



# EVALUATING THE 4-H SCIENCE INITIATIVE:

*Early Findings and Recommendations*

# INTRODUCTION/OVERVIEW

## 4-H YESTERDAY, TODAY, AND TOMORROW

Since the 4-H Youth Development Program began in 1902, 4-H youth have been engaged in demonstration projects that bring innovation and understanding of land-grant college and university research to local communities. Understanding and appreciating the role of science, engineering, technology, and applied math is even more critical as the needs of our society and its workforce change. Now, more than ever, we must ensure that our nation's youth develop the necessary competencies and abilities for the United States to remain competitive in the 21st century.

Government, industry and community leaders' demand for increased emphasis on the mastery of science-related subjects cannot be overstated. Improving knowledge and the application of science, engineering, technology, and applied math is a growing priority as the global economy expands and workforce demands change. Furthermore, literacy in these subject areas is increasingly a prerequisite for active and informed citizenship and leadership.

The 4-H Youth Development Program infuses its hands-on approach to science, engineering, technology, and applied math learning with opportunities that help youth master life challenges, cultivate independence with guidance from caring adults, provide a sense of belonging within a positive group, and share their spirits of generosity toward others. Through 4-H Youth Development, youth gain leadership, citizenship and life skills that prepare them for success in the workplace as well as in their communities. Literacy in the 21st century means not only improving one's science, engineering, technology, and math abilities, but also the analytic, communication, interpersonal and self-directional life skills that young people develop in 4-H programs.

## 4-H SCIENCE

4-H Science programming, formerly called the 4-H Science, Engineering and Technology (SET) Initiative, is implemented by 109 Land-Grant Universities and Colleges (LGUs) in more than 3,000 counties as a part of the Cooperative Extension System. National leadership is provided by 4-H National Headquarters at the National Institute of Food and Agriculture, USDA, and National 4-H Council, which is the national

nonprofit partner of 4-H and the Cooperative Extension System. National 4-H Council focuses on fund raising, branding, communications, and legal and fiduciary support to 4-H programs. Through a partnership with the Noyce Foundation, National 4-H Council has contracted with Policy Studies Associates (PSA) to evaluate the implementation of the 4-H Science Initiative. As a result, we would like to share our insights and major lessons derived from the early stages of the implementation of our 4-H Science Initiative that we hope will allow us to build more quality and effective STEM programming.

## 4-H SCIENCE, A FUNDER'S PERSPECTIVE

### Ron Ottinger, Executive Director, Noyce Foundation

“ One of the organizations we fund is the National 4-H Council. They have the research and development capability to offer quality, informal science education at scale and can reach a very broad range of students—their network touches over six million young people. Many people think that they are still entirely focused on agriculture but their curriculum encompasses the environment, alternative energy sources, robotics, and so much more. And they are increasing the organization's capacity across the country to develop curricula, provide training to staff and volunteers, offer multi-media web resources, and engage in research and data collection. A good example is their partnership with U.S. First Robotics, which includes instruction and competition. ”

### Dr. Penny Noyce, Founding Member and Trustee of the Noyce Foundation

“ At the national 4-H science leadership conference I just attended, I met state and county agents from all over the country working on curriculum, professional development plans for their volunteers, evaluation, and fund development. Asked to say a few words about why the Noyce Foundation supports 4-H science, I referred to five key strengths of 4-H: Their visionary and distributed leadership; their firm principles of positive youth development; their willingness to partner with other youth and science organizations; their unrivaled reach and scale; and the incredible dedication of their staff and volunteers. ”



## METHODOLOGY

In 2007 through 2008, LGUs with extension offices that oversee 4-H programs completed Plans of Action, which outlined their plans for implementing 4-H Science programming over the next five years. These Plans of Action addressed seven areas of Implementation: program development and design, partnerships, professional development, curricula, evaluation and research, marketing and communications, and funding.

The **STATE IMPLEMENTATION SURVEY** was designed to collect a common core of data from all 56 LGUs who completed Plans of Action and intended to implement 4-H Science programs. This survey asked the 56 LGUs to report on their progress and to reflect on the usefulness of their Plans of Action. The National 4-H Science Leadership Team provided an outline of 4-H Science program requirements, called the 4-H Science Checklist, for universities to use as a guide in the development of 4-H Science programs. Programs that meet the requirements of the 4-H Science Checklist are defined as “4-H Science Ready.”

Of the 56 LGUs that completed Plans of Action, PSA received 42 State Implementation Surveys for a response rate of 75 percent.

## SUMMARY OF THE 4-H SCIENCE STATE IMPLEMENTATION SURVEY FINDINGS

### Partnerships

Seventy-one percent of responding LGUs reported having some type of partnership to support 4-H Science programming. The most prevalent types of partnerships reported were within respondents’ own LGUs and with nonprofit organizations (Exhibit ES1). The contributions that LGUs reported receiving most often from partner organizations included volunteers or mentors, help with recruiting participants; and programs, activities, or services for participants. School districts provided the most volunteers per LGU, followed by faith-based organizations and businesses.

### Staffing and Professional Development

The most commonly used format for professional development was “train-the-trainer.” Eighty-four percent of LGUs who provided 4-H Science professional development reported using the train-the-trainer format. Other commonly used professional development formats included implementation training, mentoring or coaching, and individual and guided development.

### Curriculum

In order to help programs implement 4-H Science programming, 73 percent of LGUs reported that they are currently identifying science curricula and sharing them with programs. In addition, 58 percent of LGUs currently offer training on specific 4-H Science curricula, and 58 percent offer training on 4-H Science content

areas. Forty-five percent of LGUs report identifying businesses, faculty and other community resources that programs can utilize to develop curricula.

### Evaluation

The most common approach for conducting evaluations was developing evaluation tools such as surveys, focus groups, or observations to assess 4-H Science programming. Forty percent of LGUs reported using these types of evaluation tools. Thirty-four percent are currently analyzing data from 4-H Science evaluations.

### Marketing and Communications

Many LGUs (81 percent) reported that they had success in marketing 4-H Science programming to local schools and requesting their involvement and support. In addition, 78 percent of LGUs reported that they are informing university faculty and students in science, engineering, technology and applied mathematics departments about 4-H Science and requesting their involvement.

### Funding

LGUs’ most common approaches to secure funding for 4-H Science programming were seeking private grants and seeking federal, state or local government funds. Seventy eight percent of LGU’s reported seeking private grants as well as government funding. In addition, 73 percent of LGUs reported soliciting funding or in-kind donations from businesses, and 50 percent of LGUs reported soliciting funding or in-kind donations from 4-H Friends and Alumni Association.

## EXHIBIT ES1 TYPES OF PARTNERSHIPS

Type of Organization	Percent of LGUs that have a partnership (n=30)
Departments within LGU	90
Non-profit organizations	90
School districts	87
Businesses	77
Other colleges or universities	60
National 4-H Science partners	60
Local government agencies	53
Federal gov. agencies other than USDA	50
Faith-based organizations	23
Media organizations	23
Other	10

Exhibit reads: Ninety percent of LGUs with partnerships reported having partnerships with their LGU’s departments.

## CHALLENGES OF LGUs' 4-H SCIENCE READY PROGRAMS

- LGUs staff lack resources and time to seek out partnerships.
- LGUs have limited funding and lack staff time and resources to implement 4-H Science curricula into programs.
- LGUs lack sufficient resources to pay staff to spend time on evaluation, and to train staff and volunteers to use evaluation tools.
- LGUs lack funding for professional development, especially for travel and staff time.
- LGUs lack funding, have limited staff time, and resources or the expertise to market 4-H Science programming.
- LGUs staff lack the time and/or resources to seek funding for 4-H Science programming, and staff also lack expertise in grant writing and seeking funding.

## CONCLUSION: LESSONS LEARNED

Among our findings, 4-H Science programming provides added value to both schools and communities to increase the number of students pursuing STEM fields in their academic studies and careers. According to LGUs responding to the surveys, many 4-H staff, volunteers, and partner organizations are enthusiastic about the 4-H Science initiative and agree that its goals are important.

As a result of the survey findings, National 4-H Leadership and LGUs have a greater understanding that it takes strong viable partnerships and collaborations, and an investment in staff training and funding to effectively implement science programming. This will be essential to impact and prepare our youth for today's world that is defined to an even greater degree by science, engineering, technology, and applied math.



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National 4-H Council works to advance the 4-H Youth Development movement, building a world in which youth and adults learn, grow, and work together as catalysts for positive change. National 4-H Council partners with the Cooperative Extension System of Land-Grant Universities and Colleges, 4-H National Headquarters at USDA, communities, and other organizations to provide technical support and training, develop curricula, create model programs, and promote positive youth development to fulfill its mission. National 4-H Council also manages National 4-H Youth Conference Center, a full-service conference facility, and National 4-H Supply Service, the authorized agent for items bearing the 4-H Name and Emblem. National 4-H Council is a non-profit 501(c)(3) organization. National 4-H Council is committed to a policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, sex, religion, religious creed, ancestry or national origin, age, veteran status, sexual orientation, marital status, disability, physical or mental disability. Mention or display of trademark, proprietary product, or firm in text or figures does not constitute an endorsement by National 4-H Council and does not imply approval to the exclusion of suitable products or firms. The 4-H Name and Emblem are protected by 18 USC 707. Produced by National 4-H Council Marketing and Communications Team. ©2010 NATIONAL 4-H COUNCIL