Chairman's Award - Team 66

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2019 - Team 66

Team Number

66

Team Name, Corporate/University Sponsors

General Motors Corp/Michigan Department of Education/ZF&Ypsilanti STEMM Middle College

Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2018/2019 year and the preceding two to five years

Grizzly Robotics (GR) recognized early on the life changing power of FIRST and have worked to harness that power in a way that impacts not only the brightest and best, but also the most vulnerable students. Because of our FIRST-centered school, in 2018 team members averaged test scores higher than the state average for the first time in the team's 21 year history and where 100% of Middle College team members will earn college credits, many of whom are first-generation college students.

Describe the impact of the *FIRST* program on your community with special emphasis on the 2018/2019 year and the preceding two to five years

Using FIRST in the classroom, GR has increased math and science proficiency rates from 3% and 9%, respectively, to 33% and 35% (15% above the state average). Despite only 69% of students graduating prior to 2013, 97% of students are now graduating. As the first team in our county, GR has spent years promoting FIRST and STEM. We created a cultural recognition of FIRST that paved the way for the 159 FIRST teams that now exist in our surrounding communities.

Team's innovative or creative method to spread the *FIRST* message

GR takes PR seriously. To spread the word of our STEM educational model we targeted international educational conferences where educational strategy spreads. As a result, schools from as far away as Sweden have approached us to adopt our FIRST-centered model. We also send out press releases to our media connections to stay in the headlines. This eventually resulted in our appearance on HBO where we shared the message of FIRST with over 32 million viewers.

Describe examples of how your team members act as role models and inspire other *FIRST* team members to emulate

Our lead programer Dalton is a role model for us all. He used GR as a launch pad for his programing skills. Despite losing his legal guardian and becoming homeless, he remains diligent in his studies and mentors JFLL, FLL, FTC, & FRC teams. He's traveled to the state capitol to present our code to the Governor, to DC to lobby Congress for FIRST, and China to meet with ZF. Dalton is one of many Grizzlies who challenge the limits of what's possible in their situations and in the world.

Describe the team's initiatives to help start or form other FRC teams

High faculty turnover is a fact of life at our school, but we've used that to our advantage by working with 5 former teachers to start FRC teams at their new schools. We've also secured $300,000 towards the development of a county-wide makerspace for all FIRST teams in our area that will provide the tools and mentor support necessary for success. GR has started 11 FRC teams. We've mentored 13 FRC teams including 2 teams in China, along with assisting countless other FRC teams.

Describe the team's initiatives to help start or form other *FIRST* teams (including Jr.FLL, FLL, & FTC)

We designed and ran a training for elem. teachers to help them tackle the challenges of leading a FIRST team. 11 of 16 teachers in our Summer 2018 Program are now leading our 11 new JFLL and FLL teams. We also applied for funding through the FIRST STEM Innovation Grant to integrate a FIRST-based curriculum into each elem. school and start JFLL, FLL and FTC teams through all classrooms. We also use our post-kickoff events to expose new students to FTC, resulting in 3 new FTC teams.

Describe the team's initiatives on assisting other *FIRST* teams (including Jr.FLL, FLL, FTC, & FRC) with progressing through the *FIRST* program

We started 11 new FIRST teams in 2018, developing a complete FIRST pipeline in our district, exposing all students in our district to FIRST from pre-k to college. We also run a Post-Kickoff Workshop for area FTC teams, mentoring teams and helping brainstorm ways to tackle the game. GR assisted 13 teams in completing the Michigan Education Dept's grant for funding. We also partnered with UM to host weekly trainings called Girls Who Code, to spur girls' interest in programming FIRST robots.

Describe how your team works with other *FIRST* teams to serve as mentors to younger or less experienced *FIRST* teams (includes Jr.FLL, FLL, FTC, & FRC teams)

Our students not only serve as mentors to FIRST teams in the Grizzly Pipeline, but to regional FIRST teams as well. We've helped organize, start and run teams at several neighboring districts. Over the past 5 seasons, GR has opened our build space to rookie FRC/FTC teams across the region. We have student ambassadors who work regularly with other teams, mentoring and assisting in design, building and programming. Our programming team also provides technical support to teams across the country.

Describe your Corporate/University Sponsors

Grizzly Robotics' diverse support starts with General Motors, who has stood by us for 21 years. Our recent strategy of developing well-rounded partnerships has resulted in 37 sponsors giving at varying levels of financial, technical, and educational support. Industrial partners include ZF, DTE Energy, Michigan Aerospace, and Ford. Our education partners include the University of Michigan, Purdue University, Kettering University, Eastern Michigan University, and Ypsilanti Community Schools.

Describe the strength of your partnership with your sponsors with special emphasis on the 2018/2019 year and the preceding two to five years

We were the first team sponsored by auto supplier ZF and pitched their leadership on the benefits of supporting FIRST. Since 2016, ZF has invested $458,000 in supporting FIRST programs. ZF recognizes FIRST's impact, as it provides a valuable opportunity to recruit experienced engineers. ZF also funded our trip to China so we could pitch their Asia division on the benefits of supporting FIRST teams locally, while also giving our students the global business experience they seek to recruit.

Describe how your team would explain what *FIRST* is to someone who has never heard of it

FIRST is a life saving program that gives students the tools they need to achieve success whether that's graduating from high school, or creating professional connections for their career. Through a mentor-based approach to building robots that compete in yearly changing challenges, students develop support systems and self-confidence. During the competition season, teams work with others to achieve success and where everyone is celebrated for their hard work and dedication.

Briefly describe other matters of interest to the *FIRST* judges, if any

The facts of life in our community are these: 69% of kids in our school qualify for free or reduced lunch? 78% identify as a racial minority? the median household income is $33,055. We don't share this to garner unnecessary attention, we mention these facts to point out just how high our students have climbed using the support systems provided by Grizzly Robotics and FIRST. As a team, we're proud of how far we've come and believe we're stronger because of it.

Team Captain/Student Representative that has double-checked this submission.

Charity Middling

Essay

The mission of Grizzly Robotics is to change the world, one life at a time. For 21 years, we've used FIRST programs to build STEM leaders and transform our culture. At our core, Grizzly Robotics shows students from pre-kindergarten to college that STEM is not only fun and rewarding, but is a proven path where everyone can "go pro".

GRIZZLIES CHANGE LIVES THROUGH FIRST
Our story changed when we realized we could use FIRST to destroy the generational cycle of poverty for our students, develop high-functioning adults, and change the world one life at a time. Using our FIRST experience, we reinvented education and created a pipeline for our students into STEM careers.

In 2013, Grizzly Robotics started the STEM & Manufacturing (STEMM) Middle College which revolves around our robotics team and the principles of FIRST. This 5-year program requires students take engineering and manufacturing courses, where every student builds and programs robots as a part of our normal school day. Students are also required to earn 15 or more college credits, because studies show earning credits while in high school correlates with an 80% increase in students obtaining a college degree. This transforms education and changes the trajectory of our lives.

Measurable Impact (past 5 years):
- School graduation rate has increased from 69% to 97%
- 500+ students enrolled in STEMM Middle College
- 200+ students graduated from STEMM Middle College
- Math proficiency rates have increased from 3% to 33%
- Science proficiency rates have increased from 9% to 35%; 15% above the state average
- Student suspension rates have decreased from 35% to less than 1%
- By June 2019 STEMM Middle College students will have earned over 1,400 college credits while still in high school

Despite this incredible success, students are still enrolling at the school significantly behind their peers academically. We took 3 specific actions to change this dynamic.

1. We created a cradle-to-career-to-mentor pipeline, aka the Grizzly Pipeline. We started 11 teams to expose all students to a FIRST team from JFLL, FLL, FTC, and FRC. Now, students are exposed to FIRST throughout their education, but also mentored and supported as they transition to college and careers. As a result of the Grizzly Pipeline, 70.4% of our mentors are alumni who have returned as professionals to inspire students to become STEM leaders.
2. We're working with our district to expand the STEMM Middle College to include the 6, 7, and 8th grades. This will allow even more students to be surrounded by FIRST's approach to education at a much earlier age.
3. We submitted a FIRST STEM Equity Community Innovation Grant Application for funding to integrate a FIRST/STEM based curriculum into each elementary school and grow the number of JFLL, FLL and FTC teams throughout every classroom.

We also focus our attention on preparing students to enter the workforce with global experiences that employers seek.

In 2018, Grizzly Robotics traveled to Hangzhou, China where we mentored 2 pre-rookie FRC teams. We then traveled to Shanghai to meet with our corporate sponsors, Honeywell and ZF, urging them to support FIRST teams in China. Our students, who once struggled to speak in their classrooms are now successfully presenting to corporate boardrooms at global companies.

We took Destination Deep Space literally by partnering with 2 universities on missions going to space. First, we worked with graduate aeronautical engineering students from the University of Michigan to design, manufacture, and assemble a CubeSat Satellite.

After learning of our partnership with the UofM, we were asked to partner with Purdue University on the Base 11 Fueled Rocket Challenge. Together, we'll work to design, manufacture, and launch a liquid fueled rocket into space. Our students will travel to Purdue, work with graduate-level aerospace engineers, and further expand their access to STEM careers.

Everything we do is in pursuit of our mission: to change the world, one life at a time. Whether its starting a FIRST-inspired STEMM Middle College, expanding that program to reach more students, creating a FIRST pipeline from cradle to career, sending rockets into space, or even traveling halfway around the world - our students' lives are changing because of STEM.

GRIZZLIES SUPPORT THE FIRST COMMUNITY

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As the first team in our county, Grizzly Robotics has spent 21 years promoting FIRST and STEM. Since 1998, we've participated in over 500 demonstrations in cities and schools across the region. We created a cultural recognition of FIRST that paved the way for the 159 FIRST teams that now exist in our surrounding communities. In just the past 5 years we've been directly responsible for starting 22 FIRST teams and have mentored 13 FRC teams.

We've hosted annual FLL summer camps for 156 students; many are now members of our team and attend the STEMM Middle College. During the school year, we also host "Fun Science Fridays" at our elementary schools to engage over 500 students with STEM and inspire them to join the Grizzly Pipeline.

In our district, one of the biggest challenges with starting FIRST teams is high staff turnover, which makes it difficult to recruit and keep mentors. To combat this, we developed and ran a training for 16 elementary teachers; 11 of whom went on to lead our 11 new JFLL and FLL teams.

To address the issue of program stability for local FIRST teams, we're developing the Washtenaw Robotics & Engineering Community Center (WRECC). The WRECC will provide FIRST teams with build space and tools with mentor support from local businesses. We've already secured $300,000 in financial commitments from local partners to make this community makerspace a reality. Blueprints are currently being drawn up and we expect to open Fall 2020.

We're also working to support FIRST teams nationally. We developed tools like "Grizzly Time", a team tracking software, used by teams across the country. We also used our achievement data at the FIRST National Advocacy Conference the last 4 years. We met with members of Congress and convinced them to adopt new federal education policy; this law will allow Congress to spend $1.65 billion in support of afterschool STEM programs. Our continued advocacy efforts will help start FIRST programs in every school across the country.

As a veteran in the FIRST community, Grizzly Robotics sees the forest AND the trees. For us, it's not enough to care for just our cubs, but it is our responsibility to support and care for the entire FIRST ecosystem.

GRIZZLIES MAKE FIRST LOUD
Grizzly Robotics has a reputation for making FIRST really loud. Because of our success on and off the field, we're fortunate to have a platform to promote FIRST at nearly every turn.

Locally, we're a pillar in the Ypsilanti community. Over the last 5 years, we've shared FIRST at over 100 community and corporate events. Most notably, we gave a TEDx Talk on the impact FIRST has on women in STEM and the integration of FIRST in education. We've also had over 1 million exposures to FIRST over the last 21 years at the Ypsi Festival, where we've put the community behind the controls of our robots.

Michigan Governor Rick Snyder, who was awarded the 2015 FIRST "Make it Loud" Award by Dean Kamen, chose our STEMM Middle College as the place where he would sign his final education funding bill. In his speech, he praised Grizzly Robotics as a model program that others should emulate for our utilization of FIRST in the classroom. At the bill signing, one of our students was invited to share the impact of FIRST and our school on her life.

Last year, FIRST studied our program and released a 5-page report, entitled A New Type of School Teaches Skills for the Future, that detailed the impact of Grizzly Robotics. FIRST is now using this document to raise financial and human capital for FIRST programs across the world. Even more impressive, FRC Team 3182 Athena's Warriors used the FIRST Case Study on our team to convince their school district to not eliminate their team.

We've also used our platform to promote FIRST at 6 national and international education conferences across the world. In 2019, we were joined by FIRST VP of Strategy & Impact, Mike Greenlaw, at 2 conferences where we shared how to reinvent education using FIRST. We've also hosted similar sessions at the FIRST Championship Conference over the last 2 years.

In 2018, Grizzly Robotics amplified FIRST to over 32 million people when we obtained a feature on HBO's Real Sports with Bryant Gumbel that showcased FIRST's impact on our students lives. We've also been featured on US News & World Report, PBS's American Graduate Day, LinkedIn's Pulse, Automotive News, the EdNews Daily, and countless local media outlets.

All our hard work has earned us numerous community awards and international recognition, providing us the opportunity to become a model for the rest of the FIRST community to emulate. This led FIRST HQ to select Grizzly Robotics as the FRC team highlighted at the 2018 Championship Showcases, where we shared our educational model so that FIRST supporters can create culture transformation in their own communities.

We're committed to finding new and innovative ways to promote FIRST and it's culminated in a Grizzly roar that's just too LOUD to ignore.

GRIZZLY ROBOTICS MAXIMIZES THE IMPACT OF FIRST
If you had the power to save lives, wouldn't you feel obligated to maximize your impact?

We maximize our impact on our students by using FIRST to break the generational cycle of poverty. We maximize our impact in our community by growing and supporting the FIRST ecosystem. We maximize our impact on the world by sharing our scalable FIRST educational model.

We do this because FIRST gives us the power to save lives. We know—because it saved ours.

Our stories are our inspiration, and FIRST provides the means to accomplish our core mission of changing the world, one life at a time.