she came home. Her feeling of confidence affected her response to entering junior high school. She felt up to the challenges accelerated math and she considered herself a “math person.”
- She is now very interested in pursuing engineering/science in her future. I feel that now she has a goal that she wants to reach for. I have seen no negative effects from the program. I thought it was a great experience for [name].

- [Name] found a place that embraced her intellectual curiosity. It was cool to be smart at Camp Reach, unlike middle school where being smart is not always an asset. She loved learning about engineering—especially when taught by women.
- Gave her a good idea what living in dorms is like, and living away from her family is not easy. She made a good friend with her roommate. She has a better idea what the engineering field has to offer.
- I do think she will be influenced to continue to enjoy science and math, knowing of the opportunities that are available. She felt very ready to come home at the end of the camp. Somehow I don't think she connected particularly well with the other campers or staff. She is quite social and easy-going, so I am not sure why this would be. She is very serious when working.
- [Name] has established many new friendships through the camp, and continues to communicate with the other girls. She is looking forward to a reunion and to see the results of her team's work. She was very proud of her work and speaks very highly of the camp to others.
- [Name] matured considerably in the 2 weeks at camp. She loved the learning and the positive energy toward learning and education. Her self confidence was damaged some from the conflicts with [camper name] and her perceptions that she couldn't bring her concerns to a staff.
- Looking forward to participating in WUNDERS camp. More confident in doing new and unknown activities/projects.
- Seeing young women such as your RAs and other students who were a part of this program in the past was a huge positive impact on my daughter.
- Generally it has been a very positive experience for [name] and I. It has been great to see her confidence improve in her school work and to have her note that women are in these careers. She is so pleased now to see her "mental talents" appreciated and not only her physical talents (dance, sports). She is looking forward to returning this summer.
- [Name] has much more self confidence! I would recommend camp to any girl interested in math and science.
- She's not really sure if she would like to become an engineer after the program. She thinks "interior design" might be her thing. Her confidence has definitely improved. And she's very proud of the fact that she "went to college" this summer.
- It was her first time being away from us for two weeks. She made it... and is now more confident to do this again. She is also now thinking of being some type of engineer—before this, she was only considering a career of being a teacher.
- This program has brought [name]'s self confidence to a new level.
- It has broadened her knowledge of STE and careers in those areas. [Name] will now consider a career in one of those fields instead of being intimidated or saying those fields are boring, as she previously had.
- Engaged with a more diverse circle of friends. Helped build her confidence as a competent, independent person. We love it that she got to spend 2 weeks with other fun kids who also love to read and learn.
- You took a child who likes to cook, sew, paste, cut and baby sit and gave her more than a dream of what is out there. You showed her, you allowed her to experience it at her own level. You increased her confidence in herself, in her ability to learn, instilled a can-do attitude, increased her need for knowledge and her desire to go to college. She knows she can make an impact, be a positive influence in this world.
- Has developed a deeper interest in engineering.

- She really developed a great understanding of the business process. The research, getting quotes, convincing people she really was doing the project and yes she was only 12. I think it was a big boost to her self-confidence.
- The program gave her self confidence and opened her mind of all the great possibilities and great careers she can go into. She is very grateful.

STAFF DEVELOPMENT GOALS

| Effects of the Camp Reach Program on Staff Members | | |
|---|------|-----------|
| | Mean | Std. Dev. |
| As a result of Camp Reach 2006 I have a better understanding of engineering. (High School Teaching Assistants and Middle School Teachers) | 3.78 | 0.67 |
| I will be able to adapt design project or workshop activities or approaches in my own teaching (Middle School Teachers Only) | 4.00 | 0.00 |
| I have ideas from Camp Reach that I will be able to share with colleagues who can apply them in their teaching. (Middle School Teachers Only) | 4.00 | 0.00 |

* Staff rated their level of agreement with each of these statements on a scale from 0 = Strongly Disagree; 1 = Disagree; 2 = Neutral; 3 = Agree; 4 = Strongly Agree.

Comments from Middle School Teachers

What was the most valuable aspect of the program for you personally?

- The most valuable aspect was seeing the campers succeed and hearing that they felt they were making a positive difference.
- The most valuable aspect of the program for me was to learn that engineers are problem solvers. It also showed me the many types of engineering that I didn't know.

Describe how you will use any of the experiences you gained during Reach in your teaching next year.

- The engineering design process is a wonderful fit with the scientific method. I would like to use some of the research techniques in my classes as well as the forensics activity.
- I will use the engineering design process next year. I think it is a good approach to any project. I could probably recreate the wacky shoes lab for my classroom.
- Wacky Shoes would be easily adaptable to my classroom: measuring, scale drawing, and the engineering design process is going to become a structure for activities to help my students better understand the engineering design process.

Please describe how your knowledge or attitude about engineering changed, if at all, as the result of the Camp Reach Program.

- Seeing the link between the topics I teach and the range of topics covered here was very enlightening!
- My attitude about engineering completely changed. Before the camp, engineering sounded very boring. Now it seems exciting and limitless!
- Engineering continues to weave its way into how I structure my classroom. It is so much a part of our lives that I want my students to be more aware of how they could be a part of this.

Comments from High School Teaching Assistants

What was the most valuable aspect of the program for you personally?

- I now have a lot more respect for middle school teachers because 7th grade girls have so much energy at the wrong times of day! But I enjoyed it because I met some really nice girls who I'll keep in touch with and I'm glad so many TAs were from my year!
- I learned a lot from this program especially as being a TA. It was through helping and teaching the kids that I think I learned the most. I learned a lot of life skills, such as trying to teach different kinds of kids with different types of learning styles. I learned to maintain patience and how to work out differences.
- I definitely was really inspired by the amazing girls in camp who are so excited for the design project and the workshops. The experience was so awesome because most of the girls were genuinely interested in the projects. They definitely inspired me to continue to support girls in being exposed to math and science and encourage them to follow their dreams.
- It was difficult for me to separate me as a friend from me as a mentor. I generally treat everyone as a peer unless I have some particular reason to respect them. I was probably too friendly at times and too distant at other times. I think I'm probably a little better at acting like a mentor and watching how I act and what I say.

Please describe how your knowledge or attitude about engineering has changed, if at all, as a result of the Camp Reach program:

- Coming here really makes me think of what I want to do because you're introduced to so many different careers involved with engineering. You realize that how people are affected every day and how you can be a part of that. So, now I have a better understanding of what engineering is and what it can do for you.
- Coming to Camp Reach has given me a new view of engineering and makes me consider it as a career.
- My attitude about engineering has changed since completing the Reach program. One of the main goals in whatever career I choose is to help people. As silly as it sounds I didn't consider engineering a form of helping people. But I learned it is. There are so many ways (too many to mention) that engineering helps people.
- I have to admit that early in my sophomore I was 110% sure I would never be an engineer. But after attending all the workshops, my interest in the field has been sparked, and I am going to look at the different paths I could take in engineering.
- Has not really changed.

Has this program caused you to think differently about the type of career you might be interested in? If so, how?

- For about a year, I've been thinking about doing something in architecture. My project had to do with designing landscaping and building different areas, so it was related to architecture. I want to do something with design in engineering. This program has pushed my interest in the subject.
- Yes, now I am considering engineering of some sort.
- When entering the Camp Reach program, I wasn't too interested in following a career path in engineering. But after completing the program I saw all the opportunities engineering had to offer, and how after the program, I am again considering a career in engineering.
- I definitely think so. I had my heart set on being a doctor, but now I'd like to explore careers in biomedical engineering.
- I came into the program not wanting to be an engineer and that's how I'll leave. There is no problem with the camp, but I like politics so much more that it would have been very difficult for me to change my mind.

Comments from Residential Advisors

What was the most valuable aspect of the program for you personally?

- Being a Reach RA taught me how to interact with middle school girls in such that I could still be their friend while I could also maintain a certain level of authority. It also reminded me of the importance of being kind and respectful to others.

EFFECTS OF CAMP REACH ON FAMILIES

| Effect of Program on Parents' Understanding of Engineering (N=21) | | | |
|--|-------------|-------------|----------------------|
| | Mean | | p[^] |
| | Pre | Post | |
| I/we have a good understanding of engineering and engineering careers.* | 3.79 | 3.67 | .535 |
| * Parents were asked to indicate their level of agreement on a scale of 1= Strongly disagree; 2= Somewhat disagree; 3= Neutral; 4= Agree; 5= Strongly agree. | | | |

Describe any ways the program influenced you or other family members:

- My husband and I are comfortable with her spending more lengthy periods alone and know that she is definitely able to handle it.
- It made me more aware of what engineers can do. I wish I was exposed to a program like this when I was younger. My career path may have been different.
- My youngest daughter, age 10, wants to attend Camp Reach because she saw how positive an experience it was for [name]. And, I'm keeping my eye on the Mass Academy of Math & Science program for both of them.
- I thought it was a great experience for my daughter. Even though we missed her a great deal, we knew it was a good experience for her to be on her own and learning to get along with others.
- I learned about the Mass Academy of Science & Math, and more about WPI.
- I recommend the camp to others who seem to have an interest in math and science.
- Camp Reach influenced our whole family in a positive way. I wish they had one for adult women!! I love the fact that [name] is interested in the math and science now. She also has more confidence in using her voice to clarify her position/opinion.
- More at ease with leaving my daughter at home or away for longer periods.
- I work in Biotech/pharmaceutical and have a stronger interest in attending school @ WPI to sharpen my skills in my current role.
- She has sparked an interest in her 2 younger sisters as well as in her older 14 year old sister. She shares her fascination with all she retained and it's been contagious. She has also shared her experiences with this year's 6th graders.
- I am hoping that [name] will pursue her options at the Academy during her junior/senior years of high school. She seems interested in the idea and we discuss it occasionally. She has goals of attending Harvard some day.

- It definitely boosted our opinion of WPI. We are definitely recommending this to other 7th grade girls. I look forward to our younger daughter being able to attend this!
- I was very empowered by the program as was my family.
- The program has been such a positive experience for 2 of our daughters who attended. They've had exposure to the fields in such a positive, fun, and practical manner. Learning to work with others toward a common goal and for the community has been invaluable; there is nothing like a real life experience.
- We're proud of her.
- Everyone sees a new [Name], a stronger [Name], one that dreams bigger. She wants more programs that involve science, research, and equipment. She wants to go to college at WPI.
- My daughter's interest in engineering has become stronger.
- The program itself was great. I did not see engineering in the way that my daughter explained it. Now we all find new ways to do projects at home using science.

DISCOVERY WORKSHOPS AND OTHER ACADEMIC ACTIVITIES

| Campers' Ratings of Discovery Workshops and Other Program Activities* | | | | |
|--|----------------------------|------------------|---------------------------|------------------|
| | Degree of Enjoyment | | Degree of Learning | |
| | Mean | Std. Dev. | Mean | Std. Dev. |
| Segways & Gyroscopes | 3.9 | 0.25 | 3.4 | 0.90 |
| Sandcastle Building | 3.9 | 0.35 | 3.6 | 0.72 |
| Robotics | 3.8 | 0.38 | 3.4 | 0.94 |
| Forensics / Who Dunit | 3.8 | 0.57 | 3.7 | 0.45 |
| Wacky Shoes | 3.7 | 0.52 | 3.4 | 0.93 |
| Field Trip to Bose | 3.7 | 0.70 | 3.6 | 0.72 |
| Un-Birthday Party Design | 3.6 | 0.62 | 3.0 | 0.95 |
| Rehabilitation Engineering Workshop | 3.3 | 0.77 | 3.6 | 0.77 |
| Salt Marsh Scavenger Hunt | 3.3 | 0.94 | 3.1 | 0.76 |
| Computer-Aided Design | 3.1 | 0.82 | 3.5 | 0.78 |
| Electrical Engineering: Building an AM Radio | 3.1 | 1.0 | 3.5 | 0.86 |
| Computer Orientation | 3.0 | 0.98 | 2.8 | 1.1 |
| Fire Protection Engineering Lab Tour | 2.9 | 0.96 | 3.4 | 0.83 |
| Wind Power Activity | 2.6 | 0.86 | 2.7 | 0.96 |
| Web-Searching Activity | 2.4 | 1.1 | 2.5 | 1.3 |

* Participants rated their level of agreement with the statements "I enjoyed this workshop or activity" and "I learned a lot from this workshop or activity," on a scale from 0 = Strongly Disagree; 1 = Disagree; 2 = Neutral; 3 = Agree; 4 = Strongly Agree.

| Historical Progression in Workshop Ratings* | | | | |
|--|-------------|-------------|-------------|-------------|
| | 2003 | 2004 | 2005 | 2006 |
| Mean Enjoyment Rating (All Workshops) | 3.02 | 3.34 | 3.48 | 3.35 |
| Maximum Enjoyment Rating for a Workshop | 3.80 | 3.87 | 3.96 | 3.93 |
| Minimum Enjoyment Rating for a Workshop | 2.07 | 2.76 | 2.82 | 2.37 |
| Mean Learning Rating (All Workshops) | 3.14 | 3.28 | 3.44 | 3.29 |
| Maximum Learning Rating for a Workshop | 3.63 | 3.80 | 3.86 | 3.73 |
| Minimum Learning Rating for a Workshop | 2.40 | 2.67 | 2.75 | 2.50 |

*Several workshops were significantly re-vamped after the 2003 program. Two activities were new in 2006.

DISCOVERY WORKSHOPS AND OTHER ACADEMIC ACTIVITIES

General Comments from Middle School Teachers and/or TAs about Academic Program:

- The campers didn't seem too interested in the activities when they were sitting down a lot – got fidgety listening to people talk. Better with the hands on things. Some of the campers seemed uninterested all together, but as a whole, they seem to be enjoying themselves. Wacky shoes and Segways definitely a hit.
- The girls really enjoyed the robotics and Segways and gyroscopes workshops. They could have learned more at these workshops if there were more hands-on portions of the workshops. (MST)
- Most of these activities were both enjoyable and learning experiences.

Comments and Suggestions from Middle School Teachers and/or TAs:

Computer Orientation and Web Searching

- Most girls were familiar with computers so learning how to use them was slightly boring.
- Computer orientation/web-searching: girls learned a lot but was not very exciting because most are familiar with computers.
- Girls didn't enjoy the web searching because they wanted to do other things. Computer orientation boring because the girls wanted to explore.
- I think the students may have needed a little more time in the web-searching activity. Other than that it was a great activity. (MST)
- The web-searching activity was frustrating to some but still worthwhile to do. Maybe pairing them would have been helpful. (MST)

Wacky Shoes

- Everyone was having so much fun that they ignored the process.

Rehabilitation Engineering

- Girls were restless and falling asleep; girls liked the wheelchairs but the professor was long-winded
- The girls loved the wheelchairs but the lecture part went too long and they lost it a little. The girls really seemed not to like it.

Salt Marsh Scavenger Hunt

- It's important that people do not get lost in the Salt Marsh scavenger hunt because getting stuck in the mud was scary and painful for some of the girls though it provides an interesting story. Another thing about the scavenger hunt was that staff didn't really know what to look for so it was a little harder.
- The Salt Marsh scavenger hunt was fun for me but the campers thought differently.
- Some girls didn't like getting so deep in the sand and water for the scavenger hunt. They learned a lot but some felt gross doing it.

Windpower Activity

- It would have been beneficial to have more time for the wind power activity.
- The wind power activity was a little hectic when some girls didn't understand. I think they still enjoyed measuring their wind power.

Sandcastle Building

- As always, the sand castle building was a hit and good learning experience for everyone and the Cape was very relaxing.

Fire Protection Engineering Lab Tour

- In my group for the FPE lab the girls got bored and lost it. It would be better if it was more interactive.

- In the FPE lab, there were long periods of time of not doing much, in tight quarters and being loud. The live demo was interesting for the girls.
- Also the fire activity was very informative.
- The fire protection lab could be shortened a little to compensate for some campers with shorter attention spans. (MST)
- The FPE tour was very informative and hopefully the girls learned a lot. (MST)
- The fire protection engineering tour is important, but maybe the technology could be incorporated into the Forensic Science lab. Connecting how the technology is used to a problem solving activity would involve the students and promote better understanding of how engineers contribute to fire protection. (MST)

Electrical Engineering: Build an AM Radio

- For the electrical engineering, the lecture was too advanced for them.
- Had lots of physics but worked out fine.

Robotics

- Crowd pleaser but hard to teach anything substantial about such a complicated field in such a short time – the use of robots to help humans should be emphasized.
- I think the girls would love to be able to design their own robot.

Computer-Aided Design

- CAD session was somewhat dry so it was hard to tell what the girls thought of it.
- The CAD program was challenging. More time with applications to our specific design projects would have helped my group. (MST)

Segways & Gyroscopes

- Campers enjoyed it but not many read the info sheets.
- It would have been nice to learn how a Segway works.

Field Trip to Bose

- The trip to Bose should be continued too.
- I'm not sure how much the kids enjoyed the Bose trip. They didn't pay attention all the time and sometimes seemed bored. (MST)
- The trip to Bose was a valuable experience as well as the forensic science lab. Their enjoyment of these activities varied among campers depending on their interests. (MST)
- I'm not sure how effective the field trip to Bose was for the girls. I think the best part of the trip for the girls was the exposure to women in important job roles. The trip could be made better if there were more hands-on activities, rather than a tour of the facility.

Forensics Engineering/ Who Dunit

- The forensic science lab was fun and educational for the girls. Girls seemed distracted by the hot weather but that was unavoidable.
- I believe they also learned a lot during the who dunit lab that they won't have the opportunity to learn elsewhere. (MST)

Based on these results, consider the following changes in workshops for 2007 Program:

- Work more with workshop leaders to minimize listening and lecturing (Rehabilitation Engineering, ECE/Radios, FPE), increase interaction and activity and connection to real-world problems (Robotics, Segway). Increasingly, appropriateness of behavior seems correlated with level of action and interaction.

- Consider developing an environmental-related workshop to substitute for one of the less popular activities.
- For Bose trip, be sure to remind girls about behavioral expectations immediately before getting off the bus. This year we had that discussion on campus, but they seemed to forget much of it during the 45 minute lag before arrival at Bose.

DESIGN PROJECTS

| Campers' Response to Design Projects* | | |
|--|-------------|------------------|
| | Mean | Std. Dev. |
| Mid-Program | | |
| I am enjoying work on the design project | 3.67 | 0.66 |
| I am learning a lot from the design project | 3.60 | 0.67 |
| I am contributing a lot to our team's project | 3.66 | 0.55 |
| End-of-Program | | |
| I enjoyed working on the design project | 3.57 | 0.73 |
| I learned a lot from the design project | 3.67 | 0.61 |
| I contributed a lot to our team's project | 3.60 | 0.62 |
| We produced high quality results for our customer. | 3.83 | 0.38 |
| The customer seemed happy with our work. | 3.87 | 0.35 |

* Participants rated their level of agreement with each of these statements on a scale from 0 = Strongly Disagree; 1 = Disagree; 2 = Neutral; 3 = Agree; 4 = Strongly Agree.

Comments from campers about what they learned from design projects:

- Bridge design, wetland regulations, various materials that are environmentally friendly, the engineering and design process, how to make a decision matrix.
- How to build a bridge. What materials work best for forests!
- I learned responsibility, teamwork, and a lot about playgrounds. I also learned how hard it is to design something. But when you have teammates it's easier!
- I learned a lot about plants and how hard it is to figure out landscaping for a house. I also learned what the Friendly House is—a shelter for families.
- I learned about business, what you have to do to make someone happy. That being an engineer is very difficult and that friendly house needed our help.
- I learned that you may think you have a great idea but it what the customer is looking for (sic). You have to have options. You have to do research.
- I learned to divide jobs better amongst a team.
- I learned that constructing or helping to construct a plan is hard work for anybody.
- About working together with people you didn't know and are now friends with. And a lot about dumpsters!
- That I will never look at a bridge the same way again!

- I learned many different things about building safe playgrounds like how the surfacing needs to be so someone won't get hurt (12-15 in).
- I seemed to learn that bridges are more complicated than they seem!
- That when you work in a team more gets done!! It's more fun to be with friends than to be alone!!
- I learned how to get better research, and to make blue prints. I also learned that pictures can help your presentation and that you have to be careful on what you pick for kids with disabilities.
- I learned that you might think one subject was easy but when you learn more it gets harder. I learned that teamwork really helps. There are a lot of problems that engineers must solve.
- I learned a lot about mulch, fencing, and landscaping.
- I learned how working with other people has a lot of benefits.
- I learned many things from the design project: how to make a blueprint, decision matrix, the best way to get the best materials, and much more.
- I have learned how many people in this world may be sick and need help and even a bunch of 12-13 year olds can make a difference. Thank you for helping me realize that.
- I learned that it takes a lot of work to design something, and that there was so much to do just designing something.
- I learned more about the engineering design cycle.
- I learned a lot about Broad Meadow Brook, bridges, and helical piers.
- I learned a lot about interviewing, working as a team, and kids with cancer and just how much they are fragile.
- I learned how to use Autodesk Inventor and to do projects in a big team.
- That working for/with a customer isn't all fun and games but it pays off in the end when you see the expression of your happy customer. Also, that it is a great friend making process and cooperation exercise.
- I learned a lot about play equipment, children with cancer, Sherry's House, Why Me, working together and teamwork.
- I learned that I am very lucky to not have cancer and that a lot of people get cancer each year. I also learned about Why Me, Sherry's House, and playground requirements and expenses.
- I learned that teamwork is very important to complete a big task like designing a playground for Sherry's House.
- We all learned how to work with each other girls.

| Staff Feedback about Design Projects* | | | | |
|---|------------------|------------------|-------------------|------------------|
| | TAs (N=6) | | MSTs (N=3) | |
| | Mean | Std. Dev. | Mean | Std. Dev. |
| The project scope and topic seemed realistic and appropriate for this age group. | 3.17 | 0.41 | 3.33 | 0.58 |
| The project provided an appropriate level of challenge for our team. | 3.17 | 0.75 | 3.67 | 0.58 |
| I was comfortable with the level of guidance and support given by Chrys. | 3.67 | 0.52 | 4.00 | 0.00 |
| I think our project team would have benefited from more guidance. | 2.08 | 0.49 | 1.67 | 1.15 |
| It was easy to keep our campers focused and motivated on design project tasks. | 2.83 | 0.98 | 2.67 | 1.53 |
| Each team member made a real contribution to the project. | 3.00 | 0.89 | 2.67 | 0.58 |
| Roles for team members should have been more defined or structured. | 1.50 | 1.05 | 1.50 | 0.87 |
| The team produced high quality results for the customer. | 3.67 | 0.52 | 3.50 | 0.50 |
| The customer seemed happy with the results the team produced. | 3.42 | 0.49 | 4.00 | 0.00 |
| The customer seemed knowledgeable about the project process. | 4.00 | 0.00 | 3.33 | 0.58 |
| The design project was successful in teaching girls about problem solving using the engineering design cycle. | 3.50 | 0.55 | 3.67 | 0.58 |
| Overall, the design project went well for our team. | 3.33 | 0.52 | 3.50 | 0.71 |

* Staff rated their level of agreement with each of these statements on a scale from 0 = Strongly Disagree; 1 = Disagree; 2 = Neutral; 3 = Agree; 4 = Strongly Agree.

Comments and Suggestions from Teachers:

- (Mid-program) The TAs are taking down time when I need them to help with research. This was addressed and once their roles were clarified, it seemed like we were acting as a team. This was much more effective.
- Our particular design project was challenging because it had so many parts that required equal amounts of attention. I think the campers would have felt more successful if they had been able to spend more time getting estimates for the work that needs to be done.
- This project was great. The girls were invested in the project from the very beginning and really feel their work is important. They were given a problem and they became the problem-solvers. It was a great challenge for them.
- The amount of guidance we received was adequate regarding the roles for team members: The TAs need to be guided into the role as facilitator / coach. After that, their roles were defined and they were more directly involved and a great asset to the project. The campers' needs varied in this respect, so I would say for some of them, more structure was needed and for others, the flexibility worked well.

Comments and Suggestions from TAs:

- 3 hours is a long time and the girls could focus more if they had more breaks. BMB project – difficult: many rules to bridge building
- Friendly house – very difficult in some ways; there are many aspects to the project which has caused stress on some of the groups.
- Marketing team did well with their phone calls. They had a hard time coming up with specifications because there are so many things to consider. The girls confused the problem statement and goal. The group does not stay on topic well. Girls complained that TAs were “no fun” because they didn’t let them play games and read email instead of researching. It’s difficult to find a difference between strict and fun.
- DP difficult because many things need to be considered when building a universally accessible bridge. It’s good that it’s challenging because the girls are learning a lot.
- Going well – girls confused about the budget (Sherry’s House). They want a set budget
- For the design projects, we should help the girls research but not be accused of not helping. Some girls don’t need a lot of help and prefer to be left alone so only if they have difficulties should we interfere. Girls should be more carefully placed in design groups because one girl lived right across the street from Friendly House so it was difficult for her to always be seeing her family but not being able to talk to them. Go over more: oral presentation skills, especially phone interviews (girls didn’t really know where to begin). Less computer time next year / more group communication because not as focused when doing excess research.
- Sometimes I think it’s hard to talk to adults about questions that I have. They always make themselves open but they’re always stressed and busy so I feel bad asking them. As far as our project team, the girls are wonderful but our project is a little different than we thought. It’s a little more difficult because we have a third man who is stuck to his company rules. Because of that I feel like a lot of the design has been done for us.
- I think that we did a good job of dividing our group into different tasks but there were parts that we obviously couldn’t cover because there was so much to do. I suggest that next year’s projects not be so complex.
- The projects were fun but I feel like they were rushed and we did not have enough time.
- Our project wasn’t challenging enough for the girls (Sherry’s House). Guidance level was perfect. The roles in our teams worked out well. We switched around a lot so everyone had a chance to participate in different things.
- At first the project seemed so overwhelming because we had to consider so many points but Jill was great and friendly houses’ team was very cooperative and supportive. Once girls were assigned to individual tasks, they seemed to focus well. Sometimes they needed guidance to figure out what to do and they got frustrated if the girls didn’t like their ideas but the staff was able to guide the girls to a successful path.
- Our design projects went so well. I am so proud because even though it was a really difficult project at first, it was a great challenge for the girls. At the progress presentations, our customers were very pleased and excited. Things got a little hectic the past couple of days because it was crunch time and everyone had to get to work. We really unorganized which made things hard but it went well and I loved the project.

Based on these results, consider the following changes in design projects for 2007 program:

- Encourage teams to define their own break times in morning design sessions, and be on the watch for lack of focus during computer research time. (Perhaps make sure they go in with a list of searching tasks.)
- Remember that TAs typically need a lot of coaching regarding coaching! May not always feel comfortable asking questions of more senior staff members.
- Emphasize in TA application materials the hard work involved during the day.

EVENING / RECREATIONAL ACTIVITIES

| Ratings of Recreational Activities*: Mean (Std. Dev.) | | | |
|--|----------------|-------------|-------------|
| | Campers | TAs | RAs |
| Ice Breakers, Sunday- Week 1 | 3.07 (0.94) | 3.50 (0.50) | 3.25 (0.50) |
| Ice Cream Sundae Building, Sunday- Week 1 | 3.87 (0.43) | 4.00 (0.00) | 4.00 (0.00) |
| Floor Meeting/Getting to Know You, Sunday- Week 1 | 3.20 (0.92) | 3.29 (0.76) | 3.25 (0.50) |
| Teambuilding & Games, Monday- Week 1 | 3.67 (0.55) | 3.43 (0.79) | 3.75 (0.50) |
| Arts & Crafts, Tuesday- Week 1 | 3.37 (1.03) | 2.43 (1.13) | 3.25 (0.96) |
| Move Night, Wednesday- Week 1 | 4.00 (0.00) | 3.43 (0.53) | 4.00 (0.00) |
| Swimming, Thursday- Week 1 | 3.73 (0.52) | -- | 4.00 (0.00) |
| Games, Thursday- Week 1 | 3.70 (0.53) | -- | 3.50 (0.58) |
| Photo Pillowcases, Friday- Week 1 | 3.43 (0.90) | 3.33 (0.82) | 4** |
| Karaoke, Friday- Week 1 | 3.37 (0.67) | 3.17 (1.17) | 4 |
| Talent Show, Saturday- Cape Weekend | 3.40 (0.72) | 3.67 (0.52) | 4 |
| Girls Night, Sunday- return from Cape Weekend | 3.30 (0.75) | 2.83 (0.98) | 3 |
| Un-Birthday Party, Monday- Week 2 | 2.57 (0.94) | 1.67 (0.82) | 1 |
| Swimming, Tuesday- Week 2 | 3.66 (0.55) | 3.00 (0.82) | 4 |
| Crafts/Picture Frames, Tuesday- Week 2 | 3.52 (0.63) | 3.67 (0.52) | 4 |
| Movies/Slumber Party in Campus Center, Wednesday- Week 2 | 3.50 (0.69) | -- | 4 |
| Games on Quad/T-shirt Signing, Thursday- Week 2 | 3.50 (0.57) | 3.33 (0.58) | 4 |

* Participants rated their agreement with the statement "I enjoyed _____" for each of these activities on a scale from 0 = Strongly Disagree; 1 = Disagree; 2 = Neutral; 3 = Agree; 4 = Strongly Agree. **Shading indicates most popular activities from the perspective of each group.**

** Only 1 RA rated activities in the second week.

Comments and Suggestions from TAs regarding Evening Activities:

- Poster board section of the Arts and Crafts night was not very effective – one group had problems and did not get along at all
- Arts and crafts session was too short; some campers just floated around
- Some campers would like some more free time where they can play cards and talk. The only people they get to hang out with are their roommates and design project partners
- Good line up of games – enjoyed everything
- Girls liked mafia and captains orders. They've requested more games
- Girls should be given time during the day to let loose all of their energy so they're not so energetic at night. Teambuilding activities worked! Name games were good. More TA freedom and time off during the day is needed – shouldn't have to accompany the girls at night when the RAs are there.
- The arts and crafts activity didn't really work out. A lot of the girls were not interested in the poster design. Also some more creative games should be played for ice breakers instead of the generic ones.
- I don't think the unbirthday party was much of a hit for the girls. There didn't seem like there was that much to do. Something else could have been much better. Also, some girls didn't have friends for the photo pillowcases so they didn't enjoy it. The karaoke went well as well as the arts and crafts. The girls really enjoyed the talent show even though we almost didn't get in (to the church).
- The unbirthday party was not very organized and the girls didn't seem to like it very much.
- The unbirthday party was a disaster. A lot of things went wrong that were out of our control. It would have been better if more staff were involved. Girls night out turned into free time and the girls seemed to enjoy it.
- In general good. Unbirthday party needed more planning. Sometimes hanging out at night would be fun too when we're all so tired.
- The unbirthday party was such a mess and uncoordinated. A lot of things went wrong. We didn't have a hose for the slip and slide and it took forever to fill the water balloons. It lacked direction and order but the girls seemed to have fun.

Comments and Suggestions from RAs:

- Girls like Mafia; Problems during bulletin decorating activity; One group had problems including all of the girls – could be fixed by assigning a TA or RA to each group rather than letting the girls lead themselves.
- Name games were good; Mafia popular; Evening activities running smoothly; Healthy alternative to evening snack?
- Girls night in – provide nail polish / make-up so that the girls can give each other makeovers; Other ideas – friendship bracelets, hair wraps, hair-dos.
- Unbirthday party – most girls complained that they weren't having fun and the games were boring. Maybe it would be better to skip this activity at night.
- Other ideas – scavenger hunt, masquerade night.
- A few girls complained that they were being fed too much and I reminded them that they could choose not to eat a snack. Perhaps it would be better to eliminate snack time. It was also suggested that there be a time to exercise.

Based on these results, consider the following changes in evening activities for 2007 program:

- Emphasize the importance of staff involvement in all small-group evening activity to head off any “drama” and unkind behavior.
- Continue to strive for balance between physical and non-physical activities (specifically, make sure there’s some physical activity each night, at least as an option.)
- UnBirthday party clearly did not go well in 2006 compared to the first time we tried it in 2005. Strange, because girls designed and selected the birthday design themselves. May need to stress to logistics coordinator, after-hours coordinator, and RAs the importance of preparing for the party the first week of the program (especially if the girls don’t think about things like filling balloons, etc.) Or the staff may need to ask girls to redesign the party if aspects of it aren’t feasible.
- Make laundry day / phone call day more efficient.

MEASURES OF OVERALL SATISFACTION

CAMPERS

| Program Satisfaction Indicators* | | |
|--|-------------|------------------|
| | Mean | Std. Dev. |
| Mid-Program: | | |
| The program staff are helpful and friendly. | 3.86 | 0.35 |
| The program is well organized. | 3.72 | 0.45 |
| The food is good. | 3.55 | 0.57 |
| Things are going well in the residence hall. | 3.48 | 0.83 |
| End-of-Program | | |
| The program staff were helpful and friendly. | 3.63 | 0.49 |
| The program was well organized. | 3.70 | 0.53 |
| The food was good. | 3.60 | 0.56 |
| The living arrangements in the residence hall were good. | 3.30* | 0.84 |

* Participants rated their level of agreement with each of these statements on a scale from 0 = Strongly Disagree; 1 = Disagree; 2 = Neutral; 3 = Agree; 4 = Strongly Agree.

* This indicator of residence life quality, while definitely acceptable, is lower than in previous years: 3.71 in 2005, 3.60 in 2004. Staff members were called upon to deal with more interpersonal conflict in 2006.

| Campers' Ratings of the Overall Program Experience | | | | | | |
|---|------------------------------------|-----------|-----------|------------|-------------|---------------|
| Program Year* | % of Campers Providing Each Rating | | | | | Mean Rating** |
| | Very Poor | Poor | Fair | Good | Outstanding | |
| 1999 | 0% | 0% | 13% | 46% | 42% | 3.32 |
| 2000 | 0% | 0% | 3% | 17% | 80% | 3.77 |
| 2001 | 0% | 0% | 3% | 34% | 62% | 3.56 |
| 2002 | 0% | 0% | 0% | 7% | 93% | 3.93 |
| 2003 | 0% | 0% | 3% | 27% | 70% | 3.67 |
| 2004 | 0% | 0% | 0% | 13% | 87% | 3.87 |
| 2005 | 0% | 0% | 0% | 7% | 93% | 3.93 |
| 2006# | 0% | 0% | 0% | 20% | 77% | 3.78 |

* Data not available for 1997 and 1998 programs.

**Calculated using Very Poor = 0; Poor = 1; Fair = 2; Good = 3; Outstanding = 4.

Does not sum to 100% because 1 respondent circled both Good and Outstanding. For the purposes of determining an average, that response was entered as 3.5

General Program Feedback from Campers

What did you like most about the camp experience?

- Swimming in the pool, the salt marsh, karaoke
- Well everything but I really liked the Who dunnit activity! It was a lot of fun and I learned a lot!
- Meeting new friends
- Most of the activities that we did, the food, swimming, being with friends
- Friends + staff+ design project
- The slumber party and cha cha
- I liked forensic science the most because I like CSI and I like to solve mysteries (not math word problems though)!
- Sleeping in dorms
- I loved everything! Though I did really like riding the segway...
- I liked the overnighiter at Cape Cod and making a design for a playground for kids w/ cancer.
- Everything basically.
- All the unique things about engineering I never would have known if I didn't come here. Now I want to be an engineer.
- I liked the games and the Who Dunit project
- I liked that this program kept you up on your feet.
- I liked all of the different activities
- I liked meeting new people
- Cape Cod trip
- That I got to help kids with cancer have fun.
- I liked playing games and meeting new people.
- The dorms
- Learning about engineering and meeting friends
- I liked the design project and the weekend at the Cape

- Being around so many girls my age because my school is so small
- Doing the Sherry's House project!
- The variety of activities and new experiences
- I liked meeting new people and making new friends most.
- I liked when we got to do the forensic science and engineering
- Love the staff and all the girls. Cha cha was funny and Fanny was too! I guess meeting new people.

What did you like least about the camp experience?

- How little sleep we got.
- The fire protection tour, it was OK but it wasn't really my thing.
- How long it is
- The food!
- That there was not enough free time and that Daniels Hall doesn't have a/c
- Getting stuck in the salt marsh in Cape Cod
- The bed time
- I didn't like how there was no AC in the dorms and that we didn't swim as much as I would have liked.
- Miss my mommy! I was sad.
- Getting up early
- The library computer thing. Boring!
- Nothing except when we got stuck in the mud and got cuts on our hands and legs.
- My roommate—she kind of annoyed me.
- Too many sweets
- When the counselors didn't get enough sleep and were cranky (not all were though!)
- Too much food
- Getting stuck in the mud in the marsh
- Too hot to sleep
- The stuffy and hot rooms.
- Having no AC
- Some of the staff didn't really listen to us.
- Not enough shower time
- My roommate
- We have to act like we're not at camp but professionally with our customers.
- Ummm, making the shoes
- I least liked getting up to my roommate slamming something.
- The unbirthday party!!

What suggestions do you have to improve the camp for next year?

- Earlier bedtime, give out t-shirts earlier
- Maybe the choice to have some exercise!
- Buy everything that the un-birthday design needs
- Schedule more free time, get AC in Daniels Hall. Have wake up and lights out time later.
- I think the unbirthday party could have more games and activities.
- Better snack time drinks
- Getting up a little later
- Take out the library computer thing, make sure the bowling guy isn't on vacation.

- More exciting design projects
- Maybe more outside activities
- Do the same!
- Make sure everyone's happy with their roommate, and more games.
- It's good how it is but longer shower time would be nice and more exercise
- The unbirthday party should go more as we planned
- Put AC in Daniels Hall!!!
- Nothing. I loved this camp and I had a great time.
- Option of exercising.
- Give air conditioned dorms
- More shower time
- None it is awesome
- More exercise and sports
- I think everything great the way it is!!!
- Don't do the research activity—we all mostly knew how to research and if not could learn from our friends. Karaoke more well organized.
- Have the TAs know where we are going.
- Like I said, we should help fight global warming and learn about alternative energy.
- Make the unbirthday party better and more fun

PARENTS

Based on responses from 21 out of 30 parents to a mail survey distributed in October-November 2006

| Respondents' Assessment of Program Value Compared to Tuition* | | | |
|--|-------------|-------------|-------------|
| The value and quality of the program... | 2004 | 2005 | 2006 |
| 1: ...was much less than expected, given the tuition. | 0% | 0% | 0% |
| 2: ... was a little less than expected, given the tuition. | 0% | 0% | 0% |
| 3: ... was about right given the tuition. | 4% | 5% | 0% |
| 4: ... exceeded what we paid in tuition. | 24% | 20% | 29% |
| 5: ... far exceeded what we paid in tuition. | 72% | 75% | 71% |
| Average Rating | 4.68 | 4.70 | 4.71 |
| Standard Deviation | 0.56 | 0.57 | 0.46 |

* Tuition was \$400 in 2004 and \$500 in 2005 and 2006.

| Parents' Overall Score for the Camp Program | | | | | | |
|--|------------------------------------|------------------------|-----------|------------|------------|---------------|
| Program Year* | % of Campers Providing Each Rating | | | | | Mean Rating** |
| | Poor | Somewhat disappointing | Good | Very good | Excellent | |
| 2003 | 0% | 0% | 0% | 20% | 80% | 4.80 |
| 2004 | 0% | 0% | 0% | 16% | 84% | 4.84 |
| 2005 | 0% | 0% | 0% | 0 | 100% | 5.00 |
| 2006 | 0% | 0% | 0% | 14% | 86% | 4.90 |

* Data not available for 1997 and 1998 programs.

**Calculated using Poor=1; Disappointing=2; Good=3; Very good = 4; Excellent= 5

What suggestions do you have for improving the camp from your perspective as parent or guardian?

- I would have a dorm mother present. These girls are too young to be supervised by a grad student and college students. They have little or no experience with girls' roommate conflicts and how to solve them. That was my only complaint. Failing that, give the option of single rooms.
- To introduce various engineers from different fields to give the girls an idea into various careers that can be sought after in the engineering science field.
- I think you do the best you can about screening the campers. The first roommate my daughter had was there because, but her mother's own words, "She has to go to camp because I work... she has a choice of camps, but she has to choose one." I think you did your utmost to have the girls make the choice—but I wonder if they were all there for their own reasons. I work too, and made my daughter aware of the camp, as had her math teacher, but she made the choice.
- I do wish there had been a more thorough investigation/intervention into the conflict between [name] and [name] much earlier. While I appreciate the need for girls to learn to work things out for themselves, [name] needed to have someone who could listen openly to her perception of the situation. She truly had never had an experience with a girl like that before, so had no skill to manage it effectively.
- Everything was well thought out and planned. I think in order to reduce parents' asking multiple questions on opening day that a FAQs list would satisfy many parents' needs.
- Additional public relations so others are aware this program is available. We became aware through another parent (just one) at school. Also, general program content available for the campers to bring back to school the next year for others. Her science teacher is a huge fan of the program and really wanted additional info to share with her classes.
- Inform parents of any situations that may occur.
- More physical activity.
- If there is a problem with campers then you should get the girls together and speak it out so that no one feels left out or feels not wanted there from other girls.

STAFF

| Overall Impressions and Satisfaction of Staff Members (N=13) | | |
|--|--------------|------------------|
| | Mean* | Std. Dev. |
| The program ran smoothly and was well organized. | 3.69 | 0.48 |
| During the camp program, there was good communication between staff members. | 3.62 | 0.51 |
| The food arrangements were good. | 3.30 | 1.06 |
| Things ran well in the residence hall (TAs and RAs only) | 3.20 | 0.70 |
| I learned a lot from being a Camp Reach staff member. | 3.60 | 0.70 |

* Staff members rated their level of agreement with each of these statements on a scale from 0 = Strongly Disagree; 1 = Disagree; 2 = Neutral; 3 = Agree; 4 = Strongly Agree.

Feedback and Suggestions from Teachers

What did you like most about the camp experience?

- I liked how much we learned and the different ways engineering is used. The girls were shown many different kinds of engineering.
- Getting to work with motivated young women was exciting and inspiring—this program helped me to develop skills in inspiring them.
- I really enjoyed feeling that we were making a wonderful contribution to the community.

What did you like least about the camp experience?

- I didn't like that we didn't have any time in the afternoon to regroup as a team to discuss our project.
- I wish we had time to create a model—this would help us “see” our plans better and bring our separate tasks together (Broad Meadow Brook team).
- I didn't really like feeling rushed as we researched the problem.

What are the one or two things you think we should focus most on in making improvements or refinements for next year?

- I would think about the field trip to Bose and see if you can get some hands-on activities included in the trip. I think the girls would love to be able to design their own robot.
- 1) The TAS should be aware that involvement with the campers as coaches provides them with the guidance they need; 2) Possibly incorporating time for construction of a model or prototype.
- Paying TAs, giving them a larger role in the design process, and giving them some time off.

Feedback and Suggestions from TAs

What did you like most about the camp experience?

- The thing I liked most was the Cape Cod trip. It is basically the only time I get to go to the Cape and was definitely a trip to remember! It was also very satisfying to discover that we were really prepared at the end. I thought we were way behind but we weren't!
- Meeting new TAs and becoming awesome friends.
- What I enjoyed the most was the people I got to meet. Throughout the camp I met so many wonderful people. All the TAs were really nice and it was a cool experience to reconnect with them after so many years. I also really enjoyed seeing and meeting with engineers especially when it's a career I'm considering.
- I really enjoyed bonding with the other TAs. We helped each other through obstacles, made close friendships, and supported each other when we became stressed. It was awesome.

- I really LOVED being a staff member and having campers be able to come to me when they needed help. I loved being a role model and a mentor. I also loved meeting new people or just reconnecting with old friends.
- Bose, Cape Cod

What did you like least about the camp experience?

- I didn't like the heat (can't be helped). I also didn't like the fact that the TAs had to spend the evening activities with the girls because it should be our time off. I also think that we should've been able to walk and hang out at the Campus Center at night.
- We didn't have a lot of time to ourselves.
- One thing that made camp a little harder for me was the group of girls. All the girls were wonderful, and were always insightful. But sometimes they would really act out, start drama, and were really mean to each other.
- I did begin to become very tired and irritable at times. I wish there had been more free time for TAs to relax, go out, and be tied down a bit less.
- It was a lot of work to make sure every camper was all right. And there were so many issues and conflicts that everything got really hectic and hard to handle.
- Very stressful—it felt like we were being counted on to give 100% and work as best as we possibly could for 13 hours straight. It was hard to keep up with everything.

What are the one or two things you think we should focus most on in making improvements for next year?

- I think we should make sure that we aren't locked out of anything. TAs should be able to choose their roommates if they like. More TA freedom and time off!
- Free time for TAs
- One thing that might of made my time here a little easier is more defined roles. Sometimes I wasn't sure of what my job was exactly and how much or how little responsibility I was supposed to have.
- I think it's important to be a bit more strict about camp rules. Sometimes with the girls, things just got out of hand, and girls just stopped listening to TAs and/or RAs.
- Pointing out or emphasizing the rules for the camp and making sure the girls remember them and behave. The campers were out of control so many times I think because of lack of sufficient rules.
- More down time for both campers and staff.

Based on these results, consider following changes related to staff for the 2007 Program:

- **TAs:** Give TAs time off in the evenings on a rotating basis. For example, two or three TAs each evening could help the RAs, while the rest are given free time in the residence hall. Or give all time off. Simultaneously, try to make expectations even more clear that the position is a lot of work: they will need to be active coaches for the design projects and during workshops they should either work with the girls or do the same things the girls are doing (i.e., be good role models, be engaged.) Should also make clear in application process why their freedom needs to be restricted a bit and why: at least then there should be no surprises and they can opt out of applying if they don't like the sound of it. In application process, look for applicants who are interested as much or more in *giving* as *receiving* from the program.
- Include a more focused conflict management session during staff orientation (or at least for RAs)
- Be proactive about roommate relationships: On first or second evening, have roommates develop agreements that they will follow to be kind and respectful of each others' needs. After-hours coordinator and RAs should plan how to lead this before camp begins.

- Emphasize rules more. Involve campers in developing them, but staff can add ones that are missing. Then revisit the rules every 2-3 nights, even if things are going well, to identify areas that are strong, areas that need improvement, adjustments that need to be made. Coach girls on how they can give feedback in constructive ways during this process.
- **RAs:** Consider whether alumnae between high school and college are experienced enough to be RAs. Perhaps give preference to WPI students who have roommate experience and know what it's like to live in a residence hall. Also, it may be too much to have one person serving as both after-hours coordinator AND health coordinator, especially if they're responsible for two summer programs simultaneously.

STAFF TRAINING

| Staff Preparedness Resulting from Training and Orientation* | | |
|--|--------------|------------------|
| | Mean* | Std. Dev. |
| I was sufficiently prepared to address issues related to adolescent behavior. | 3.43 | 0.51 |
| I felt knowledgeable about camp policies and procedures. | 3.43 | 0.51 |
| After staff orientation, I felt comfortable with other staff members and felt we could be an effective team. | 3.14 | 0.66 |
| I was sufficiently prepared to address issues related to homesickness. | 3.29 | 0.91 |
| I was sufficiently prepared to facilitate our teams' work on the design project. | 3.50 | 0.53 |
| I was sufficiently prepared for the following workshops: | | |
| Computer Orientation | 3.50 | 0.53 |
| Un-Birthday Party Design | 3.70 | 0.48 |
| Wacky Shoes | 3.50 | 0.53 |
| Forensics / Who Dunit | 3.56 | 0.53 |
| Segways & Gyroscopes | 3.30 | 0.48 |
| Computer -Aided Design (CAD) Activity | 2.95 | 0.83 |
| Salt Marsh Scavenger Hunt | 3.17 | 1.17 |
| Wind Power Activity | 2.83 | 1.17 |
| Sandcastle Building Workshop | 3.67 | 0.52 |
| Fire Protection Engineering Tour | 3.22 | 0.67 |
| Field Trip to Bose | 3.44 | 0.53 |
| Rehabilitation Engineering Workshop | 3.10 | 0.57 |
| Electrical Engineering Workshop: Building an AM Radio | 3.40 | 0.52 |
| Robotics | 3.30 | 0.48 |

* Staff members rated their level of agreement with each of these statements on a scale from 0 = Strongly Disagree; 1 = Disagree; 2 = Neutral; 3 = Agree; 4 = Strongly Agree.

Suggestions for improvements in staff training and orientation:

- We had a bit of a tough time with figuring out the slopes for the ramps because we didn't really understand the instrument. As far as homesickness goes, I've never really been in that position so it's particularly hard for me to relate to girls in those instances. The CAD, which I knew nothing about until staff training, was easy so it wasn't difficult to follow along and help the girls.

- I thought training was very long. It was effective, but there was just a lot of talking for the whole time and nothing really hands-on.
- One thing I think that would have been nice would have been to have more group conversations about what to do in specific situations. I think it would also be nice if training was closer, like the week before camp started.
- Mostly I felt very prepared for all workshops.
- Homesickness- this is nearly impossible to plan for because we don't know the individual girls, their situations, reactions, and expectations. I didn't feel like we were very comfortable with each other after staff orientation, but we very quickly bonded so it was not a problem.
- I thought training was good and needed but it was so long. I know we discussed this on having it 2 days and that that was hard to organize, but it was very long.
- I felt that staff training was unnecessarily long and tedious. We got all the information but it was mind-numbing, even with all the breaks we had.
- I had no idea what to do for the scavenger hunt because I didn't know what to look for. Also, I had no idea about the windpower activity, but the girls seemed to figure it out well.
- I felt like there wasn't a lot of training on any of the workshops but you really didn't need any. The only one I would have liked to get more training on is the forensic workshop. We got a lot on the training day, but by the time of the workshop I had forgotten a lot of the information.
- I think it helped a great deal that I was a former Camp Reach camper, so orientation did feel somewhat lengthy. Many of the activities did not really require preparation, so the binders were very helpful as an aiding tool.
- I felt very well prepared for majority of the workshops. But there were a few like the wind power activity and the fire protection tour that I had no idea what was going on. But other than that I felt good about them and well-trained.
- I could follow along and assist with CAD while help was available, but my "ease of use" was not there to help campers use this program. I would have liked more time or help available to use it on creating a plan for our bridge design. (MST)
- I would have liked to learn more about CAD prior to the campers arriving so I would have been better prepared for the design project. (MST)

Feedback on TA Nights Out:

- TA night out is very good because it helps us to be able to relax and meet the real world again, but I think there should be other nights off too when we can go down to the fields or walk around on campus. I know we're minors & need "supervision" but we're 16/17 and can handle ourselves. Especially during the time when the evening activities take place, we shouldn't be expected to lively participate in all of them because we've already been with the girls all day and have to be enthusiastic during that too. It makes for a super long day. I think we should be allowed to have down time or whatever during that. Maybe go over to campus center with the big chairs, pool tables, TVs, computers, etc.; in other words, just time to ourselves and time to relax!!!
- TA night out was really good! I really enjoyed the moving and Coldstones. I suggest that we get a different vehicle but I doubt that will happen.
- So much fun. It was good that we had two vans to bring us and not just one.
- A lot of fun—I don't think they could be any better!
- No, I thought they were wicked fun and a great joy to look forward to. I only wish there were more!
- They were so much fun! I had the time of my life and it was so good to have a break and just hang out. It really made us closer.

Based on these results, make the following changes in training for 2007 program:

- Try to decrease listening, increase activity as much as possible on staff training day. This might be easier if we send as much material as possible ahead of time in the mail and ask them to read it before arriving. Then the day can be spent more actively on “practicing” with regard to coaching, conflict management, etc.
- Provide more emphasis to TAs (drawing on MST expertise) on how to facilitate discussion with 7th grade girls without giving them the answers (e.g., art of questioning) and how they can be an asset during the project design process.
- As stated elsewhere in this report, provide more training in conflict management and plan interpersonal/roommate skills development activities to be held regularly during the two weeks.
- If a design team will clearly benefit from using AutoCAD Inventor, figure out a way to provide more training to the MST for that team.

**PARENTS’ FEEDBACK ON
PRE-CAMP COMMUNICATIONS, OPENING DAY, AND CLOSING DAY**

| | N | Mean | Std. Dev. |
|--|----------|-------------|------------------|
| Overall, what was your sense of comfort and preparedness in bringing your daughter to WPI’s Camp Reach today, based on our pre-camp communications?* | 30 | 4.50 | 1.20 |
| How useful were the opening day activities?*** | 21 | 4.52 | 0.51 |
| How useful was the closing day parents’ session?*** | 21 | 4.38 | 0.80 |
| * 1= Definitely uncomfortable; 2= Somewhat uncomfortable; 3= In between; 4= Somewhat comfortable; 5= Definitely comfortable | | | |
| ** 1= Not at all useful; 2= Marginally useful; 3= Somewhat useful; 4= Useful; 5= Very useful | | | |

Suggestions for how pre-camp communications could be improved:

- Communications are good
- Excellent job
- Well prepared
- Check room keys before hand
- One camper’s forms were very late (she was added on after a withdrawal so her forms were never sent until she called us 1 week before camp started - be sure to check this next year)

Areas for improvement in opening day activities and closing day parents’ session:

- Questionnaire should be filled out at the closing day session, not the opening. I would have a get-together before camp starts to see if the roommate matches work. Also to see if some of the girls are healthy enough emotionally to handle two weeks at camp. [Name]’s roommate situation was really horrible.
- Opening day activities were perfect. All my questions were answered in the presentation and I was confident that my daughter was going to be well supervised. It may not have been possible, but it would have been nice to see some concrete examples of the girls’ work, e.g. models, etc. We enjoyed the video show.
- Closing day was somewhat dragged out with the speech from Mass Academy (even though it was interesting)—made for a long afternoon.

- I thought both were very well done. I thought I left [Name] there feeling like she would be safe and learn a lot. When I picked her up, I thought I had some idea of what she had experienced during the week. Nice dinner, and a good opportunity to meet the other parents (a WPI graduate and his daughter who was a counselor.) We liked the slide show presentations by the three groups in the amphitheater. We witnessed the camaraderie of the “teams.”
- Although I am very impressed with the Mass Academy of Math and Science I felt that the school took advantage of a captive audience. I was unaware that they were going to do a presentation, and would have preferred to have the option as to attend or not.
- None—I thought it was terrific!
- Open day activities—great transition for kids leaving/separating, having the schedule very helpful.
- A list of FAQs for parents.
- Both sessions were well-organized and helpful. I never felt rushed out or that I didn’t have an opportunity to ask questions.
- Well run, well organized.
- Email addresses for us to contact for copies of presentations (either from you or even the television station/producer) should be handed out to us on paper. There is so much going on that was easy to miss that type of information.
- That was the most well orchestrated camp that I have ever seen.
- Our daughter keeps kosher—mostly food choices were excellent but didn’t like the food at opening barbeque.
- As parents, we were very appreciative of the closing program to see what kids had been doing, meet our daughter’s new friends, and meet some staff and families.
- Opening day: We were very impressed, you did a great job easing the nerves and reassuring parents the amount of care and protection our children would receive. Closing: We asked three people (including a gentleman in a WPI vehicle) each one gave us a different building to go to. A sign in the middle parking area would have been a great help. That is why some people were waiting in the auditorium and not with group at the very beginning.
- I enjoyed the tour of the campus opening day. It gave a good frame of reference for her emails later.

Based on these results, for 2007 program:

- Continue attention to registration/check-in process. Making sure that setup of registration tables occurs sufficiently in advance is essential, and all materials (health forms, binders, keys, etc.) should be organized well in advance, not in the last half hour.
- Consider adding a “FAQs” to material that’s sent in advance to parents.
- Discuss the possibility of eliminating or simplifying the closing meal. Could replace with simpler reception with refreshments and slide show.