

2021 - Team 6304

Team Number

6304

Team Nickname

EAGLE

Team Location

zhenjiang, Jiangsu - China

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.

90% of our graduates are engaged in STEM education; others also work for engineering, machinery, and relevant industries. Most of our alumni have chosen STEM majors in their universities. All of them are keen to help other teams in need.

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

In light of the COVID-19, we launched online courses. Jumping out of the conventional teaching methods, helping students experience FIRST activities at home. We also interspersed some knowledge of epidemic prevention during the classes. In 2020, 6304 held FRC Maker Camp, Zhenjiang(ZJ) Robot Competition, the first session of ZJ Robot City Challenge, FRC vocational education seminar, etc. We used online and offline teaching methods to help our students study and overcome the difficulties together.

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?

We make the promotional videos of FIRST, integrating STEM spirit and unique points, then sending them to school, community and local media. Our members held over 50 lectures with FIRST topics in primary and secondary schools, as well as the community every year. We organize different robot competitions and STEM summer camps, winter camps, and other interesting events in ZJ. Now, there are more than 30 deaf-must students in 6304 who have participated in FRC activities and established FRC clubs

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

Every year, we keep sharing our experiences, STEM curriculum design, drawings and robot program making, etc. on our official website and We-chat public account. we cooperated with FRC China Organizing Committee(FCOC), jointly holding Jiangsu Youth Robot Maker Camp, improving the awareness of robot resources and knowledge from the mass, and spreading the spirit of the FIRST culture. Some of our 6304 members are now coaching other teams like FRC8163, 8214, 8529, 8554, 7529, 7002 and FTC16108.

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

Since 2018, we have tutored to establish two FLL teams and one FTC team. We have taught over 2,000 students in local primary and robot courses and held local FLL competitions for three consecutive years. In 2020, 6304 organized a robot seminar and invited FRC teams to share their technical capacity. Furthermore, 6304 has communicated with FCOC by a video call, sharing our design experience with FRC teams.

Beyond starting teams, what initiatives have you done to help inspire young people to be science and technology leaders and from your efforts in the past 3 years?

Now, we regularly carry out EV3 and WEDO events in many schools of ZJ. As a pioneer of ZJ FIRST, we have invited many children from other cities to participate in our events. We have attracted more than 5000 students by organizing EV3 and FTC training camps, as well as planning activities for the local Robotix League. We have also organized EV3 and WEDO events in several primary schools in ZJ. As a pioneer of ZJ FIRST, we invite children from other cities to learn FIRST.

Describe the partnerships you've created with other organizations (teams, sponsors, educational institutions, philanthropic organizations) and accomplishments together with emphasis on the past 3 years

6304 has many excellent sponsors. The Bank of Jiangsu provides us with team registration fee every year; ZJ Federation of Trade Unions provides us with technical support; ZJ Wenguan Group offers us a multimedia platform; Our school provides tools, equipment, and workshops for us; BJ C.H. graduates; BAIC Group and KYB give us technical support. In 2020, SOFA not only sponsored funds but also helped us improve our technical level.

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

Our mission is to STEM accessibility for everyone. 6304 is a diverse family. We pay more attention to students' interests in team recruitment where everyone can have access to participate in. In addition to campus recruitment, we also promote the FIRST spirit in our community and join us. In 2018, we proposed the "Angel Project" to help children with congenital diseases join us and experience the infinite charm of FIRST.

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

Every member of 6304 will learn our distinct team spirit from the beginning of joining our team. We will take every new member to visit our team's activities and also got great support from the local schools during the annual recruitment. Within three years, we have established a closed-loop education system surrounding cities. What's more, the teams we have guided all attained improvement through constant engagement.

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

The relationship between our sponsors and our 6304 team never just exists in funds. We always invite the children of sponsor staff to participate in our activities every opportunity to enhance their reputation and social influence such as displaying their logos on our uniforms and websites. Moreover, we have become outstanding employees, engaging in the research and development of robotics for our sponsors such as BAIC Group.

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

The replacement of new and old members has always been a problem for our team. 6304 has experienced four times of replacement of members during that time. Until 2020, we found a new teaching model: the peer-to-peer teaching model. We encourage old members to help new members, forming a sustainable knowledge cycle. By implementing continuous teaching and cooperation in learning, we can gradually form a team with continuous improvement.

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

Team 6304 EAGLE's mission is to develop confident leaders and innovators. 6304 offers more than 10 courses. In 2020, we held FRC's first City Challenge of Robot in ZJ, and the FRC Vocational Education Seminar. We offered public service and voluntary teaching even more people. We propose the "Angel Project" to help deaf teenagers join the FIRST family, and arose more attention from our community.

Briefly describe other matters of interest to the *FIRST* Judges, including items that may not fit into the above topics. The judges will select one item of your team that may be unique or particularly noteworthy.

6304 is a place to realize your dream: each of our small project teams can give play to their own strength, make themselves glow in the field of FIRST. We also cooperate with the local government, host the local FIRST events, and share FIRST in every local school. We have organized various activities to introduce the competition for every participant, to promote the knowledge and spirit of FIRST, as well as guiding the FRC teams from other cities to participate in our events.

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-driven organization, we build teenage leaders & problem solvers to engage in critical-thinking, technical problems, and leadership opportunities that are crucial to prospering 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.

Our Group

6304 is the first FRC team established by a vocational school in China. We have been looking for new ways to develop STEM education, make it universal to everyone in our society. Hence, we never stop promoting STEM in the local school, communities, cities, and provinces. At the time 6304 was founded, we had only three mentors and six students. But now, 6304 has grown into a big family of tutors, students, parents, sponsors, university professors, volunteers, and government officials. Our peer-to-peer teaching structure encourages experienced students to teach new students the necessary skills and develop their leadership as well as collaboration capacity. We also share our training venues, tools, spare parts, design drawings, and computer programs with other FIRST teams. Furthermore, we have helped more than 18 schools establish their STEM laboratories so far. Meanwhile, with our support, three new FRC teams have been successfully formed. Looking back, we have realized that the resources are always limited - without the support of the government and political associations such as ZJFTU (ZJ Federation of Trade Union), ZJSA (ZJ Science Association), and ZJEB (ZJ Education Bureau), we cannot transmit the idea of STEM to so many people. Therefore, it is our obligation to promote FIRST constantly, till everyone has access to it. Since 2017, we have collaborated with ZJFTU, ZJSA, and ZJEB to help over 10 schools found their STEM labs. Relying on our sustainable development plan, we believe that our members will become leaders in various fields in the near future.

Our Outreach

In the off-season, members of 6304 still try to lay the foundation of our reputation, elegant professionalism, and team mission. As a strong advocate of FIRST, 6304 introduced FIRST & STEM to every corner of the city through cooperation with the government. In October 2017, the Youth Robot Education Association (ZJYREA) was established in ZJ. From only 8 member schools to over 20 member schools, ZJYREA provides various STEM opportunities to students who cannot join the FIRST. And everything started with the resources of science classes, videos, experiments, robot events, and a series of FIRST competitions that 6304 planned and implemented. In the past four years, to expand 6304's influence, we have held FRC Maker Camp, ZJ Robot Competition, the first session of ZJ Robot City Challenge, FRC vocational education seminar, and monthly STEM voluntary events in ZJ. In these outreach activities, we drove culture change, advocated the core values of our team, showed our robots, gave lectures, helped start the FIRST teams, and taught students important STEM skills. According to the statistics, we have held over 50 outreach activities in different public events like ZJ Science and Art Festival, ZJ Innovation and Entrepreneurship Expo, STEM Expo in City Square, etc. We not only displayed our robots and made STEM briefing but also greatly promoted the FIRST culture. To spread more impressive aspects of the FIRST robots and STEM education, our robot exhibition and speeches about team mission and the FIRST culture were repeatedly broadcast on TV for a week, attracting more than 3.2 million audiences. Such an achievement not only brought remarkable effect on the FIRST culture promotion, team mission improvement, and STEM education promotion but also benefited all the local FIRST teams in recruiting mentors and sponsors. In 2020 Maker Camp, 6304 independently set up a service station to lend equipment to inexperienced teams. Every day, we popularized mechanical, electrical, and design knowledge for the new teams. We also went to their schools for publicity. Under our guidance, these new teams have acquired critical thinking, team skills, and management abilities. 6304 has established noble professionalism by providing service. In January every year, we hold a public ceremony. In Suning Square, ZJ, 2020, our ceremony attracted more than 15 schools, over 10 technical groups, and nearly 1300 local residents to participate.

Our Partners

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 the local government, we started and implemented weekly charity classes in special education schools over six semesters. Our engagement with ZJFTU&ZJEB reaches beyond our facilities and funds. They provide the 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.

The Growth and Support of FIRST

We support the FIRST by participating in and holding competitions such as FLL Friendship Competition, FTC City Exchange Competition, FRC City Championship, etc. In 2018, we cooperated with ZJEB to hold the FLL competition. In 2019, we organized the third session of the FIRST City Championship, successfully improving the visibility of the FIRST. In 2020, we held the first Robot City Challenge of ZJ and share the operating model with our surrounding cities. We also launched the professional development program for teachers with our partners ZJIEC (ZJ Information Education Center) and ZJYREA. Since September 2018, we kept offering FIRST classes to ZJ Special Education Center, ZJ No.3 Middle School, and ZJ No.1 Foreign Language School every week, introducing knowledge of robot engineering to their teachers and students. In 2018, we invited ZJ No.3 Middle School (9105) to participate in the FRC playoffs and helped this team win the rookie inspiration award. In the 2019 playoffs, we further invited and helped the teams of 9114, 8163 (former 9113), and 8214 (former 9112) participate in and win the runner-up and Rookie All-Star Award. Through online communication by We-chat, QQ, and email, we guided 6970, 7002, 7529, 7586, and other teams out of the Jiangsu province. In 2020, we cooperated with FRC Shanghai Organizing Committee, holding FRC Maker Camp in Jiangsu province and guiding 9113, 9114, 9122 (now 8529), 9123 (now 8554), 9126, and other rookie teams. We upload activity materials and technical documents on our official website "TEAM6304.com" every week. We also shared the CAD drawing over the years on "THINKREDSHARING.com" for reference of other teams. We have launched 3 FRC teams, 6 RCC teams, and 2 FLL teams. Now, we are also guiding 1 FTC team and 10 FRC teams.

Past & Future

In 2017, 6304 was founded based on our passion for engineering. FIRST has taught us win-win cooperation and elegant professionalism.

In 2018, we aimed to share FIRST and STEM education with everyone around us, expand our team influence, and become the benchmark of STEM education in ZJ.

In 2019, 6304 has made changes to every participant in FIRST not only for students but also for mentors, volunteers, sponsors, and people who work for FIRST. 6304 helped special groups set up career goals and shaped the sense of belonging and responsibility of every participant.

In 2020, through the influence accumulated in the past three years, 6304 successfully promoted FIRST to more people and every corner of the city.

In the future, 6304 will take the STEM education model of ZJ as the benchmark, influence the surrounding cities to set up STEM education activities, and create a closed-loop of robot education in Jiangsu province and even the whole country of China.