

Chairman's Award - Team 6424

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2022 - Team 6424

Team Number

6424

Team Nickname

Stealth Panther Robotics

Team Location

Knob Noster, Missouri - USA

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.

Team members gain real-life experiences including budget oversight, time management, and creating innovative solutions with project constraints. Team members have been granted opportunities to talk about FIRST, STEM, gracious professionalism, cooperation, and the values of our team to people within our community and nationwide. 100% of our alumni pursue a secondary education in a STEM field and have returned to act as mentors for all of our teams.

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

We are a rural farming community in Missouri; also home to Whiteman Airforce Base and our student body is always changing due to the continuous rotation of military members. However, our school district has given us a proper educational environment and supports our FIRST programs, allowing us to be capable of big things. For example, we are assisting the school district with the challenge of implementing "Mission Readiness" to support strong education for the Nation's defenders' children.

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?

With the integration of FIRST in our district's curriculum 68% of students are actively involved. We consider returning members and numerical growth as results. We donated backpacks to students, held a FIRST informational booth during open house at all KNSD schools, local Shop Small Event and Spring Fest, we participated in a FRC demonstration during the State Fair, presented at a PLTW summit, and visited Washington D.C. to discuss our AMAD safety cover solution that helps keep the B-2 flying.

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

We hosted a code camp for a local 4-H club and met with their coordinator and discussed how we could help them start their own FLL team(s). We also continue to help teams from overseas with CAD and aspects of their teams. In our school we are tutors and cadet teachers for shop and engineering classes. Mrs. Forest, our science teacher, said "the 6424 members are a different caliber of student. They are polite, gracious, helpful and excellent role models for all Knob Noster Students."

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

6424 held a conference call with the Department of Defense Education Activity Headquarters Career and Technical Education Instructional Specialist, Daphne Bonaparte, in forming a team in Ramstein, Germany. We also mentor FTC 18752 at McConnell AFB, and we have held discussions about forming a team in San Antonio-Randolph, TX including how to apply for DoDEA STEM grants and opportunities available to schools serving the military child. We hosted an off season event called the "Hangar Games".

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?

We have an amazing community outreach program. We 3D printed a spoon for a fellow student so that he could feed himself, a solution for a dynavox maestro speech generating device, we tricked out a wheelchair for the 2021 prom, and a replica of a specialized tool for our sponsor to use on the B2 before they spent \$10,000 on the actual tooling. Our initiatives have resulted in the team becoming our communities' problem solvers. We have started FIRST Fridays in our school district.

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 are grateful for our sponsors for their support and willingness to provide financial aid guidance, real world knowledge and experience for our team. We are always working to strengthen our relationship with our sponsors by sending team updates with our newsletters and promoting their organization on our team shirts, robot, pit, and our social media accounts. We've attended numerous corporate and professional conferences through our sponsors to represent them and FIRST.

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

6424 actively recruits the underserved students in our community. Students who have been overlooked by other organizations due to a disability, those who struggle with school, or maybe just do not feel like they fit in. We give them a home where they feel confident in their own voice. They are included in every aspect of the team, where they can find their own career path. Students can be successful now and in the future.

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

With our successful initiative to embed FIRST into the curriculum, students are exposed to programs early on leading to continued participation. 8 team members act as student mentors to the FLL teams. These mentors set a good example as STEM leaders while demonstrating the Core Values and the gracious professionalism of FIRST. Within the last three years, we have created all levels of FIRST in our district creating a pathway of progression for students.

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

Our partnerships with our sponsors are concrete. We are grateful for their support and willingness to provide financial security, guidance, real world knowledge and experience for our team. We are always looking for businesses that align with our values to showcase our strengths and attract them as new sponsors. We are always working to strengthen our relationship with our sponsors including: sending quarterly newsletters, The Growler, thank you gifts that we have hand made in our robotics shop.

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

As a team, we want to improve our relationship with other activities based in our school district, seeking to lift each other up in mutually beneficial partnerships. Our school's JROTC TRIAD Raiders team advanced to National's in Georgia and we understand the financial burden trips can cause for students, therefore to show our support and alleviate financial stress, we donated \$300 to provide a meal for the team.

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

Our goal is to inspire, promote, and advocate the ideals of FIRST locally and internationally. We took the first step locally and exposed all students to all levels of FIRST either in the classroom or afterschool. Students are now able to progress at the pace that will guarantee their individual success as we train the next generation of doers and problem solvers within SPR. Our next steps are assisting with students' transition from base to base, state to state or internationally.

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.

We are adjacent to Whiteman Air Force Base and are a unique and diverse community. Students are able to join our program and confidently make their way in the world with skills that they have learned. We have made it our goal to assist in a student's transition from base to base and team to team by implementing a FIRST program at every military base. General Harencak stated, "...we made a commitment that every Air Force Base will have a FIRST robotics team".

Essay

Stealth Panther Robotics Team 6424

A world without change becomes stagnant. Stealth Panther Robotics (SPR) Team 6424 is continuously working towards changing and improving our school, our community, and our world. When we walk into our engineering lab, we are greeted with a large sign on the door that reminds us: "Beyond this door exists high expectations. It is here that we train the next generation of do-ers, problem solvers, craftsmen, and engineers to solve the world's problems, from farm to space, with the confidence and grace born within this building." FIRST has given us the opportunity to be confident and successful in our future endeavors.

The Robot Builds Us:

Team 6424 strives to embody the ethos of FIRST. We have built upon this philosophy by implementing our team motto, "the robot builds us." Our team goal is to inspire students in the pursuit of science, technology, engineering, and mathematical fields. We promote leadership, teamwork, creative problem-solving skills, real-world experiences, and advocate for these opportunities to be made available for everyone. Our team works together diligently to find our individual strengths and weaknesses. Armed with our knowledge, we can create partnerships that complement and enrich each other. We measure our success by the number of lives we impact, through the people reached, our involvement in the community, and by the growth of participants in FIRST programs. One member expressed, "this team has made me a better person and I feel not just like a team member, but part of a family." We are able to confidently share ideas to enhance the team in a supportive environment, knowing that someone in the group will have the necessary skills to move from concept to final product while also teaching those skills. FIRST has provided us with an outlet to be creative, improve our social skills, establish friendships (locally and abroad), and introduce members to STEM fields that they had not previously considered. 100% of our alumni have pursued a career in a STEM field. 2020 was difficult for everyone globally. Our team saw a shortage of personal protective equipment (PPE) across the country and knew we had the tools and knowledge to 3D print face shields and respirators. We partnered with Whiteman Air Force Base Squadron Posters and the Kansas City PPE Drive to distribute PPE. We 3D printed and donated a total of 3,315 PPE across the country. We inspired the elementary schools in our district by sharing our project with the science classes via a video conference; inspiring others into action while promoting STEM.

2021 brought the new challenge of turning one of KNSD's bus barns into a practice facility we call the "Hangar". After the refurbishment we then constructed a regulation size game field with fully operational game elements. As we worked on the 2021 at home challenge we decided that we would host a 2v2 off season event that was called the Hangar Games. We made a promotional video, posted on social media to spread the word, invited our community, and had 23 teams participate from MO, IL, MN, AR, and KS. 7 weeks of qualifying rounds culminated on week 8 with a championship. We made specialized championship banners, had a senior parade, our sponsor Northrop Grumman had flags flown in a B2 to be presented to the winning alliance, and we plasma cut trophies for the finalists. Our team was overwhelmed by the gratitude from the other teams and the emotions from the winning alliance partner, a 15 year veteran team, who had never won a banner and also the support from our community when they saw what a FRC competition looked like. The "Hangar Games" led to Arkansas asking us to help them put on an event. We traveled to AR and ran the 2021 Arkansas Robotics Coop event. This included using our specialized scoring system, and field elements we brought with us. Gateway Robotics Competition (GRC) is an off season event that we participate in every fall. This year we headed to St. Louis, Missouri the night before to assist with setting up the event at Linwood University. 6424 is always quick to rise and go above and beyond to help others. 6424 takes on the challenge to inspire, promote, and advocate in everything we do.

Inspire

In February of 2018, we petitioned our school board to increase the number of STEM classes and embed FIRST into our district's curriculum. The initiative was approved and instituted in August of that year. As of 2022, 100% of pre K thru 5th grade students have a robotics class using 20 FIRST LEGO League (FLL) Discover Class Packs and FLL Explore. 6th thru 12th have multiple robotics electives available, giving every student in our district the opportunity to engage in FIRST. Currently, 68% of the entire district's student body is participating in a FIRST program. We donated a 3D printer to the STEM lab at Whiteman Elementary to inspire the students to create.

We started FIRST LEGO League team SPIRIT 31309 at Whiteman Air Force Base's Youth Center and seven more as an after school program in the Knob Noster School District (KNSD). We led the implementation of these new programs, and 6424's team members now act as student mentors. They attend trainings, meetings, Qualifiers, and their Championship. Elementary and middle school students join FLL out of curiosity, but by the end of the year, their enthusiasm and passion is apparent. Their knowledge and dedication continues to grow as they proceed on their journey with the SPR family. We also started FIRST Tech Challenge (FTC) 16309 and hosted the first annual Knob Noster Qualifier in 2019. In 2021 we hosted 2 FTC meets. 6424 also mentors FTC 16309 continuously encouraging and leading our middle school robotics members.

Our newest initiative is FIRST Fridays. The robotics team travels to one of the other schools in the district the FIRST Friday of each month to participate in a STEM activity with the students. They provide a new make and take activity each month with informational flyers that the students can take home and share with their parents and discuss what they discovered.

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Promote

SPR has garnered the support of the KNSD and the surrounding community. We have prepared backpacks for students, had a FIRST informational booth during open houses at all schools in our district and the Whiteman AFB Air Show. We participated in the local Shop Small Event, Revitalization Commission, and Spring Fest, we promoted STEM in seasonal parades, and participated in a FRC demonstration during the State Fair. When there is a need in our community, we fill it. Such as when our team designed and built a message board for our local park.

Team 6424 volunteers whenever schools in our district are in need of our expertise. Using our technological expertise, our team came together and was able to "trick" out a fellow student's wheelchair for the 2021 Prom. A team member expressed that "having the ability and being able to impact someone's life like we did was an amazing feeling." We also introduce all 9th graders to SPR with a demonstration on Freshman First Day.

After the completion of a mission, a group of switches on the B-2's instrument panel were inadvertently disengaged. The incident required the plane to execute an emergency landing. Brigadier General Nichols declared, "I don't want to wait 10 years and spend 10 billion dollars," so he challenged universities, industry leaders, and team 6424 to come up with a fix. We quickly jumped into action, honored to rise to the challenge when our Nation was in need and with our money saving solution we out-shined all the competition.

Over 72 hours, an Airframe Mounted Accessory Drive (AMAD) panel used in the B-2 cockpit became our main focus. Armed with Computer Aided Drafting and Design (CADD) technology, a modified 3D Printer, and a vacuum chamber; our team designed, printed, and tested multiple prototypes. We were invited to the B-2 flight simulator where we met with pilots to test our 3D printed ideas. The team left the flight simulator with valuable feedback from the very people their solution was going to affect. We continued to make modifications and integrated the feedback we received from the pilots. The tenacity, perseverance, and work ethic of the team was evident on day three, when we presented Version 8 of the AMAD cover. The final version of the AMAD cover completed the approval process and is still being used in every B-2 and the flight simulators today.

Advocate

We continue to advocate for STEM and FIRST education. We have shared our story and the Core Values of FIRST with Missouri Congresswoman Vicki Hartzler, the Missouri School Board Association, at the Department of Defense Education Association Midwest Regional Conference, and the Strategic Deterrent Coalition in Washington DC. We also spoke with 4 Star General Timothy Ray, who granted the final approval on the AMAD cover to be used in the B-2 Stealth Bomber. We presented at the PLTW summit in KC and also hosted a PLTW board meeting with president and CEO Dr. Vince Bertram. We have been featured on various news channels, including the PBS television show Wicked Awesome Stuff, Forbes magazine, Business Insider and numerous other publications. We strive to use every opportunity to advocate educational opportunities and strong schools for every student.

Our Legacy

When our team is seen in the community or speaking at events, some may just see teenagers playing with robots; however that is just a glimpse of who we are. We are Stealth Panther Robotics team 6424. We work hard to impact future innovators in our school, community, and the world. We know that in order to change the perception of STEM, we need to be the beacon of hope that advocates STEM education for all.

From promoting STEM within our community, to inspiring FIRST within our school district, to advocating on a national level, 6424 is ready to conquer any challenge while living by our motto, "The robot builds us!"