

FIRST Impact Award - Team 6702

2025 - Team 6702

Team Number

6702

Team Nickname

PrepaTec - StingBots

Team Location

Tlajomulco de Zúñiga, JAL - Mexico

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 last 3 years, our team has impacted 160 students in our school. 66% of them are active in FIRST programs as mentors or volunteers, and 86% are involved in STEM careers. Some outstanding examples are Frida Amaya, a Dean's List Finalist in 2023 season; Damaris Villa, admitted to study engineering at MIT; Carlos Carrillo, an FRC Game Announcer; and our coach Mauricio Moreno, an Alumni who has a 12-year trajectory in FIRST, who currently works at MAGNA.

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.

Our school is located on the outskirts of the metropolitan zone of Guadalajara. One of the biggest barriers in our region is socioeconomic, this is why we started offering scholarships to students that are interested in STEM. Since there is a lot of support inside the metropolitan zone of our city and not enough on the outskirts we have created opportunities, spaces and unique projects to impact our zone, unifying our community.

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.

Based on the current situation in Mexico,, including insecurity and poverty, we generate our STEM projects, which range from local Hackathons, to classes in reading, writing, mathematics, mechanics, electronics, programming, and CAD in low-income communities, helping them to be more interested in their studies and STEM. Also, we have made several engineering presentations in malls, letting our community know young minds are brilliant and can help solve complex problems.

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

Our main goal is expreding STEM around Mexico by sharing our projects and inspiring young generations to create and innovate for a better future. Based on that goal, we opened two new teams in our school, one of FRC (KrakenBots) and another one of FTC (JellyBots #25517). We offer scholarships for students to participate in our FTC FIRST team. Once we achieved this, we qualified students from three different schools in STEM areas for them to open their own teams in the future.

What impact has your team seen from your efforts described in the above question? How does your team measure impact?

As we welcome more people into the FIRST community, we notice that there are more rookie members interested in our team and alumni who want to continue to mentor students. Furthermore, we see how our scholarships have made possible for 100% of JellyBots members to continue their studies while being part of FIRST. TIDECREW measures impact by counting the number of people involved in our projects like the team members and children who participated in “Alcanzando STEM”.

Please provide specific examples of how your team and team members act as role models within the *FIRST* community with emphasis on the past 3 years. How do you share these best practices with other teams?

During preseason, we invited 10 local teams to our school, where we not only mentored them on any questions they had about their robots, but we also helped them with their own robot, by programming their swerve software, polishing their mechanisms and making strategies to prepare for Mexico All-Star 2024. We have also published our official robot designs, strategies, and prototypes on Chief Delphi for other teams to consult.

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

We have made the handbook, a book that is available on our website, which shows our team’s administration to the technical areas. We have also invited 10 teams to our school, organizing the Pre-Off Season, where they could solve technical doubts and practice for the Off-Season in Leon 2024. Also, as we opened our FTC team Jellybots, we are guiding students from Colegio Británico, Colegio Finlandés and Sendero Educativo through STEM areas, in order for them to open their own teams in the future.

What other initiatives have you created, grown, sustained, or participated in (*FIRST* 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?

Alcanzando STEM is a project we created to help the children of Pilares de Santa Ana, a low-income community near our school. We built a library for them and tutored them in reading and writing. Furthermore, we taught classes of mathematics, mechanics, electronics, programming, and CAD, helping them become more interested in STEM. We held a Hackathon with the automotive company Continental, which gave a challenge to students at our high school to innovate Jalisco’s traffic using bicycle sensors.

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.

Our most recent and important sponsor is Molex. We are the only Mexican team out of the 20 teams that Molex sponsors worldwide. Last year we could connect with more people and this year our new projects expanded, all thanks to Molex. Colegio Británico de Guadalajara is also a very important sponsor, it’s a school that we are guiding to build their own FTC team. We have also created powerful relationships with teams that are part of our region through different projects like the pre-offseason.

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

In the past 3 years 45% of TIDECREW members have been women and most of them had leader roles, and as time passed, we have learned to create a culture that encourages more girls to join “ male-dominated areas”. Our philosophy stands that everyone is welcomed in TIDECREW, because we know that each one of us is capable of everything, no matter who you are, what gender you identify with, your ethnicity, or anything else. TIDECREW is for everyone.

Explain how you ensure your team and the initiatives you have created will be sustainable.

We have always depended on our amazing coaches and sponsors to ensure the sustainability of our projects; nevertheless, with this year’s Molex support, we know that our projects will be continued in the future as we share the idea of spreading STEM. “Alcanzando STEM” is backed up by one of our school’s student groups: “Más por los demás”. We have worked side by side to maintain this initiative, and they have been an enormous support for the sustainability of the project.

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

Generally speaking, something that we are working on is organization with our team, especially in the electronics department. To address this we are implementing a system made to prioritize our tasks and setting specific deadlines for each operation. Also, Molex will help us with courses given by electronic engineers. We are also developing a database to track every action taken by the team, allowing us to create a detailed progress chart and achieve our goals more efficiently.

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, particularly noteworthy, or had a large impact.

One of our most significant projects is the “Tejuino Board”, developed with the help of our sponsor IOT4U Technology. This system uses the CAN protocol to control neopixels. With this innovation, managing LED lights has become easier and more accessible for Mexican teams. Today, 39 Mexican teams have their own PCB board in their robots. We are proud of its impact across Mexico, adding both style and functionality to their robots without unnecessary complications.

Judge Feedback

	In your experience, what types of collaborative initiatives are most effective for amplifying the impact of STEM in a community, and what strategies would you recommend to ensure their long-term sustainability? An area the team has an opportunity to improve. Something that really impressed the judges.
--	--

Essay

This story begins in 2017, in a small classroom inside PrepaTec Santa Anita, in Guadalajara, Jalisco, with one small stingray that for 9 years overcame hurricanes, storms, and enormous waves. This single Stingray is now Stingbots 6702. Currently, Stingbots is a veteran team that, throughout the years, has participated in 9 regionals and 2 world championships. We won the Laguna 2018 and the Monterrey 2023 regionals, were finalists in Monterrey 2020, and also have had a Dean's List Finalist award. In Crescendo 2024, we had the opportunity to go to two different regionals, these being Hermosillo and Laguna. We finished the season extremely proud of our achievements; first, that we were alliance captains for the first time ever, and second, that we won the Excellence in Engineering Award. At first, it was only a vision and a dream, but then we outgrew expectations and 7 years later became TIDECREW, a community of 30 students divided into 3 teams: StingBots 6702, JellyBots 25545 and KrakenBots. Krakenbots is a team of 11 students designed to mentor new members from scratch about engineering concepts. Jellybots, our first FTC team, conformed by 6 members which have our STEM scholarship. TIDECREW is a team not only founded by innovation but also by a family formed by students, coaches and mentors. Being part of the team has helped several of these mentors receive a total of 896,000 dollars in international scholarships. Thanks to TIDECREW, these students could continue their studies in university. Not only do some of our alumni get a scholarship for their hard work on FIRST, our FTC team is also made up of student recipients of the STEM scholarship in our high school. It is essential to highlight that 70% of the students with the scholarship are hardworking women. This season, Jellybots

had its first competition and participated in the Zapopan, Guadalajara regional. Said experience made us venture into the world of FTC as a whole, and gave us plenty of new exposure on how to manage a new FTC team. Since we were already discovering unexplored waters, we had the idea to share this experience with 15 families from the “Colegio Britanico” middle school in Guadalajara, which have been captivated and impacted by our invitation to show them the extensive world of FIRST and encourage them to start their own robotics team. TIDECREW would not be as big and strong as it is today without the help of our 11 mentors with a total of 72 years of collective experience, who also form part of the FIRST alumni. They have poured their hearts and souls into these teams, and have dedicated their time and energy to teaching us everything, from how to drill, to how to be a family throughout the seasons. Every year, they hand down their legacy, in the form of a book: the handbook, a book that contains everything you need to start your own FIRST team, from the administrative side to our engineering process. Here we explain our objectives, methods, and results. We can also find the Speckbook, where we write a step-by-step tutorial on how to fully build each and every single part of our robots every season. You can find our handbooks on our website. We like to share everything we do, like prototypes and strategies with FRC teams so that everyone can know our story and process. We have published all of this in Chief Delphi. Furthermore, we have also given guidance to those teams who request it. This guidance is given either in person or in an online meeting. Some teams we have helped this year are: Horus 6348, StarTec 8293, Lebotics 5948, and BlueSteel 5133. We did not only help them with their swerve code, but also with their robot mechanisms. Before the All-Star Mexico competition, we organized an event, a pre-off-season where 10 different teams had the opportunity to come to our workshop, so we could aid them and their robots before the off-season. One of TIDECREW's biggest accomplishments has been the Tejuino board. We saw that many teams in Mexico did not use LED lights, so with IOT4U technology's help, we created this device that allows you to easily control the lights on your robot. It uses an embedded system that controls neo pixels through CAN protocol. Thanks to this creation, Mexican teams can easily acquire this technology. Currently 39 Mexican teams have this system integrated into their robot. We realized that this creation had a big impact on not only our robotics community, but for the whole country. We know we are helping a lot of Mexican teams, but what about our city? That is why we created 4 additional projects to influence our society. The first one called “Alcanzando STEM” is an educational project that changed the life of 160 low-income children between the ages of 3 to 17 years old. Accompanied by one of our sponsors, Zeyco, we not only built a library in their community Pilares de Santa Ana, but also gave them classes on how to read and write Spanish, along with mathematics, electronics, programming, and CAD. Besides teaching these children, we also wanted to bring some joy to their homes, so we organized Christmas gatherings where we donated 300 pieces of clothing and 300 presents the kids had previously asked for in some Christmas letters that we asked them to write. Activities like musical chairs, drawing, jumping roping, and other dynamic games were organized to make sure every kid had a fun time with us. Continuing our social service, we wanted to make sure that the people that live around us were also impacted; therefore, we created a project called “Vamos por un México limpio” where our main goal was to clean and restore the 400m long street that passes in front of our school. 120 neighbors showed up to help the community. At the end, we gathered 27 kilos of litter, and the Tlajomulco town hall gave us a recognition for initiating a cleanup project, helping our team be an example for our neighbors. After helping out other communities, we arrived back to our high school to help out some more. We developed PCVs with integrated components and handed them out to PrepaTec Santa Anita students. This was a great tool for their programming classes, where they made interactive electronic devices with the platform Arduino. Thanks to this, 184 students of PrepaTec Santa Anita participated in our first Hackathon sponsored by Continental. The students learned how to use ultrasonic sensors on bicycles to improve cyclists's safety. One thing that TIDECREW is known for is ambition, so going forward along-side of our sponsors, we are going to be able to develop and bring our FTC project to other schools. We are looking forward to making Krakenbots a competing team, so we can increase the number of people in the FIRST community. Beyond building robots, we are committed to constructing a better future for aspiring engineers. Notwithstanding, Stingbots has one clear goal: becoming one of the TOP 5 best teams in Mexico. Our team could not have gotten so far without our sponsors: Zeyco, Panzura, Continental, Colegio Britanico, NASA, Prepa Tec, IOT4U Technology, Briken, Mundo Dogo, HNI Solutions, Distribuidora de aluminio EFL S.A. de C.V., Marka sports, Café Berrini, and Memorias Milimétricas. Without them, the vision would not have been possible. Currently, TIDECREW is one of 20 teams worldwide, and the only Mexican team that Molex sponsors. This year, we were able to do more projects thanks to them. They have donated \$600,000 pesos to help us buy building materials, pay for most of our trips, and expand our social projects to make a bigger

change in our community. In the past 3 years, TIDECREW has impacted 32, 911 people from all over the world, especially in Mexico. We have been focused on improving the quality of robotics in Mexico, but we have also affected our community and the environment for the better. Still, this impact is not enough for the adventurous stingray that is always growing and working on new projects, despite all of the strong currents and storms it has to go through. This stingray is not stopping until Mexico is full of great, award-winning teams. As one of our founding mentors once said: "True success is not in the trophies we win but in the lives we transform and the legacy we leave behind." Today, TIDECREW is more than just a robotics team; it is a movement that inspires, a family that grows, and a vision that continues navigating toward a future where innovation and passion light the way for many more. Because in the heart of every member of TIDECREW burns the desire to prove that no matter how fierce the wave, there will always be a brave stingray ready to conquer the horizon. ;

