

Science, Technology, Engineering, and Mathematics (STEM) that Students Enjoy

How Afterschool Programs Engage Students in STEM

Iowa fourth graders were outperformed in mathematics by their peers in six other states on the 2009 National Assessment of Education Progress. Fifty percent of Iowa students who took the ACT in 2009 were not ready for college-level mathematics while 63% of students were not ready for college-level science.¹

Students at East Elementary in Waukon work with a retired science teacher, going out to Palmers Creek to conduct water and soil tests. They even get their own pair of waders to work out in the water. The same teacher also provides a taxidermy class, taking advantage of the rural community resources and exposing the students to unique avenues into STEM fields.

Combining STEM learning with the youth development expertise of afterschool professionals has the potential to revolutionize both fields by integrating each other's strengths. Afterschool programs are proven to teach the so-called "soft skills" of communication, problem solving and team work, which young people need in any career. Making use of the hours after school for STEM activities gives students time to develop an interest in science, which is key to getting students into STEM careers.²

The 21st Century Community Learning Center program serving Roosevelt Elementary students at the Council Bluffs Boys and Girls Club starts exposing participants to STEM in kindergarten. Students in the kindergarten and first grade class learn how food molds. After taking several food items from the kitchen, the teacher goes over what each item is and has the students volunteer how much mold they think will grow. The molding food is studied every few days and the class discusses the results.

Out of school time programs may be better able to engage girls when they try to relate STEM activities to the girl's age group, interest in particular STEM subjects, preferred mode of learning, and ability level. Tailoring this experience is especially helpful in engaging girls who otherwise might not be inclined to engage with STEM subject matter.³

The Chrysalis Science Girls program in Des Moines addresses needs of minority middle school girls by providing educational and experiential opportunities in STEM through Chrysalis Afterschool programs. With a community coalition of women in STEM careers, the program provides activities to build girls' self-confidence in math and science, affect girls' attitude towards gender roles, increase community awareness of STEM careers, and cultivate a "growth mindset" for girls related to their future careers.

Iowa eighth graders were outperformed in science by their peers in seven other states on the 2009 National Assessment of Educational Progress.⁴

Hoyt Middle School in Des Moines offers dynamic STEM projects thanks to their 21st Century Community Learning Center grant (a federal afterschool grant) and the assistance of Rich Schuler, an ISU Professor who provides the students with the same semester-long LED lights project that he teaches at a costly summer camp for gifted science students. The middle school participants are able to work with LED lights to create their own flashing pattern, utilizing knowledge in the core subjects of math, science, and technology.



Iowa Afterschool Alliance
2910 Westown Parkway, STE 302
West Des Moines, IA 50266
515-243-2000
www.iowaafterschoolalliance.org

Michelle Rich
Network Coordinator
mrich@sppg.com

¹ Iowa STEM Education Roadmap, IowaSTEM.org

² Afterschool Programs: At the STEM of Learning, Afterschool Alliance

³ STEM Out of School Time Programs for Girls, Harvard Family Research Project

⁴ Iowa STEM Education Roadmap, IowaSTEM.org