

FIRST Impact Award - Team 3814

2025 - Team 3814

Team Number

3814

Team Nickname

PiBotics

Team Location

Erlanger, KY - USA

Describe the impact of the *FIRST* program on team participants within the last 3 years. Think about percentages of those graduating high school, attending college, in STEM careers, leadership skills, and serving as mentors/sponsors in *FIRST* programs.

In the past 3 years, every PiBot has graduated high school and over 90% currently attend a 4-year college or trade school, often entering with an Associate's degree and/or college credit. 2 alums have represented Kentucky in the National Youth Science Camp, and 5+ have been selected to attend the Governor's Scholar Program! Several of these alumni have even returned to the team as mentors, using their careers in robotics, aviation, and engineering (among others) to grow our chain of knowledge.

Describe your community along with its unique opportunities and circumstances. Think about your geographic region, diversity of town/school, language barriers, socioeconomic barriers, and cultural expectations.

As the only FRC team in Boone County, we bring robotics opportunities to 8 different high schools, creating opportunities for upwards of 6,450 total students -- 52.4% of which have free/reduced lunches and 10.1% who are English Language Leaders! We're similarly able to use our proximity to Cincinnati to our advantage, working with leading STEAM companies in an effort to not only build better robots, but to expand our community and the impact we create across geographic boundaries.

Describe the team's methods, with emphasis on the past 3 years, for spreading the *FIRST* Mission in ways that are effective, scalable, sustainable, and creative.

This past year, PiBotics was told that we wouldn't be able to continue. The team's strong culture led us to take action. Students wrote emails to the school board, attended a board meeting, and advocated for the team, greatly demonstrating the confidence, resilience, and passion they'd learned through the STEAM opportunities we provide to our community! We're proud to have not only rescued the team through our member's skills, but secured a sustainable future for Kentucky youth in STEAM.

Describe your team's goals and the progress you have made towards them to fulfill *FIRST's* Vision.

Our utmost goal is to build STEAM access in our community, where these opportunities have been historically neglected at the middle and elementary school levels. Thus, we work to recognize and celebrate the accomplishments of these students through hosting/supporting the NKY FLL Regional and the FLL State Championship nearly every year (respectively). We can't wait to continue to expand the number of local leaders in STEAM through the creation of new FLL/FTC teams with 4-H this summer!

What impact has your team seen from your efforts described in the above question? How does your team measure impact?
With this involvement, we’ve ensured the upkeep of regional FLL events for 40+ teams in Kentucky, including securing a \$20,000 grant to support the cost of their parts and travel in 2023! And, in the process, we’ve helped ensure hundreds of students in the region are able to pursue their passions, engaging them in presentations about how they can continue to participate in STEAM and measuring our impact through the excitement we’re able to see flourish in each of them with their questions!
Please provide specific examples of how your team and team members act as role models within the <i>FIRST</i> community with emphasis on the past 3 years. How do you share these best practices with other teams?
Every member of our team operates as a role model by supporting our values of learning, collaboration, and fun. At the beginning of each season, students participate in various “pods” where groups of upperclassmen and new members design small robots together to discover their passions and subsequently help build a contagious team culture of coopertition and intellectual curiosity, spread among the FIRST community with our positive spirit and communal involvement at competition.
Describe your team's initiatives to Assist, Mentor, and/or Start other <i>FIRST</i> teams with emphasis on activities within the past 3 years.
Over the past 3 years -- on top of our emerging efforts to create new teams with the 4-H Foundation -- our team has regularly gone out of its way to lend other teams a helping hand. The Blue Grease Crew, our only neighboring team in Northern Kentucky, has used our facility alongside us for practice matches and field testing; some of our students have similarly worked year-round to assist Engineers of Tomorrow in the stands and mentor budding FLL teams like the Kelly Elementary Cobras!
What other initiatives have you created, grown, sustained, or participated in (<i>FIRST</i> or otherwise) to help inspire young people to be science and technology leaders and innovators? What outcomes have you seen from your efforts in the past 3 years?
As a team, we aspire to constantly encourage the youth around us to become leaders in STEAM. Through events such as Super STEAM Saturdays, we’ve engaged hundreds of elementary students over the past 3 years in design, aerospace engineering, and CAD-based activities! We’ve also recently grown our efforts to introduce new students to robotics in our community, including dressing our competition robot up for Halloween and hosting demonstrations at schools across Boone County annually.
Describe the partnerships and relationships that you've created with other organizations (teams, sponsors, educational institutions, government, philanthropic entities, etc.) and what you have accomplished together, with emphasis on the past 3 years.
Over the past 3 years, because of partnerships from companies such as 3M and BOSCH, PiBotics has been able to remain free for students, ensuring equal access despite any potential socioeconomic barriers. Likewise, we’ve also historically been able to work with organizations such as Learning Grove and the Ignite Institute, providing 100% of our current seniors with the skills necessary to secure local internships and even participate in prestigious scholarship programs like NaviGo with U.S. Bank!
Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, <i>FIRST</i>, and your communities.
PiBotics is always working on improving our team diversity; through the creation of subteams, we’re proud to offer opportunities for any and all students in the region, no matter how niche/broad their interests may be! And, allowing any grade level to take on leadership positions, we hope to give all of our students equal opportunities to lead, building a culture of belonging that welcomes/respects everyone’s perspective, background, and voice as an essential element in developing our community.

Explain how you ensure your team and the initiatives you have created will be sustainable.	
After the Northern Kentucky FIRST LEGO League competitions faced shutdown due to a lack of volunteers a few years ago, we began to focus on engaging the next generation of engineers in our community to keep these opportunities up and running, sharing our knowledge at STEAM workshops across Kentucky and building relationships with the local sponsors! That way, we're able to not just pass down our knowledge, but also sustain the resources needed for them to build upon our efforts as they grow!	
Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.	
A few years ago, we noticed that some students with less experience in STEAM were struggling to engage in our subteams, often feeling like they didn't have the background knowledge they needed to participate. However, in the seasons since, we have been working on remedying this issue through team-wide learning opportunities, where everyone groups together to work hands-on with 1 to 2 components of the robot and/or test out roles they may not be familiar with each day!	
Briefly describe other matters of interest to the <i>FIRST</i> 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, particularly noteworthy, or had a large impact.	
We got to see firsthand the impact that we created in our community this year. Not only did students come to advocate for PiBotics, but so did parents, mentors, and alumni, willing to fight around the clock for the impact we've been able to generate across Northern Kentucky. And, with support this year through organizations such as LINK NKY News, we can't wait to see how much we're able to impact Kentuckians this year, ensuring that as many students as we can feel represented in STEAM.	
Judge Feedback	
	How do you believe we can best shift our efforts this upcoming season to bring STEAM to new communities in Kentucky; what results would you like to see us document in addition to the evidence provided here? An area the team has an opportunity to improve. Something that really impressed the judges.
Essay	
In 1988, a French immunologist known as Jacques Benveniste published a study purporting the idea that water has a memory (the ability to recognize the substances that were previously dissolved in it even after none of the original substance remains). It's a theory that is often considered pseudoscientific in modern-day chemistry -- contradicting nearly everything we know about water and its properties -- and has been widely disputed by scientists from the BBC, United States Department of Defense, and Benveniste's team in the years since. However, regardless of whether his theory will ultimately stand the test of time, our team would like to offer up some of our most precious memories as evidence of its truth today, focusing on how our members continue to generate an impact across the world of robotics over time. Foundations (2011): In particular, one of our team's first memories begins in a seemingly random classroom from 2011 to 2012, where PiBotics was founded under the leadership of Lead Mentor David Lindsay and Robotics Coordinator Elizabeth Koch. Back then, the team was limited to just one class and could only afford to participate in one regional event, where we were ultimately eliminated in 40th place with a record of 2-8-1. However, despite the unfortunate results we took home, our team also made some incredible ground that season, gaining the support of our longest-serving mentor and continuing to improve our strategy when we returned in 2013. And, through our	

struggles that year as a rookie team, we were even able to finish off the year with the development of a permanent mission for the team: upholding three essential “pi”-llars of impact, growth, and leadership!

Furthermore, with the establishment of these pillars, our team also made a few fundamental commitments that we still uphold to this day, including forever-free team membership and unrestricted leadership positions, allowing any student from a qualifying high school to join the team and gain experience managing a project or subteam regardless of their past involvement! That way, without limiting involvement to seniors, we’ve been able to promote a much more diverse array of individuals in leadership positions, and encourage younger members to delve deeper into the areas on the team they’re passionate about while developing highly-regarded soft skills in communication and self-confidence.

Moving (2019): Then, through an effort to reinforce our team goals, resources, and outreach initiatives from 2019 to early 2020, we moved venues to the Ignite Institute, growing into the largest team in Northern Kentucky (with a ~200% increase in new members) and accepting students from an additional 8 high schools across Boone and Kenton County! We were also able to place 90% of our senior team members into nearby internships in technology and/or engineering (including at premier companies such as BOSCH and R.A Jones), and welcome in one of our most diverse graduating classes ever -- with 66% of our team representing minorities in STEAM -- by 2023!

FIRST LEGO League (2023): Soon, with the incredible support of our new team members and mentors at Ignite, we began to shift into expanding our overall community impact, with 20-30 of our new team members volunteering to help host/support the Kentucky FIRST LEGO League Regional and State Tournaments respectively, allowing the events to continue operating despite a decline in external volunteers that would’ve otherwise made these opportunities inaccessible to students in Northern Kentucky. It became part of our culture to share learning opportunities with one another, to create a safe space on our team for anyone and everyone interested in STEAM. And, in the process, we even secured over \$20,000 in grants from Johnson and Johnson for the 40+ FIRST LEGO League teams we’d supported through our local involvement!

Additional Events (2023): Similarly, with the creation of the first annual “Fright Nite” and “Winter Fest” holiday events at the Ignite Institute, our team also began new programs to impact our community through interactivity, building several themed robots to demonstrate to hundreds of visiting youth in Ignite’s Engineering Bay and answering parent questions about our team! We began working with local programs such as the Northern Kentucky MakerExpo and started our own “STEAM Saturdays,” where we’ve since been able to introduce hundreds of elementary schoolers in the area to many of the soft skills we use every day via rotating team building and design-based activities! And, working with educational institutions like Cooper High School and St. Pius X School, we have also been able to successfully host demonstrations of FIRST Robotics at each level of education since, encouraging upwards of 300 middle schoolers to look into pursuing STEAM and equipping high schoolers with the tools to learn alongside us without any previous experience in engineering/robotics!

Social Media (2024): Likewise, on top of our recent in-person efforts, the team also formed a new subteam to grow our social media presence when a few of our team members expressed interest in digital marketing last year. By awakening many of our once-dormant social media accounts to resume daily posts to deliver information to parents, sponsors, and students, we have reached over 25,000 people through an approximately 3,700% increase in peak view count and 1,200% increase in overall post frequency across Facebook, Instagram, TikTok, and Twitter! We also started more actively maintaining our website with information about sponsoring and watching the team online for those who live outside of Northern Kentucky, garnering visits from 30 states (including 24 different cities surrounding our home in Kentucky), and 19 countries across the globe!

Defense of FIRST (2024): However, around the peak of these efforts in mid-2024, the team also faced one of the most difficult challenges we’ve ever had to deal with-- our coach Ms. Koch announced her retirement, prompting the superintendent’s office to announce an indefinite suspension on all team meetings pending a re-evaluation of the coaching position. Our fate, whether FIRST Robotics would be effectively eliminated in our county, was entirely in

their hands.

But, despite how dire our circumstances seemed, we immediately began looking for a way to fight for our team and protect the impact we generate across Boone and Kenton County. Thus, our students and mentors began emailing that night, discussing the possibility of switching to a community-based team with the support of our local 4-H branch at the University of Kentucky's Boone County Cooperative Extension Center in case the board decided to fully disband the team. And, in the process, several of our students also coordinated some of our first works of activism as a team, reaching out to mentors, alumni, and friends via email to encourage them to share our impact with the superintendent's office as they made their final decision. We were even able to later gather 15+ volunteer speakers together to help defend the presence of FIRST in Northern Kentucky at the July Boone County Board of Education meeting, updating them on the evidence we'd gathered to prove the program's importance. Likewise, we also took to sharing our story with over 3,000 individuals online around that same time via published articles and recordings, garnering significant traction among other teams through online FRC communities despite an otherwise all-encompassing ban on PiBotics social media posts!

Expanding Our Reach (2024): In the end, we are proud to announce that we were able to successfully make our mark on the district, finally hearing back that September that we had saved the team! And, through the stories that each member shared in our joint presentations, we've also learned more than ever about the tremendous impact that FRC is able to generate, empowering us with an abundance of new resources to protect our initiatives for future generations of engineers in Kentucky! Each and every member of our team has been equipped with countless invaluable life lessons throughout this process, ranging from learning to embrace diverse perspectives through the STEAM accessibility we promote to developing confidence as a leader preparing for our team events; it is without a doubt that none of us would be who we are today without the work of FIRST, our team, and everyone on it to build up our environment as much as we are able.

In the future, we can't wait to expand our mission with the help of the community that helped support us through this past summer. And, whether that's by founding new FLL and FTC teams via Northern Kentucky 4-H this summer or changing how we interact with others on social media to reach new audiences across the globe, we hope that our efforts are able to truly embrace the spirit of the water, creating opportunities that will provide the countless underrepresented young engineers in Kentucky with lifelong access to STEAM -- to the point where, even once all of the members working on the team today graduate, the work that we do will continue to live on. In other words, we hope to finally prove Benveniste's theory correct as the water of this year's game carries the memories we've shared with you today on to forever impact our school, state, and the entire world!;

