Significant gains in 21st Century Skills by elementary students in an Ohio afterschool program that featured 4-H, communications, inquiry and technology design.

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Young Buckeye STEM Scholars (YBSTEMS), an 18-month, after-school, project based program (January 2007- June 2009) for upper elementary students (grades 5-6) in ten Central Ohio suburban and rural schools, incorporated scientific inquiry, technology design, teamwork, communications and leadership development. The project hypothesized that individual and team student research & technology design projects, building on 4-H projects and experience, would accelerate the development of 21st Century Skills and STEM knowledge. Of the initial 227 enrollees, 192 completed the first project year, and 93 were active through the project's end in June 2009. Males (50%) and females (50%) participated equally. External evaluation results determined that students displayed 4-H projects at county fairs (76%), summarized science news articles (78% completed 18 and 33% completed 36 articles), submitted science research or technology design plans (91%), participated in science fairs (86%), and developed a group technology design project to meet a community need (62%). Statistically significant impacts included increased understanding of ten hands on technology lessons. Students (N=93) also increased interest in problem solving (70% to 84%). Parents said their child likes to be a leader (from 58% to 82%) and now writes well (from 65% to 86%). Positive impacts on school districts, teachers and students are replicable.

The overall content of the YBSTEMS program was incorporated in three final reports:

http://www.ohiosci.org/YBSTEMSCapstoneProgram.pdf

http://www.ohiosci.org/YBSTEMSFinalEvaluation.pdf

http://www.ohiosci.org/YBSTEMSTeacherPD.pdf

Professional poster presentations (abstract above) were made internationally at Sigma Xi (Nov. 2009) and at The American Association for the Advancement of Science (Feb 2010):

http://www.ohiosci.org/SigmaXiPoster48x48.pdf