

SWE

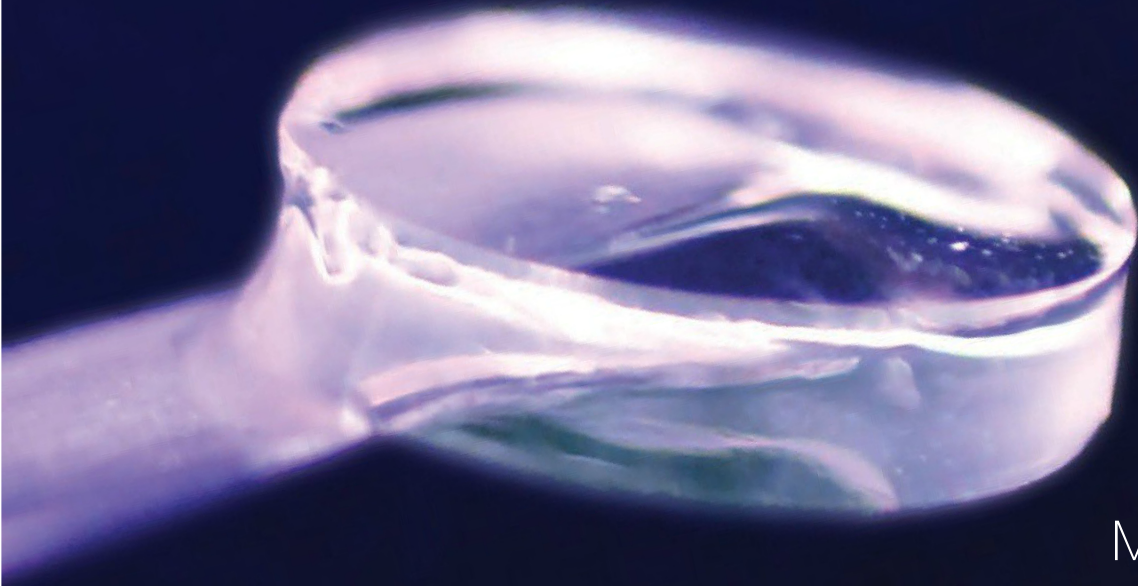
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Taking Inclusion to the Next Level

Three hundred U.S. high school *FIRST*® Robotics Competition teams competed for 20 SWE grants that would help them participate in the 2016 season challenge, “*FIRST* StrongholdSM.” One Seattle team and its CEO are not only taking the message of gender parity and inclusion to heart, but their efforts are expanding opportunities for other underserved groups.

By Seabright McCabe, SWE Contributor

Excitement is building in the weeks ahead of the 2016 *FIRST* Championship, scheduled for late April in St. Louis. Anticipation is palpable, not just for the hardworking high-school teams that are competing, but also within SWE and *FIRST*, two organizations opening a new chapter in collaboration.

“SWE received a grant from the Motorola Solutions Foundation and passed it through to *FIRST* in the form of 20, \$1,000 grants,” Randy Freedman, SWE’s associate director of educational programming, explained. “But instead of just passing along money, SWE and *FIRST* wanted to make a statement.”

This year’s SWE grants had “strings,” and each team had to meet three requirements. Most importantly, they had to display a commitment to gender equality, with a 50/50 team ratio of boys to girls. In addition, a girl was required to take an active leadership role on the team, either “driving” the robot during the competition, or as captain or CEO. (Of course, girls could also participate in any team aspect they wished — design, marketing, fundraising, recruiting, or management.) Finally, team mentors and coaches were required to take SWE’s online diversity training, Outreach 4 Change.

Response from high schools across the U.S. was tremendous. “We had 300 teams vying for 20 grants,” Freedman said. “That’s 100 more than last year.”

Carla Proulx, alliances manager for *FIRST* — the better-known acronym of the organization For Inspiration and Recognition of Science and Technology — is equally enthusiastic about this year’s teams, and one in particular. “We want gender parity, not necessarily all-girl teams. It’s very important to create that equity so there’s not a mostly male environment,” Proulx said. “The

CyberKnights of King’s High School in Seattle is one of those teams, and it has also connected with the business world.”

Two SWE members from The Boeing Company, Dana Day, a primary flight controls engineer, and Deborah Limb, director of structures engineering, are working with them. “We don’t require that the teams connect with SWE; we encourage it, and this team did,” Freedman said.

The role of boys

In addition to having a girl in a leadership role, SWE and *FIRST* gave equal prestige and eligibility for the grants to teams that had a girl captain (CEO). “The teams function like a business, with executives, public relations, fundraising, and marketing. That’s

promoting girls, and it’s become second nature for them to be supportive. There’s real equality now, and that’s empowering. Girls don’t want to be treated differently; they want to be treated the same. They want to be recognized for their talents, regardless of their gender. I really applaud SWE for this grant program because now, in its second year, people are really responding. There are more and more teams applying, and they’re proud when they win that grant, because they’re getting it for all the right reasons.”

“At the highest level of SWE, there’s a recognition that we’re not going to push gender equity very far without male advocates,” Freedman said. “It’s the same for *FIRST*. We need the boys to stand up and say, ‘This is a social justice issue, and we want girls in the program.’

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what they’ll be doing in the real world,” Freedman said. “These grants shed recognition on diversity and gender parity. The teams didn’t achieve that in order to win a grant — they were already doing it. We’re holding them up as what all teams should aspire to be. We’re pushing for creating boy advocates for women in technology in the future.”

“There’s been a real increase in advocacy by boys recently,” Proulx added. “I go to events now, where guys are really

It’s our ultimate goal to get all teams to gender equality, and the teams that won this grant are what we think all *FIRST* teams should look like.”

“This is here to stay,” Proulx said. “This is the new *FIRST*/SWE.”

Reaching out to the special needs community

Led by CEO Delaney Foster, the CyberKnights of King’s High School in northern Seattle exemplify what



Delaney Foster (left) and her sister, Kendall, share a moment following the Unified Robotics finale at Roosevelt High School, December 2015.



The Unified Robotics team, which comprises students from Roosevelt High and the CyberKnights of King's High School, celebrates following their program's finale.

inclusion is all about. "I've always been involved in inclusive activities with my sister, Kendall," Foster said. "We're both seniors. I had really gotten into *FIRST*, but she didn't have that opportunity. She would come to my school and loved to hear about our robot."

Kendall, who is autistic, attends nearby Roosevelt High School. Through after-school visits, Kendall became friends with many of the students on the CyberKnights team. Seeing her sister's enthusiasm, Foster looked around the special needs community for a robotics program where her sister could take part. "We weren't able to find anything," she said. "So I had an idea."

Foster's idea became her brainchild: Unified Robotics. She worked through the summer of 2015 to connect the two schools, creating a pilot program, modeled after the Special Olympics Project UNIFY®, which is designed to help kids of all aptitudes and abilities become champions within their communities.

"I know a lot of my sister's friends really well, and they would perk up whenever I talked about my robotics class. They're all so capable of doing this! So I knew it was something they would want. There was always the risk of its totally failing, and no one really getting much out of it, but it was worth it to keep trying. I really wanted to do it.

I really wanted these students to have the opportunity. I kept pursuing the idea until it happened."

Unified Robotics is a student-designed and implemented, six-week, after-school program, and is open to students with special needs and a variety of learning challenges. It's the first of its kind, bringing the world of STEM and robotics to high school students with special needs. In its premiere outing, students from the CyberKnights (along with Unity Club volunteers from Garfield and Ballard high schools) went to Roosevelt on Wednesday afternoons to work alongside students to design and build robots in teams of four, using NXT kits made by LEGO®. Each team built and programmed its own robot.

In a "season finale" at Roosevelt, each team presented their robot and its features, and then competed in a nonaggressive "Battle Bots" event. "We really celebrated each student on each team," Foster said. "They all got awards, and one of the students was the game announcer. We made sure everyone felt valued in the competition."

Foster's *FIRST* mentor, Mikel Thompson, an engineering teacher at King's High, said of Foster, "You can see Delaney's baseline determination, one of the key components that enables her to get through obstacles. The *FIRST*

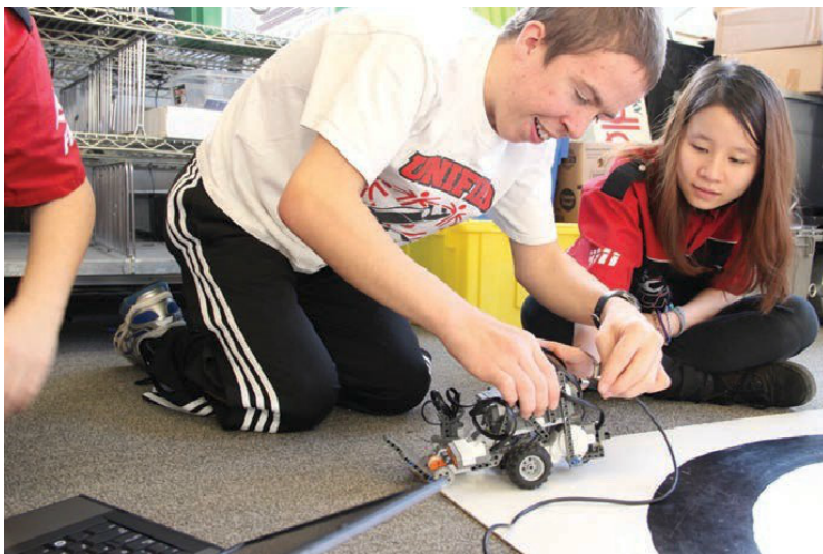
program is designed to help develop this within students. Delaney has had her natural capabilities tuned through it."

Teaching to learn

Foster's program caught the attention of Carla Proulx at *FIRST*. "The CyberKnights thought they would just be teaching, and instead, they learned a lot about themselves — about when to teach and when to listen — and that when you're solving a problem, there's no single way that's always right," said Proulx. "I'm very impressed with this team's passion and ability. They had an incredible experience with these kids."

Part of that experience included Foster and her team learning to redefine "success." "We're such a competitive team, and to us, success was about winning awards," Foster said. "We realized success has many different definitions. Success for the students we worked with could mean just putting two LEGO pieces together, which could take an hour for some students, but they kept at it. That gave all of us a new perspective."

Delaney's mom, Noelle Foster, is a graphic designer, and a team mentor and coach. She also has the advantage of knowing both daughters' friends and teammates, and is active in the autism community. "It was very special to me to watch our family's two worlds collide —



TOP: Michael Zurich (left), a student at Roosevelt High School, and CyberKnights team member Tammy Nguyen test their student-designed robot as part of the Unified Robotics program. BOTTOM: The CyberKnights of King's High School in Seattle. Team CEO Delaney Foster can be seen in the back row, right.

it was the first time we'd all gotten to be involved that way," she said. "As I continued to work with the CyberKnights and saw how this experience transformed them, I realized this was so much bigger than I thought it would be."

The bonds of friendship and communication between the CyberKnights and the Roosevelt students at the Unified event was clear to all who attended. "A number of people came to observe, not only the families and teams involved, but people who just came to see what was going on," Thompson said. "They

expected to see the CyberKnights do the usual things teenagers do when they encounter people who are different. Sometimes, a special needs student would have a behavioral outburst, or do things that weren't considered socially acceptable. The attitude of our kids was completely accepting. They realized they were really no different from the kids they were working with. They just had different challenges. It was such a joy to me, as a teacher and a dad, to see the way they connected and became friends."

A program with a future

Foster aims to take her program nationwide so other *FIRST* teams can bring it to their own communities. "My goal is to have Unified Robotics in every high school in the U.S.," she said.

To help make that happen, Foster wants to form a partnership between Special Olympics Project UNIFY and *FIRST*, two worldwide organizations that have a strong impact on high schools, inclusion, and diversity. Both have shown interest.

Her efforts have also captured the attention of SWE and *FIRST*. "Dean Kamen, *FIRST* Robotics' founder, has always believed there is a great correlation between *FIRST* programs and kids with autism, but we've never really had any data on specific teams — not to this extent," Proulx said.

Foster is working hard to connect Unified Robotics with Seattle's public schools. She's made a guidebook, and hopes to present how the program will look at the *FIRST* Championship in St. Louis. "Right now we're just getting it out there and trying to get schools here to adopt the program, because it's very impactful for everyone involved. I really want other people to have this opportunity."

Foster also has her eye on the horizon, not just for herself, but for her sister, Kendall. "In about 10 years, the students who take the Unified Robotics program now will potentially be industry leaders," Foster said.

"This program is creating a new norm for the workplace that includes individuals with special needs. I believe that when the members of my team are in the position to hire people, they will already understand and have a passion for working with special needs people, and their job opportunities will increase.

"In a perfect world, if we can grow this program, my generation can make working with special needs people the new norm," Foster said. "Within the STEM industries, there are so many jobs where they would be amazing!" ■

Watch Foster and her Unified Robotics team in action by visiting <https://www.youtube.com/watch?v=7GZmUyNNO7A>