Chairman's Award - Team 2451

Print Close

2021 - Team 2451

Team Number

2451

Team Nickname

PWNAGE

Team Location

Saint Charles, Illinois - 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.

PWNAGE students gain skills in leadership, engineering, business, communication, and project management while working with industry and technology leaders. 100% of our students have graduated from high school & pursued higher education. 95% of students have entered STEM fields. Many alumni see value in FIRST programs and have come back to mentor our team, or teams like 33 Killer Bees, 111 Wildstang & 148 Robo Wranglers. Alumni, parents, and mentors donate hundreds of volunteer hours every year.

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

Many local schools don't offer robotics programs, so PWNAGE fills a need by accepting students from 15 schools. As a private team, we work in a professional machine shop and meet year-round which enables us to offer off-season training. Our team has a low student to mentor ratio giving students more one-on-one time learning with mentors who are experts in their fields. Our small size means each member can work on multiple subteams and make significant individual contributions to our team.

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 deliberately structure outreach events to be educational and fun. PWNAGE runs annual summer camps and is a key contributor to two different annual STEM events. This year we began designing and building an interactive demo robot, created by students, to be used exclusively for education. This will provide hands-on opportunities for learning, especially for smaller children, and can be modified. Each year, youth and adults join FIRST as members and mentors as a direct result of our outreach.

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

PWNAGE models Coopertition by providing help to FRC teams, making custom parts, lending batteries, sharing best practices, and hosting a scrimmage for local teams. We initiated/ run Women in STEM at Midwest and are leaders in Eco-FIRST. This year we created a Scouting Palooza competition with participation from teams across the country. At competitions, we display Gracious Professionalism by handing out pit awards, thanking volunteers with small gifts, and helping until clean-up is finished.

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

We target assistance to other FRC teams: Bumper guide for rookies (4k downloads), run electrical training for multiple teams, gave 2 motors to rookie Israeli team, bring extra parts + batteries in pit to share, manufacture custom parts for 2 teams, assist 2 off-season events, helped rookie 8014(2020)- parts, scouting, electrical expertise. Initiatives to start teams directed at FLL: Started/ mentored 6 FLL teams, recently 45486 GLOW (working directly with them in 2021 Innovation Challenge).

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?

Our team runs Girl/ Boy Scouts badge workshops resulting in us being preferred providers for GSINWI. PWNAGE created 3 years of curriculum for 2 annual summer camps that we host. Our summer camps have recently expanded into a third district, online in 2020. We ran a Girls Who Code chapter and an inclusive FLL club. The team attends 20+ outreach events annually, including demos at STEM fests, a MakerFair, schools, community festivals, etc resulting in thousands learning about FIRST.

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

PWNAGE is allied with key sponsors: Genesis Automation and Ace Metal Crafts host plant tours where we gain real-world manufacturing insight, and they find skilled interns. Student Excellence Foundation partners with us to showcase robotics at an annual STEM Expo for D200 Schools. We support ILFIRST at FLL, FTC, and FRC events providing judges, volunteers, set-up/tear-down help, and Women in STEM panel. We partner with EcoFIRST striving to educate people around the world about ecological issues.

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

Students come from 15+ different schools (public, private, religious, and homeschool) creating diversity. Our team demographic is 44% girls, and 25% under-represented students. In 2021 we added non-tech and business leads to grow from being primarily mechanical into embracing all FIRST's Core Values. This is our 3rd year running Women in STEM at Midwest, and our team has 83% more female members now than 3 years ago. We specifically target outreach to a variety of ages, from children to adults.

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

At annual strategic meetings, we review our SWOT analysis and set goals for the upcoming year. At bi-weekly meetings, the student board reviews activities to ensure the goals are being met. Younger students shadow experienced members to make sure knowledge is passed down. All leads document activities and plans for future students to use. We have off-season training to prepare all students for skill development. An adult foundation board oversees our team to make sure we are on mission.

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

In past years, students reached out to 3 companies. This year we grew our plans by providing thorough training, including one on one practice and help from our new sponsorship student lead and 2 sponsorship mentors. Several new approaches were formed to find sponsors including emails, calls, Zoom meetings, and alumni contact. To retain and engage with sponsors, we hold an open house(pre-COVID), send bi-weekly newsletters, handwrite thank-yous, and more benefits depending on sponsorship level.

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

training to help students be more involved. In 2021, we created 7 new non-mechanical leads/ sub-teams. (Core Values, Sponsorship, Outreach, etc.) PWNAGE encourages students to work on multiple subteams by not having overlapping Zoom meetings. Cross-subteam small groups help rookies acclimate faster. Despite COVID challenges we have seen consistent participation within our team members, especially our rookies.

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

We are intentional in developing interpersonal, communication, and technical skills. We expanded our leadership positions, giving more students opportunities to plan, lead, and practice project management. Seasoned team members are encouraged to train rookies. Our volunteer mentors are passionate about STEM education and enjoy sharing their unique knowledge. Mentors make every effort to meet students at their level, and support innovative student-led ideas, helping them become reality.

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.

In early 2020, our team created a new motto, "Just PWN It!" Then COVID hit. PWNAGE decided to pull together, get

creative, and make adaptations. We prioritized Fun/Teamwork to help with mental health, started meeting virtually, and moved our outreach online. We've launched online initiatives as a result of the pandemic. Our team has continued to grow and stay engaged despite changing circumstances. Difficult situations may seem daunting, but with innovation and teamwork, we can PWN problems!

Essay

PWNAGE is a well-rounded and respected team, a leader both in our community and in FIRST. We intentionally keep our team size small, between 20-30 students per year. We typically have 18-20 active mentors providing access to in-depth, personal instruction. Mentors encourage and support student projects and ideas. Being a private team, we run on 100% volunteer effort. We are a student-driven team, with an active student board. Our student board's vision is to build a united team, well-versed in all aspects of PWNAGE Robotics, that openly demonstrates the educational and core values of FIRST both internally and externally.

In our early years, PWNAGE focused its outreach on local STEM education and robot demos. Now we have expanded our impact nationally and globally. We aim to spread awareness of FIRST programs to industry professionals through demonstrations at The Assembly Show, ISTE conference, and other events. We focus on beginning and cultivating relationships with cutting-edge companies, encouraging their interest and involvement in FIRST programs. In 2020, a team member represented PWNAGE and Eco-FIRST at the Western Regional Robotics Forum Winter Conference. With Eco-FIRST, we contributed to a video about invasive species with FRC teams from around the world. In the past 3 years, we have extended our efforts to assist and mentor international FRC rookies. This year we held videoconferences with Brazilian team 7567 Octopus and Mexican team 7421 Overture to share our team structures and how we are dealing with COVID. In April 2020, we assisted Anatolian Eaglebots 3390, a Turkish team, with a project they created. PWNAGE has changed our game, broadening our definition of outreach to include leading/mentoring and spreading the mission of FIRST; we are proud to say we are achieving this goal at national and global levels.

Statewide, PWNAGE is a recognized leader in robotics engineering, STEM outreach, and ongoing support of ILFIRST. For every Midwest regional, our team supplies a large number of volunteers to help run the event. We also regularly support FLL and FTC state championships with robot demos, judges, and set-up/tear-down assistance. In 2018, PWNAGE students approached ILFIRST with a proposal to start a Women in STEM luncheon at the Midwest Regional. With Mentor support, students planned and organized all the details, including panelists, venue, food, etc. and the inaugural event in 2019 had over 180 attendees. We were invited to run a second luncheon in 2020, which attracted an even larger audience, and was one of the last in-person FIRST events held that year. For 2021 we are adapting this special event to be presented virtually; it will feature interviews with several influential women from across the US. We hope that our presentation will inspire girls from IL and expand to reach our country and world. We presented at the Chicago Robotics Conference in 2020 and have received recognition from the Illinois State Assembly. PWNAGE members serve as ambassadors at regional and Championship competitions, introducing FIRST to guests. We are proud to serve our state and represent FIRST in these ways.

We continually seek to inspire and educate students in our region - the western suburbs of Chicago. PWNAGE runs multiple robotics summer camps for K-6 students each year. We bring our robot to local outreach events to showcase our technical skills, and also provide fun, hands-on projects to engage young children. Our energy and enthusiasm get both children and adults excited about STEM. Every year, with limited resources and for maximum impact, we intentionally choose at least one large non-STEM community gathering (i.e. Minor League Baseball game, Christmas Parade, or County Fairs) where we can reach thousands of people who may not otherwise hear about STEM or robotics. PWNAGE believes in serving others, whether it's through Feed My Starving Children, the Illinois Food Bank, packing boxes for troops, etc. When COVID hit, our team jumped into action, engineering and providing 200+ masks and 500+ ear savers to support frontline workers during this pandemic. Because PWNAGE prioritizes inclusion, we have placed special focus on educating underrepresented groups in STEM. We see a growing need for women in engineering, so we started offering Girl Scout workshops and Girls Who Code. Our team started and ran an FLL Jr. club for students with disabilities, and two all-girls FLL teams. As we share STEM with underserved demographics, we are changing the game by helping create diverse technology leaders in the world.

In addition to supporting ILFIRST events, historically our efforts within FIRST were directed toward forming new teams, specifically 6 FLL teams. In 2019, we started, assisted, and mentored team 45486 GLOW by providing materials, programming workshops, video editing help, and technical expertise. We are collaborating with them on our 2021 Innovation Challenge, diving more in-depth and using our engineering expertise to bring their idea to life. In 2020-21 we started and assisted the Rookie team Unstoppable Robo-Girls FLL 45481. Both of these all-girl teams won individual awards and advanced to state this year. Our work with FLL teams is essential for recruiting future team members. In recent years, we have changed our game by increasing our efforts toward rookie and struggling FRC teams in order to help them succeed. We created and shared a bumper guide for rookies (4k downloads). Our access to a professional machine shop allows us to manufacture custom parts designed by teams who lack their own equipment. In 2020, we mentored and assisted Rookie Fortitude Robotics 8014, sharing electrical training and expertise as well as scouting instruction. We even scouted with them at Midwest, their first regional event. We host an annual pre-event scrimmage to help nearby teams practice the game before competitions begin. In the spirit of Coopertition, we present awards to other teams at competitions to recognize their accomplishments. Other teams view PWNAGE as a dependable resource based on our willingness to generously share time, resources and talents, and our recognized Gracious Professionalism.

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When FIRST officially brought the Core Values into FRC in 2018, we fully embraced them and have experienced tremendous results. Our team has expanded efforts into non-tech areas, allowing team members more opportunities to lead significant initiatives beyond building a robot. Having a student business subteam gives us a deeper understanding of the financial aspects of running a team and also the importance of sponsors for ongoing success. PWNAGE created Core Values small groups, deliberately mixing students from different subteams, allowing all members to form deeper bonds which fosters a family-like team atmosphere. This year we have emphasized regularly-scheduled fun activities to keep students engaged, help with mental health, and also as a substitute for an "in-person event" to fuel team spirit. We encourage discovery and innovation by holding off-season training sessions and hands-on practice with the engineering design process. Our student-led safety training practices inclusion: we mandate EpiPen and diabetes training for everyone due to current and past students' health concerns. During this year's Game Design Challenge we purposely chose colors that anybody with color blindness could still see. PWNAGE bought clear masks for all students to use so that our mentor with hearing impediments can read lips and understand what we are saying. Twice a week, we hold whiteboard/ update meetings where leads are able to practice speaking skills. At the end of each season, we conduct SWOT (Strength, Weakness, Opportunity, Threat) analysis to identify areas where PWNAGE needs to grow, including everyone's input. PWNAGE empowers students to design and present trainings covering a variety of skill-based/ technical and non-tech subjects. In addition, the student board provides leadership training to grow communication, project-management, and other interpersonal skills. We plan to continue these efforts and strengthen them each year.

Through PWNAGE, we gain hands-on technical experience in a professional setting and build life skills. We practice a philosophy of "PWNing It" in our own lives. This means taking appropriate responsibilities and then working hard to overcome a challenge or accomplish a goal. One student created an innovative way to practice scouting during the 2021 season, due to no live events. It was intended to help ensure continuity, so that newer students learn how to scout a simulated game. It also promotes excitement for scouting, an area this student is passionate about. He explained his idea to a mentor, who enthusiastically supported it. Now, after hours of project development, test runs, finding sponsors and judges, the 2021 PWNAGE Scouting Palooza was launched. So far, over 13 teams nationwide are actively participating. These types of student-initiated and led projects are common on our team, as mentors encourage student ownership and creativity. PWNAGE empowers its students to apply skills and innovative ideas in areas they are passionate about, to produce change in ourselves, our team, and our world.

Our game-changing perspective has strengthened us both individually and as a team. PWNAGE has embraced the FIRST Core Values and we strive to apply them in our everyday lives. This quote by Woodie Flowers summarizes our team's experience, "When you see your target, your aim is perfect." Our Student Board casts a vision for the team, and sets goals which are central to every activity we plan and execute. Our results speak for themselves. We are not only changing the game, we are also changing ourselves and expanding opportunities for our future.
As game changers, we are "PWNing It!"