

***FIRST* Impact Award - Team 5985**

2024 - Team 5985
Team Number
5985
Team Nickname
Project Bucephalus
Team Location
Wollongong, NSW - Australia
Describe the impact of the <i>FIRST</i> 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 <i>FIRST</i> programs as mentors/sponsors.
Barriers overcome, opportunities explored and voices heard. For 5985, 3 years of statistics show FIRST is a: -Community: 64 members from 20 schools in 3 continents -Passion: 67% in 2+ FIRST programs -Dedication: 45% mentoring FIRST teams -Future: 100% planning tertiary education and 95% seeking STEM careers -Legacy: 63% of alumni returning as 5985 mentors -Pathway: 100% of alumni in tertiary education or STEM careers -Lifeline: 52% claim 5985 as their place to be safe and belong
Describe your community along with how your team addresses its unique opportunities and circumstances.
PB's home is Wollongong (pop. 315,000), built on a recovering steel industry. Neither rural nor urban, funding is scarce. Here PB grew: -A major FIRST Hub accessible to rural teams and a robust FLLC community of 232 teams (68% PB mentored) -A system obtaining STEM grants and material for 37 schools and FIRST teams -A teaching network active in 44% of city schools -A varied team with 23% homeschool and 31% low-income families -Ties to 12 Local, State and Federal Government members and agencies
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?
The Teaching Program funds PB and inspires interest in STEM and FIRST. 3 years of statistics show the impact: -Runs year-round for 2,492 children in 40 venues and online. Students attend for up to 9 years, with 91% of PB members learning to teach -Financial incentives saw 27% of students use personal robotics kits, freeing PB resources for 18 new locations -Eager students explore STEM concepts in 119 PB-created lessons. LEGO robots play the Royal Game of Ur (2,600BCE) and 5:1 scale FRC games!
Please provide specific examples of how your team members act as role models within the FIRST community with emphasis on the past 3 years.
PB Culture is built on GP. Over 3 years, members have: -Taught in 2,541 hrs of STEM classes, representing FIRST to students and inspiring teams to create partner programs -Volunteered at 37 FIRST

events globally -Rescued panicked teams by fixing robots and filling in as robot operators at 10 FIRST events -Modelled Coopertition at 13 FRC events with multi-team collaborative scouting - sharing data, even in opposition -Been primary support for Australian FLLC teams with 65+ hours of ad-hoc lessons

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

PB builds FIRST worldwide. In 3 years PB has: -Assisted teams via 23 published resources, 6 official programs and 6 Kickoff events -Started 12 FLLE teams in 2 countries with My Maker's Space -Started 27 and mentored 56 FLLC teams globally in the Teaching Program -Started and mentored 7 FTC teams, 3 in a program for students with disabilities -Created 3 FRC programs teaching strategy and GP to 30+ teams from 3 countries -Created a program for at-risk youth, starting 13 teams -Started 5 FRC teams

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?

In 3 years, PB's STEM opportunities have: -Run programs in 16 Special Education schools, guiding 5 to Unified Robotics and FIRST -Reached 28 venues in weekly classes for all skill levels, growing attendance 32% and female engagement to 31% -Formed Australia's only SWENext club, connecting 63 girls with 22 global experts -Reached 459 youth in a Scouts Australia program and 2,000+ in hands-on robotics classes at a state camp -Made STEM attainable for 1,332 rural and city students in Science Week

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

PB thrives on collaboration. 2024 marks: -9 yrs bringing STEM to rural areas with the University of Wollongong -7 yrs teaching CAD and creating resources for IronCAD -7 yrs mentoring 7583 and 6035, donating space and running integrated STEM programs -5 yrs promoting tertiary education with TAFE NSW to 2,572 students -3 yrs running female STEM programs with Propel Technologies -2 yrs teaching STEM to at-risk students with Flagstaff -1 yr with Special Olympics running Unified Robotics in Australia

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

PB strives for accessibility, 3 years of efforts include: -Achieving 52% female membership -A free all-girl STEM program for 113 girls, reaching refugee families and starting 3 FLL teams -Financial accessibility. 91% of PB teach in lieu of fees -Government funding programs providing 813 students access to PB classes -Providing therapy, educational and vocational STEM training to 321 youth and adults with disabilities -Engaging ages 2-97 in STEM with visits to preschools and nursing homes

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

PB and its projects endure because of the Teaching Program: -Financially, it provides 84% of team income. This grants stability and absorbs risk of new projects. Integration with government programs gives security -Structurally, it provides flexibility and removes reliance on others. Classes are easily started, stopped or moved. PB was welcomed to 18 new locations since 2021 -Socially, it provides community visibility, free student access to FRC via volunteering and a pathway for 78% of recruits

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

PB has seen 61% sponsor growth in 3 years, building partnerships that include: -Running robotics classes for sponsor staff -Enhancing sponsor projects - such as robots visiting Santa at holiday BBQs and sending LEGO robots to Antarctica! -Award plaques featuring "used" FRC Game pieces -Engaging employee children in team activities -Custom access to season insights in a Build Blog 56% of sponsors met PB via the Teaching Program - engaged by team members, class quality and the fun had by children

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

PB prioritises accessibility. In 2024 a legally blind student with ASD brought the realisation that though physically accessible, the workshop's visual accessibility had been neglected. PB worked with Guide Dogs Australia and overhauled workshop practices to: -Improve safe storage -Create safe, clear walkways -Intensify focus on identifying trip hazards -Relabel storeroom and put visual aids on tools - Reorient safety culture to include sight-based hazards This student is now a vital PB member

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

PB has 3 main goals: -Create Opportunities: Any life can be changed by a chance to engage. PB reaches the overlooked, engaging 301 students with disabilities since 2021 -Transform Communities by building leaders and creators: PB teaches STEM, but also collaboration, critical thinking, resilience and more. Health providers fund access to PB programs for therapy and life skills for 143 students - Normalise Robotics: PB classes are a visible, accessible connection to STEM for 190+ students a week

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.

Independent and self-sufficient, PB:

-Hosted Australia's first Ri3D team -Had a member named Wollongong's 2022 Young Citizen of the Year for robotics work -Sent 10kg of LEGO to Turkish earthquake relief -Restarted the Special-Ed Vocational Skills Network -Members travel 129km+ to reach the workshop -Ran a national FRC webinar series - Cherish their oldest fans in the IRT nursing home -Built a community library in memory of an FRC mentor -Ran FRC robots in a theatrical show, reaching 550+ people

Judge Feedback

Who/When

Feedback

Mar 18,
2024
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We find it very hard to decide which 5985 activities and programs get mentioned for the Impact Award, and which get cut. Is there anything we spend 1) too much or not enough time on, or 2) that we shouldn't mention at all?

An area the team has an opportunity to improve.

Something that really impressed the judges.

Essay

The world is changed one opportunity at a time. For 5985 Project Bucephalus (PB), simple kindness grew a culture of diversity and acceptance that literally saves lives. STEM programs in borrowed workspaces founded a tertiary education partnership - and built a major robotics hub. Teaching created from the heart of Wollongong (WOL) now reaches all 7 continents. Guided by the Vision: "Create Opportunity, Transform The Community" PB has become a powerhouse of STEM equity and education, stretching from the beaches to the bush and pre-schools to nursing homes. PB is ready to change the world, and does so - one opportunity at a time.

We're ready to teach. PB's heart is the Teaching Program: team-run LEGO robotics classes that reach anyone, generating income while inspiring a love of STEM. The logistics astound: 560+km of travel, 190+ students, 28 locations and 16 classes - EVERY WEEK! 97 global online classes and holiday workshops extend the program year-round, reaching an extra 350+ students annually. A PB class has been in session every day of the school week since 2015.

The Teaching Program is an institution - sharing PB's identity with 7,869 Australian students. Beyond robotics, it is formal therapy, vocational training and a place to belong. STEM-minded children are recognised early, inspired to explore FIRST, then challenged by FRC in highschool. Powerful bonds form as students become teammates, then teachers - a path taken by 78% of PB. Their stories define PB:

Jadzia was friendless, ASD, ADHD and Anxiety proving too big a barrier. She joined PB, declaring soon after: "now I have 41 friends!" Jadzia thrived in a place where she was finally accepted. Among new skills she uncovered a love for teaching: 10 hours a week, Jadzia leads class in noise-cancelling headphones, a role model for those who are different.

We're ready to balance the scales. Reaching beyond traditional STEM audiences, PB saw inequity. The response was the Unlimited program - in just the last 3 years it expanded the Teaching Program to ESL students, nursing homes, vocational training for adults with disabilities and occupational therapy. Sponsors and a \$125K government grant fund weekly Special Education STEM classes - reaching 221 students in 16 schools. Rocketing Girls Into Robotics has engaged 113 girls from indigenous, refugee, and low-income backgrounds since 2021. This work shapes PB: 52% female, 70% with disabilities or disorders, and wildly diverse educational and cultural backgrounds.

We're ready to connect. PB's visibility attracts invitations to high-profile events like Industry Days, Youth Entrepreneurship festivals, the Comic Gong convention and Australia Day festivities, collectively reaching 52K+ people. These partnerships deliver unexpected opportunities - like rescuing the 2022 FRC Australian Regional! With a venue desperately needed, PB revived plans for a COVID-cancelled event and stepped in with a robot-ready alternative in WOL. PB hosted the Regional for 2 years, served on the Planning Committee and rallied volunteers. Lobbying government and community groups, PB raised \$50K in event funding.

PB prioritises mutually-beneficial partnerships, the most powerful with TAFE NSW: Australia's largest vocational training provider. Charged with bringing youth STEM opportunities to campus, PB has transformed an empty function centre into a robotics hub and workshop for 16 FIRST teams. PB hosts scrimmages, FLL/FTC tournaments, holiday workshops and 7 weekly robotics classes.

Inspired by PB, TAFE supports robotics events year-round and offers FRC as a formal course! "Start Your Future" is a National TAFE program for potential Year 10 school-leavers, offering alternate pathways

to qualifications or careers. In 2023, TAFE engaged PB to run an official 8-week program, replicating a multi-team FRC season for 23 students from 6 schools. This trailblazing program exceeded all expectations, sceptical students becoming engaged with STEM. The course met curriculum standards and boasted the highest retention rate in the state.

We're ready to serve. PB stands at the heart of FIRST in Australia as stewards for all teams, guiding 633 students to a home in FIRST just since 2021. 9 years of sustained outreach has created a FIRST powerhouse on the South Coast of NSW. This energy transcends borders - working with team members in the USA and Brazil, PB has supported 37 official FIRST events since 2021.

FLLD/E is powerful, especially in PB's "My Maker's Space" program. This official season-in-a-day event has impacted 82 marginalised USA youth since 2021. Expansion to Australia in 2023 enthralled 23 K-1 students from refugee and low-income backgrounds. PB started 31 FLLD/E teams globally and runs Expos at the WOL FLL Regional.

PB's passion transformed FLLC in Australia. Kickoff to competition is covered by grant assistance, equipment donation, 6 published resources, 4 official support programs and PB's training webinar - annually attracting 60+ teams from every Australian state and 11 countries. PB has mentored 259 FLLC teams (starting 141) globally since 2015 - including 68% of all South Coast teams! The WOL FLL Regional is a community icon, run by PB since 2015 and engaging media, industry, and politicians.

PB champions FTC as an inclusive STEM opportunity, assisting teams throughout the season: from standing in as driver/coach support to speaking on remote team management in training events in the USA and Canada. PB ensures a place for rural and Special Education teams by running the WOL FTC Qualifier - the only NSW event outside of Sydney. PB has mentored 7 FTC teams (starting 5) globally since 2021.

We're ready to reach out. Empowered by members in 3 countries, PB has made an impact in all 7 continents! Ongoing efforts send LEGO Robotics kits to schools in Tanzania, Ethiopia, Ghana and Kenya. Since 2021, PB has worked online to train Mauritanian teachers, translate and run 2 FLLC conferences for rural Chinese schools and mentored FLLC teams in Singapore and Germany. In Brazil, PB mentored 2 FRC teams, kickstarting translation of PB Published Resources into 6 languages. In 2023 PB promoted STEM education by working with researchers to run a LEGO robot in Antarctica, and sent trauma-relief packs to tent cities in earthquake-torn Turkey.

We're ready to unify. Because local resources are scarce, PB prioritises sustainable FRC - empowering the community of existing FRC teams over starting new ones. PB shares space and expertise, running FRC scrimmages and national webinars. The team moderated and spoke at 24Hrs of STEM, and assists teams and events globally as part of The Compass Alliance. Ultimately, PB created 2 programs: the South Coast Alliance (SCA) and Collaborative Scouting Project (CSP).

PB co-founded SCA as a 9-team collaboration. Gracious Professionalism in action, SCA enables PB to save teams from collapse, run scrimmages and coordinate programs to complement instead of compete. In addition, PB provides rural teams access to a full FRC field.

CSP teaches Coopertition and strategy: building alliances that share scouting, data and analysis - even in opposition! PB annually leads 13 international teams to produce a system used by 30+ teams in

events worldwide. In 2022, CSP covered 3 Championship Divisions.

We're ready to persevere. PB's long-term approach paid off, starting 5 sustainable FRC teams, 3 from low-income areas, all rooted in PB's FLL outreach and Teaching Program. Each grew STEM access into unreached areas - driving PB's greatest victory: reclaiming lost opportunities in the Unstoppable program.

Unstoppable began in 2022 at Flametree, a Special Education high school for high-risk students: 52% in the Justice System, 100% with backgrounds of trauma, abuse and neglect. PB designed, then pitched the program to disability service providers, Education and Justice Depts - creating a \$512K FRC program! PB mentorship built FRC into the Flametree curriculum. The impact ran deep: students without capacity for FRC discovered FLLC and asked to compete. PB mentored the team and provided a controlled experience at the WOL FLL Regional. In 2024, PB proved Unstoppable was repeatable - creating 9616 for at-risk students from Keira High.

We're ready to blaze a trail. In 2023 PB brought Unified Robotics (UR) to Australia, uniting students with and without ASD or Intellectual Disabilities on the same STEM teams. Partnering with Special Olympics and working with UR in the USA, PB designed and globally launched "Buccaneer", the 2023 pirate-themed game - then funded, ran and hosted Australia's entire UR season. Determined PB members lobbied 4 school administrations, starting 10 teams and driving 2 whole-school partnerships with Special Olympics Australia. 2 PB members shape the organisation as Youth Ambassadors, using new perspectives to improve FIRST accessibility.

PB recognised the Unified concept as an untapped gateway to FIRST. Armed with a grant to grow FTC, PB advocated for 3 low-income schools with Special Education Units - starting the world's first Unified FTC teams! The experience was a revelation. Teachers were stunned as students from opposite ends of the academic spectrum worked as equals, revealing talent and compassion on all sides. The WOL FTC Qualifier was eye-opening: Unified students welcomed as equals, then leaving with new possibilities in reach.

Run from a disused function hall, funded by teaching others and made up of those struggling to find a place - PB nevertheless stands at the heart of FIRST in Australia, transforming communities and reaching out around the globe. As teachers, they challenge assumptions; As pioneers, they demolish barriers; As advocates, they balance inequality. Working across age, gender, ability, skill and location PB has discovered a fundamental truth: powerful change begins with creation of simple opportunity. PB is ready to change the world, and does so - one opportunity at a time.;

