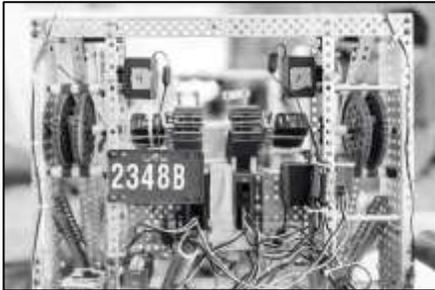


**Chevron HaSTA Grant Report**  
VEX Robotics Project School Year 2014 - 2015  
*Moanalua High School Robotics Club*  
*Advisor: Sean Takahashi*

During the 2014 – 2015 school year, the Moanalua High School Robotics Club set a goal to reestablish their participation in the VEX Robotics Competition (VRC). The VRC is an annual competition where teams from schools across the world are given a specific game they must build a robot to compete in. Students are challenged to design, build, program and drive a robot. The funds from received from this grant were used to replenish our inventory that included many outdated and broken pieces so that more robots could be built so that we would be able to provide closer access to those robots for more students.



During this season, we were able to have four teams working on four separate robots in preparation to compete at three different events. Although there were many challenges throughout the process, and many things did not go according to plan, students were provided with a great hands-on learning experience that is unique from anything else on campus. Of course winning at the competitions was something the club strived for, the ultimate goal of this project was to provide this irreplaceable learning experience provided to the students in this STEM context.

One of the resounding successes was the opportunity for students to find solutions to the challenges they faced in the design stage of the process. In particular, students were challenged to build a robot that was able to pick-up and lift objects to a level almost three times the original height of the robot. All teams went through many failed iterations of their design, working together to find a solution to the speed, strength and balance problems of this lifting mechanism. Another great success of the project was the opportunity for students to improve their design throughout the season. Since there were multiple competitions, students were able to drive their robot in competition and see what aspects did not work as well as planned so that they could improve their design for future competitions. One student wrote in his final reflection that the *“biggest lesson I learned during this season is there is always improvement that can be made and for this improvement to become a reality a lot of hard work is needed.”* This team, in particular, spent many nights at school trying to make improvements to their robot, especially as competition day neared. His teammate added they *“noticed how unstable and slow it was compared to other robotics teams at our first competition. Respectively, within the two weeks before our next competition, we changed the sizes and the ratio of the gears for a greater speed rather than torque.”*



As an overall assessment of the project, one major mistake was being a little too ambitious in creating four robots at the same time. While many new parts were purchased, there were still not enough to fully support four robots. This resulted in students not having vital pieces to their robot, which delayed the competition of their robot. Another challenge faced was time constraints due to the regular class schedule for the students. Although many students were dedicated to the project, students still had seven classes and other extracurricular commitments they had to balance. Students learned the value of time management, but were also unable to complete some aspects of their design. As the students look to the future of the club, they are excited to continue the learning experience through the new school year. They are already hard at work, building new robots for the new game, taking the lessons learned last year in order to improve. Another student reflected that the *“biggest lesson that I’ve learned this season is not to underrate the importance of teamwork...as it allows better synergy between fellow team members.”*