CS OPEN: Computer Science Outreach Program Evaluation Network

This report was funded and supported by Google's K-12 Evaluation Team, with administration and leadership from the National Girls Collaborative Project, evaluation capacity building by Kathy Haynie of Haynie Research and Evaluation, and substantial input from grantees.

Purpose of CS OPEN

With a desire to support the development of effective and equitable CS opportunities for girls and the acknowledgment that many nonprofits lack the evaluative capacity needed to ensure high quality programming, the Google K-12 Outreach team and the National Girls Collaborative Project (NGCP) developed the CS Outreach Program Evaluation Network (CS OPEN). CS OPEN was created to provide support to enhance the evaluative capacity of network grantees. It was announced at a July 9, 2015 event co-hosted by the Center for Gender Equity in Science and Technology and the White House Council on Women and Girls. CS OPEN is a project designed to improve opportunities and empower underserved girls through CS education by boosting select NGC programs' knowledge on exemplary practices in evaluating CS education initiatives. For the 2015-2016 pilot, Google--in partnership with Haynie Research and Evaluation--provided expertise and professional development to promote evaluation of CS education initiatives within the NGC network. The overall goal of the pilot was not only to enhance the programs participating, but also to inform the field of CS education. During the 2015-2016 time period, the twelve CS OPEN projects served a total of 3,183 participants, of which 1,649 were girls. The median number of female participants is 89; half of the CS OPEN projects served girls only.

12 CS OPEN projects

3,183 Participants

1,649 Girls

"An especially valuable tool for an organization relatively inexperienced in conducting program evaluations. It provided direction, asking questions that, when answered, provided a solid framework to utilize when building an evaluation plan."

— Regarding Evaluation Worksheet

Building Evaluation Capacity

Evaluation capacity for individuals and for groups can be built in terms of knowledge (e.g., evaluation concepts, the evaluation process, strengths and weaknesses of different evaluation strategies, IRB review and approval) and skills (e.g., developing a logic model, designing data collection instruments, analyzing qualitative data). The CS OPEN network was designed to meet the wide range of needs through professional development opportunities and individualized support. The CS OPEN project built evaluation capacity using a variety of strategies in line with Preskill & Doyle, 2008, including:

- The CS OPEN network community of practice
- Grantee involvement in their own evaluation process, including writing an evaluation plan, developing instruments, collecting data, analyzing data, and reporting
- Monthly videoconference meetings including topic-based training
- A web repository of online evaluation resources
- Individualized support and mentoring to help address specific needs

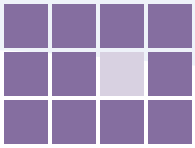
Non-profits' need to do evaluation to

1. understand what is working and what is not,
2. make adjustments to better serve their students and
3. prove to their funders their program efficacy in order to keep operating and/or grow.

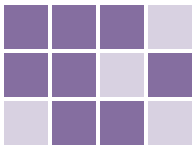
CS OPEN Project Evaluations

Project evaluations were conducted by each of the grantees and included the development and administration of a variety of data collection methods including survey, interview, observation, and content assessments.

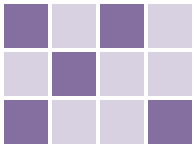
- Nearly all of the projects (11 of 12) used participant surveys. Of these, seven projects surveyed participants at two time points – typically, pre and post.
- Two-thirds of the project evaluations involved observations of camps, activities, workshops, club meetings, and/or classes.
- Five project evaluations used some type of content assessment, either paper and pencil, online, or embedded in a participant interview. Three of these were pre/post.
- Five of the evaluations involved interviews – typically of students and instructors. One project used only interviews – of six different stakeholder groups!
- Three of the project evaluations used focus groups of participants (and one included parent focus groups).



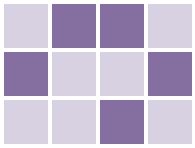
11 of 12 used participant surveys



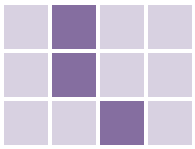
Two-thirds of the project evaluations involved observations



Five project evaluations used some type of content assessment



Five of the evaluations involved interviews



Three of the project evaluations used focus groups of participants

Increased Evaluation Capacity, Based on Self-Ratings

In August 2016, grantees rated the knowledge or skills level of their evaluation team at the proposal time (October 2015), and in August 2016. Some ratings reflect one person's capacity; other ratings reflect the combined skills of the evaluation team. Key gains include:

11 of 12 projects in logic modeling / writing an evaluation plan

9 projects in developing evaluation questions

6 projects in data collection methods and collecting reliable data

11 of 12 organizations moved from 'beginner' to 'intermediate' or 'expert' in at least one of the nine areas of evaluation

"It was helpful to learn I wasn't alone – there are a lot of people all over the United States doing this stuff. It was encouraging to me. The ideas and plans that everyone was doing. Different ideas, but at the end we all have the same goal."

— Regarding Monthly Community Meetings

Highlights on Powerful Learning Gains in Building Evaluation Capacity

Grantees were asked through survey, interview, and final report to describe their growth in evaluation capacity as associated with the CS OPEN initiative. Below are the skills or advancements that grantees self-reported as correlated with participation in the CS OPEN initiative:

- Streamlining evaluation tools across all programs
- Creating and developing better evaluation tools and instruments with more relatable context
- Empowering all staff
- Surveying schedule
- Moving beyond basic surveys
- Developing qualitative evaluation approaches
- Designing a framework and providing the support needed to shape the department
- Creating milestones and measures
- Transcribing data

"We were able to consult not only with local evaluators, but also with the CS-Open team and other awardees. Due to the similarities of several CS-Open projects, we were able to get ideas and receive feedback as part of our monthly meetings."

— Regarding CS OPEN as a valuable community of practice.

Major Successes of CS OPEN

- CS OPEN enabled five of the project evaluations to happen.
- CS OPEN enabled the expansion of six existing evaluation efforts.
- Most grantees (and their teams) aspire to become expert in evaluation.

Evaluation Findings on Engaging Girls in CS Education

- Tap girls' natural enthusiasm at young ages. Girls are interested and want to be engaged in CS.
- Consider best environments. Girls do well in all-girl settings. Physical activity can be integrated.
- Offer hands-on, exploratory activities. Use hands-on activities, not lectures. Make activities engaging and relevant.
- Provide support and encouragement. Provide help that is always available.
- Use longer delivery formats. More contact time can support stronger outcomes.
- Provide role models, a vision for future career. Linking CS to the real world is key.

Recommendations for Strengthening CS OPEN

1. Differentiate tools and support based on experience level.
2. Organize and focus the Community Meetings around specific themes, as well as create non-mandatory topic-specific training sessions.
3. Create working groups based on program characteristics.

Resources

Logic Model Development Guide. Michigan: WK Kellogg Foundation. 2004.

Preskill, H. & Boyle, S. (2008). A Multidisciplinary Model of Evaluation Capacity Building. *American Journal of Evaluation*. December 2008 vol. 29 no. 4 443-459.

Welsh, M. & Morariu, J. (2011). Evaluation Capacity Building: Funder Initiatives to Strengthen Grantee Evaluation Capacity and Practice. Innovation Network: www.innonet.org.

Zweben, S. 2010. Undergraduate CS enrollment continues rising; Doctoral production drops, 2008-2009. Taulbee report. *Computer Research News* 22, 3.