Building Kids Through Building Robots

Presented by the Ponytail Posse robotics team

11:20am - 12:20pm

Panelists

Norton Lam – coach for 13+ years

Charlotte Hamilton – participant for 4 years

Nancy Koshy – participant for 8 years

Amy Helgeson – participant for 9 years

Rose Lam – participant for 9 years

Krispen Lam – mentor for 7+ years

Four team members not in attendance: Sabriyah Taher, Heeral Narkhede, Meghan Froehle, and Amelie Elmquist

The Ponytail Posse

FIRST®

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FIRST® LEGO® LEAGUE JR.

K - 4th

Create a LEGO model to demonstrate their research

** Non-competitive*

FIRST® LEGO® LEAGUE

4th - 9th

Build and program a LEGO robot, Research real-world problem and develop a solution

FIRST® TECH CHALLENGE

7th - 12th

Build and program an 18”x18” robot on a team of up to 15 students

FIRST® ROBOTICS COMPETITION

9th - 12th

Build and program an industrial-size robot on a team of over 20 students

HIGH TECH KIDS
BUILD. CREATE. THRIVE.™

***High Tech Kids**: MN local partner for FLL Jr, FLL, and FTC*

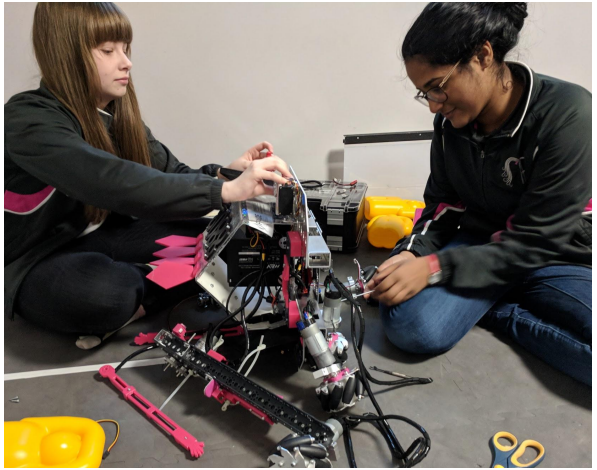
***MN FIRST**: MN local partner for FRC*

660K
students in
110+ countries

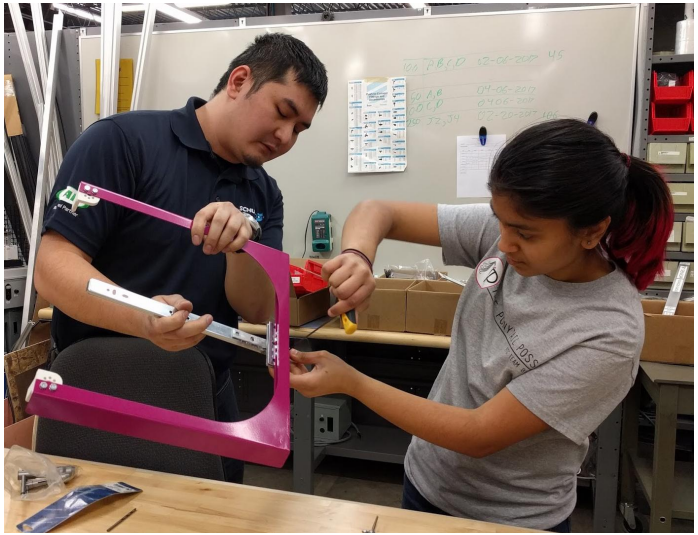
300K
mentor, coach, judge,
and volunteer roles

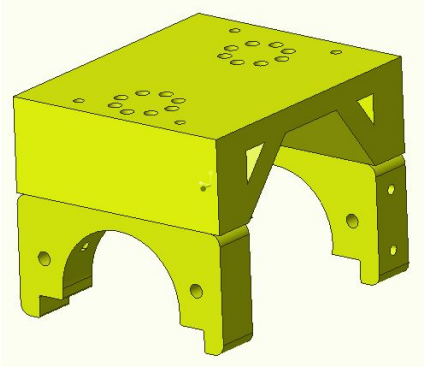
$80M+
scholarship opportunities
from **200+** providers

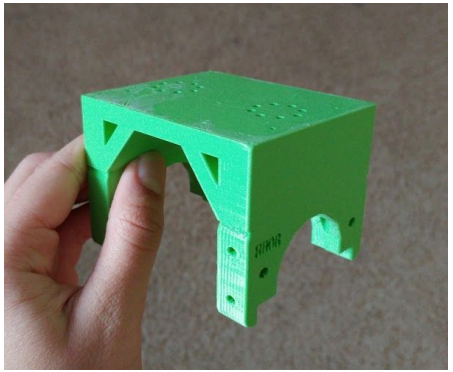
3,600
events in
100+ countries




Edison
Division







Soft Skills

- Problem Solving
- Teamwork
- Innovative Thinking
- Perseverance
- Leadership
- Public Speaking

Technical Skills

- Programming
- Designing
- 3D (Computer Aided Design) CAD
- Using Power Tools
- Documentation
- Troubleshooting

FIRST Alumni

DECLARE A MAJOR IN STEM

FIRST Alumni — 89%

Comparison group — 59%

DECLARE A MAJOR IN ENGINEERING OR COMPUTER SCIENCE

FIRST Alumni — 70%

Comparison group — 25%

FIRST Alumni (Women)

DECLARE A MAJOR IN ENGINEERING OR COMPUTER SCIENCE

FIRST female alumni are more likely to declare majors in engineering and computer science than their peers.

FIRST Female Alumni — 59%

Comparison group — 12%

TAKE COURSEWORK IN ENGINEERING OR COMPUTER SCIENCE

Compared to their peers, *FIRST* female alumni are more likely to take coursework in engineering and computer science.

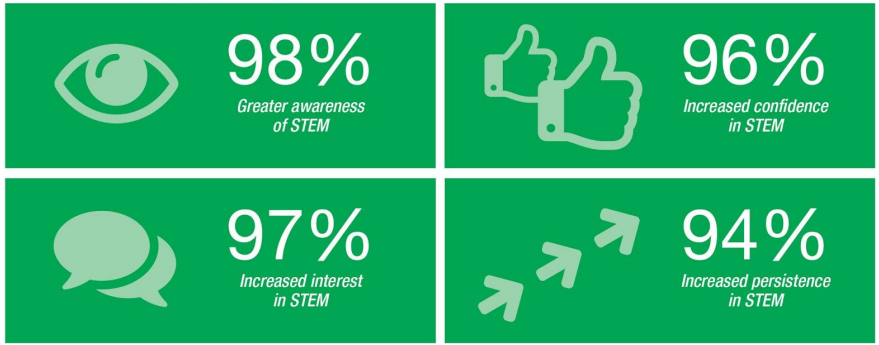
3.7x Engineering

5.3x Computer Science

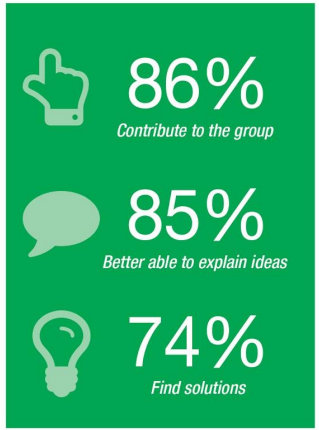
FIRST® LEGO® League Jr. IMPACT

Coaches indicate that the majority of team members experienced gains on a number of outcomes as a result of participating in *FIRST* LEGO League Jr.:

STEM AWARENESS, SKILLS, INTENT



LEADERSHIP, INNOVATION, ENTREPRENEURSHIP



21ST CENTURY WORK-LIFE SKILLS

Source: *FIRST*® LEGO® League Jr. Evaluation Study (2014), The Research Group, Lawrence Hall of Science, University of California, Berkeley

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FIRST® LEGO® League IMPACT

The majority of *FIRST* LEGO League participants participate in key STEM activities on the team and experience gains in a number of outcomes such as:

STEM AWARENESS, SKILLS, INTENT

- **89%** *Design a robot*
- **88%** *Explain how the robot works*
- **84%** *Build a robot*
- **88%** *Program the robot*
- **98%** *Greater awareness of STEM*
- **88%** *Increased interest in going to college*
- **87%** *Increased interest in doing well in school*
- **80%** *Interest in a job that uses science and technology*

21ST CENTURY WORK-LIFE SKILLS

- **95%** *Time management*
- **95%** *Conflict resolution*
- **99%** *Team work*

LEADERSHIP, INNOVATION, ENTREPRENEURSHIP

- **90%** *Creating an innovative solution for the team's research project*
- **97%** *Problem solving*
- **97%** *Belief that I can succeed if I try*

Source: Evaluation of the *FIRST*® LEGO® League Senior Solutions season (2012-2013). Center for Youth and Communities, The Heller School for Social Policy and Management, Brandeis University

FIRST® Tech Challenge IMPACT

The majority of *FIRST* Tech Challenge participants participate in key STEM activities on the team and experience gains in a number of outcomes such as:

STEM AWARENESS, SKILLS, INTENT

- **93%** Design the robot or part of the robot
- **92%** Build the robot
- **63%** Program the robot
- **94%** Explain process in designing a robot
- **85%** Interested in becoming a scientist or engineer
- **93%** Understanding of the engineering design process
- **87%** Increased interest in going to college
- **86%** Increased interest in doing well in school
- **92%** Greater STEM awareness
- **95%** Increased desire to learn more about STEM
- **89%** More interested in a job or career in STEM

21ST CENTURY WORK-LIFE SKILLS

- **85%** Self confidence
- **100%** Team work
- **93%** Solve disagreements

LEADERSHIP, INNOVATION, ENTREPRENEURSHIP

- **92%** Increased leadership skills
- **88%** Use math to solve a real world problem
- **98%** Solve unexpected problems

Source: Cross Program Evaluation of the *FIRST*® Tech Challenge and *FIRST*® Robotics Competition (2011). Center for Youth and Communities, The Heller School for Social Policy and Management, Brandeis University

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FIRST® Robotics Competition IMPACT

The majority of *FIRST* Robotics Competition participants participate in key STEM activities on the team and experience gains in a number of outcomes, for example:

STEM AWARENESS, SKILLS, INTENT

- 86% Design the robot or part of the robot
- 87% Build the robot
- 37% Program the robot
- 93% Explain process in designing a robot
- 83% Interested in becoming a scientist or engineer
- 92% Increased interest in going to college
- 88% Increased interest in doing well in school
- 93% Gained mechanical/technical skills
- 96% Greater STEM awareness
- 97% Increased desire to learn more about STEM
- 91% More interested in a job or career in STEM

21ST CENTURY WORK-LIFE SKILLS

- 92% Self confidence
- 99% Team work
- 94% Solve disagreements

LEADERSHIP, INNOVATION, ENTREPRENEURSHIP

- 95% Increased leadership skills
- 90% Use math to solve a real world problem
- 99% Solve unexpected problems

Source: Cross Program Evaluation of the *FIRST*® Tech Challenge and *FIRST*® Robotics Competition (2011). Center for Youth and Communities, The Heller School for Social Policy and Management, Brandeis University

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Resources

www.firstinspires.org
International organization that runs *FIRST* robotics programs

www.hightechkids.org
Local organization that runs FLL Jr., FLL, and FTC in Minnesota

www.theponytailposse.com/resources
Find this slide presentation and other resources

Email the Posse at **team@theponytailposse.com**

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