RECF Community Challenge
Double Deuce, 81822A
High School

Community Impact Process:

- **Problem, Need, or Opportunity:**
  Our team knows the struggle of trying to get involved in STEM without proper resources, experience, and guidance. When our team started as a robotics club at our school 5 years ago, we had no engineering knowledge, no mentor to guide us, and no proper access to a robotics lab or parts. What we did have, however, was an auditorium, and we used this to begin hosting VEX IQ competitions for our community before we competed in VEX V5 ourselves. This season, our team made it our mission to continue supporting underfunded, understaffed, and inexperienced teams through direct mentorship, hosting VEX IQ comps, and allowing students from all backgrounds in our school to have a safe space to explore robotics after school for free.

- **Project Planning and Proposal:**

  Vex IQ Competitions:
  This year, we plan to host regional VEX IQ competitions at our high school. These events will be made possible by the efforts our team members put in, training to become certified REC Scorekeepers and Head Referees for the current VEX IQ game, Mix & Match. Our referees will volunteer after school to ensure these events run smoothly, from setup to takedown, while supporting elementary & middle school teams with technical support and upholding the mantra of student-led problem solving. In addition to running matches and ensuring gracious professionalism, we also plan on displaying both our V5 and FRC robots in action to inspire both competitors and viewers to pursue robotics in higher education.

  Vex IQ Mentoring:
  As a team, we will continue to expand our outreach to other schools, particularly focusing on middle & elementary schools to give younger students exposure to VEX and engineering early on. Our team members will reach out to nearby schools, supporting the children and coaches of these teams during their meetings. By pushing students to ask questions about components of their robot design and strategy, we plan to improve their engineering skills and critical thinking. Additionally, we hope to guide students in the documentation of their design process via an engineering notebook. After seeing that many local teams did not submit an engineering notebook, or did not meet notebook requirements to qualify for awards at our IQ competitions during previous years, we hope to support teams with the endeavour by introducing them to the E.D.P (Engineering Design Process), and pointing students in the direction of proper documentation while allowing the students themselves to lead the way.

-Team's inclusivity:

Our school is divided between two academic pathways: STEM magnet students and general education students. Our team recognized the unequal distribution of STEM opportunities between these programs, which is why we will recruit from both pathways equally to remove academic placement as a barrier to STEM. As a Title I school, we understand that financial barriers can prevent students from participating, so we will continue offering our after-school robotics program for free and engineer around our any financial constraints to stay competitive. This will allow us to maintain a 1:1 ratio of non-magnet to magnet students. To ensure members with limited experience grow, we will create sub-teams where veteran members mentor small groups of rookies, ensuring each member has a designated mentor while building confidence and technical skills. By pairing structured mentorship with open access, we will create an after-school environment where students from all backgrounds can contribute ideas, engineer them into reality, and extend that growth into our surrounding community.

Mid-Season Progress Documentation:

Team inclusivity: Our team's internal growth this year directly expanded access to STEM leadership within our school. We began the year with approximately 15 members and grew to over 30 across our VEX and FRC programs while maintaining a 1:1 magnet to non-magnet student ratio. Many of our newer members had little to no prior exposure to engineering. Through team leadership restructures, we created sub-teams where veteran members mentor small groups of rookies, ensuring every student has a mentor to help them build confidence in STEM. This structure allowed students who may not have previously seen themselves as "STEM students" to actively design, build, document, and grow as STEM leaders in their community. As these members developed confidence and engineering skills, they also began volunteering at VEX IQ events and mentoring elementary and middle school teams, extending their growth beyond our campus and directly impacting robotics programs across the San-Fernando Valley.

GermainBots VEX IQ Mentoring - Our team began mentoring nearby Germain Elementary School's 2 VEX IQ teams: GermainBots 1 and 2. These teams have progressed greatly since we started outreach at the school. Thanks to our mentorship, a program once led by one overworked teacher now has 3-4 mentors, allowing for more individualized support for team members, ranging from notebooking advice, to code debugging, to strategy formulating. The teams, whose coach faced many challenges with communication and concentration, now work together during matches seamlessly, and have formed strong bonds with their high school mentors. The team's engineering notebooks have transformed from audio notes on an ipad to a full notebook with pages describing their design process written by the students themselves. During practice matches, the scoring potential of the teams have gone up noticeable, from consistently

scoring in the 20s to 60-80s. The effects of our mentoring were made clear at the VEX IQ regional event hosted at our school, where one of the GermainBots teams won Teamwork Champion, with a Finals score of 106, moving on to the State championships.

PRCS - Our team also began to mentor Porter Ranch Community School (PRCS) and their 10 VEX IQ teams, including 2 Elementary teams and 8 Middle School teams. Through the efforts of Double Deuce, PRCS had grown their robotics abilities such as with their notebook, their comprehension of the games themselves, and with their judging capabilities. The 10 PRCS teams were previously coached by 4 coaches who had minimal to no comprehension on how VEX IQ competitions worked and now, with the effort of 2 members of Double Deuce, the team has the knowledge required to succeed in competitions. To quote Ms. Cullen, one of PRCS's coaches, “We have come so far with your help and guidance”, showing that the efforts of 81822A have come to good use. To further this claim, PRCS has also gotten high scores at competitions and have received awards for their efforts. At the VEX IQ competitions hosted by Chatsworth, one of their teams received the 2nd place title with a score of 78. At the Monroe High School VEX IQ In The Valley Valentine's Day competition, PRCS sent 5 teams, coming home with the 2nd Place Teamwork Champion Award and the Judges Award. With the help of Team 81822A, the teams, who included members completely new to the idea of VEX, became aware of how to formulate a VEX engineering notebook, how a Judges meeting feels, and how to grow together as one and work with your alliance partners, harnessing the ideals of gracious professionalism in their actions, an idea which Double Deuce holds near and dear to their hearts.

Superior Elementary STEM Saturdays - Part of our team made excursions to Superior Street Elementary School, where their teachers, Mrs. Fisher and Mrs. Pak, hosted classrooms of 2nd and 3rd graders and engaged them in activities related to Science, mathematics, and technology. The teachers expressed their desire to teach the kids engineering with their unused VEX GO kits. Without any experience, however, they were unable to instruct the students through the process. Our team used their prior experience to create lesson plans for the students, introducing them to the engineering design process and assisting them through the building process. Then, they set up activities for driving and coding, teaching teleoperated and autonomous driving. The 15+ students, who went into the events not knowing what VEX was or what engineering even meant, were able to work together to create their first robot. The kids were overjoyed, and were even more excited to hear that there were higher levels of VEX for them to continue as they learned more in the future.

VEX IQ Competitions-

Through this season, we were able to host 10 competitions, including our regional finals, where we were able to iterate, improving off each event, creating smoother match flow,

ensuring equal scoring precedents, and promoting gracious professionalism. For example, when an ambiguous scoring rule was presented, we made sure to communicate among all referees and teams ensuring an equal scoring for the entire comp creating a spirit of competitive fairness. Furthermore, in these events our demonstration team was able to display what our team has been doing this season in both FRC and V5, showing off our robots in action, inspiring hundreds of competitors and viewers on engineering in higher education. Our demo team was able to answer questions to curious families and students, showing the possibilities of VEX and FRC in high school. Furthermore, members of our team volunteered at V5 competitions at schools in our community, knowing the importance of volunteers at our events we had to support.

there has been a huge growth not only the teams that competed but also in our volunteers… copy paste stuff from note. Our show cases at these competition have gotten competitors and viewers who came to watch now interested in the future of robotics, whether it be V5 or FRC.

Collaboration and Partnerships:
REC foundation - Our partnership with the REC Foundation enabled us to host 10 VEX IQ competitions this season, including our regional finals. By aligning with official competition standards, certification processes, and referee training protocols, we ensured competitive integrity and consistency across 500+ matches. Through REC certification, over 10 members of our team became Head Referee certified, strengthening not only our events but also events across Southern California where we volunteered.

Germain -We partnered with Germain Elementary to mentor two VEX IQ teams weekly. Prior to mentorship, their program was led by one overextended teacher with limited robotics resources. Through structured support in coding, notebook development, and match strategy, we helped transform their documentation from informal notes to full student-written engineering notebooks. Their scoring increased from the 20s to consistent 60–80 point matches, culminating in a Teamwork Champion victory (Finals score: 106) and advancement to States. This partnership demonstrates sustained growth through consistent mentorship.

PRCS -
We partnered with PRCS to mentor 10 VEX IQ teams (2 elementary, 8 middle school). Initially, their coaching staff had limited familiarity with VEX competition structure, judging criteria, and engineering notebook requirements. Through consistent guidance in strategy, documentation, and competition preparation, PRCS teams improved performance and competitive readiness. This season, three PRCS teams advanced to States. As noted by Coach Tiffany Cullen, their growth would not have been possible without our team's mentorship. This partnership represents multi-team, multi-grade impact.

To Whom It May Concern;

As a robotics coach, I understand that challenges are inevitable. At Porter Ranch Community School, we have faced those challenges head-on and grown stronger because of them. Our elementary and middle school teams have been fortunate to receive mentorship from the Chatsworth High School robotics team. Their guidance in coding, technical skills, and team leadership has made a profound impact on our students and our program as a whole. In just two years of building competitive robotics teams, we have achieved tremendous growth, an accomplishment that would not have been possible without their support. This year, three of our teams are advancing to states, one elementary team and two middle school teams, and we proudly share that success with our mentors from Chatsworth.

Kindly,

Tiffany Cullen
Porter Ranch Community School
Robotics Coach

Superior Elementary - Through STEM Saturday sessions at Superior Street Elementary, our team supported VEX GO and introductory robotics programming. We assisted students in applying the Engineering Design Process, building confidence in iterative problem-solving and teamwork.

Dear Chatsworth High School Volunteers,

I would like to sincerely thank you for volunteering your time and energy in our Saturday STEM class. Your support with VEX GO and robotics activities has made a meaningful difference for my students.
Each Saturday, you came in ready to help young learners explore engineering, teamwork, and

problem-solving. Your patience, encouragement, and ability to explain new concepts in a way young learners can understand has helped them grow more confident in STEM.
Because of your guidance, my students have been able to build, test, and improve their robots while learning that mistakes are part of the design process. They enjoyed working with you, and many of them feel inspired by having older students as role models.
Your dedication has not only strengthened our robotics program, but it has also created an exciting and supportive learning environment. Thank you for sharing your skills, leadership, and enthusiasm with our class.
We truly appreciate the positive impact you have made, and we are grateful for your involvement.

Sincerely,

Lily Fisher
Nationally Certified Teacher, NBPTS
Superior Street Elementary School

Measuring Impact:

Our team experienced over 100% growth this season, expanding from approximately 15 to over 30 active members while maintaining a 1:1 ratio of magnet to non-magnet students. Through a leadership restructure, we placed six veteran members into defined leadership roles, each mentoring a small group of rookies. This improved team efficiency, increased engagement across all experience levels, and contributed to measurable competitive outcomes, including earning our first VEX Judges Award and later winning the Design Award at a subsequent competition.

VEX IQ competitions- 10 comps this season(25+ over our team's lifespan(4years)), 50+ volunteers across the school not just our team, introduced higher level robotics, inspiring hundreds of both robotics and non-robotics students and families at these comps through our showcases, 10+ certified head refs from our team this year,

Germain - 15+ students mentored, scoring improved 200% since outreach started, time per student increased 150%, notebook created, tournament champion won.

PRCS - Our team also began to mentor Porter Ranch Community School (PRCS) and their 10 VEX IQ teams, including 2 Elementary teams and 8 Middle School teams. Through the efforts of Double Deuce, PRCS had grown their robotics abilities such as with their notebook, their comprehension of the games themselves, and with their judging capabilities. The 10 PRCS teams were previously coached by 4 coaches who had minimal to no comprehension on how VEX IQ competitions worked and now, with the effort of 2 members of Double Deuce, the team

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Step 3. Final Project Reflection

Results and Outcomes:

Through outreach and mentoring, our team has made a significant and measurable impact on our community, especially students and coaches. By assisting in engineering notebook management, running practice matches, and debugging small coding issues, we gave coaches and mentors more time to focus on working one on one with individual students. The support we offered directly helped teams stay organized, feel less overwhelmed, and ultimately improve their performance at competitions, which got them more immersed in VEX as a whole. As for us, we learned that outreach requires the same engineering mindset we use in our own team; problem solving, troubleshooting, and communication are just as important when mentoring as they are when building and coding our own robots. Robotics as a whole is not only an educational tool, but also a chance to foster growth for everyone involved. Building leadership, teamwork, and social skills that create strong relationships and push people to become better engineers.

This experience also taught us how important growth was. For instance, when hosting IQ competitions, we iterated our referee process after each day in order to fit the needs of and improve every time. Not just growth for us though. Seeing the teams we mentor grow in confidence and skill, advancing to the state level and then thanking us for our help, we are reminded of just how much community service and outreach can positively affect the growth of the next generation.

As for the future, we hope to expand our mentoring efforts to support more schools and teams in our area. We also plan to work with our own school administration to bring back our state-level IQ tournaments, allowing us to serve a broader community and give more opportunities for student growth through robotics.