Junior Master Gardeners Impact on 4-H After-school Programs and 4-H Partnership toward the Scientific Future

The Situation
Youth interest in science has significantly dropped over the past 30 years. According to Business-Higher Education Forum Report, (January 2005) “The number of science and engineering degrees awarded to U.S. citizens is decreasing at a time when job growth in these fields is predicted.” As well, at a time when the demand for mathematics and science is at an all-time high, American elementary and secondary students are not achieving the level of skills and knowledge required for an internationally competitive scientific and technological workforce.

The lack of youth interest toward science is partly attributed to science perceived as a dull subject. According to Education Today (No. 11 Oct-Dec 2005), part of the blame for this perception can be the shortcomings of science curricula and textbooks, which often lead to rote learning and give no real understanding of concepts. This ends up with students becoming bored and developing a lasting aversion to science. One way to overcome this perception of science is for students to learn by doing. Learning by doing allows a student to learn by trial and error, practice hands-on involvement and become competent and capable. The 4-H philosophy of learn by doing fires enthusiasm for discovery from an early age that will be life long.

Our Response
“Learn by doing” is part of the Experiential Learning Model found in all 4-H cooperative curriculums. Students are encouraged to experience, share, process, generalize and then apply what they learn. Ada County 4-H fits nicely in a partnership to increase science enthusiasm by using several cooperative curriculums. Junior Master Gardeners (JMG) is a cooperative science based gardening curriculum that aims to ignite a passion for learning.

Ada County 4-H has been partners with Garfield Elementary School Recreation After-school Program (RAP) in the Boise School District, a homework based after-school program, since 2003. In the previous year an assortment of different activities were taught to students. This last school year, however, only science enrichment was taught once a week as a reward to 1st through 6th graders who had completed their homework. JMG curriculum and Wildlife JMG curriculum were used to provide hands on activities. Bureau of Land Management presentation on birds of prey and conservation at the 4-H Garfield RAP.
on science activities like learning about plants, animals, and their environment. Partner organizations, The Idaho Botanical Garden, Idaho Fish and Game and the Bureau of Land Management, also provided 4-H Garfield RAP with hands on and fun.

**Program Outcomes**
For the 2004-2005 school year the 4-H Garfield RAP had an average of 24 students per class. A total of 480 students were present at the program throughout the 2004-2005 year, with some repeat attendees. Parents indicated kids had fun and were surprised by the level of engagement. Observation by teachers, JMG facilitators, and student helpers suggest the following outcomes:

**Youth Life Skills Outcomes:**
- Youth learned to learn through letting their curiosity explore the different gardening activities by asking questions and experimenting.
- Youth lead themselves and others in gardening groups.
- Donated microscopes from Albertson College of Idaho empowered science skills learning.
- Youth demonstrated they could communicate with others, with the group leader, and fellow students.

**Other Youth Outcomes:**
- Positive changes in behavior toward the JMG Science Curriculum.
- Attendance numbers for voluntary participation remained constant, nearly capacity for the program.
- Students retained a knowledge of past lessons.
- Understanding and self exploration of the scientific method was demonstrated by the students.

**Summary**
RAP participants gain an enthusiasm and enjoyment of science from 4-H’s partnership with Garfield. “Learn by doing” activities enable youth to learn on their level, foster ownership in the learning process, and keeps activities fun and engaging. Youth are excited about each new project for the day and what next week’s project will be. During one lesson a 2nd grade boy exclaimed, “I want to be a scientist when I grow up.” Youth use the scientific method to explore their own curiosities about gardening. During another lesson, a group of girls began hypothesizing about what would happen if they tried different ideas and then put those hypotheses to the test.

The use of experiential gardening activities and partnering with other organizations to enrich the curriculum has increased youth passion toward science. Several teachers from Garfield commented on the children’s increased enthusiasm when partner organizations presented and were excited to get the same presentation into their classrooms to enrich their own curriculum. For the future of the 4-H Garfield RAP partnership, engaging other organizations to keep the material fresh, new and increasingly hands-on is important. With continual hands-on learning, youth enthusiasm and curiosity, science will continue throughout their lives.

**For More Information**
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