

Chairman's Award - Team 1671

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2020 - Team 1671

Team Number

1671

Team Name, Corporate/University Sponsors

Apple/J IT.Outsource/Valley Iron Inc/Leidos/Educational Employees Credit Union/WestCoast Products/Harris Manufacturing/SolidWorks/ComptonTech/ADCO Manufacturing/Buchanan Foundation&Buchanan High School

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

Bird Brains are inspired to pursue STEM careers - 61% of our team's leadership goes on to pursue study in STEM fields. Our team breeds a culture of volunteerism. Whether at home or away, we have volunteered at every competition that we've gone to, and 1 in 5 of our team's leaders goes on to volunteer for FIRST after high school. Once a Bird Brain, always a Bird Brain. When surveyed, 67% of team leadership uses the word "family" to describe their relationship to the team.

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

We have volunteered a total of 9,534 hours over the past 5 years in activities such as community clean ups, book drives, hospital visits, STEM workshops in elementary schools in our community, and FIRST events. Civic leaders know and respect our team. We have been formally recognized by our school board, city council, county supervisors, and two former California governors for our contribution to our community. Governor Jerry Brown said, "I'd never seen robots in a high school before."

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

Team 1671 upholds FIRST's mission to celebrate STEM leadership and innovation with a comprehensive K-12 strategy. Our 64 workshop sessions (with 754 man-hours, and 53.5 hours of girl-focused curriculum so far) has brought 537 students to the world of STEM. Our new incubation strategy, Hatching It Out, has helped jumpstart 40 students so far into the FIRST organization. Our 5,600 followers over 6 social media platforms are treated to instructional videos and other engaging content promoting STEM.

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

The Buchanan Bird Brains lead by example with our culture of volunteerism - 1,906 hours per year over the past 5 years on and off the field. We fill crucial roles at every FRC competition we attend - 13 former Bird Brains have earned Volunteer of the Year at FRC Regional events. Every FRC team in our region has taken advantage of our open-shop policy. One teammate traveled 6,683 miles to Taiwan at the request of Team 7589 to deliver custom training videos about our leadership structure.

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

Marie Curie was denied a scientific education in her native Poland. In keeping with the value of accessibility in STEM, in 2017 our Curie Carnival raised 10,000 dollars to distribute among every FRC team in our district - 5 in total. Curie lives on with our team's open shop policy. Every FRC team in our region has taken advantage of our shop tools, advisors, and expertise. Most recently, teams 3970, 5817, and 6305 can tie the formation of their rookie years to our direct intervention.

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

Our STEAM workshop introduces elementary school children to Team 1671 and fosters a curiosity about FIRST. Our female-focused GEMS curriculum gives hands-on experience in our machine shop, and encourages attendees to form their own of FIRST teams. Hatching It Out gives interested parties direct guidance to start new FLL teams. Our Curie ethos provides ongoing resources at all levels. FLL Jr. Expos hosted by Team 1671 are the only place to compete at this introductory level of FIRST in our area.

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

Our STEAM Workshop (delivered at 15 schools in 2 continents since its creation in 2019) serves as a catalyst into our Hatching It Out initiative which develops teams at all levels of FIRST. Our Free Flight Scrimmage has given 59 FLL teams the opportunity to become competition ready. Our Curie ethos provides resources for our region's two newest FTC teams. Direct mentoring and coaching from senior team members levels up existing FIRST teams and starts new teams.

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)

Strong relationships with teams 6305, 5817, and 1323 have led to opportunities to lead by example. Bird Brains provided guidance to students and new coaches during our area's fledgling FTC kickoff events. FRC team members from various teams assist with our Free Flight Scrimmage in all roles. Hatching It Out partnered with FTC team 14323 to create new FLL Jr. team assistance and the Hatching It Out curriculum has been open-sourced - available to any FIRST team to implement.

Describe your Corporate/University Sponsors

Buchanan Foundation is the non-profit funding source established at our school to keep us sustained. Our growing list of corporate sponsors includes large multinational companies down to small regional organizations. A truncated corporate list includes: Apple, Harris Manufacturing, Leidos, AdCo, Educational Employees Credit Union, Leyland Farms, Fresno Rotary, and Bobby Salazar's. Half of our sponsorship dollars come from private-parties in our community.

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

In the past 5 years, our sponsor relationships have yielded \$170,000. Our reputation and great relations not only keep our sponsors returning year after year, but increasing contribution year-over-year, as was the case with Apple and others. We maintain a strong relationship with our sponsors through updates, vlogs, emails, in-person tours. Events such as our annual Open House and Sponsor Banquet show our appreciation, as well as team progress and the impact of each sponsor's donation.

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

FIRST competitions pack K-12 gymnasiums and event venues all over the world with the same excitement you see at college or even pro sporting events. Teams travel internationally to compete with each other in tournament-style play. But besides building complex robots, these students work as marketers, artists, animators, PR specialists, and activists in their communities to promote science and technology to improve our world.

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

In 2019, the Bird Brains traveled 7,968 miles to Ban Phônssavan, Xiangkhoang, Laos to deliver our STEAM Workshop to 90 deeply underprivileged students. With the blessing of the Nonghed District Education and Sports Bureau, we left behind materials translated into Lao and Hmong. At Ban Phawaii Elementary, copies of our book, "Three Little Birds: Reach for the Stars," are the only books they have. This experience reinforced our Curie ethos of accessibility to STEM in a deeply meaningful way.

For FRC teams older than 5 years, briefly describe your team's broader impact from its inception.

Team 1671 is a high-impact, high-profile promoter of STEM and FIRST. The success of 1671 directly led to STEM education at our school and district, garnering millions of dollars to build STEM facilities. We have been directly involved with all levels of FIRST for over a decade, beginning with hosting an FLL Championship in our rookie year. Central Valley Robotics depends on our volunteers year-after-year to hold successful legacy events, and launch and host new FLL Jr. and FTC competitions.

Team Captain/Student Representative that has double-checked this submission.

Elijah Hernandez

Essay

World Champion FRC Team 1671 (The Buchanan Bird Brains) has built a 16-year legacy that stands the test of time. We have soared into amazing heights by traveling internationally to teach our workshops, present our robotics program to two California Governors, reach hundreds of thousands of radio listeners and thousands more social media followers, and bring thousands of children into the exciting world of FIRST and STEM.

SCHOOL AND SPONSOR RELATIONS

Buchanan High School located in Clovis, California in the San Joaquin Valley provides tremendous support to Team 1671. The non-profit Buchanan Foundation, a funding source formerly reserved for our school's sports teams, is now the chief contributor to robotics. In 2019 Buchanan provided a new expanded robotics facility in the former automotive shop and has outfitted our team with a generous supply of machinery and proper supporting infrastructure. A host of corporate sponsors and private donors also have contributed \$170,000 in cash donations and thousands more in in-kind donations over the past five years.

EARLY HISTORY

In 2004, 14 students at Buchanan High School formed one of the earliest FRC teams in Central California history. At the time, local teams depended on spare rooms and hallways to build their robots and asked for donations from local hardware stores. Our first robots didn't run, and when they did, they caught fire. Early mentors became so frustrated they nearly ended the whole program. They never could have anticipated that Team 1671 would not only survive but grow to 80 members and clock a 5-year shop hour total of 62,089 hours.

ALL-TIME ACCOMPLISHMENTS

Over 15 consecutive years, we have hosted official FIRST events in Central California. We have mentored or assisted 70 FLL teams since 2013 through direct mentorship and by providing resources, workshops, and scrimmages. Moreover, we have provided prestigious competition and team networking opportunities to California's most noteworthy teams.

- 1) FLL Championship - Hosted by Team 1671 since 2005 at Buchanan High School.
- 2) Battle at the Nest FLL Qualifier - Hosted and run by Team 1671 since 2011. Acting as a blueprint for 5 additional qualifiers in our area.
- 3) Free Flight FLL Scrimmage - Hosted and run by Team 1671 since 2014. The only FLL scrimmage in Central Valley Robotics.
- 4) FLL Jr. Central CA Championship Expo - Hosted by Team 1671 since 2016. The only FLL Jr. Expo in Central Valley Robotics.
- 5) Stable Stomp FTC Qualifier - Hosted by Team 6305 and run by Team 1671 since 2017. The only FTC tournament in our area.
- 6) MadTown ThrowDown FRC Offseason Tournament - Hosted by Team 1323 and run by Team 1671 since 2011. The only off-season FRC tournament in our area.

NOTABLE ACCOMPLISHMENTS AND ONGOING INITIATIVES

Our team helps ensure the success of robotics and STEM in our region by sharing our extensive FIRST experience through an effort we have termed our "Curie" ethos. Marie Curie was actively denied a scientific education in her native Poland but went on to make huge scientific advances. We believe in removing barriers to STEM inclusion and honoring the Curie ethos in everything we do.

- 1) \$500,000 Career Tech Education Grant - Partnered with key school administration in 2017 to introduce an engineering pathway at Buchanan High School and provide professional-grade machinery available to all engineering students and local FRC teams. Students are 10-hour OSHA certified before working on mills and lathes; 90% of 1671 team members are OSHA certified.
- 2) Title I Advocacy - Title I funding emphasizes equal access to education and focuses on access to technology. Our 2013 visit to Washington D.C. joined four other FRC teams, the PTA, and other national organizations to lobby Congress for the reauthorization of the Elementary and Secondary Education Act, which also reauthorized Title I funding nationwide. Directly impacted at home, in our neighboring Fresno Unified School District, which is deeply affected by socioeconomic challenges, 86% of students depend on this key funding to bring technology into their schools and neighborhoods.
Direct Interaction with:
5 x U.S. Senators
4 x U.S. Representatives
- 3) Women and Girls in STEM - Our attendance and workshops at the Girls' World Expo (since 2016), the Central California Women's Conference (since 2016), Fresno Pacific University's Girls' STEM Expo (2019), and the 2017 creation of our own G.E.M.S. program (Girls in Engineering, Math, and Science) through funding from NCWIT has reached a total of 278 girls over five years and provided direct mentorship to 48 girls and counting.

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4) Refugees Learning STEM - Fresno County is home to over 50,000 Southeast Asian refugees. Our local relationships with Fresno Interdenominational Refugee Ministry, A Hopeful Encounter, and various elementary schools in Fresno Unified School District and our international relationships with Laos Ambassador Mai Sayavongs Bio and the Nonghed Education and Sports Bureau have led to a significant impact on refugee STEM education in Fresno County and set the stage for our 2019 trip to rural Laos.

5) Open Shop Policy - Our Curie ethos is a thread woven deeply into the fiber of our team. Two FRC teams (3970 and 5817) directly attribute their rookie years to our open-shop and open-source contribution. Every FRC team in our area has depended on our help (from parts-creation to team formation) and has benefited from our commitment to our amped-up version of Gracious Professionalism.

6) Bird Brains' STEAM Workshop - A multi-day workshop created in 2018 with the purpose of serving every elementary school in Clovis Unified School District and Title I schools in Fresno Unified School District. We strive to introduce underserved populations to STEAM and encourage entry into FLL and FLL Jr. Our penetration rate in Clovis Unified School District elementary schools is 38% and 100% of the pilot programs we ran in Fresno Unified School District are requesting the program's return.

7) Original Children's Book - Written over a two year period, "Three Little Birds: Reach for the Stars" and the accompanying "Bird Brains Activity Book", teaches elementary-aged students about basic STEM concepts and targets students who otherwise might not pursue post-secondary education and STEM careers. To accommodate the needs of our community we translated the book to Spanish, Hmong, and Lao and are working on Punjabi and Hindi translations. We have sold 429 books and reached 682 students at 15 different schools so far.

8) Hatching It Out - A multi-session bridge between our STEAM workshop and the formation, coaching, and maintenance of new FLL teams. We give rookie teams an immersive training that kicks off their season and helps reduce the overwhelming experience of getting started in our highly-competitive FLL region. 33 total students were reached in 2019.

MEDIA AND SOCIAL REACH

Our media reach has a sustained and growing history. We maintain year-round relationships with local news media outlets, radio stations, and local sports announcers. Our social media reaches thousands of subscribers with weekly posts. Our reputation has drawn the attention and respect of 2 California Governors and a bonafide U.S. Astronaut.

Radio Stations Featuring Team 1671: 9 in total on 3-week PSA campaigns and featured sports interviews - 940 AM ESPN, 790 AM ESPN 2, 1430 AM KYNO, 104.1 FM, 95.7 FM, 99.3 FM, and 105.5 FM. Total weekly listeners - 367,000 (Nielsen)

Television Stations Featuring the Team: 4 in total - NBC 24, Fox 26, ABC 30, CBS 47

Documentaries Featuring Team 1671: 1 in total - "Roboleague" featured on AT&T's Buzz Channel

Social Media Outlets Featuring Team 1671: 6 in total - Instagram, YouTube, Twitter, Facebook, Pinterest, TikTok. Total Subscribers - 5,581. Total video views - 66,716

Notable Americans Featuring Team 1671: 3 in total - Governor Arnold Schwarzenegger, Governor Jerry Brown, Astronaut Gregory Chamitoff

VOLUNTEERISM BY THE NUMBERS

Our volunteerism is widely regarded by FIRST organizers, community leaders, our school, and our new international partners. Central Valley FIRST events rely on 1671's labor pool to operate smoothly. Year after year, we are contacted in advance by FIRST organizers - a testament to our reputation as creators of success for our FIRST family. A total of 11 Bird Brains have received FIRST volunteer awards.

Five Year Totals:

Total volunteer hrs - 9,534

Total FIRST events volunteered - 36

SUSTAINING LEADERSHIP AND MENTORSHIP

Team 1671's leadership strategy is built to last. Our recruiting includes a resume submission and interview process. After selection, 6 C-Suite Leaders and 13 D-Suite Leaders undergo 80 hours of intense curriculum during our mentor-led leadership camp to prepare these student leaders to take charge of an 80-member team.

Once a Bird Brain, always a Bird Brain. Team mentorship is largely dependent on Bird Brain alumni; notable alumni mentors include our Head Coach, assistant coach, and the Director of Central Valley Robotics.

BIRD BRAINS TRAVEL TO LAOS

Building upon the success of our STEAM workshop in Fresno County, we teamed with A Hopeful Encounter, a nonprofit organization, to translate our STEAM workshop, including the curriculum, children's book, and activity book, to Lao and Hmong for our 7,968 mile trip to Laos. There, we reached 90 students at Ban Phawaii Elementary School. After teaching our STEAM workshop, we gifted 15 translated copies of our book. We were astounded to learn that these would be the school's first books. Over the next 10 days, we participated in cultural exchanges at two other upper secondary schools and at Laos National University. We returned with a renewed sense of commitment to making STEM accessible to our most deserving communities.

CONCLUSION

Team 1671 has enjoyed a storied 16-year career, building a commitment to our community, and to our reputation as a team who Inspires Young Minds to Spread Their Wings.