

Chairman's Award - Team 6304

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2020 - Team 6304

Team Number

6304

Team Name, Corporate/University Sponsors

Zhenjiang Investment Consulting Co., Ltd (BAIC Group)/Bank of Jiangsu/Zhenjiang Federation of Trade Unions/KYB/Beijing C.H.L. Robotics Co.,Ltd./SOFA/The Argosy Foundation/AEC/Anhui Hiseed Robot Co.,Ltd/Xihe Digital Co.,Ltd./Phoenix Publishing & Media Group/Zhenjiang Media & Culture Industrial Group/Jiangsu University&Zhenjiang Vocational & Technical School

Briefly describe the impact of the *FIRST* program on team participants within the last five years.

The 6304 experience goes beyond robots. All students develop diverse abilities like independent thinking, problem solving, time management, leadership, etc. This led them to become more confident in future careers. We provide opportunities for students to foster their hard and soft skills, such as event/workshop hosting, online teaching, participating in 3D Modeling Competition. Most of our alumni have pursued STEM-related majors in university and are passionate about helping other teams.

Describe the impact of the *FIRST* program on your community within the last five years.

Team 6304 offers 10+ courses including CAD, Java, Design, PS, Video Editing, etc. for 30,000+ people, and hosts STEM events every month in our city. Many participants who have never been exposed to FIRST have been inspired to become judges, volunteers, and mentors. We regularly hold FIRST promotion activities and STEM courses in primary&middle schools to help students enter the era of STEM. We propose the "Angel Project" to help deaf teenagers join the FIRST family.

Describe the team's methods for spreading the *FIRST* message in ways that are effective, scalable, sustainable, and creative.

FIRST promotional videos are produced, filmed and edited by our students, and are played on school channels, community TV channels, local buses and the electronic display of the city. Since 2017, we have donated many FIRST kits to orphans and students in impoverished areas. We motivated students' interests toward technology through hosting FIRST competition and STEM Summer&Winter Camp. Currently, 3 autistic students participate in Jr.FLL, and 27 deaf students participate in FRC activities.

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

Every year, we share our training grounds, processing equipment, STEM courses resources, design drawings and computer programs with other teams on our team website and ThinkRed, a nation-wide CAD sharing website. We establish a service station to provide borrowing services to inexperienced teams, and to provide safety packages for all teams during competition. Some alumni of 6304 now mentor other FIRST teams such as FRC8163, FRC7529, FRC7002, and FTC16108.

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

Since 2018, 6304 has been going to Special Education Center, local middle schools weekly to teach mechanical design, Java programming, and PS. We motivate these schools to hold team-building events once a month. We helped start 3 RCC (an off-season event of FRC) teams, of which one team has been officially registered as 8163. During the season, we invite these teams to our workshop to work with them side-by-side. We were also invited to give FRC mentor training for 400 educators by the city.

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

6304 has promoted FLL and FTC to every corner of the city. In the past 2 years, we helped establish 1 Jr.FLL, 2 FLL and 1 FTC team. The team has reached out to 2000 students through hosting EV3 and FTC training camps, and planning activities for the local robotics education association. We regularly conduct EV3 and WEDO activities in primary schools in ZJ (Zhenjiang). As a pioneer in FIRST in ZJ, we have organized the first FLL Friendship Competition and the second WEDO Challenge in our city.

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

We held summer and winter camps and other FIRST activities attracting 3000+ people to participate in. We gave robotics lessons to 2000+ students at city's Children Palace, and have been hosting local JR.FLL and FLL competitions for 2 consecutive years. Our team members assisted other FIRST teams regularly in programming, machinery, publicity, electrical, etc. We communicate with other teams through social media and share our resources and build blogs.

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)

Team 6304 guided several FIRST teams through constant mentor-ship, including China's first FRC girl's team 7529 (Great Northern Regional Rookie All-Star 2019), FRC team 8163, FTC team 16108?participating in the World Championships in 2019, and 1 FLL team named Little Hawk. Our team members volunteer as mentors at RCC Maker Camp in the summer to guide rookie teams such as RCC team 9105, 9113, and 9114. Our team members spend a total of 1500+ hours each year helping rookie teams.

Describe your Corporate/University Sponsors

To ensure the sustainable development of our team, we have 14+ sponsors. Bank of Jiangsu provides the team registration fee yearly. ZJ Federation of Trade Unions sponsors our uniforms and cultural products. ZJ Wenguang Group provides multimedia platforms for team propagation. ZJ Vocational & Technology school provides us with tools, equipment and workshops. Beijing C.H.L. Robotics Co., Ltd. provides scholarships for our graduates. Companies such as BAIC Group and KYB provide technical supports.

Describe the strength of your partnership with your sponsors within the last five years.

Our sponsors provide us with funds, mentors and technical assistance. We improve their reputation&social influence by displaying their logos on uniforms&websites. We invite the children of our sponsors' employees to our robot Summer&Winter Camps. 20+ members of 6304 have become outstanding employees of our sponsors such as BAIC & KYB Group to engage in R&D or installation of robots. The sponsors become the advocates of FIRST, thus expanding the influence of FIRST.

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

"To me, FIRST fosters innovative thinking, improves problem solving skills, boosts confidence, motivates collaboration, emphasizes team spirit and teaches a student how to make an impact in the world."says Lingfeng Jia, an alumnus of 6304, now an engineer. The comments of the current members are as follows: FIRST inspires innovators through building a robot with limited time. Team members find a strong sense of belonging to the group and communication is open, honest and respectful.

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

6304 devotes to the equal access to STEM education: Overcame communication barrier to create an FRC team for the deaf. Invited FRC 1477 to off-season for Chinese teams to exchange ideas with international team. Established ZJ STEM Education Base to host FIRST seminars. Planning a Maker Camp to provide mentorship for FRC teams in vocational schools nationwide. Worked with local government to grant authority to host local FIRST events and implement STEM education in schools.

For FRC teams older than 5 years, briefly describe your team's broader impact from its inception.**Team Captain/Student Representative that has double-checked this submission.**

Xunyu Shao

Essay

Our Mission

Team 6304 EAGLE provides opportunities for students to learn, collaborate, take risks and serve others. We firmly believe STEM should be fundamentally accessible. All students are natural inventors, creators, and leaders. Team 6304 enables students to practice and exhibit these talents and skills. As a student-lead organization, we build teenage leaders & problem solvers to engage in critical-thinking, technical problems, and leadership opportunities that are crucial to prosper in the 21st century workforce. Team 6304 EAGLE's mission is to develop confident leaders and innovators who extend FIRST opportunities to people of all ages in order to achieve STEM accessibility for everyone.

The Team

6304 is the first FRC team formed in vocational schools in China. We have been seeking new ways to grow STEM education, to make it accessible to everyone, and to promote it throughout our school, community, city, and province. When we were founded in Zhenjiang (ZJ) in 2016, we only had 3 mentors and 6 students. Now team 6304 has grown into a big family of mentors, students, parents of student, sponsors, college professors, volunteers and government officials. We are making strides towards our goal: to be a model of Gracious Professionalism every day. We share our training grounds, tools, spare parts, design drawings and computer programs with other FIRST teams. Furthermore, we help other schools build their own STEM Labs. Realizing that our resources were limited, and STEM cannot be brought to all without the support of government and political associations, such as ZJ Federation of Trade Unions (ZJFTU), ZJ Science Association (ZJSA), and ZJ Education Bureau (ZJEB), we take it upon ourselves to inform them about FIRST. Since 2017, our collaboration with ZJEB, ZJFTU and ZJSA has helped 10+ schools fund their STEM Labs. Now, we span an area of 3,843 sq kilometers serving 22 schools & 3000+ students across ZJ city, teaching youth about STEM and growing the impact of FIRST.

Outreach

Overtime, our team members have laid a foundation for our reputation, Gracious Professionalism and our mission. As strong advocates of FIRST, team 6304 introduces FIRST&STEM to every corner of the city through working with the government. The ZJ Youth Robotics Education Association (ZJYREA) was created in October 2017, which only had 8 schools in the early days and now has more than 20 primary and secondary schools, providing STEM opportunities for students who do not have direct access to FIRST. It all started with a few science courses, videos, experiments, a robot, a serial of FIRST competitions, and several maker camps. Over the past three years, to expand our advocacy province-wide, we host STEM events that's accessible to everyone every month. At these outreach events, we drive culture change, advocate for core team values, showcase our robots, give presentations, help people start their own FIRST teams, and teach students valuable STEM skills. We have conducted 50+ outreach activities at ZJ Science and Art Festivals, ZJ Innovation and Entrepreneurship Expo, STEM expositions and City Square, etc. These events include robot exhibitions, briefings of STEM, promotion of FIRST culture. In order to inform everyone about every impactful aspect of FIRST Robotics and STEM education, FRC robot demonstration and speech about team mission & FIRST culture from the team members were repeatedly broadcast for a week on the TV program "XiaoLiang comes to Help", and 3.2 million people in our city watched the TV show. We promoted FIRST culture, strengthened our team mission, advocated the importance of STEM education, recruited mentors and sponsors for all local FIRST teams through this TV show. Furthermore, the video of our robot demonstration was repeatedly played for a month on the mobile TV on all local buses. Through this, people can learn about STEM&FIRST during their bus ride. Prior to 2019's RCC (an off-season event of FRC), our students and mentors spent over 1000 hours helping RCC 9112, 9113 and 9114 with robot building and programming. Through our mentorship, members of these rookie teams gained critical thinking, teamwork, and project management skills. Every January, we run a Kick-Off party, which brought together 500+ people from 10+ schools&10+ tech groups each year.

Partnerships

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The strength of our partnerships is key to our success. Our partners agree with our vision of achieving STEM accessibility for everyone. Furthermore, they help us advance our mission by establishing policies & guidelines and providing financial and material needs. Without their consistent support, none of our work would be possible. Since 2017, we've forged connections with several Tech Groups who could help amplify our impact. Beyond working with our sponsors such as the BAIC Group, KYB Group, Beijing C.H.L. Robotics Co., Ltd and ZJ Media & Culture Industrial Group, etc, we've initiated new outreach by collaborating with ZJFTU, ZJEB&ZJSA to continue their support for funding FRC registrations and advanced technical help. They allow us to pursue opportunities, stimulate our growth and community impact. Moreover, government, sponsors and our school are integral to furthering the education of students and give us resources to provide for the STEM educational promotions in our city. In 2018, a team member proposed the "Angel Project" to help deaf-mute teenagers join the FIRST family. One of our strategic directions is to create opportunities for special students to explore STEM. As a joint effort with local government, we started and ran weekly program at Special Education school for over three semesters. We taught them to solder, crimp, use Computer Aided Design software, build pneumatic & electrical circuits, and code with Java. Three of these deaf-mutes are now involved with our team. We showed them career possibilities and introduced them to new future choices, and they showed us the importance of engaging with the minorities in our community. Our engagement with ZJFTU&ZJEB reaches beyond our facilities and funds. They provide policy to support our strategy. For example, mentors or team members who teach STEM technology to special students such as deaf&mute will have the opportunity to win the title of the most beautiful&valuable teachers or students. In addition to this, we have a good partnership with the China FRC Organizing Committee (CFOC). On February 10, 2020, We will hold a FIRST alumni sharing session proposed by Chinese Director Ms. Min Zhang at the National Vocational School Teacher STEM Exchange Conference. In early July 2020, we will work with CFOC to host a 7-day maker camp for all RCC Rookie teams. We don't just seek these opportunities for our personal gain, we believe other teams should be able to benefit from their own partnerships. We are forever grateful for each sponsorship and know that without their support our impact on STEM&FIRST will not be sustainable. That's why we strive to show our sponsors how much they mean to us.

FIRST Growth & Support

We support FIRST by running and hosting competitions such as FLL Friendship competition, FRC City Championship, etc. In 2018, we worked with ZJEB to host and run FLL competition. In 2019, we organized the 3rd FIRST City Championship to raise the visibility and credibility of FIRST. Other cities in our province followed our model. We also initiated a teacher professional development program with our partner, ZJ Information Education Center (ZJIEC) & ZJYREA. This was the largest initiative in our city to teach educators about mechanical & program design. This program was taught by team 6304's lead mentor Qin Shi who was awarded a doctorate in mechanical and electrical engineering in 2017. It provides teachers with 64 hours of professional credit. Since September 2018, we have been going to ZJ Special Education school, ZJ No. 3 Middle School, ZJ No. 1 Foreign Language School to conduct weekly workshops that introduce their teachers & students to robotic engineering. After each semester, students are awarded with a Certificate of completion to commemorate all they have learned. "Without 6304's support & guidance, we couldn't have possibly started the team. We certainly would not still be around for our second year," said Xiayun Tang, team 8163 (formerly RCC9113) lead mentor. This year, we took the initiative to mentor team 8163 and prepare them for each of their event this season. Our impact doesn't stop in Jiangsu province, we mentored several teams such as 7002, 6970, 7586 and 7529 from other provinces, and helped them in different ways, whether it be over We-chat, QQ and Email, we provided motors and developed a robot design tutorial to jump start their team. Recently, we started supporting Team 7529, China's first all-girls FIRST Robotics Competition team. We created the "team6304.com" website in 2017 to share all the resources related to FIRST&STEM such as video of FRC training courses, design drawings and JAVA programs to rookie and growing teams. Furthermore, to help young children enter the era of AI as soon as possible. We also expand STEM&FIRST education by incorporating AI knowledge into the classroom. We have started 1 FRC team, 2 RCC teams, 1 Jr.FLL team and 1 FLL team, and mentored 1 FTC and 8 FRC teams.

Together&Stronger

Our growing presence in the world of STEM&FIRST has empowered us to inspire others. FIRST nurtured our interests in many fields and taught us the value of Gracious Professionalism and Cooperation. Our mission allows us to magnify our impact into a powerful force for cultural change. Cooperation and Gracious Professionalism has molded us into the EAGLE we are today. FIRST changes the lives of everyone it touches, not just students: mentors, volunteers, sponsors and people who work for FIRST. All of us come together to innovate, solve problems, and hope for a more sustainable future—one that's built better together.