FIRST Impact Award - Team 7712

2024 - Team 7712

Team Number

7712

Team Nickname

ACCN UMOJA

Team Location

Scarborough, ON - Canada

Describe the impact of the *FIRST* program on team participants within the last 3 years. This can include but is not limited to percentages of those graduating high school, attending college, in STEM careers, and in *FIRST* programs as mentors/sponsors.

Umoja, Team 7712 was established six years ago to provide Black youth with equal opportunities in STEM. Over the past three years, we've hosted STEM camps, outreach and university events, and created a supportive environment for Black youths to take risks and explore Robotics. Our impact: 100% of alumni graduated high school, 99.5% entered higher education, 90% in STEM. Empowered by Umoja Robotics, our students excel in STEM. Five alumni come back as mentors, and 40% of our members are girls.

Describe your community along with how your team addresses its unique opportunities and circumstances.

Umoja means Unity, and drives our focus on community building and inclusion. Our diverse members come from Toronto, Peel, Durham, and Niagara, some travelling up to 45 miles. We prioritize underrepresented areas, aiming for "No Child Left Behind" in STEM. Our team supports members with registration fees, lunches, pick up/ drop off. Through partnerships and fundraising, we break down economic barriers, ensuring equitable access to STEM and championing Black excellence in FIRST.

Describe the team's methods, with emphasis on the past 3 years, for spreading the FIRST message in ways that are effective, scalable, sustainable, and creative. How does your team measure results?

Through annual outreach programs (6 in the last six months), robot demos, and school events, we promote FIRST, encourage Black youth in STEM, and cultivate sponsor relationships. We use emails, Slack, and social media for awareness. Collaborating with teams like 1325, YorkU, ACCN, Streetcode, and k2i, we run STEM programs. Our team evaluates success through various metrics, including member engagement, community outreach impact, alumni achievements, and feedback from stakeholders.

Please provide specific examples of how your team members act as role models within the FIRST community with emphasis on the past 3 years.

In the past 2 months, we participated in 3 Black History Month events, like MACCA's STEMming from the Motherland. We volunteer at FIRST annual golf tournaments, present at rotary clubs, run summer camps, and spread Xmas holiday cheer in low income areas. Three members have been/are on the FIRST Canada Youth Council promoting FIRST initiatives. We built and donated sterilization kits to long-term homes. We ran a workshop for seniors on using their digital devices - with impactful testimonials.

Describe your team's initiatives to Assist, Mentor, and/or Start other *FIRST* teams with emphasis on activities within the past 3 years.

We hosted FIRST STEM events for kids using LEGO. We collaborated with Teams 1325 and 1360 for pre-season and in-season electrical and mechanical training empowering black youths with technical skills. Our youth council members partnered with 4476 on climate initiatives. We assisted teams with parts and supplies, and helped Team 6140 build Everybot at competition. Partnering with Jane Finch coalition, FLL teams to feed into Umoja will be started. Our Wakanda game design was shared on Twitch.

Beyond starting teams, what initiatives have you done to help inspire young people to be science and technology leaders and innovators? What results have you seen from your efforts in the past 3 years?

Every year we run free STEM summer programs for students across the GTHA taught by team members and alumni. 408 students have participated in our free summer STEM programs, 75% expressed interest in joining Umoja and 25% came on board. We take high school students to University fairs to explore STEM pathways e.g., U of T Mississauga. We share scholarship opportunities with families. MP Shaun Chen acknowledged 7712 as making a difference through STEM in the low socioeconomic areas of Scarborough.

Describe the partnerships you've created with other organizations (teams, sponsors, educational institutions, philanthropic entities, etc.) and what you have accomplished together with emphasis on the past 3 years

Our team partnered with York University's k2i team, providing us access to space, equipment, and student mentors. With k2i, we conducted programs teaching TinkerCad, micro:bit coding, Onshape CAD design, and engineering design process. With ACCN, we ran STEM summer camps and picnics. With The Canadian Multicultural Inventors Museum & StreetCode Academy, we presented the Who's Next Tour. We have also partnered with Mississauga Community Services, FIRST, TD, and Independent schools.

Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, *FIRST*, and your communities.

We're breaking barriers in historically disadvantaged communities e.g., Yorkgate event. We partner with professionals such as Dr. Solomon of Lassonde Sch. of Engineering who emphasized diversity in STEM, engaged students in mechanic workshops, and 3D printing for robot parts. We run virtual STEM programs to reach a wider audience. With ACCN - free homework help for under-represented students. In 2022, a team member won the Girls in STEM award, reinforcing our commitment to fostering inclusivity.

Explain how you ensure your team and the initiatives you have created will continue to run effectively for the foreseeable future

Our team embraces, "It takes a village to raise a child," emphasizing community building and unity. We've kept our 3 sponsors and 7 mentors since the team began. New members participate in pre-season preparation and 4 alumni return to mentor, passing on valuable skills in robotics and academic pursuits. Our programs instill both hard and soft skills for sustained success and adaptability. We created a business plan, and held regular scrum meetings by student leaders to assess and realign goals.

Describe your team's innovative strategies to recruit, retain, and engage your sponsors within the past 3 years

We build a community and attract new sponsors through robot demonstration, in-person presentations and virtually events, expanding our reach e.g., at Breakfast Television. Our sponsors from ACCN and YorkU volunteer at meetings offering guidance and support. Diversifying outreach through building connections, community events, and weekly Instagram posts, we've attracted sponsors like Studica. Open houses, design reviews and recognition events strengthen sponsor relationships for ongoing support.

Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.

We structure our program so that students can choose different subteams: electrical, mechanical, coding, award and project management teams. Many of our students like to gain hands-on experience building the robot, and sometimes there is not enough work for every team member to do. This year, we decided to work on our competition robot and a second robot to provide more hands-on experience for members. We also recognize the need to establish other teams; something we have started plans on.

Describe your team's goals to fulfill the mission of *FIRST* and the progress you have made towards those goals.

Our team is dedicated to introducing every black youth to STEM.To overcome barriers, we run in-person and virtual programs, ensuring accessibility despite cost, distance, or timing constraints. Breaking down more barriers, we offer free registration, transportation, and technical support. This is evident in the 391 students who joined our robotics and summer STEM programs.100% of our alumni noted that Umoja sparked their interest in STEM, a testament to our commitment to changing the narrative.

Briefly describe other matters of interest to the *FIRST* Judges, including items that may not fit into the above topics. The judges are interested in learning about aspects of your team that may be unique or particularly noteworthy.

Many of our students are in schools where robotics clubs are not available and through Umoja, FIRST has offered them a space into the world of STEM. Our team has won 5 FIRST awards including Engineering Design, Imagery, and Gracious Professionalism. This year we've enhanced our fundraising efforts with more marketing tools and events by 50%. Sponsors offer internships too. 5 members lead their school Black Alliance Club promoting STEM. Members use learned skills to create small business apps.

Judge Feedback

Who/When	Feedback
Apr 06,	**N/A** **An area the team has an opportunity to improve.**

2024 10:00:20 AM EST	**Something that really impressed the judges.**

Essay

Umoja Robotics, team 7712 started as an initiative by the executive director of ACCN, Cherryl Lewis. She recognized the under-representation of Black Students in STEM and started the team to cultivate potentials, unlock opportunities and ignite a passion for STEM among Black youths. Umoja is the first Black robotics team to enter a FIRST Robotics competition with participants ranging from grade 5 to 12, and coming from various communities across the Greater Toronto and Hamilton Area (GTHA), and Niagara region.

Umoja is a team created to break barriers. Since its inception, our team has remained family-oriented, fostering unity and demonstrating our ability to achieve the extraordinary. It all started because of one statistic: “Black youth continue to experience historical and systemic barriers/challenges to success. According to a Statistics Canada report, only “25.2% of visible minorities (including Blacks), graduate from STEM programs. By comparison, 74.8% of non-visible minorities graduate from those programs.” Due to systemic discrimination, societal barriers have kept Black youth from succeeding in STEM, especially at the post-secondary level.

With this unfortunate news, we created our first goal: to bridge the knowledge gap between Black and non-Black youths. As evidenced by the findings of a 2023 research study conducted by York University, and Wilfrid Laurier University, 75.2% of Black students graduate from high school, while an impressive 100% of our grade 12 team members successfully graduated. Furthermore, the study highlights the disparity in higher education access, with only 54.9% of Black students moving on to post-secondary institutions. In stark contrast, 99.5% of our team members have progressed to higher institutions, with an impressive 90% in STEM fields. 90% of our current grade 12 students have applied to STEM courses, including Computer Science, Biochemical, and Mechanical Engineering.

Umoja has engaged over 390 Black youths, showcasing the growing interest in robotics and STEM. This season, with 45 students, 7 mentors, and active parent involvement, we thrive on collective dedication. Students develop both soft skills like project management and leadership, as well as hard skills in mechanical, electrical, and coding. Our team has consistently demonstrated excellence and innovation, earning several prestigious awards like Highest Rookie Seed, Rookie Inspiration, Imagery, Gracious Professionalism, and the 2021 Engineering Design Award for our Wakanda Frontier Game design.

Fueled by our commitment to diversity and inclusion, we actively seek opportunities to share the message of FIRST participating in 6 events in the last 6 months. At Yorkgate Mall, we introduced STEM/robotics to Black students and demonstrated our robot, resulting in a 25% increase in enrollment. A similar event at YorkU attracted 10 new enrollments, with families joining from as far as Niagara Falls, 130 km away. Our end-of-season event in Scarborough in 2023 celebrated achievements, thanked sponsors, reviewed highlights, and welcomed new members, ensuring sustainability.

Focusing on our local community, we annually host free STEM and summer camps for students across the GTHA. These camps provide coding and design skills to elementary and high school students, fostering the next generation of STEM leaders. Our programs, held both in-person and online, teach CAD, coding, and web design fundamentals.

In addition to current initiatives, we're partnering with organizations like the Jane Finch Coalition to launch FIRST LEGO League (FLL) programs in underserved areas. These initiatives aim to provide STEM experiences and pathways to Umoja Robotics. Furthermore, we are excited to introduce FLL camps as part of our outreach efforts this year. This year our annual free summer STEM program will include workshops on Artificial Intelligence, and hands-on engineering experiments. In 2023, MP Shaun Chen applauded two team members at a recognition event for teaching summer STEM programs.

Last winter break, our coding team, led by a grade 12 veteran member, conducted hands-on coding sessions for swerve drivetrain and Kitbot. Using FRC tools, they tested and analyzed robot drivetrain and autonomous paths. This helped new members to transition seamlessly to build season coding.

In 2023, we organized a summer picnic outreach in a low-income Brampton neighbourhood. This initiative involved interactive community-building activities and the sharing of Umoja's impact in our lives. Over 30 high school students also participated in our University of Toronto: Mississauga fair to learn about STEM programs.

Our 2023 community Christmas party held in partnership with ACCN in an underrepresented neighbourhood in Scarborough helped to spread holiday cheer. We distributed gifts and essentials to families in need, aiming to brighten their spirits and alleviate some burdens they face during the holiday season. By fostering a sense of goodwill and solidarity, we reinforced our belief in collective action to bring about positive change in the world.

In January 2024, we partnered with Mississauga Community Services to host a seniors workshop, guiding older adults in navigating their electronic devices. This initiative aimed to bridge the digital divide by providing hands-on support in technology use. Testimonials highlight the positive impact on participants, including those with Alzheimer's. Through this partnership, we empowered seniors and fostered community engagement.

In collaboration with FRC, Team 1305, and Vale Corporation, Umoja developed UV light cubes to sterilize PPE for frontline workers. Donated to facilities like Mariann Home, these helped to enhance safety during the pandemic. Through such initiatives, we actively support frontline workers and our community during challenging times.

We engaged educators, government officials, and industry leaders to celebrate Black contributions in STEM. Partnering with The Canadian Multicultural Inventors Museum and StreetCode Academy, we launched the Who’s Next Tour, showcasing VR, AI, and AR. This reflects our goal of motivating and empowering historically marginalized communities of colour to actively participate in the innovation economy.

This February, we participated in three Black History Month events. At Durham, we had 10 sign ups and 5 connections to potential sponsors. At MACCA’s STEMming from the Motherland:Nurturing Future Innovators event, we showcased our robot, reaching over 300 participants. Interacting with high school students, we highlighted STEM careers and notable Blacks in STEM such as Mae Jemison. Through interactive demonstrations and engaging discussions, we aimed to ignite a passion for innovation and technology among young minds, fostering a sense of empowerment and possibility for the future.

Our Black History Month events also include our presentation at Breakfast Television- CP 24. During this event, we showcased our robot, discussed our vision/goals, and extended invitations to fellow Black students, mentors, and partners to join our team.

Throughout our FIRST journey, we have collaborated with different teams and organizations. For example, supported by Team 1325: Inverse Paradox, Black youths were equipped with technical skills to build swerve wheels. Additionally, we collaborated with Team 4476: W.A.F.F.L.E.S. to start the FIRST Climate Conference, engaging in interviews with FIRST Canada staff and government officials to raise importance to the issue of climate change. In the 2023 competition, we assisted Team 1640 by leveraging our expertise in building Everybot.

Our students have also been awarded prestigious awards like the FIRST Women in STEM Scholarship, and the Mark and Rhona Breadner Leadership Fund for exemplary leadership in STEM. Our Alumni return to mentor in our summer and fall programs covering coding, CAD, web design, and project management. Our students' dedication extends outside Umoja, having the courage to start initiatives like Black Leadership Committees at their own schools.

We recruit sponsors by attending events and highlighting FIRST Robotics' goals. At these occasions, we present our robot and discuss the impact of FIRST on our team. We also participate in the annual FIRST golf tournament, and share our impact with organizations like The Rotary Club of Brampton to support our initiatives.

We build strong connections with our sponsors by having them actively participate in our programs. For the past three years, York University, Associate professor Dr. Solomon Boakye-Yiadom, and the k2i academy at Lassonde School of Engineering have worked with our team to provide pre-season, in-season and off-season STEM training. We have access to using their equipment for manufacturing parts, and YorkU students volunteer and mentor our team. In 2022, we hosted a STEM workshop at York University, attracting 35 students from across the GTHA. During the session, they delved into Tinkercad and microbits, gearing up for the upcoming build season. We maintain regular communication with our sponsors via emails, Slack, social media platforms, and events, ensuring they stay informed about our programs and the positive impact we're making in our communities.

Umoja Robotics is a testament to changing the STEM landscape, driven by goals of increasing diversity, being community-oriented, and being unified in all that we accomplish. Our commitment has produced outstanding outcomes, including redefining what it means to be Black and in STEM. MP Shaun Chen praised Umoja Robotics in his June 2023 Parliament speech, emphasizing its role in empowering Scarborough North youth, an underrepresented community. By fostering a diverse and inclusive environment, Umoja Robotics is making a significant impact in the lives of young people, schools, and communities. In unity, we shape a future where excellence knows no bounds.;