

FIRST Impact Award - Team 359

2023 - Team 359
Team Number
359
Team Nickname
Hawaiian Kids
Team Location
Waialua, HI - 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.
Through FIRST, our team has brought modern technology to rural, underserved areas. Our STEM Learning Center (SLC) has provided our students with the means to flourish & has led our program to have a 100% graduation rate with a valedictorian almost every year, for 24 years. One recent graduate came from an underserved family; she persevered & graduated our program as a 2020 FIRST Dean's List Finalist, valedictorian, & a full-ride scholarship recipient for the University of Hawai'i.
Describe your community along with how your team addresses its unique opportunities and circumstances.
Our underserved community competes with various organizations for limited resources in town, leaving us with little support. We persevere & maintain strong partnerships with over 37 businesses, foundations, & grants inside & outside of our community. We have a large pool of elderly people in HI; Through mentorship, they share their vast knowledge & experience with students while gaining opportunities for them to give back & stay engaged with the community.
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?
We donate over \$35K annually to Waialua HS's program & extracurricular organizations, such as After School All-Stars, Band, & Yearbook. We've seen more & more students join the team. Participating in outreach events such as Made in Hawai'i & AFCEA allows us to raise awareness of FIRST in our state. Through these organizations, we're able to reach new audiences & convert them into sponsors, mentors, & participants. We travel internationally carrying the flag of FIRST to China, Japan, & Indonesia.
Please provide specific examples of how your team members act as role models within the FIRST community with emphasis on the past 3 years.
Our students regularly act as ambassadors, hosting tours & workshops for students & mentors from FRC teams worldwide, such as China, Japan, Canada, Australia, New Zealand, Indonesia, Korea, & mainland USA. We provide teams in FIRST fundraising advice on how we leverage our

grants/sponsorships/manufacturing/business partnerships. Students advocated for state grant funding to enhance equipment in our SLC. As a result, 6 Hawai'i FRC teams, including us, received a total of \$5 mil in funding.

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

We regularly assist local FRC & STEM programs with our facilities, tools, equipment, & mentoring support. We shared our Program Management & Sustainability training documents with 130+ teams including veteran teams through our website. Getting parts to Indonesia is difficult & expensive, but we donated 5 custom swerve modules to help Team 7719 implement a swerve drive, walking them through building & constructing a robot in the offseason. We continue to support them & others through this season.

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?

Special Projects allow us to address issues within our community by designing & building solutions. Our "After-School All-Stars" program promotes STEM learning to students in the community. Implementing STEM Pathway Curriculum, SLC, & hands on real-world experience, we nearly triple math & science proficiency among our students. At Waialua, 12% of students meet or exceed proficiency in math & 4% in science, while students in our program are 31% & 11%, respectively, with rates rising every year.

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

We established Friends of Waialua Robotics 501(c)3 Organization to support the vision & mission of Team 359. We've strengthened our partnerships with current sponsors like Oakley (providing us high-quality apparel at cost) & Skydive Hawai'i (donating their forklift). This provides our team with quality low-cost apparel & support while we work on repairs to our buildings. Some of our students have found a career after working with our sponsors, such as Hawai'i Electric & Pearl Harbor.

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

Our team is living the FIRST initiative of EDI by providing our native populations with the opportunities to partake in STEM. Over 1/3 of our team is female. Members of our team are native Hawaiian/Pacific Islanders in a school where 60% of the students qualify for free or reduced lunch. Without our team, STEM opportunities in our community are close to none, but students coming through our program are exposed to countless opportunities & experiences that go beyond the classroom & our island.

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

Our team received \$1.35M from our Governor & a \$2M Dream Fund from the State of Hawai'i, allowing our SLC to become a focal point of STEM learning across the Pacific region. The grants establish high-quality machinery & equipment within the SLC for future generations of students. Through remote mentoring, we're able to pull in more alumni & industry experts, which expands our mentor pool & allows us to impact more & more students. We will continue to manufacture projects for our community.

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

We leverage our SLC as a flagship point on our island to recruit sponsors & apply for grants, give annual tours of our facilities & volunteer in outreach events. At the end of the year, we host an event to provide team photos & plaques with a business summary to engage our sponsors, strengthen our relationships & create a reciprocal system to provide services, volunteer support & solutions. Our Special Projects foster closer relationships with the State government & achieve state grants.

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

Coming from a school with a student body of 635 students ranging from 7-12th grade, our team struggles with student recruitment. To broaden our impact, we expanded our program to involve students beginning in 7th grade. Through peer-to-peer mentoring, intermediate students are exposed to our program & STEM earlier on & are prepared with the skill sets to succeed upon entering high school. This year, our program welcomed 9 intermediate students, increasing our team from 19 to 26.

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

Our goal is to encourage & expose students to activities that relate directly to careers in STEM-related fields such as engineering, computer science, graphics, CAD, video production, & web page design. We strive to transform the culture of our rural community by preparing students to succeed in higher education through achieving the FIRST pillar of discovery. In contrast to 30% of students school-wide, 100% of students graduating from our program have pursued STEM careers.

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.

For many teams, robotics is a co-curricular, but for us, robotics & STEM is our FIRST priority. Leveraging the record \$58K we receive from Special Projects, \$133K from sponsorships, & the \$468K we receive from grants, we work to provide youth with electronics, equipment, travel opportunities, & cultural exchanges, shaping well-rounded leaders in STEM. At graduation, we celebrate our Seniors' achievements by awarding scholarships of up to \$3000 to further their passions beyond high school.

Essay

Our Island

Team 359, The Hawaiian Kids, began in 1999 as the first robotics-related program in Hawaii. Our team consists of 26 students with a 1:3 female-to-male ratio, with over half of our students being part of minority groups & 60% of our overall school needing free or reduced lunch.

Members join the team based on their interests & are organized into 5 functional sub-teams: Construction; Control Systems; Business, Media, & Documentation; Outreach; & Administration, with concentrated divisions within & collaboration between each sub-team.

Since the closure of Waialua's historic sugar mill, our town has struggled economically. However, 359 has made it our mission to create STEM opportunities, encouraging youth to build a better world for future generations.

Serving Our 'Ohana

Many teams faced the challenges of COVID, but our team took the opportunity to help our community & state. We learned how to design, CAD, & 3D print PPE face masks & shields, donating over 1.5K to local schools, organizations, & Hawaii's first responders. Despite the pandemic, we were determined to travel & expand learning opportunities, working hard to create safety standards that allowed us to continue to meet. Protocols such as required vaccination, COVID tests, & temperature logs allowed us to push past the limitations of COVID, inspiring the state of Hawaii to adopt the standards we pioneered. COVID challenged us to creatively meet the needs of our community, allowing Hawaii to see our capabilities & view us as an essential resource for aid.

We are always looking for opportunities to serve Waialua. After noticing an alarming rise in catalytic converter thefts in HI, we took the lead in designing & manufacturing shields to protect our community. Our STEM Learning Center(SLC) allows us to participate in the entire process, including product design, manufacturing, installation, & commercialization. As the only vendor of catalytic converter shields in Hawaii, the product has become a new source of funding for 359. With the success of the catalytic converter shields, community members continue to reach out to us, relying on our capabilities to design, create, & manufacture high-quality custom items (spam slicers, trophies, & fishing equipment) at low cost. These projects have brought in \$58K to help fund the advancements of our equipment & facilities.

Based on our program's comprehensive mix of hardware, software & creative skill sets, Special Projects motivate us to focus on our passions within STEM & FIRST. Upon graduation, we are equipped with at least 4 years of practical experience in fabrication using industry-standard tools such as the CNC Waterjet, mill & lathe. Leveraging lessons learned from previous designs, we recognize the necessity to understand & experience the entire design process of Special Projects, from brainstorming to completion & delivery.

The success & awareness gained by our Special Projects & other outreach events allows us to obtain & collaborate with various sponsors statewide. By presenting catalytic converter shields, made entirely by students, & networking with other tech companies at AFCEA(Armed Forces Communications Electronics Association), we gained a \$3k sponsorship & had the opportunity to make connections, resulting in 10 job offers & internships across the nation.

Our State Government & Department of Education(DOE) recognizes the tremendous impact 359 made on Waialua's youth & community, awarding a \$1.35M grant to fund & expand our SLC. Previously, we

struggled to update our aging infrastructure & repair the leaking roof & moldy, damaged carpet. The DOE grant has helped us make necessary repairs & be on par with other cutting-edge SLCs. Additionally, DOE awarded our team \$2M out of a \$5M STEM Dream List Grant dedicated to enhancing the resources within the public school system. Utilizing this grant to stay competitive in the ever-changing technical world through education, equipment, & machinery, such as cutting-edge Mark 4 3D printers, we are one step closer to becoming a focal point of STEM education across our island, state, & Pacific region.

359 is dedicated to providing a well-rounded education to Waialua's youth. We donate \$35K annually to extracurricular organizations, including Waialua HS's Graphic Design & Band program, giving us a creative outlet to discover our STEAM passions beyond robotics & enhance our HS education & experience. We fund & participate in After-School All-Stars(ASAS), a non-profit program, providing after-school tutoring & STEM enrichment activities for elementary & middle-school students. ASAS fosters the development of leadership skills as we mentor & provide academic support to younger students. Participants leave ASAS equipped with STEM skills & seek to join our team.

Impacting Our Keiki

Coming from a rural & underserved community with limited STEM opportunities, many of our youth feel discouraged, believing that their schooling cannot compete in rapidly advancing STEM fields. However, we directly attack this mental barrier by fostering an environment where students, guided by experienced mentors & peers, are encouraged to explore their abilities & discover their true passions. Through STEM classes, resource donations, & open membership to Waialua's Intermediate School, students gain valuable skills & opportunities, preparing them for future careers in STEM while exposing them to what FIRST has to offer. Held together by the principles of Equity, Diversity, & Inclusion, 359 ensures that ALL students in rural Waialua receive a strong education & real-world experiences in STEM despite economic & educational hardships. As a result, 100% of students in our program pursue post-secondary education careers in STEM, in contrast to 30% of students school-wide.

359 relies heavily on alumni mentorship & volunteers to support our team. In recent years, we struggled to maintain consistent mentorship, making it challenging to expand our program. Using lessons learned from COVID, we brought in mentors from beyond our island, allowing us to enhance skill sets within our team, broaden our impact, & expand our perspectives. In addition to remote mentorship, we incorporate senior citizens with their wealth of knowledge & experience into our program, creating opportunities for them to stay engaged with the community & STEM. We also implemented team-to-team, mentor-to-student, & peer-to-peer mentoring to take full advantage of our available resources.

Over the summer, we put all three of these practices together as we transitioned from our 13-year history with LabVIEW to Java while building an entirely new robot. With help from Team 3310's & 694's programming & building resources, we recreated 3310's high-performing robot while improving robot design & efficiency. Mentors helped us design, build, & program a functional robot. Our veteran students shared their FRC expertise with new members.

Sharing Aloha

We optimize our facilities & funding by building up the programs around us. We collaborate with 20+ Hawaii FRC teams through our extensive facilities, supplies, equipment, practice field, collaboration of ideas (sharing designs & CAD), & knowledge (mentors & students).

Seeking to spread Aloha beyond our island, we partnered with Team 694 to provide swerve drive modules & programming assistance to Team 7719 in Jakarta, the only FRC team in Indonesia. We plan to host tours & workshops with 7719 & other teams when they compete with us in the 2023 HI Regional.

359 works towards educating both the mind & the spirit. By participating in local & statewide cultural events & festivals, we learn about & gain an appreciation for different cultures. Participating in Japanese bon dances, Kūpuna luncheons, & the Made in Hawaii Cultural Showcases promotes a sense of community within 359. These events expose us to new values that cannot be taught in a classroom, which directly strengthen vital skills, including communication, teamwork, project planning, & organization.

Coming from a culturally diverse community, we recognize the importance of traveling beyond our beloved island to develop cultural competence. We have been fortunate enough to visit the US Mainland, Canada, China, & Japan, giving us the opportunity to leave the island for the first time & experience different cultures around the world through competitions, workshops, & STEM-related events.

In 2019, the Japanese Ministry of Foreign Affairs invited us to participate in a multinational cultural exchange to expose us to new cultures & traditions. Despite COVID restrictions prohibiting us from going to Japan, we committed to stay in contact & met virtually with the National Institute of Technology in Japan, discussing technology & making connections. After 3 years of virtual communication, we finally visited Japan in 2022, expanding our cultural horizons as we immersed ourselves in Japanese perspectives, language, & culture. For most of us, it was our first time leaving the US. "Despite the language barrier, I learned new things about myself & the world around me as I tried new foods & experienced day-to-day Japanese family life during my homestay." (Zoe, Senior)

Learning about different people & societies teaches us to celebrate diversity & grow both culturally & emotionally as we engage in new perspectives. The unity that our team & SLC has made with institutions & teams across the world has helped us broaden our global mindsets & allowed others to experience our Aloha spirit.

Our journey through community service & engagement while continuously challenging & expanding the minds of our students is our top priority. We recognize our community's hardships as an opportunity to give back & provide ALL youth with resources to pursue their passions. We may have tangible outcomes where our students become 3x more proficient academically than their peers, but the most impactful lesson is learning to love sharing our Aloha.;

