Executive Summary

of 2016-2017 Evaluation Findings Regarding Techbridge Broad Implementation from Greater Seattle and Washington, DC

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Background

Techbridge's mission is to help girls discover a passion for science, engineering, and technology (SET). In August 2013, Techbridge was awarded a five-year National Science Foundation grant to scale up its afterschool program from the San Francisco Bay Area to multiple new locations around the United States. Techbridge began offering afterschool programming at elementary and middle schools in Greater Seattle in 2014, and in Washington, DC in 2015.

Education Development Center is conducting the formative and summative evaluation of the project. To assess the implementation and impact of the expansion effort during the fourth year of the grant (2016-2017), qualitative and quantitative data were collected from a variety of stakeholders, including girls who participated in the new programs and non-participating comparison students from the same schools; the parents or guardians of Techbridge students; role models who visited the programs and/or hosted Techbridge field trips at their companies; Techbridge teachers and principals; district representatives; and Techbridge staff. The evaluation team also conducted observations of selected programs.

Techbridge had a positive influence on girls' knowledge of, and interest in science, engineering and technology.

- ✓ **The Techbridge expansion sites successfully enrolled girls from underrepresented groups** (low-income, racially diverse, and first generation to college). Additionally, participation at the middle school level increased from the previous year. Several teachers said that it had become easier to attract girls to the program now that Techbridge was more established in their school, and some middle school teachers said that they had successfully recruited girls who had attended a Techbridge program in elementary school.
  - 🔍 However, retention continued to be a challenge for the nine-month program, particularly due to competing clubs and sports.

- ✓ **Girls gave the Techbridge programs in Greater Seattle and Washington, DC high marks:** 96% gave Techbridge an "A" or "B." Girls felt comfortable, supported, and appropriately challenged. They valued the opportunity to design and build, the ability to learn with their peers, and the opportunities to meet SET role models and visit SET workplaces.

- ✓ **Techbridge's hands-on activities gave girls opportunities to become more confident in themselves and their abilities in SET.** Although post-survey ratings showed a small decline in girls' perceived abilities to do well in science and technology activities, general gains in confidence were consistently noted by girls, teachers and families. Girls reported that Techbridge's supportive, collaborative environment helped increase their confidence to try new things, including in SET. Teachers and families described gains in girls' overall self-confidence, especially in taking a leadership role.

- ✓ **Techbridge helped girls understand various career options in SET and the pathways toward these careers.** Techbridge girls made greater gains than comparison girls in their self-reported knowledge of what people who have SET jobs do as well as the kinds of classes you need to take to have a career in SET.

- ✓ **As in previous years, the program appeared to have an especially strong influence on girls' understanding of practices and process commonly used in SET**, such as the engineering design process. At the end of the year, Techbridge girls were significantly more likely than comparison students to report they understood and used SET practices ($p < .05$).

- ✓ **Girls were somewhat more likely to say they were considering a career in SET after participating in Techbridge,** although the increases were not as large as the previous year. The total percentage of Techbridge girls who listed at least one SET-related career among their top three choices increased from 41% at the beginning of the year to 49% following participation in the program, while the percentage of comparison students who did so remained unchanged. The field trips and role model visits piqued many girls' interest in SET careers, exposing them to careers they did not know existed and helping them envision themselves doing that work.

- ✓ **After participating in Techbridge, girls were more likely to believe that someone like them could work in engineering or technology.** Many girls said they felt a sense of belonging in Techbridge, and that Techbridge facilitators played a large role in developing these positive relationships. Additionally, exposure to role models who shared a similar background helped the girls see themselves in a SET profession.

- ✓ **Techbridge helped girls become better problem-solvers and to persevere in the face of obstacles.** Techbridge participants were more likely than comparison students to ascribe to statements suggesting they have a growth mindset, such as understanding that intelligence is malleable. Techbridge's emphasis on the engineering design cycle provides opportunities for girls to problem-solve, struggle, and not give up.

Techbridge teachers and school administrators were very satisfied with the program.

- ✓ **Teachers rated the training and support they received from Techbridge highly**, especially the initial training during the summer before the program began and the debrief meetings with their Techbridge Program Coordinator.

- ✓ **Teachers were very satisfied with the level of leadership and decision making they had in their Techbridge program,** though the role of teacher varied widely from program to program (or day to day). Teachers were generally content and appreciative of the opportunity to serve as a "supporting" teacher to the Techbridge Program Coordinator at the end of a full school day. Teachers were often responsible for helping recruit girls, maintaining attendance, and classroom management as well as supporting the learning activity.

- ✓ **Techbridge teachers were impacted by their involvement in the program,** especially in their interest in engaging girls in SET and their knowledge of strategies to engage girls in SET.

- ✓ **Principals praised the benefits of having Techbridge in their school**. Techbridge intentionally selected schools that were committed to SET and equity and principals were appreciative of the opportunities provided by Techbridge for their students.

Role models visits and field trips were highlights of the program.

- ✓ **Role models were well-prepared for their interactions with Techbridge participants:** 93% of role models agreed they were more confident in conducting outreach due to Techbridge. All but one role model agreed that serving as a Techbridge role model was worthwhile.

- ✓ **Teachers and girls rated role model visits and especially the field trips highly**, naming benefits to students such as exposure and inspiration regarding SET career opportunities.

Parents praised the program.

- ✓ **More than 95% of parents agreed that, because of Techbridge, they were more aware of SET activities** their daughter can participate in, and have encouraged their daughter to participate in more SET activities. According to girls, the majority of their parents already supported their interests in SET prior to their involvement in Techbridge. However, some Techbridge girls reported that their families became more supportive of their interests in SET.

The Techbridge expansion sites implemented the Techbridge program model with a high level of fidelity.

- ✓ Along with using the hands-on activities from the Techbridge curriculum, **the expansion programs used strategies that are part of the Techbridge model**, including consistently emphasizing the engineering design process, fostering positive relationships, and promoting a growth mindset.

- ✓ Programs made more connections between the activities and students' lives than in the previous year and were also more likely to talk about gender inequities in SET and how to address them.

  🔍 Programs showed room for growth in providing opportunities for reflection.

Techbridge experienced another year of growth and internal changes, and is poised to launch a new model for serving elementary school girls.

- ✓ The expansion has stretched Techbridge's infrastructure. Staff at headquarters and expansion sites have been identifying and responding to gaps in communication and systems.

- ✓ Techbridge expansion site staff appreciate the efforts leadership made to communicate with them during this past year, leading them to feel more connected to the organization as a whole than in the previous year.

  🔍 In general, expansion site staff would like even more communication and involvement (as much as possible) in major organizational decisions (e.g., the decision to suspend the high school model, changes in staff positions).

2016-2017 was another year of changes and staff transitions for Techbridge which have created opportunities and placed stresses on Techbridge's internal systems. Two important decisions have put a revised plan in place for 2017-2018. First, Techbridge will not expand to a third geographic location as originally planned in this AISL grant, and instead will focus on strengthening the expansion sites and central systems. Secondly,

Techbridge decided to change its elementary school model to one that could potentially reach more girls while requiring less Techbridge staff time. The majority of current elementary school teachers and school leaders were cautiously optimistic about the new Inspire model, although some were concerned it may be harder to recruit and retain teachers and/or that the new program will not have as much impact on girls. Techbridge is poised to maintain the momentum of the program and build on previous successes, including taking advantage of lessons learned over two or three years of implementation in each site with now more experienced staff and teachers, supportive schools, and committed role models.