
A Multi-Tiered Approach to Evaluating a Nonformal Youth Development Program

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Abstract: It is essential for nonformal educational organizations to evaluate their programs and validate impact. However, despite recent pressures for accountability, nonformal settings often do not have shared assessment measures or expectations. Further, many nonformal programs are complex and encompass a broad range of educational settings and methods. Evaluation strategies must respond to a more learner-centered approach to education and be responsive to local needs, but they must also be designed with an appropriate level of methodological rigor. This paper describes the efforts of the National 4-H Science Initiative to develop and administer a multi-tiered evaluation that effectively documents impact through methods that reflect the unique needs and landscape of 4-H science programs.

Introduction

Recent trends in funding have elevated the importance of illustrating impact and accountability for nonformal educational programs (Huffman, Lawrenz, & Thomas, 2008; Isaacs, Macomber, Rennae & Steuerle, 2010). The use of effective evaluation in nonformal settings plays a critical role in documenting outcomes both, to inform decision-making and influence stakeholders (Clavijo, Fleming, Hoerman, Toal & Johnson, 2005). Now, more than ever, programs must validate their merit and justify their existence through evaluation evidence. Attention to sound methodology maximizes the influence of a program's evaluation and ultimately affects the value and impact of the results (Braverman & Arnold, 2008).

Despite pressures to comply with a gold-standard approach to evaluation, which is most commonly considered to be a highly rigorous experimental design, there are several factors that influence the selection of more appropriate and efficient methodologies for nonformal educational settings. Certainly, funding, time and burden to participants are considerations.

The ability to conduct certain methods and the culture of the organization also encourage a more flexible and creative approach to evaluation (Braverman & Arnold, 2008). Further, nonformal settings often do not have shared assessment measures or expectations and they encompass a broad range of educational settings and methods. Evaluation strategies must respond to a more learner-centered approach to education and be responsive to local needs (Clavijo et al., 2005).

In this paper, we address the approach we have taken with the National 4-H Science Evaluation to design and implement an evaluation strategy that documents impact and informs decisions regarding content and context. We will describe a three-tiered design that includes both formative and summative evaluation strategies. Finally, we will discuss challenges faced in the development and implementation of the design.

4-H Youth Development Organization

The 4-H youth development organization is a unique public-private partnership administered by the National Institute of Food and Agriculture within the United States Department of Agriculture and the nation's land-grant universities, and supported by a private, non-profit partner, National 4-H Council. More than 30,000 professional 4-H faculty and staff support over 500,000 adults serving as volunteers with the 4-H program across the country providing leadership to community clubs, school-enrichment programs, after-school programs, special interest activities, and day and resident camps

For more than 100 years, science has been a core mission of 4-H. 4-H Science programs, which are inclusive of science, engineering, technology, and applied mathematics, engage nearly five million youth annually in hands-on experiences that improve their knowledge and science skills in areas that are essential in the 21st century. In *Rising Above the Gathering Storm*,¹ the Committee on Prospering in the Global Economy of the 21st Century (2007) documented the urgent need to bolster the United States' competitiveness and pre-eminence in science and technology. The 4-H Science Initiative was formally launched to bring an intentional focus and framework to science and technology education for youth development programs nationwide.

The complexity and breadth of the National 4-H Science Initiative presented a need for an evaluation design that was tailored to the needs and culture of the 4-H organization. Unquestionably, methodological rigor was an important consideration in designing the three-tiered approach. It was also the evaluation design team's intent to ensure that the approach was reflective of current standards in the evaluation of nonformal educational programs.

Approaches to the Evaluation Design – The Three-Tiered Approach

The National 4-H Science Evaluation's three-tiered approach (see Figure 1) was created in 2007 by a multi-disciplinary design team that included evaluation and out-of-school time program experts and others with expertise in nonformal science education programming. Because of the relatively recent launch of the National 4-H Science initiative in 2004, the evaluation design team recommended a multi-tiered, staged approach to evaluation including formative and summative evaluation strategies.

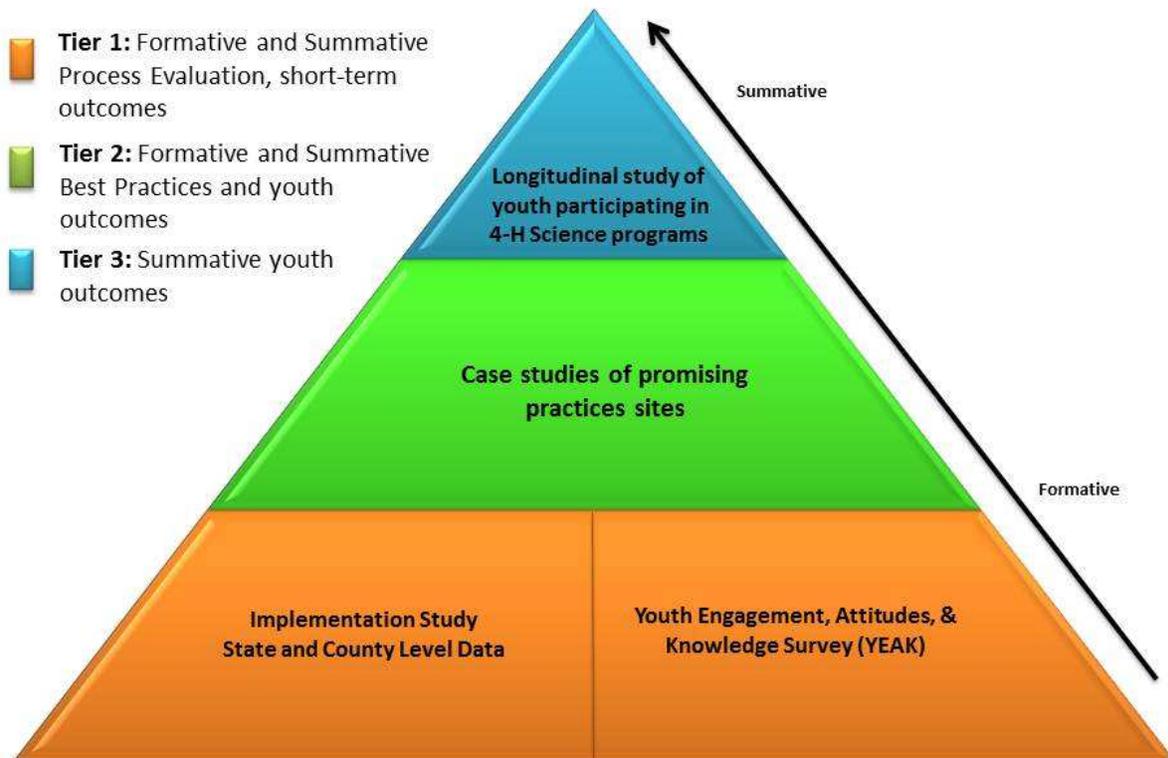
Tier One

The initial implementation stage, Tier 1, included a mixed methods survey with both closed and open ended questions and captured data from existing tracking systems to determine who is being reached in 4-H Science programs. This formative, multi-year evaluation was intended to better understand the scope of 4-H science programming around the country. This included how many youth were engaging in science programming and the nature of those programs. In addition, in order to be eligible for grants from National 4-H Council, the U.S. Department of Agriculture's private, non-profit national partner, state 4-H programs submitted Plans of Action which detailed the programs' plans for programming, professional development for staff, evaluation, and fundraising. Tier 1 also examined how these plans were put into operation and assessed the challenges that 4-H programs were facing in carrying out their plans.

Figure 1

Overview of the 4-H Science Evaluation Design

This illustrates the multi-tiered evaluation design of the National 4-H Science Initiative



Another important recommendation from the evaluation design team was to obtain a baseline and subsequent annual assessments of the "state of 4-H Science participants" including demographic data, youth attitudes toward science, their interest and engagement in science and career aspirations toward science related fields. These data are being collected annually through a survey administered to a stratified, random sample of 4-H youth in order to assess whether the national science initiative efforts are making an impact, in general, across the 4-H landscape.

Tier Two

The purpose of Tier 2, case studies of best and promising practices, is to offer a more in-depth opportunity to examine the combination of contextual factors (e.g., staff, volunteers, content, curricula, community) that contribute to successful nonformal science programming. Case studies are being selected through a nomination process for both high content and high context settings (Kress, 2007).

This approach is modeled after two studies that have examined the effectiveness of youth development programming in informal/nonformal settings (Vandell, Reisner & Pierce, 2007; Informal Learning and Science Afterschool Overview, 2011). The Study of Promising Afterschool Programs (Vandell et al., 2007; Vandell, Reisner, Brown, Pierce, Dadisman & Pechman, 2004) began with a set of over 200 programs culled from published information and expert nominations. These programs then went through a vetting and winnowing process resulting in a final set of 29 elementary and 28 middle school programs that were selected to participate in the study. Similarly, the Informal Learning and Science Afterschool (ILSA) Project used a nomination process to select promising program sites for their study (Dahlgren, Noam, & Larson, 2008).

Tier Three

The summative portion of the evaluation design will be completed in Tier Three. A longitudinal study of youth participating in 4-H Science programs is focused on examining the impacts of participation in nonformal educational programs on changes in youths' attitudes, behaviors, and education and career aspirations over time. It is proposed that this will be a quasi-experimental design using a matched comparison group of non-4-H participants. Tier Two sites may serve as sampling sites for participants in the longitudinal study.

Challenges

Because of the nature of 4-H's public-private partnership and its grass-roots philosophy, there are several challenges in designing a national evaluation that this three-tiered approach has attempted to address. First, it is essential that we attain buy-in and support from key partners and stakeholders throughout the 4-H system. This will be an on-going effort throughout the evaluation's duration. One important way in which we have accomplished this buy-in is by including land-grant university faculty on the evaluation design team. A second challenge has been to ascertain the way in which 4-H Science provides high quality youth development contexts for learning rich, standards-driven content (Kress, 2007). This includes an examination of overall program quality, such as interactions between volunteers and youth, youth engagement, and other important quality indicators. We are addressing this challenge through the Tier Two examination of high quality programs. Finally, given the scope and diversity of the 4-H organization, we have faced challenges in drawing a representative sample of 4-H Science program participants. We are addressing this challenge in the design's multi-tiered approach through a scan of the landscape of 4-H Science programs in participating state programs.

Conclusion

The complex nature of the 4-H organization and its National 4-H Science Initiative necessitates a creative, flexible and multi-method approach to evaluation. Because of the challenges outlined above as well as our focus on quality and impact, we designed a multi-tiered evaluation that combines qualitative and quantitative methods, engages key stakeholders, and reflects the culture of our organization. The scaffolding of the three tiers has enabled each phase of the evaluation to flow into the next. We are able to use the results from each phase to inform

subsequent phases. In addition, we are able to renew our emphasis on engaging our partners and stakeholders. In sum, this strategy has fit the needs of our organization and its complex approach toward youth development programming.

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