

Science and Technology/Engineering Initiatives

June 7, 2018

Engineering is Elementary (EiE)

Worcester was invited to join the Boston Museum of Science Engineering is Elementary (EiE) DELL Scholarship grant program in the summer of 2016. EiE engineering units start with a story about a young person somewhere in the world who faces a “real world” problem. Students relate with the character and the problem, and then use simple materials and the engineering design process to create solutions to the problem. Students learn to build and test prototypes and then reflect on and improve their designs. By the end of next year, eighteen schools and more than sixty four teachers will be trained and implementing this great curriculum thanks to the DELL Scholarship grant and the Boston Museum of Science.

Project Lead the Way

Project Lead the Way grants have supported the engineering curriculum at Doherty Memorial High School and the computer science curriculum at Worcester Technical High School. Jacob Hiatt Magnet School will pilot elementary level curriculum next year.

Curriculum Enrichment – Tower Hill, Broad Meadow Brook, EcoTarium

Over 6,000 students in grades 2, 6, and 7 visited the Tower Hill Botanic Gardens, The Massachusetts Audubon Center at Broad Meadow Brook, and the EcoTarium this year. Curriculum materials aligned to Massachusetts grade level science standards were created for classroom use, to prepare students for the trip to each institution. Students had opportunity to see science in the real world, as they measured trees and calculated oxygen production, studied watersheds, explored the great diversity of plant life, and looked at what’s involved in engineering a city. These experiences were made possible through the generosity of local foundations in partnership with WEDF and the Worcester Cultural Coalition member organizations.

Biotechnology

The Massachusetts Life Science Center offered Worcester a \$45,000 grant to develop an afterschool “lab readiness” program with the goal of preparing students for paid summer internships at local universities and biotechnology companies. Three Worcester Technical High School biotechnology instructors created the curriculum and then worked eight weeks after school and Saturdays with twenty one students from North High School, Doherty Memorial High School, and Worcester Technical High School. Teachers from North and Doherty participated in each session and were supported by the biotechnology instructors, as they developed new curriculum for the biotechnology elective courses at their respective high schools.

Robotics

The enthusiasm for the elementary robotics program is incredible. This year saw thirteen schools and over 235 students participate in the ten weeks of problem solving, teamwork, robotic design and testing, with the final tournament at the new Nelson Place School. This program reaches such a diverse group of students and all of the teachers who coach in this program, report how thrilled they are to see students who may struggle in the classroom, excel with the expectations and demands of the robotics program.

Envirothon

The Envirothon is Massachusetts’ leading natural resource education program for high school students, emphasizing hands-on, team-oriented problem solving and community involvement, that prepares young people for environmental careers and active citizenship. More than thirty teams representing communities from Boston to the Berkshires, prepare throughout the school year, then come together in May at the annual Massachusetts Envirothon competition to demonstrate what they’ve learned about the environment and environmental issues. At the state competition this May, the team from Doherty Memorial High School received an overall sixth place award for their work on watersheds, water infrastructure, and the impact of recent damaging storms in their community.

Regional and State Science and Engineering Fairs

Last spring Superintendent Binienda challenged the science department to support more students in doing independent research projects for Regional and State Science and Engineering Fairs. With a grant and support from the Massachusetts State Science Fair, teachers were able to take advantage of professional development courses, and then provide afterschool support for students in all of our middle and high schools. Mentors from local colleges and industry met with students over the school year, and the result was a huge increase in participation at Regional and State Science and Engineering Fairs. At the high school level, all seven schools sent students to the Regional at WPI with several projects going on to the State level competition. Students from Burncoat High School received awards at both the Regional event at WPI and the State competition at MIT. For the Middle School Regional event, there was a record number 115 projects representing all six middle schools and thirteen elementary schools, with the Grand Prize Award going to a student at Sullivan Middle School. Overall, Worcester students received eleven awards competing against the best school districts in Central Massachusetts and one prestigious award at the state level!

Family Involvement and Partnerships

All of these amazing programs fostered family involvement. Students showcased their newly acquired laboratory skills at the culminating event for the Biotechnology program. The Robotics Tournament saw a huge turnout of family members cheering on the 235 students. With the Regional Science Fair held locally at WPI, families were able to see their young scientists and engineers in an environment of high expectations. Successful partnerships with colleges, industry, and funders enabled our students to have these rich experiences in science and technology/engineering.

You do the math: Family support and encouragement + funding and partnerships + great teachers and experiences = student readiness for futures in STEM!