

WeBot – Western Massachusetts Robotics Project

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This project provides technology, math, and science rich robotics kits and training to elementary and middle schools in Western Massachusetts. The Lego WeDo (grades 2-4) and Lego Mindstorms (grades 6-8) robot kits have been successfully used in the Williamsburg Schools for many years. We will integrate this promising technology into curriculum and instruction in participating schools in 7 Western Massachusetts districts (Amherst, Easthampton, Northampton, Hampshire Regional, Gateway Regional, Greenfield, South Hadley, and Ashburnham-Westminster.)

Curriculum Standards – The curriculum provides rich learning in science, math, and technology/engineering. Technology/engineering has traditionally been a difficult area to provide for students. Students will start at an early age and build their technology/engineering skills over time. Teachers will specifically address the engineering process and the scientific process.

Cooperative learning – Students work in teams of two or three to build, program, and test their robots. They develop skills in working as a team, a highly sought after 21st century skill especially important in the technology field. Students will receive explicit instruction in working as teams in the context of the robot projects.

Distance Learning – The professional development consists of an online course in MassOne Moodle for content, posting resources and successes, for discussions, and for problem solving. This will be supplemented by 2 face-to-face sessions during the school year using the actual robot kits and one wrap-up day in the summer.

Improve Teaching and Learning – This project improves teaching and learning by:

- filling a need by providing curriculum and instruction for technology and science/engineering starting at an early age,
- providing rich, hands-on, technology, science, and math where students use their skills in the context of a high-interest, practical, hands-on projects,
- improving the technology skills of teachers as well as students.

Assessment and Data – We will use rubrics and challenging final projects to evaluate student work. We will also take qualitative data from teachers and students participating in the project.

Technology Infrastructure – The project provides the robot kits and software and partial funding of laptops to schools, which will directly improve the technology infrastructure.

Gender Issues – The robots are great for some of our elementary boys who need more hands on experience in school. Also, for some early elementary boys who may struggle with reading and attention issues, robotics is a place where they can be seen as experts by their peers. Young girls who may not have Lego experience also benefit greatly by hopefully increasing the number of woman entering Science, Technology, Engineering, and Mathematics careers.

Participating Schools train 2 teachers per year¹. They will receive stipends and/or substitutes for taking a 2-month long, 45 long hybrid online and face-to-face course. The school will receive hardware and software (to be shared by the 2 teachers) that will provide laptop assistance (if needed), software, and a robot kit for each pair of students in a class. The 2-month course will take place in the spring of 2010. Projects will be implemented with students in the spring of 2010. The grant also provides for mentoring including a coach to assist teachers with at least one lesson with students. During the summer - with the assistance of the evaluator - we will revise our professional development for a second round of training with additional teachers in year 2. Participating teachers will provide at least 2 promising practices/lesson plans to the MA DOE by August 2011. Williamsburg Schools is providing the professional development and project coordination for the project. Hampshire Regional School District is the fiscal agent for the project. The Technology Education Partnership (TEP), and Lego Education will provide additional support for the project.

¹ Ideally. This could be less for small schools.