

***FIRST* Impact Award - Team 4499**

2024 - Team 4499
Team Number
4499
Team Nickname
The Highlanders
Team Location
Fort Collins, CO - USA
Describe the impact of the <i>FIRST</i> 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 <i>FIRST</i> programs as mentors/sponsors.
The graduation rate of our students who pursue STEM (College, Armed Forces, Trade Schools) is 88% and 86% since inception. Many students receive achievements like the Grewcock, Daniel's Fund, and Boettcher Scholarships. 13 students have participate in internships with companies like Lockheed Martin, Scion Aviation, and Neaera Consulting in technologies like satellite guidance systems, aviation and connected and automated vehicle industries.
Describe your community along with how your team addresses its unique opportunities and circumstances.
Based in Fort Collins CO, 4499 is a community team made up of 25 students from 6 schools, 6 cities, and 2 countries. Meetings start with homework, then we spend our time in the shop. We review our tasks for the day during our team dinners made by our families. Our team is more than just a team, we are a family. Our unique program focuses on team-led ideas and decisions that promote workforce development skills like leadership, critical thinking, and communication to prepare us for our future.
Describe the team's methods, with emphasis on the past 3 years, for spreading the <i>FIRST</i> message in ways that are effective, scalable, sustainable, and creative. How does your team measure results?
4499 advances FIRST's mission through programs like our robot camps, science kits, and continued translation of our book series into 5 languages. We spread the message of FIRST through the new programs including a first-ever Colorado FIRST license plate initiative and new camps in Ecuador. We continue to scale up our efforts by working with CSU to create summer camps and host on-site welding classes, impacting 190 students. We measure success through the lives we have impacted.
Please provide specific examples of how your team members act as role models within the <i>FIRST</i> community with emphasis on the past 3 years.
4499 aids teams with our new safety, team management and sustainability classrooms. These have been used by Colorado FIRST and shared with other teams. Students advocate for FIRST Statewide as co-chairpersons in the Colorado FIRST Student Advocacy group and in FIRST events serving as advisors,

referees, demonstrators, and reviewers. We hosted a successful 2-day workshop, how to swerve, and led 7 teams through classes to build fully functional swerve bots. This resulted in 5 new swerve teams.

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

Our Drop-In Shop days, workshops, donation of materials, and mentorship have assisted 26 FRC and FTC teams. Through our weekly meetups and Shop-Talks, 456 members collaborate, exchanging ideas and insights. Our FRC curriculum, emphasizing kitbot assembly and programming, was shared with the 4 rookie teams in Colorado. Overall, assisting 18 FRC teams, 8 FTC teams (4 rookie teams), starting 1 FTC team and working on starting 1 FLL team in Ecuador and India. This showcases our wide-reaching impact.

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?

To increase the impact of our FRC program, we encourage students in 7th grade or older to join our team. We host FLL events, run workshops and mentor teams. Most of our graduates have gone into engineering fields (88%), and many have been awarded internships at engineering firms. 100% of our seniors this year pursued STEM education/careers. Assisting in starting camps/workshops across 5 countries, 4499 has impacted 132 children and donated 110 STEM kits and 33 rover kits internationally.

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

Establishing Neaera Robotics 501(c)(3) in 2013 to support 4499 and to promote the vision of "HANDS ON TRAINING, MENTORING, AND EDUCATION IN THE FIELDS of STEM" we have been able to help and assist 92 students and 291 since 2013. Sponsors donate parts, financial support, and offer our students internships. 13 of our students were able to receive internships, this year we have another internship available for two students. Our partnership with our sponsors are invaluable to our future!

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

4499, a student-led team, is open to all students of any experience and is free to everyone. Our diversity plan prioritizes inclusivity and fostering a safe space where all voices are valued embracing our differences. Through virtual meetings, webinars, and collaboration, we include all of our students. This year, we have diversified our team by having a 56% minority representation. All our mentors are YPP certified, as well as all mentors and students have participated in FIRST's ED&I training.

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

Our team management initiative and sustainability course teaches each team member about team leadership, expectations, outreach initiatives, fundraising goals, and team recruitment. Our Cycle of Success initiative, where alumni work for our sponsor, Neaera, and a portion of the profits and mentor support go back to the team. This has brought 60% of alumni back to mentor and \$225K in the past 3 years and \$900K in the past 12 years, to financially support our program.

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

In the past 3 years, 4499 has secured support from 9 sponsors, showcasing gratitude on social media and through logo displays. To sustain our connections with our sponsors, we write annual reports showing the impact their support has made. We encourage on-site visits and special events with government officials to highlight our skills. We collaborated with WYDOT and the Wyoming Governor's office to share our workforce skills, aiming to support the launch of their own STEM programs.

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

4499 is a community-based team, we do not have a pipeline of students from a school to depend on. We expanded our program to involve younger students which was such a successful way to onboard, train, and set team expectations quickly. Our Team Management Initiative helped us to create a safe space to collect and track information like food restrictions, the team contact, and shop certifications. Our program welcomed 9 students this year, increasing our team to 25 students.

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

Team 4499 proactively engages with the community, whether it's local or global to transformatively spread the FIRST mission. We impact students' lives by teaching them the possibilities of STEM regardless of where they are from and what their background is. We have gone to 5 countries from which we were able to impact hundreds of students through STEM camps. We solidified plans for running 6 camps in India, and new summer camps locally, and are in talks with a local school to start a FIRST team.

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.

4499's eagerness to learn and improve our skills shines through everything we make. Students and mentors partnered up to design and machine our own CNC Router. This project took us 2 years to complete but taught us exceptional skills further deepening each team member's strengths. By providing a hands-on learning experience our students have a unique confidence and understanding that anything is possible and we can create anything we put our mind to.

Judge Feedback

Who/When

Feedback

Mar 10,
2024
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PM EST

How would you evaluate teams that have large opportunities for change through mentor connections in a school district and compare that with student efforts in a smaller community with workforce development skills and hands-on learning opportunities?

An area the team has an opportunity to improve.

Something that really impressed the judges.

Essay

The Highlanders (Team 4499) represent a dynamic assembly of 25 passionate students hailing from 6 schools, 6 cities, and 2 countries. Our roots lie in the community of Ft. Collins, Colorado, yet our impact extends far beyond, reaching people across the globe. Engaging with individuals beyond state borders, we've left a lasting impression in 7 countries over the past 12 years. This expansive reach is encapsulated by our guiding motto: "It's not about the game; it's about the journey." Beyond words, our team members embody this ethos, channeling it into their personal outreach efforts and continuous learning endeavors. The inspiring journey undertaken by 4499 mirrors the meticulous construction of a castle. Just as a castle requires planning, collaboration, and dedication from its architects, our team exhibits teamwork and perseverance.

Foundation In the heart of our achievements, much like the stones that build a majestic castle, lies the essence of The Highlanders with our leadership and sustainability initiative. Just as each stone contributes to the strength and beauty of a castle's structure, each of our kilt loving engineers forms a diverse yet strong foundation that guides our leadership model. Our leadership initiative mirrors the intricate weaving of a coat of arms, symbolizing not only diversity but also the collaboration of students, mentors, and sponsors. Together, we build a beautiful castle of leadership, skill development, and community engagement.

Fortifications Looking further into the castle, there are our halls of success, including the Cycle of Success (COS) Initiative. This is the path our students tread to become future leaders and innovators, connecting with sponsors, such as Neaera Consulting, Lockheed Martin, and Woodward. These connections, like sturdy fortification walls, provide internships at esteemed companies like Tesla, Leidos, Xilinx, and Xion. The graduates, akin to the guardians of a castle, give back by providing funding and mentoring, ensuring the team's legacy continues to thrive. Our nonprofit started as a FIRST incubator in Northern Colorado and has now grown to support 6 FIRST teams, 281 students across Colorado, and hundreds of students worldwide.

Standards The Highlanders have laid the foundation for the castle, through their involvement in FIRST. For 12 years, we ran FLL qualifiers, volunteered at FLL expos, and hosted mentor and student workshops both in person and virtually. We impacted our community through FIRST by starting, funding, and mentoring a new FTC team to teach students and create a feeder program to ensure continued transition to our FRC team. 4499 students assisted 1 FLL, 8 FTC, and 18 FRC (2 rookie) teams. The robot demonstrations at community events are like grand banners, announcing the presence of a castle, captivating the audience, and inspiring questions from inquisitive minds, allowing students to be engaged by FIRST. Our support extends to other FIRST teams, offering assistance through weekly shop talks, drop-in shop days, mentor presentations, and workshops. The castle of community engagement stands tall, adorned with the banners of The Highlanders' involvement in parades, conferences, and other events like STEM nights, and demonstrations at local and global businesses including Sierra Space and Medtronic. Like the vibrant festivities within a castle, we engage with the community during Halloween events; passing out candy with creative robot costumes, sparking joy and curiosity. Last year we transformed our 2023 robot into a T-Rex to join our past creations of a dragon and ghostly critters. Through 6 Rocky the Robot books translated into 5 different languages and YouTube read-a-longs, we carry the castle's message to schools, tournaments, and other countries sharing the values of FIRST from a student perspective.

Drawbridge Unlike most castles, 4499's drawbridge is always open allowing our students to venture into our local and international community; welcoming others to share ideas, shop space, and equipment.

Locally, we are 1 of 2 teams working with CO FIRST to start a custom license plate initiative, we created and shared our sustainability initiative and Team Management initiative with mentors to teach team leadership and management across Colorado. Our partnership with CSU continues to grow as we run our robot camp to 50 students each summer. Our relationships with local schools like Loveland High School, Kinard Middle School, and afterschool clubs like Science Olympiad are becoming stronger as we share our team-made KILT kits - promoting STEM to over 132 students in the past three years. Internationally, 4499 has developed ties in Ecuador, France, Jordan, India, and Peru. 4499 jump-started the first FLLC program in Ecuador this year with our donation of robot kits and supplies to 20 students. With our continued support, we plan to help them register as an FLLC team and participate in FIRST Global. The impact of these outreach initiatives is akin to the castle gates opening to a world of possibilities, inspiring students of diverse backgrounds. We have gone to refugee camps, orphanages, community spaces, and schools where we can inspire kids of all ages and education. In Jordan, local leaders use our kits to continue to ignite STEM awareness and are working with officials to start FIRST programs within their communities. In Peru, France, and Ecuador, we donated STEM kits and robot kits to local orphanages totaling over 200 kids,. This summer we will run 6 STEM camps in India and start an FLL or FTC team. The Courtyard Stepping into the courtyard of STEM education, 4499 sees a bright new future emerging within its grounds, a Great Hall. This Center of Excellence, 4499, in partnership with our non-profit and mentors, is a dream coming true to build a hands-on STEM center for all to visit, use, and be introduced to FIRST, STEM, and the ethos of the Highlanders. The innovation center will house a common workshop, classrooms, FLL, FTC, and FRC fields. We are excited to announce that registration is open for our summer camps at this facility for this summer!

Collaboration Collaboration within a castle is essential for sustaining a safe community and advanced skill development. In the summer of 2022, thirteen 4499 students participated in a summer internship program to develop an autonomous rover, MIRV, to reduce the danger to first responders on the highway in Virginia. In this partnership, with Neaera and VTTI, we were able to showcase our ability to provide real-world solutions through skills we learned on our FRC team like machining, CAD, computer vision, and artificial intelligence. Through these initiatives we have brought in over \$15,000 to our program to help fund our team and outreach programs.

Castle Roads 4499's team initiatives include safety, team management, and how-to classes leveraging Google classroom. This is like the roads from the castle going out to others, spreading knowledge between teams, and sharing ideas. This year, the Highlanders developed safety and team management courses containing learning materials, videos, and safety quizzes. To ensure a safe workshop, all students are trained in CPR, first aid and basic tool usage. Assignments, such as team registration, food restriction documentation, 1-on-1 training, team code of conduct, and team commitment are examples of information we gather in our team management system. By sharing our sustainability and how-to classrooms, we help other teams develop a guide to a successful and sustainable model. Our course does this by having topics like "How to plan for current and future seasons" and "How to write a business plan and why." We inspire teams to make their plan for a better team with a high degree of sustainability for the future. Both of these courses have been adopted by Colorado FIRST as a prerequisite to grant applications within their organization.

Knights The final touches on this castle are the commitment to STEM education and outreach, much like the Knights of the Round Table. 4499 works to expand FIRST in Jefferson county public schools and the state of Wyoming. In Wyoming, we hope to bring FIRST to their communities and school districts. 4499 students met with the policy advisor of the Wyoming governor's office, and the director of WYDOT, to

show how our program has benefited us, and how to implement new FIRST programs in the state of Wyoming.

Unity 4499 is committed to impacting the world through STEM education and outreach. Our mission is to provide youth with the opportunity to explore STEM through hands-on experience and support. We achieve this through a passion for robotics, commitment to outreach, and dedication to STEM education. Our journey is about how we shape our community, individuals, other teams, sponsors, mentors, and alumni. It's about using the love of science and technology to impact the world with hard work and high expectations to transform the culture of our society. Our team has grown from local to international outreach, and our students serve as youth leaders and trailblazers. We measure our success through the growth of our members, our influence on the community, and the lives we have changed. We are proud of the change we have made in our community and know our journey will continue to affect us positively. While castles might not be commonplace in Ft. Collins, the Highlanders are building their own, using their unique style, global impact, and dedication to FIRST. While all of us might be different stones, we all come together to build a beautiful castle with strong ties that will continue to build our community for years to come. ;

