

The National Girls Collaborative Project: Building capacity through collaboration

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Abstract

The National Girls Collaborative Project (NGCP), funded by the National Science Foundation, aims to advance the agenda of gender equity in Science, Technology, Engineering and Mathematics (STEM). There is a startling lack of women in STEM professions, beginning as early as eighth grade when twice as many boys than girls show an interest in STEM careers (Commission on the Advancement of Women and Minorities in Science, Engineering, and Technology Development, 2005) and continuing to college, where women receive only 21% of Bachelor's degrees awarded in engineering, 27% in computer sciences, and 43% in physical sciences (National Science Board, 2006).

Numerous programs and initiatives to create gender equity in the areas of STEM have been implemented only to lose effectiveness or fade away. Often these projects did not address sustainability as resources declined, personnel changed, or priorities shifted when original objectives were achieved. In other cases, STEM-related projects have had limited impact due to factors such as size, location and mission. Had these programs had the benefit of collaboration with other girl-serving projects, organizations and institutions, their capacity for continuation and/or broader impact could have been substantially increased.

NGCP is designed to bring organizations together to compare needs and resources, share information and to plan strategically to expand STEM-related opportunities for girls. Collaboration, as an interactive process, enables professionals across projects and communities to generate and carry out creative solutions and strategies that maximize benefit beyond that which one project or community could accomplish alone.

The potential benefits of collaboration include easier and coherent access to services, resources and the possibility of greater and longer lasting impact on targeted systems. Furthermore, they are diverse. Loan-Clarke & Preston (2002, as cited in Caniglia, n.d.) describe several benefits.

- *Collaboration can ensure more effective use of individual talents and resources.* In general, collaboration offers the possibility of multiple entities coming together to work towards a common goal. It is often the case that no single organization possesses all the knowledge, skills, and techniques required to most effectively accomplish that common

goal. The current situation of representation of girls in STEM may be an indicator that such a talent and/or resource deficit exists in individual STEM girl-serving organizations. While it is possible that an organization might be able to learn or acquire all the techniques and resources needed to solve a particular problem, it seems both unlikely and also very costly in terms of time and other resources. In contrast, when organizations collaborate, it is more likely that, when they combine their resources and skills, they will possess what is needed to effectively address the problem.

- *Collaboration may be a source of stimulation and creativity.* When individuals and organizations with similar goals work together, there are natural opportunities for the discussion of ideas and for these ideas to cross-fertilize and be adapted for improvement, or for the spin-off of new ideas that grow from the old. Individual organizations may or may not be staffed sufficiently to promote this sort of creativity—yet combining multiple organizations may help to achieve this outcome.
- *Collaboration extends the individual organization's networks.* An implicit outcome of the above is that by connecting previously unconnected organizations, all organizations have a broader network from which to draw upon for future needs. An individual organization may have contacts with 10 other like-minded who can be contacted for information or advice. By collaborating with others, the network can be extended and further productivity enabled.
- *Collaboration enhances dissemination of results.* With this extended network, the opportunities for disseminating results are increased. In the area of girls in STEM, this is particularly important as the need to know, both what activities are currently available and what is working, is necessary if we are to further increase the representation of girls in STEM fields.
- *Collaboration can build organizational empowerment* (Wolff, 2001). A last, but very important potential benefit of collaboration, is the potential for individuals to be more empowered, or more confident overall due to their increased connectivity with like-minded organizations. This sense of empowerment can improve the organization's ability to respond to new challenges, and to new opportunities. (Wolff, 2001).

Many coalitions and collaborative projects have achieved these types of outcomes when addressing complex societal issues (Jackson & Clark, 1996). Research suggests that coalition building assists in carrying out the educational plan: broadening the development of new audiences, reporting the results of member activities through media, and improving the educator's capacity for providing information to citizens, interest groups, and policy-makers.

NGCP model

NGCP develops regional collaboratives across the country to help girl-serving organizations, education, and business work together to leverage resources, provide more opportunities for girls and young women in STEM, and to have a larger voice when advocating for gender equity in STEM.

In 2002, the Puget Sound Center for Teaching, Learning and Technology implemented the Northwest Girls Collaborative Project (NWGCP) in Washington and Oregon to address the

complex issue of gender equity in STEM fields. In 2004, NSF funded the National Girls Collaborative Project (NGCP). The purpose of the NGCP was to increase the capacity, impact, and sustainability of existing and evolving girl-serving STEM projects and programs by replication of the NWGCP model in three states: California, Massachusetts, and Wisconsin.

In August 2006, the National Science Foundation funded a process for extending and focusing of the NGCP model. Using the American Association of University Women (AAUW) regional framework to organize oversight and support, this project implements and disseminates the strategies from the successful collaboration structure previously developed via the NWGCP and NGCP. The expanded NGCP utilizes the leadership and expertise of additional partners, Assessing Women and Men in Engineering (AWE), and the Educational Development Center (EDC), to disseminate research-based promising practices to further advance the work of existing and evolving girl-serving projects and also to provide a forum to share results among practitioners and researchers.

The goals of NGCP are to:

- **Maximize access to shared resources within projects and with public and private sector organizations and institutions interested in expanding girls' participation in STEM.**
- **Strengthen capacity of existing and evolving projects by sharing best practice research and program models, outcomes and products.**
- **Use the leverage of a network or collaboration of individual girl-serving STEM programs to create the tipping point for gender equity in STEM.**

The model implements the following design elements that bring the players together into a collaborative network.

1. Identification of Collaborative Partners: The National Leadership works to create the individual "regional collaboratives" by identifying organizations that demonstrate "collaboration readiness". These organizations must have a history of local collaboration and be able to integrate participation in NGCP into existing organization activities and utilize existing organization staff. Typically, these organizations are seeking a leadership role in their communities and welcome the resources and tools the NGCP provides to further this goal. Once identified, the national leadership and the AAUW liaisons provide training and mentoring of these regional collaborative participants in how to create STEM-related collaborations and assist these collaborative networks in creating action plans which utilize research-based promising practices in the areas of informal learning and evaluation and assessment. AAUW regional liaisons provide support to regional collaboratives through a connection to AAUW and other regional efforts to improve opportunities for girls in STEM. By the end of the five-year project, the project should support regional collaboratives that cover all states in the U.S. as well as Puerto Rico.
2. Dissemination and Outreach: In partnership with regional and professional organizations, the NGCP leadership team works to document and promote coordination and collaboration among girl-serving STEM programs throughout the United States and

Puerto Rico by implementing an on-going communication system linking these organizations. There are several tools used to promote this communication including webcasts, the NGCP newsletter, and the NGCP Program Directory. The Program Directory lists organizations and programs that focus on motivating girls to pursue careers in STEM. The purpose of this Directory is to help organizations and individuals network, share resources, and collaborate on STEM-related projects for girls.

3. Collaboration Support: Regional collaboratives offer mini-grants of \$1000 or less to girl-serving STEM-focused programs as an incentive to collaborate and to assist in informal STEM-focused learning projects as well as assessment and evaluation activities.
4. Research Evaluation: Conduct evaluation of the NGCP to determine effectiveness of collaboration and the impact of collaboration and implementation of STEM research-based promising practices at national, regional, and local levels.

The combination of these design elements produces a model that addresses the need to reduce isolation and increase collaboration by bringing people together in person and online, providing professional development and incentives (mini-grants) for collaboration, providing and creating an online ‘community’ for those doing this work, and connecting girl-serving organizations with each other, education and business to have a greater impact on services and possibly policy (‘a bigger voice’).

Results

Six regional collaborative have been established since the beginning of the NWGCP. All of these are still operating. Four additional collaboratives will be in operation by March 2008.

Collaboration formally occurs within regional collaboratives at in-person events, online via the Program Directory and webcasts, and by participation in mini-grant projects. This paper focuses on the webcasts and mini-grant projects as venues to facilitate collaboration and strengthen the capacity of existing girl-serving STEM programs.

The online program directory is fundamental to the success of regional collaborative and individual mini grants’ ability to find collaborative partners and sustain them. This directory was first created in 2001 with approximately 185 entries; the current directory has grown both in functionality and size with over 500 entries and increased administrative functions. One hundred and ten mini-grants have been awarded since 2004 totaling \$100,000. Mini-grants require two organizations to collaborate in order to receive funds, resulting in involvement from more than 200 organizations in these projects so far. Each collaborative will be awarding additional mini-grants throughout 2008.

One of the earliest results from these collaborative projects came from the mini-grants funded in the NWGCP. The NWGCP awarded 25 mini-grants of a maximum of \$1000 each to organizations that collaborated on a project serving girls in STEM. The mini-grant projects varied in size and scope, including a summer Lego Robotics camp for underserved girls, an inquiry-based science class for underachieving high school girls, a trip for rural girls to visit Boeing and the Museum of Flight, and an after-school program for middle school girls focused on marine science.

Of the twenty-five mini-grants awarded, ten mini-grant recipients completed a pre-report and thirteen recipients completed the post-report. The pre-survey was completed before projects began and asked mini-grantees about their collaborations and project goals. The post-survey asked mini-grantees about the projects, their experiences with the collaborations and the projects, and project outcomes. Our results summary here focuses on the mini-grant recipients reports of impact on collaboration.

- Many mini-grantees started a *new* collaboration because of their funding from NWGCP. For those who did not previously know each other, the NWGCP provided the opportunity to meet each other and guidance to develop a mini-grant application and project.
- As evidenced by the following quotation, for collaborators who already knew each other, the NWGCP mini-grant provided the momentum to develop a specific project together.

“The NWGCP got me moving forward on the project and collaborating with others. Without the grant my project wouldn’t have gone past the idea stage and I wouldn’t have thought about collaborating.”

- Mini-grants exemplified the benefit of shared collaborative resources. Grantees reported consistently that they were able to provide more and/or higher quality programming or services as a result of the collaboration. Many mentioned the benefits of two organizations with different skills and resources working together.
- The sustainability of the collaborations varied. Nine mini-grantees reported that their collaborations will continue, and five of these stated that the collaborations would be expanding. For example, one program developed a working relationship with a female engineer at Boeing that will continue in the future. Three recipients were hopeful that their collaboration would continue, but were not sure, and one recipient stated that the collaboration would not really continue, but the relationship would.
- The mini-grantees recognized the value of the collaborations. Mini-grantees expressed that the mini-grant really motivated them to collaborate in a new way or with a new organization. The mini-grants also motivated organizations to put into action an idea that they had not acted on previously. Mini-grantees also stated that the grants provided support (both financial and other) to carry out the project. An additional benefit for some organizations was that the mini-grantees motivated and allowed them to leverage resources for a larger project.

A recent report from the South Central Girls Collaborative project (SCGCP)—an NSF funded regional replication of the NGCP—also provides support for the effectiveness of mini-grants in supporting and growing collaboration. Although the SCGCP mini-grantees reported some challenges due to the distance between collaborative partners, almost all of the mini-grant participants that reported evaluation data indicated that the collaboration between the mini-grant partners would continue, in some form—whether it was with the same mini-grant project, or starting something new.

Another venue for collaboration through NGCP is participation in monthly webcasts. These webcasts are sponsored by either NGCP or partner organization EDC. NGCP uses the webcast format to reach a larger audience than that served by regional collaboratives (since there is no geographic constraint). By introducing a larger audience to NGCP and its resources, the Program Directory in particular, collaboration opportunities for girl-serving STEM organizations across the country are increased. To date, five webcasts have taken place, focusing on the following topics: Developing assessment based outreach activities; Effective strategies for working with girls in STEM; Tools for collaboration success; and Issues of language and media related to gender in science. Participation rates have ranged based on topic, reaching over 100 participants. Webcast participants are asked to complete an online evaluation survey following each webcast. Respondents have rated the webcasts positively, stating they enjoyed the webcasts, the content was relevant to their work and they plan to apply what they learned. Webcast evaluation results are presented in Table 1.

	Mean
Overall, I enjoyed the webcast.	4.29
Connecting to the online portion of the webcast was an easy process.	4.43
Connecting to the audio portion was an easy process.	4.49
Speakers presented the content clearly and effectively.	4.51
The content was relevant to my work.	4.43
I plan to apply what I learned from the webcast.	4.29
I hope to participate in future NGCP webcasts.	4.51

Scale where 1 = Strongly Disagree and 5 = Strongly Agree

Table 1. NGCP webcast evaluation data

Each NGCP webcast is archived on the NGCP website and accessible to anyone after the webcast has occurred. It is the result of NGCP's collaboration with other organizations that best practices and resources are provided via webcasts to interested parties across the country. These resources are aimed to help strengthen girl-serving STEM programs' capacity to collaborate and to infuse research based strategies into their work. For example, partner organization AWE conducted the webcast focused on developing assessment based outreach activities. AWE is able to provide content expertise in the field of assessment and NGCP is able to provide the venue for disseminating the information, benefitting the field of girl-serving organizations working to better assess their programs.

Conclusion

Gladwell (2000) describes the tipping point concept as the point at which small, targeted strategies or activities that happen unsystematically become widespread, causing a cultural shift that drives systemic and inherent change. The key is knowing how to apply the appropriate leverage and influence to make a bigger difference. A goal of the NGCP is to use the leverage of a collaboration of girl-serving STEM programs to create the tipping point for gender equity in STEM. Through a variety of strategies focused on facilitating collaboration and strengthening

the capacities of existing girl-serving STEM programs, the NGCP collaborative model has shown promising results working toward this goal.

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