FIRST® LEGO® League Challenge Ignites STEM Engagement
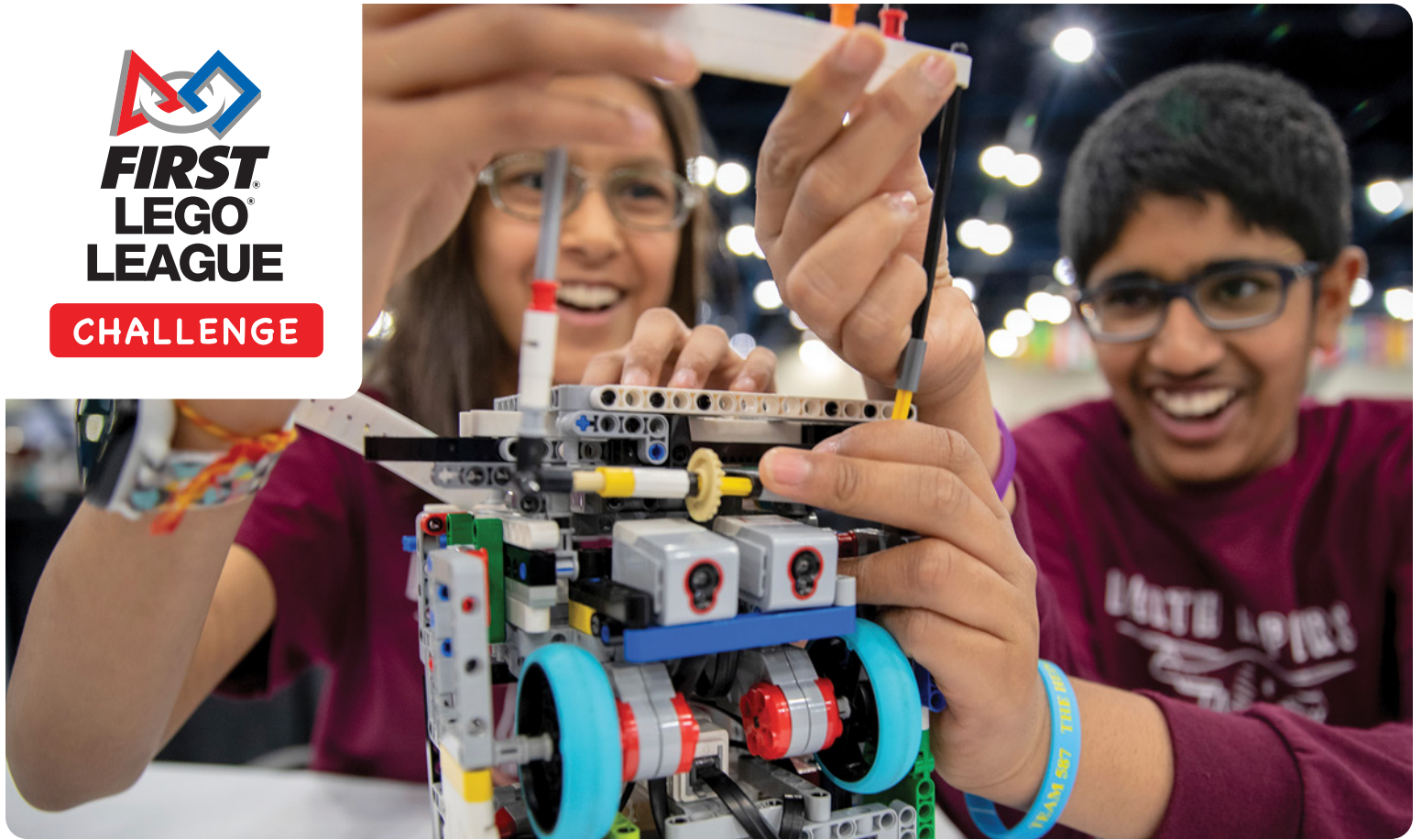
Hands-On Classroom and After-School Programs

Friendly competition is at the heart of Challenge, as teams of students ages 9-16* engage in research, problem-solving, coding and engineering – building and programming a LEGO robot that navigates the missions of a robot game. As part of Challenge, teams also participate in a research project to identify and solve a relevant real-world problem.

Learn more about *FIRST* LEGO League by visiting www.firstlegoleague.org.

FIRST LEGO League Challenge Class Pack

Challenge can be implemented through *FIRST* Class Packs, which provide the curriculum educators and facilitators need to guide their students through 12 sessions as they explore STEM (science, technology, engineering, and math) and robotics and develop an innovative solution to a real-world problem pertaining to the season theme.

Challenge Implementation Study

From 2019-2022, *FIRST* worked with the Lawrence Hall of Science, UC Berkeley[1] to evaluate the *FIRST* LEGO League Explore and Challenge programs. Goals of the evaluation included understanding impact the programs had on students and teachers. This evaluation was funded by the LEGO Foundation.

KEY FINDINGS

Teachers and facilitators noted positive student outcomes in core *FIRST* program areas, including:

Students have gains in STEM Outcomes

Interest in STEM	100%
Confidence in STEM	100%
Programming and coding skills	100%
Understanding STEM content	97%

Students have gains in teamwork and problem solving

Ability to work with others	100%
Ability to make a decision as a team	97%
Ability to accept feedback or criticism	97%
Ability to adapt, improve, and modify ideas	100%

Students reported increased interest in robotics and programming

Robotics	67%
Programming	60%

At the end of the program, students have gains in creativity:

IMAGINATIVE THINKING
97%

COMING UP WITH UNUSUAL, UNIQUE, OR CLEVER IDEAS
93%

At the end of the program, teachers feel more prepared to:

TEACH STUDENTS HOW TO PROGRAM/CODE
94%

CONNECT ACTIVITIES WITH STEM CONTENT
90%

LEAD YOUTH THROUGH THE CHALLENGE COMPONENTS
75%

"You just see the kids grow. They grow socially, emotionally. They grow academically. This is a full program. I…do FIRST because it's a superior experience."
— *Teacher*

At the end of the program, teachers feel more confident in:

TEACHING STEM
94%

USING PROJECT-BASED LEARNING TO TEACH STEM
97%

MAKING CONNECTIONS BETWEEN STEM CONCEPTS AND REAL-WORLD PROBLEMS
93%

TEACHING ABOUT PROGRAMMING/CODING
90%

"I learned that you can be an inventor, scientist, you can build things, you can listen to everyone's ideas. Just be you." — *Explore Youth*

Learn more at **firstinspires.org/impact**