

Project Title: STEM 8 VEX IQ Robotics Expansion

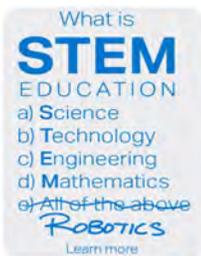
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School: Molokai Middle School

Date: 6/5/14

Final Grant Report

Project Overview



The goal of this project was the expansion of the VEX IQ Robotics program in the 8th grade STEM classes so that more students could actively participate in and benefit from STEM learning through the VEX IQ Robotics program. Prior to the request, the existing robot kits were shared across the five sections of STEM 8 classes. With (101) students in the 8th grade at that time, this came out to a robot to student ratio of 1:20 or one robot to twenty students. Such a low ratio resulted in limited hands-on opportunities for students. The expansion effort aimed at providing two robot kits per section, resulting in a 1:10 robot to student ratio and an increase in hands-on opportunities for students.

Grant Outcomes

As a result of being awarded the grant of \$1,000.00, (4) VEX IQ Start-up Kits (\$249 each) were purchased and given to the 8th grade STEM program, the results of which were as anticipated. However, after receiving the grant, MMS administration matched the grant, along with the existing kits, with an additional (8) VEX IQ Start-up Kits. In short, the net benefit, pre-and-post grant, resulted in the 1:20 robot to student ratio being reduced to 1:6, or one robot to every six students, more than tripling the opportunities for robotics engagement.

Student Outcomes

Without having to share kits with other classes, or other groups or students within the same class, more students could be directly involved in building, modifying, and driving their robots. This also resulted in a greater number of matches that could be held during each class as well as each grade-level qualifying tournament. Over the course of the first and second quarter of the school year, STEM 8 students were able to hold four class-level tournaments, and three grade-level tournaments, resulting in the selection of six students to form the 2014-2015 STEM Robotics VEX IQ Team 434 that would represent the program and school in Robotics.

Outcome Measures

In summary, the STEM Robotics Team 434 entered four State-qualifying tournaments and received numerous top awards including: (2) Excellence Awards, (2) Teamwork Champion Awards, (2) Robot Skills Champion Awards, (1) Programming Skills Award, (1) Design Award, and (1) Volunteer of the Year Award for mentoring other schools new to VEX IQ and helping them prepare for the Maui tournaments and **STEM Day @ MMS**. At the 2015 State VEX IQ Championships, 434 took home 2nd Place in the State as Teamwork Finalist.

The crowning event for STEM Robotics was the inaugural **2015 STEM Day @ MMS** held on Saturday, May 23, 2015. **STEM Day @ MMS** was a showcase featuring all STEM-related programs and efforts at Molokai Middle School including STEM, STEMWorks, VEX IQ Robotics, Science Fair, Science Olympiad, Engineering In The Middle, and Jr. Engineering Expo. At the center of the event was the first-ever island-wide VEX IQ Robotics tournament featuring teams from all elementary and middle schools on-island, including Team 434 as well as many of the original STEM 8 robotics teams that helped form Team 434. The other non-MMS teams joined **STEM Day** as a direct result of outreach efforts by Team 434 to visit, mentor, and assist their teams in learning about VEX IQ and preparing for **STEM Day**. For more info, see the related previous grant report entitled "**STEM 7 VEX IQ Robotics Startup.**"

Conclusion

We are again thankful for having been awarded this grant from HaSTA/Chevron that made this expansion effort possible in our STEM Robotics program. We also consider this project a great success, and will continue this effort in our STEM programs. Likewise, we will continue to use the purchased robotics kits in the future as an ongoing-effort to expand STEM opportunities to all students at Molokai Middle School.

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Captions: 1) STEM 8 constructing robots; 2) STEM 8's (16 total clawbots); 3) Team 434 visit to Maunaloa Elementary; 4) Team 434 at Maui VEX IQ Tournament; 5) STEM Day @ MMS on 5/23/15; 6) Team 434 officiates at STEM Day; 7) Elementary Division Champions Kilohana school; 8) Elementary Teamwork Finalists Kualapuu and Maunaloa schools

1)



2)



3)



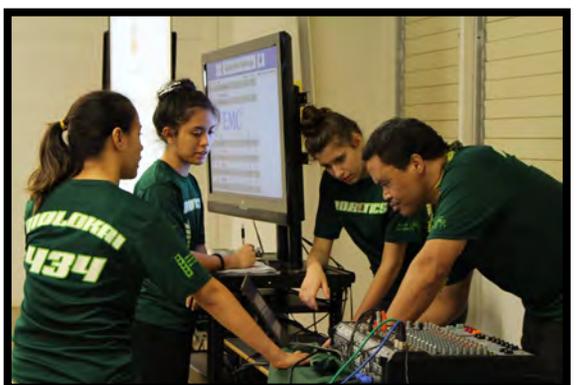
4)



5)



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8)

