



Coconino High School Robotics

FRC Team 2486 · The CocoNuts · Flagstaff, AZ

FIRST Robotics Competition Team 2486

The CocoNuts

Present our 2015 Chairman's Award Submission:

"Inspiring Change, One Letter at a Time"

Honorable Representative Bob Thorpe,

Thank you for taking the time to visit Coconino HS as part of "Take Your Legislature to School Day." The CocoNuts enjoyed sharing our vision of FIRST for Northern Arizona (NAZ) & our accomplishments. We were excited to hear your child had competed at a FIRST event that we hosted & how it inspired them. Intrigued by this, we asked others to share how the 'Nuts have been an inspiration. Recently we received 50+ letters from your constituents about how Team 2486 has inspired change on many levels, from member growth, to STEM education expansion internationally. Our actions advance our mission to extend STEM opportunities to the rural, underrepresented areas of NAZ & beyond through FIRST. "We believe robots are the hook & cultural change is our goal; this is clearly seen in a legacy created 8 years ago & continues to be the driving force of our team."

Our team members have been directly influenced by our work in STEM education. DEengelthaler, CEO of TGEN & Flag 40 stated: "Team 2486 is a vehicle for forming the whole student from advanced STEM education opportunities, mentoring, teaching, civics, stewardship, to responsibility & leadership. Many great things can & will be said about their successful competitions & their participation in numerous community events; I assure you it is all true." Josh grew up with 2486. We helped him set goals: he started talking MIT at age 10. "As a homeschooler, 2486 has given me the opportunity to be involved in FIRST at a level which I couldn't have achieved by myself." KS, 2486

One of our AlumNuts wrote about her recent interview where she was hired on the spot. She said "the interviewer was so inspired by our accomplishments & more importantly why we were doing it. Not a single question asked was on her company sheet. I was offered a position in the Engineering Leadership Development Program @ BAE Systems. They hired me purely because of my passion with the CocoNuts." MBurris, '10 Grad

CHS has experienced a huge evolution since the inception of the team. SZanzucchi, Principal of CHS, wrote: "CocoNuts is a household name in Flag. Many younger students aspire to be a 'Nut. Their passion & hard work has made them 1 of the most sought after clubs. They serve as a model for innovative STEM teaching, learning, inclusion & diversity." FUSD administrators have witnessed our impact. We are humbled by these kind words shared by our administration: "Coconino is 1 of the largest counties in the lower 48, & extends onto the Navajo Nation. I want to highlight the hopes that 2486 carries & the position they fill in our town. Public school in AZ is endangered. Until '12, FUSD had been losing 300-500 kids/yr to other choices & many were top academically. My job is to change this. Whether they know it or not, 2486 are active partners in the effort. When they got to Championship, it caused Flag to take a 2nd look at FUSD. They inspire teams from Chess to Odyssey to compete on a national level. 2486 made the impossible seem possible for so many & brought a new sense of appreciation from our community.



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Their relentless positive image & public performances helped bring back confidence in FUSD & we've gone on to develop several STEM programs. We've reversed our enrollment decline & are now annually recognized w/numerous academic & access awards." BHickman "2486 exemplify the best of STEM education through their dedication to passing along their passion for robotics, teamwork & GP. Their energy & spirit are infectious & inspiring. The lives of countless students have been & continue to be enhanced by their work." MWalton

As you are aware, Flagstaff is proud to be USA's 1st STEM City, a title we constantly strive to fulfill. "No one takes the mission of providing STEM opportunities more rigorously than 2486. They're the best of STEM & Flag, striving to make NAZ & beyond a better place through their warmth & GP. They embody Dean's words as they diligently & happily work - *To transform our culture by creating a world where science & technology are celebrated*". MBell, STEM City Coordinator. Local FTC coaches shared: "When it comes to inspiring kids, spreading the word of FIRST & supporting community-wide STEM activities in NAZ, they do it all. Last year, 2486 put on camps, exhibits, & displays at the County Fair, July 4th Parade, NAU STEM night, Flag's Sci Fest & more. Your example gave us a goal to aspire to. When I mention I coach robotics they assume it's 2486. When we do an outreach event or seek sponsorship we find you have paved the road for us with your reputation." FTC7613 Coaches

Our goal is to inspire change at all levels of FIRST programs. We believe inspiring elementary students will lead to more students studying STEM in college. APapparelli, FLL Coach said "Their training was fun & interactive. Without it, starting a team would have been an uphill battle. My students were proud just to be a neighboring school of such a great team, but when they heard a 'Nut would mentor them, they were ecstatic." An FLL student from Ganado on the Navajo Nation said "Our project is about teaching the next generation of Navajo Code Talkers the Dine Language by creating a new app. Our project won 1st. Thanks to you we were able to do it." Many coaches feel powerless to the daunting task of running a new team, but we believe in sustained support for all teams. MRolfness said: "The realization of what it takes to start an FTC team seemed impossible. We attended a tournament hosted by 2486 & talked to them about our situation. They came to our rescue! We went from dead in the water to signing up for a tournament." Even our 2nd year teams feel our support: "You gave us time & guidance, but beyond that you gave us a chance to open our program to more students. We quadrupled our reach, with only more growth in sight." SSullivan, FTC coach

One of our greatest accomplishments is supporting our rookie FRC teams. "Su casa es mi casa. Despite the 180 mi between us, we met 3 times in person with constant communication via phone/e-mail. Each member was mentored by a 'Nut expert. This continued to the regional even though their hands were full with their bot. They fixed it so our pit was next door, contributing to our earning the Rookie All Star Award for the '14 AZ Regional." FRC4985 "2486 shares their knowledge with fellow teams through resources like *The Complete Guide to the Chairman's Award*. The detailed & in-depth guide is an extremely valuable resource, especially for inexperienced teams. We reference it constantly." FRC4146

Even our coaches have dedicated their time & efforts to support the expansion of FIRST in & out of the classroom via creating FLL in a Nutshell. "This summer, it became the foundation for a professional development course for Manchester, NH teachers as part of a new initiative to put FLL in the classroom; making it accessible for every student, especially those who may not have the opportunity to self-select



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participation due to family needs, financial constraints, or don't think the program would be of interest. The guide, developed using the NXT platform, has the fluidity to be used as a resource as its core concepts relate universally to FLL." BDaniels, FLL Sr Program Manager

We believe that no location, no matter how remote or far away, should be deprived of this opportunity. "The team will travel countless hrs & mi in order to share their passion & ignite this feeling in others," MWalton, Superintendent of Instruction. 2486 services an area that out east would encompass 3-4 FRC regionals. "The dedication required to drive the huge number of miles is truly remarkable. Native Americans are by far the most difficult population to get in FIRST due to extreme poverty, lack of services in the majority of areas on reservations, virtually no internet, no hardware shops & a huge cultural divide that is practically impossible to breach. 2486 has forged on, taking the challenge with drive & unrivaled determination," FLajavardi, FIRST Senior Mentor.

We "established a thriving *FIRST* community in Flag & continue to form new teams in Native American communities in NAZ such as Ft. Defiance, St Michael, & Chinle. FLL would not exist in this area if not for 2486's willingness to breach cultural barriers," JVelez, AZFLL Partner. We supported 19 FIRST teams on the Native American Reservations. 2486 dreams big, acts bigger. We are currently working with the Navajo Nation superintendent to get FIRST in more schools.

AZ sees the value of FIRST as an extracurricular activity. "2486 built momentum to make robotics an approved sport so team members can receive varsity letters. AZ is 2nd in the USA to have a state championship in robotics." BHarris, President, Sci Foundation AZ

We have expanded our impact beyond our AZ borders. JVelez said: "They volunteer in AZ & NM at all levels of *FIRST*, driving through snowstorms to ensure even the remotest areas are receiving the benefits of *FIRST*... they DO THE WORK, donning their crazy hats & red shirts to talk about *FIRST* at exhibitions, tournaments, scrimmages, camps, & conferences. They aren't just talking at many of these events; they're running them!" Our AlumNuts have traveled internationally. "I love the FLL experience you have & think you will be a tremendous asset to our FLL camp this summer. I would like to invite you to work for Camp Eureka." Miray, Puerto Rico Camp Dir. Our neighbors down south said, "they've not only given us the opportunity to enhance our awards submissions, but also provided a way to connect us with more teams in America & learn from each other," FRC2283 Mexico

Rep Thorpe, what started as a mission to bring FIRST to our town has become so much more. Our impact has reached farther than we could have imagined. The CocoNuts have truly changed the culture throughout the world. We look forward to you judging this Saturday as we host the AZ FTC Championship & continue to build a partnership.

Sincerely,
CocoNuts



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Describe the Impact on Team Participants

Not many teenagers are told they can change the world, but that is one thing that the CocoNuts remind me of everyday. K Anderson, AlumNut

Current 'Nuts:

- 88% in advanced courses
- 96% CPR/AED certified
- 100% plan on college
- 1 STEM Student of the Year

Of 24 Alumni:

- 92% pursuing STEM careers
- 36% FIRST volunteer
- 4 Dean's List Finalists, 1 Dean's List Winner, 1 SFAZ Innovation Hero, 2 STEM Student of the Year

Mentors:

- 2 AZ Teacher of the Year finalists
- STEM Leader of the Year
- STEM Teacher of the Year

Describe the Impact on your Community

"If the Nuts didn't have a strong presence in the community, & willingly volunteer their time, then there wouldn't be the involvement & excitement about STEM that we have today." K Heins, FLL Coach

- 2300+ hours spent at 104 Outreach events, reaching 105k+ people in person
- 3600+ hours spent on 24 professional workshops & 35 presentations to professional organizations, reaching more than 1750 people
- 464 community service hours/2yrs
- 10k FIRST volunteer hours
- 100% FUSD schools have STEM clubs

Describe your Innovative or Creative Method to Spread FIRST

"2486 established themselves as ambassadors for FIRST in AZ." J Velez, AZ FLL

In our 1st year, because of the large distance between cities, we worked solo. Since then, we have transformed Flagstaff into the FIRST hub for NAZ. Our mission is to provide a personal handshake to every school board member, potential sponsor, & future team we contact. NAZ encompasses 5 counties and is larger than Georgia. The Navajo Nation, one of the biggest reservations, has a high school graduation rate of 56%.



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Describe your Team's Role Model Characteristics

"2486 is never about the numbers. It is about handshakes, smiles of assurance, & a promise that they will do their best to provide the opportunity to succeed to every student because they deserve it." *K Anderson*

"Your enthusiasm really makes you stand out at competition. It's easy to tell that you've worked long & hard to make your team what it is today but that you have fun while doing it." *FRC 2375*

"I'm not sure I have encountered such unselfish thoughtfulness in another student group." *P Elrod*

Describe your efforts to Start FRC Teams

We have started 3 teams & actively mentor each. We have passed the legacy of extending STEM opportunities to them. They're already planning to start new FIRST teams in their area, one on tribal lands. Our coaches inspire pre-service teachers to become FIRST coaches & volunteers. The coach of FRC4985 student taught with Coach Sapio.

"They transformed our team into an FRC team, instilling in us the values of gracious professionalism & the spirit of FIRST." 4985, Rookie All Star

Describe your efforts in starting FLL, FTC, JFLL Teams

"I believe that without their presence, opportunities that students, mentors & families have been provided through robotics wouldn't exist." *MKnight*

Since '08:

- Hosted 35 FLL/FTC tournaments in AZ & NM
- 18 FLL/FTC Scrimmage/Kickoff events
- NAZ FLL '14/'15 season
- 48 teams played in 3 NAZ events
- Started 17 Native American teams
- AZ/NM FTC Affiliate Partner
- 64 AZ/NM Teams - 700% growth since '09
- In '14/'15: 6 Qualifiers & 1 Championship in 2 states
- '14: 70 teams from 4 states & Mexico competed in our events



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Describe your efforts in assisting FIRST Teams in Progressing through FIRST Programs

"The core values they displayed to our team inspired them to move from FLL to FTC." M Rolfness

- 4 years of FLL Camp; 200 students
- Chairman's Award, Beta Testing Workshops
- Integration with STEM clubs,
- So many FLL teams in FUSD, & strong middle school FTC programs, create a direct line to our team
- FLL in a Nutshell: 2-day Coach training for PD credit, extensive implementation guide; partnership with FIRST HQ to put in Manchester, NH 4th grade as well as distributing to teams everywhere

Describe your efforts in Mentoring FIRST Teams

"Their belief is that no location, no matter how remote, should be deprived of this opportunity."

MWalton, FUSD

- Mentor 5 local FTC, 3 long distance (Heber, Winslow, Mesa)
- 15 FLL teams personally mentored, a new team in Ft. Defiance
- 10 Chairman's Exchanges
- 3500+ Chairman's Guide downloads
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"I've seen Nuts work with their teams the day after Thanksgiving to ensure they could compete the next weekend." MGage

"We really appreciate you coming from Flag to help us run our 1st FTC event." FRC2375

Describe your Corporate/University Sponsors

"My husband, a W.L Gore mentor, was pulled in as a mentor with his knowledge in engineering; he was just like one of the kids." PStrones

- WL Gore: Parts & most of our mentors
- NAU: 75% of NAZ event volunteers, NAUTeach creates new coaches
- APS: Grant for new drive train
- FUSD: Travel, venue support & build space
- Flagstaff 40: Financial support
- Findlay Toyota: FIRST event sponsor
- PADT: Grant & custom parts
- SFAZ: Long time financial support for rural FRC teams
- CCESA: PD credit for FLL teachers



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Describe the Strength of your Partnerships

90% of mentors from sponsors

This year, as part of the "Take Your Legislator to School" we hosted AZ Rep. Thorpe, who is judging at the AZ FTC State Championship.

"How many other teams can say that the mayor of their city has traveled to see them compete." MGage

"This team has created sustainability by recruiting teachers, students, administrators, parents & the community to support STEM education through clubs, competitions, school programs, & community businesses." MWalton

Describe FIRST to someone who's never heard of it

FIRST is best described through the effects it has had on our lives.

FIRST is a place for people to be themselves. Through its different levels, we can exercise our own creativity to reach our goals.

FIRST's focus is empowering students. By unifying us with a common goal, it allows us to realize our ability to change lives, including our own.

FIRST fosters the future of STEM education; giving aspiring scientists & engineers from all walks of life the opportunity to apply technical & life skills.

Other matters of interest

2486 is collaborating with NASA to make a prototype for future space cave missions.

We're developing a partnership with Rep. Thorpe to spark change at the state level.

We hold meetings with CHS' clubs to teach marketing skills they could use to find financial support. 2486 has achieved sustainability & is promoting this in other clubs.

"Without question it has been about making a difference, changing the landscape, & a vision from the very beginning to improve lives." KAnderson