

# Grant Funding Supports STEM Engagement at Detroit Youth Recreation Center



Photo by Daniel J. Ernst

## AT-A-GLANCE

### Background

The S.A.Y. (Sports. Academics. Youth.) Detroit Play Center is a state-of-the-art youth recreation center with the mission to “develop great readers and great people.” The no-cost center draws students, ages 8 to 18, from nearby Title I schools with after-school programs in football, basketball, music, and dance, which are available to the students after they complete one-hour tutoring sessions. To fill a critical gap left by the struggling Detroit public school system, the center sought quality STEM programs to excite and engage its students.

### Bringing STEM into the recreation center

In 2016, S.A.Y. Play was awarded a *FIRST*<sup>®</sup> STEM Equity Community Innovation Grant and introduced *FIRST* as part of its after-school programming. With the help of local community partners, the center added a robotics room and formed five *FIRST* teams, exciting students with meaningful opportunities to be a part of a team, learn how to build and program robots, and compete in tournaments.

### More Than Robots<sup>SM</sup>

*FIRST* helps fill a void of mentor-driven STEM engagement opportunities in the community. In addition to building and programming robots, the S.A.Y. Play students are learning to collaborate to solve problems, present their ideas to others, and practice public speaking. The students love being on a robotics team. “My favorite part is we get to learn new things every day,” Tyler, age 8, says.

Tucked into one of Michigan’s most disinvested neighborhoods,<sup>1</sup> off a busy northeast Detroit street lined with abandoned buildings, is the state-of-the-art S.A.Y. Detroit Play Center. Opened in 2015 by Mitch Albom, a bestselling author and radio broadcaster, the center is a nonprofit after-school youth recreation center, drawing students from nearby Title I public schools that serve a predominantly African American population. After the school day ends, S.A.Y. Play buses students to the center and provides nutritious meals, tutoring, and access to recreational activities – all free to those who enroll.

S.A.Y. (Sports. Academics. Youth.) Play has partnered with organizations such as the Detroit Pistons and Notes for Notes to create and fund after-school programs in football, basketball, music, and dance for its 275 active members, ages 8 to 18. After kids complete a required one-hour tutoring session, they can participate in any of these engaging activities.

After opening the center, S.A.Y. Play’s leadership team realized there was a critical education piece that its students weren’t getting from the Detroit public school system: quality STEM engagement programs. Among Detroit public school eighth graders, just 4 percent are proficient in math, compared to 32 percent of students nationally and 25 percent of students in large cities, according to a 2015 study from the Department of Education’s National Center for Educational Statistics.<sup>2</sup>

## Bringing STEM into the recreation center

In 2016, the S.A.Y. Detroit Play Center found the perfect STEM fit: *FIRST*<sup>®</sup>. The center applied for a *FIRST* STEM Equity Community Innovation Grant so it could offer team-based robotics programs to engage and excite students, provide positive STEM role models, and help kids see why knowledge in STEM is relevant in a community where inclusion of educational STEM programming is nonexistent. “The center has athletics, music, art, and dance,” says Lena Pernell, a director at S.A.Y. Play. “Robotics rounds that out so we can appeal to every kid.”

*FIRST* STEM Equity Community Innovation Grants are made available through *FIRST* thanks to the support of generous sponsors, including *FIRST* Strategic Partners Boeing, Caterpillar, GM, John Deere, and Qualcomm Incorporated, as well as Arconic and GitHub, among others. The grants aim to increase access to *FIRST* programs for underrepresented and underserved

## STEM EQUITY GRANTS RESULT IN GREATER ACCESS TO FIRST PROGRAMS

FIRST launched its STEM Equity Community Innovation Grants program in 2016 to provide diverse and disadvantaged students and communities with hands-on learning opportunities and outlets for creative problem-solving. During the first year, nine grant recipient sites served 152 FIRST teams totaling 1,080 young people.

The nine sites were successful in their goals of reaching young people from underserved and underrepresented communities with FIRST programs. The grant program resulted in greater participation of young women (43 percent), economically disadvantaged students (72 percent), youth of color (44 percent), and youth from rural (42 percent) and urban (40 percent) communities.

To assess the reach and impact of the program, coaches and mentors completed a survey. Most (93 percent) indicated they were successful at recruiting team members who matched the demographics of their community, and over 90 percent indicated team members showed gains in almost all STEM and 21<sup>st</sup> century outcomes.

Youth were also surveyed as part of the evaluation, and as a result of their participation in FIRST, had gains in STEM learning activation, including statistically significant increases in engagement in STEM, STEM interest, skill mastery, self-efficacy, and innovation thinking. Overall, FIRST was successful at igniting youth interest and engagement for STEM learning among grant participants.



S.A.Y. Play participants, coaches, and volunteers attend a 2016-2017 FIRST Tech Challenge Qualifier at University of Detroit Mercy.

students by helping communities develop new and innovative approaches to address inequities in STEM fields (see sidebar).

S.A.Y. Play received a \$50,000 grant to start FIRST programs for elementary and middle school students at the center, including two FIRST® Tech Challenge teams and three FIRST® LEGO® League teams. The funding supported the creation of a robotics room at the center with equipment and tools for the teams, a robotics coordinator to run the program, registration and travel costs for local tournaments, and a celebratory, off-season robotics competition and expo held at the S.A.Y. Play Center in May 2017.

To help roll out the FIRST programs, S.A.Y. Play partnered with longtime FIRST® Robotics Competition Team 503 “Frog Force” from Novi High School in Novi, Michigan. Student volunteers helped stock the center’s robotics room, hosted a “train the coaches” workshop, ran events, and made weekly trips to the center to mentor the teams during the competition season (see sidebar on page 3, “Community Partner Spotlight”).

The S.A.Y. Play teams were also coached by engineers from Ford Motor Company and Cooper Standard. Cooper Standard, along with The Dow Chemical Company (a FIRST Strategic Partner), sponsor a science station in an area called the DEEP. Located in a part of the recreation center that was once a pool, the DEEP is a core workspace for promoting learning and offers a quiet space for students to do homework, receive tutoring, and work on projects.

### Engaging students in STEM excitement

During the first year the center offered FIRST, 26 students participated. S.A.Y. Play’s robotics program coordinator, Lindsay Gehlhausen, says she was surprised by the level of interest from the students who joined. “They’re so into it,” she says. “If we don’t have our scheduled practice, they’ll get on me about it. On Friday, our free day, sometimes they’ll ask to do robotics. They really love it and enjoy doing it.”

“In our community, if given an opportunity, they’ll take it. It’s so meaningful,” Pernell adds. For many students, it was their first experience being on a team and collaborating with students from multiple schools. “You kind of get left out if you’re not a sports person, right?” Pernell says. “You miss out on opportunities to do that team bonding. Our center treats the robotics teams like any other team.”

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— LENA PERNELL, DIRECTOR, S.A.Y. PLAY

## COMMUNITY PARTNER SPOTLIGHT: FROG FORCE

To help carry out its goals for the *FIRST* STEM Equity Community Innovation Grant, S.A.Y. Play partnered with Cooper Standard, local organizers from *FIRST* in Michigan, and *FIRST* Robotics Competition Team 503 “Frog Force” from Novi, Michigan. The team of high school students and their mentors provided *FIRST* program knowledge and technical expertise to help the center launch its *FIRST* programs.

Frog Force’s student volunteers helped design a robotics build space at the center, purchase tools and equipment, and register teams. Frog Force also provided pre-season workshops, event staffing, and ongoing coach training and team mentorship.

Anne George, a seven-year *FIRST* participant and Frog Force’s vice president, is the student lead for the team’s S.A.Y. Play collaboration. She organized weekly 40-minute trips from her school to S.A.Y. Play for student volunteers to help mentor the teams during their competition season. “I like mentoring other *FIRST* students,” Anne says. “I get to see them slowly and surely fall in love with *FIRST*.”

As Anne got to know the younger students, she bonded with them over shared connections and discovered new approaches to solving problems from their perspectives. “You really see how important those relationships between high school and middle/elementary students are.” Anne says. “The experience opened me up to a different community and to the pleasure of teaching.”

For example, just like the football team does for away games, the robotics teams had a Friday night sleep-in at the center before they were bused to a Saturday *FIRST* LEGO League competition event. It both allowed the teams to bond and took the burden off parents to get their kids to the center on an early Saturday morning.

“It’s important that *FIRST* participants get the competition experience,” says Anne George, a member of Frog Force and the student lead on the S.A.Y. Play grant collaboration. “When we first applied [for the grant], everyone said, ‘Don’t expect them to go to competitions.’ I said, ‘No, they are going to go to competition.’ The competition is when it really clicks for them that they are a part of a team. You want to keep going forward. It’s not just yourself you’re relying on.”

The students participated in highly competitive events in the Detroit area—including at the University of Detroit Mercy and the Detroit Science Center—and they did well. At a *FIRST* Tech Challenge qualifying event, one of the center’s teams advanced to the finals and the other team received an award.



Volunteers from *FIRST* Robotics Competition Team “Frog Force” mentor students in the robotics room at the S.A.Y. Detroit Play Center.

## Learning how to program and present

The kids say they have fun building robots and working together, even when it gets hard. “My favorite part is we get to learn new things every day,” says Tyler, 8, who joined a *FIRST* LEGO League team. “Sometimes, it can be tough, but we always have teamwork.” Tyler says he was most challenged by learning to program the LEGO® MINDSTORMS® EV3 robots: “But when you learn it, it’s worth it.”

*FIRST* LEGO League, which includes a robot game and a real-world project that students must present at competition events, also offered the students a unique opportunity to practice communication and public speaking. Gehlhausen says the competitions are great learning experiences for her S.A.Y. Play teams, and the students have gained valuable presentation skills.

The positive impact *FIRST* programs have on students are proven and well documented. Among *FIRST* LEGO League and *FIRST* Tech Challenge participants, over 86% are more interested in doing well in school and 87% have more interest in attending college as a result of participating on their *FIRST* team.<sup>3</sup>

## Showcasing the potential of STEM engagement

The presence of *FIRST* at the center exposed the possibilities of STEM to all of S.A.Y. Play’s 275 active members, not just the students who joined a robotics team. The robotics room is located near the entrance of the center, with big windows exposing it to the rest of the building. When one of the teams got a robot working, students playing basketball across the hall would come running to check it out. “It’s opening everyone’s eyes to the potential that robotics has,” Pernell says. “You have to stress the potential because it’s not something you see every day [in the community].”

“Providing continuity and follow-through to the youth we serve is critical, as this is an often-missing component in their daily lives.”

— LENA PERNELL, DIRECTOR, S.A.Y. PLAY

In May, the center held the 1<sup>st</sup> Annual Warriors Revenge Robotics Competition, which gave S.A.Y. Play’s *FIRST* LEGO League teams an opportunity to compete against other local teams in their own neighborhood. The event drew parents to see kids compete and exposed students and parents to higher level *FIRST* programs through demos from *FIRST* Tech Challenge and *FIRST* Robotics Competition teams.



*FIRST* LEGO League teams from S.A.Y. Play celebrate success at the center’s 2017 Warriors Revenge Robotics Competition.

Jeff, a parent of 8-year-old Peyton, cheered from the sidelines during the event’s robot game matches and judging sessions. “I’m her biggest fan. I just tell her to keep building,” he said. “I don’t know that much about [robotics], but I tell her when you see somebody else that’s a bit better, ask them questions.” Jeff says he’s glad he enrolled Peyton at the center. “She loves S.A.Y. Detroit. It’s one of the best programs I could have her in. I have her try everything. Once you know how to do it, it’s not so hard to come back to it.”

Some of the students were going through tough experiences at home and couldn’t make it to every practice or event. The organizers ensured that when a kid did show up to do robotics, the student got a continuous, fulfilling experience. “A lot of the kids, you just know they are going through stuff and can’t always talk to us about it,” Janelle Moore, a mentor for Frog Force, said. “But when they come in and talk to the team and work on robotics, that’s an escape – just like playing basketball is for other students.”

## Providing stability to the community

The robotics program is growing at the S.A.Y. Detroit Play Center, thanks to a continuation *FIRST* Community STEM Equity Innovation Grant. The grant will help the center add a *FIRST*® LEGO® League Jr. team and grow the *FIRST* Tech Challenge teams through partnerships with local middle schools. The center hopes to draw more coaches that reflect the community they serve with a robotics recruitment event and off-season workshops and training sessions.

Shelley Henderson, Diversity & Inclusion Manager at *FIRST*, says that through the center’s experiences, *FIRST* will continue to learn new strategies for closing the equity gap in STEM education. “Our work at *FIRST* is as much about supporting communities seeking practical workforce development and gap-closing solutions as it is about providing quality STEM engagement opportunities,” Henderson says. “The S.A.Y. Play Center is embedded in its Detroit community and knows how to drive solutions that reach populations that we do not for greatest impact.”

Outside the Detroit center’s building and playing fields, the neighborhood is struggling. Some of the Detroit public schools are slated for closure, further upending student lives and highlighting the important role S.A.Y. Play and its programs have in the community. “Providing continuity and follow-through to the youth we serve is critical, as this is an often-missing component in their daily lives,” Pernell says.



Mitch Albom’s S.A.Y. Detroit nonprofit took over the city’s vacant Lipke Park recreation center and transformed it into the S.A.Y. Detroit Play Center, a state-of-the-art athletics and education facility for neighborhood students.

1 “Michigan’s 48 poorest neighborhoods, based on IRS’s ZIP Code data,” MLive, February 18, 2017. [http://www.mlive.com/news/index.ssf/2017/02/michigans\\_48\\_poorrest\\_zip\\_codes.html](http://www.mlive.com/news/index.ssf/2017/02/michigans_48_poorrest_zip_codes.html)

2 “2015 Mathematics Trial Urban District Snapshot Report,” The Nation’s Report Card, National Center for Education Statistics. <https://nces.ed.gov/nationsreportcard/subject/publications/dst2015/pdf/2016049XR8.pdf>

3 Brandeis University, 2011 *FIRST* Tech Challenge Evaluation and 2013 *FIRST* LEGO League Evaluation

[www.firstinspires.org](http://www.firstinspires.org)

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