

Survey Highlights

1995

More than 70% of all survey respondents Agreed/Strongly Agreed that as a result of being involved in U.S. FIRST, they "enjoy science more or rediscovered how fun science can be."

71% of the parents responding to the survey thought that U.S. FIRST "influenced their son/daughter to pursue a career in science/engineering."

As a result of being involved in U.S. FIRST:

- 98% of the **corporate/university** respondents "would work with students again," 90% "have renewed confidence in youth," and 89% "generated new or improved working relationships with fellow employees."
- 100% of the **school personnel** respondents "would encourage engineering as a profession," 86% "generated new or improved working relationships with fellow employees," and 77% "have renewed energy for their profession."
- 96% of the **student** respondents "have a better idea of what engineering is and how it is used," 87% "think math and science can be exciting," and 91% "saw how skills learned in class can be applied to a real-world setting."

88% of corporate/university respondents

92% of school personnel respondents
and

85% of student respondents
rated their "overall U.S. FIRST
experience" as Very Good/Excellent.

+ 1,800 students
800 corporate/university
300 school personnel
900 parents

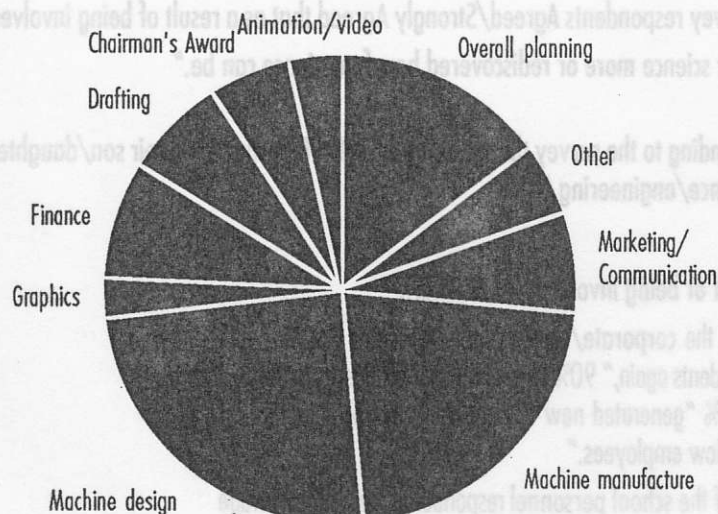
The U.S. FIRST Competition Survey was sent out to participants in the 1995 program, approximately 3,800 people.

- ☑ 205 responses were received from the corporate participants, representing 40 of 59 teams.
- ☑ 290 responses were received from student participants, representing 34 of 59 teams.
- ☑ 62 responses were received from school personnel participants, representing 33 of 59 teams.
- ☑ 145 responses were received from parent participants, representing 28 of 59 teams.

U.S. FIRST

The COMPETITION

How Did You Participate?



PARENT COMMENTS

My daughter was resisting a career in science, and now she loves it! She appreciates math and science classes now. She is more focused for college.

My son has a new appreciation for technology/engineering. He was treated as an equal and with respect from the engineers, this gave him an improved self-image.

I am glad that this is a skill my son can use in his life and build his future. An aspect to excel in besides sports.

The teamwork exemplified by U.S. FIRST, engineers and students was inspiring. It's one thing for a corporation to give money, but quite something else when other adults give their time and talent. This will stay with the kids always.

The most valuable aspect of the Competition was... The exposure to technological science and appreciation of the same... Working with adult mentors from industry and learning from them... Learning how much thought and work and planning goes into creating, producing, testing a "thing" from start to finish... Finding that trial and error do not mean failure, but a means to try again... Seeing math and science applied to the "real world"... Seeing the kind of teamwork required in the real world to carry a complex project from inception to culmination.

TEACHER COMMENTS

Having spent half my career in private industry I can say that learning commitment and teamwork were the lessons students learned best.

This is a fabulous opportunity for my school. Most of my students involved had not been outside the state. The value to them is not measurable. They are truly transformed by the project.

The Competition resulted in an abundance of positive publicity for our school and specifically the technology department. Students really saw what goes on in our area and gained more respect for technology education.

The most valuable aspect of the Competition was... Tremendous amount of positive PR... It generated school spirit in a place other than athletics... Increased interest in our technology department course offerings... Demonstration that anything is possible through hard work... Students learned a great deal about how math (i.e. Trig) is applied to science and engineering... Students learned a great deal about teamwork and problem solving. In addition, they also learned a lot about how to write effective letters for scholarship applications.

STUDENT COMMENTS

I learned and now appreciate all the work, cooperation, and time required to complete a quality machine.

I gained the experience of working at a "real" engineering lab with professionals. I learned how much fun different engineering fields can be.

U.S. FIRST is an incredible experience that should be offered to everyone, everywhere!

At first I was doubtful that I would even stick with this program, but I really got into brainstorming about the machine. It felt really good to be part of a team that was accomplishing something which required abilities of all kinds.

The most valuable aspect of the Competition was... Being able to put my skill to work for the good of the team... The chance to have our city recognized... Being able to learn from and work with engineers in many different areas... The fun that was mixed in with all the work on the robot... Knowing I do understand physics! I made steps in trying a field I was never really interested in... Accepting a challenge, making new friends, realizing physics applies to everyday happenings more than I thought... Problem solving skills, how to work with other people, how to learn from what others know... The ability to take on an immense task, and transfer ideas into reality. The ability to fail, and then continue.

CORPORATE COMMENTS

Many of the students are planning for next year already, and even taking summer classes to improve their skills.

Having the National Competition this year at Epcot was a masterstroke. It was a wonderful way to motivate the students and show off U.S. FIRST to people from across the country.

The students have more self-confidence and pride in themselves and their teammates. Since the Competition, the students have had to speak in public about their experience. This has helped one student acquire two scholarships for college (which he wouldn't have had otherwise).

This program is a major shot in the arm to kids discovering the future.

This program is truly the product of a genius and I predict that U.S. FIRST will be a household name by the year 2000. We will watch the finals on ESPN from every house in America.

RESULTS of the

1994 Survey of Robotic Competition Team Participants

The U.S. FIRST Competition has been held for three years, with the participants in the program increasing by approximately 72% from 1993 to 1994. For the first time, this year we had the opportunity to conduct a follow-up study to formally analyze participants' attitudes about the Competition, including:

- the partnership effort
- its educational values
- specific things learned from participating
- individual benefits gained from participating
- suggestions for improvement.

The subjects for this survey consisted of four groups: students; school personnel (teachers/administrators); corporate/university personnel (engineers/technicians/professors); and, parents of participating students.

This study was designed, developed and administered by Master's degree candidate and active team member, Ellen Carlson. Please feel free to use this information in support of your efforts to participate in U.S. FIRST.



RATE YOUR EXPERIENCE

Between 84% and 93% of all participants and parents responding felt that the U.S. FIRST experience was "Very Good" or "Excellent."

70-80% of all participants responding "Agreed" or "Strongly Agreed" with this statement:

As a result of being involved in U.S. FIRST, I enjoy science more (or re-discovered how fun science can be).

? Did the U.S. FIRST project influence any of your students to want to pursue a scientific/technical career?

Percent responding YES:

- ▲ School personnel 95%
- Corporate personnel... 91%
- Parents 80%

Students said:

As a result of being involved in U.S. FIRST, I:

	<u>Strongly Agree</u>	<u>Agree</u>
• enjoy science more	25%	55%
• learned how to work on a team more effectively	46%	45%
• became a better problem solver	31%	51%
• have greater respect for my teachers	30%	40%
• saw how skills I learn apply to "real world" settings	48%	43%
• value my school experience more highly	33%	42%
• learned to manage time more effectively	21%	46%
• developed a more realistic view of my strengths/weaknesses..	29%	48%
• became more adept at learning independently	22%	42%
• am inspired to study harder in school	18%	35%
• would like to take more science courses	26%	36%
• would like to take more math courses	27%	35%

UNEXPECTED RESULTS

FROM CORPORATE/UNIVERSITY PARTICIPANTS

have greater respect for teachers 77%
 learned how to work on a team more effectively .. 76%
 became a better problem solver 72%
 generated new/improved working relationships
 with fellow employees 88%

FROM SCHOOL PERSONNEL

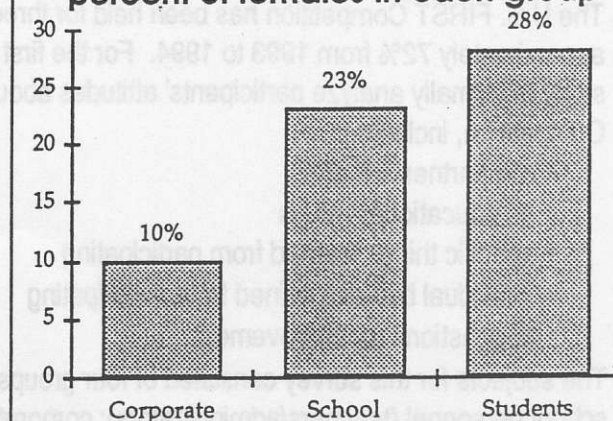
learned more about my students skills 94%
 have greater respect for my students 87%
 learned how to work on a team more effectively .. 79%
 became a better problem solver 72%
 generated new/improved working relationships
 with fellow employees 83%

FROM PARENTS

son/daughter enjoyed school more 77%
 son/daughter values school more 80%
 ability to learn independently was impacted 84%
 students' ability to work on a team was effected ... 97%

FEMALE PARTICIPATION

percent of females in each group



Participant Profiles

Corporate Personnel

Professional Engineers ... 65%
 Management level 8%
 Other 27%

School Personnel

Science Teachers 29%
 Math Teacher 6%
 Administrator 11%
 Technology Teacher 17%
 Other 37%

Students

Freshman 10%
 Sophomore 26%
 Juniors 37%
 Seniors 24%
 Other 3%

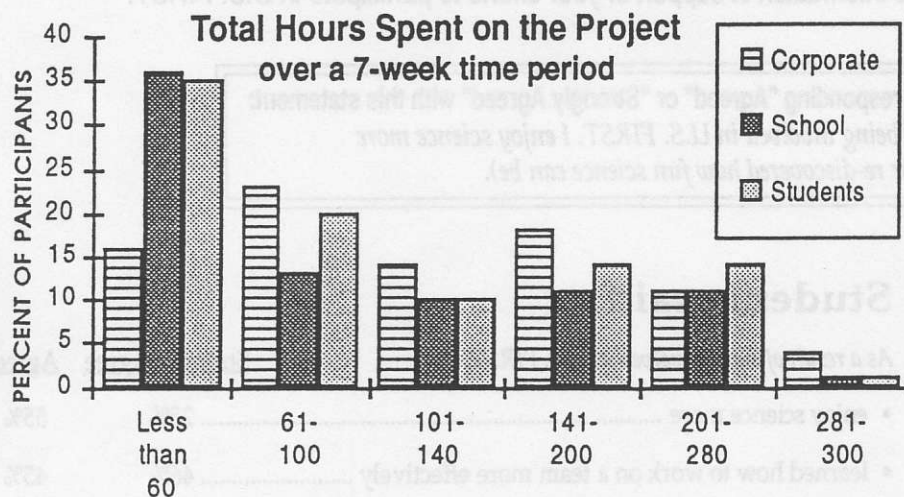
ROOKIES

First time team members

Teachers 80%
 Corporate personnel 80%
 Students 89%



We are grateful to Ms. Carlson for her contribution to U.S. FIRST in the way of her time and expertise.



CONCLUSIONS

- ▲ The program contains many of the elements that the National Council for Teachers of Mathematics called for in the publication Curriculum and Evaluation Standards for School Mathematics (1989), such as:
 - engaging learners both intellectually and physically
 - engaging students in problem solving open-ended questions and extended problem situations such as those that they would encounter in the real world
 - making connections between mathematics and other subjects and to the world outside of the classroom.
- The Competition positively influenced specific educational goals such as the ability to work on a team more effectively and the development of problem solving skills.
- Teachers were provided with opportunities to broaden their scientific knowledge base and their ability to apply science to "real world" settings-- a key goal of the U.S. Department of Education.