

5th grader

Be A Scientist Project Year End Evaluation Report

Education Development Center Inc./Center for Children and Technology
Naomi Hupert
July, 2014

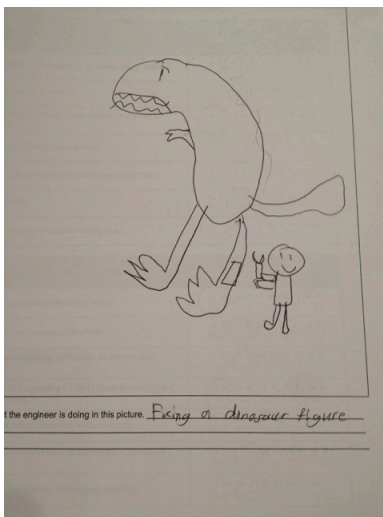
Introduction

The Center for Children and Technology (CCT) at Education Development Center, Inc., an international nonprofit research and development organization (cct.edc.org), conducted the formative evaluation of the fourth year of the Be A Scientist! (BAS) project. This project, managed by Iridescent—a nonprofit afterschool science, technology, engineering, and mathematics (STEM) program (www.iridescentlearning.org), has the goal of providing high-quality afterschool science and engineering courses to underserved families in New York City and Los Angeles. The project aims to enable participants to develop a deeper understanding of scientific practice through interaction with innovative and educational STEM activities. In the Spring of 2014, the program targeted elementary school-aged children and their families, though siblings and family members of all ages were welcome to attend.

CCT researchers used the following research questions to guide this year's formative evaluation:

1. Is the development and implementation of project materials, recruitment strategies, training, and course activities well designed and integrated into the project's goals?
2. How do participants experience the project?

The evaluation team also gathered preliminary evidence of the impact of the project on families, undergraduate engineering students, and project partners (e.g., universities, museums). Based on all evidence collected during the evaluation to date, the team also developed programmatic and strategic recommendations for the improvement of the project.



5th grader

Data Collection

CCT researchers employed a multi-method research approach to data collection. Data collection activities included the following:

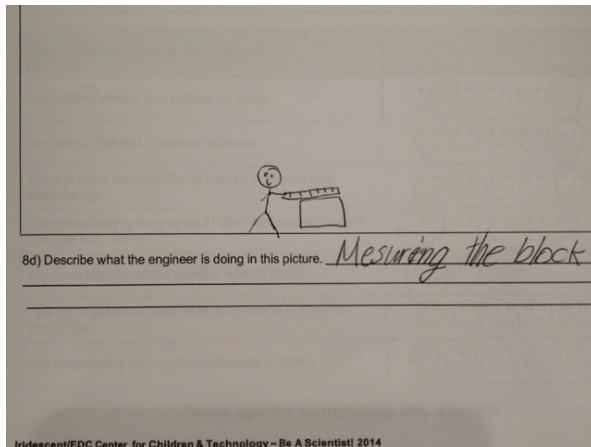
1. Family Science Observation: observations conducted by researchers during Family Science events in multiple Los Angeles sites and a single New York City site
2. Informal Parent Interview/Questions: Opportunistic interviews conducted by researchers during Family Science sessions with parents who were either recommended by Family Science staff, or who were available to talk during a Family Science session. Parents were asked about their thoughts on the program, why they chose to attend how they learned about it, and what kinds of science activities they did at home.
3. Parent Survey: A paper survey delivered during the final week of the Family Science session to parents. Spanish and English versions were available, and were distributed and collected by BAS staff. Parents were asked to rate different statements about STEM activities and careers, were asked to indicate the frequency of STEM activities they engage in at home, as well as other questions about their BAS experiences.
4. Student Survey: A paper survey delivered during the final week of the Family Science session to students. Spanish and English versions were available and were distributed and collected by BAS staff. Because many participating children were too young to complete the survey independently parents often helped. Children were asked about their attendance at Family Science, who brought them, were asked to draw a picture of construction project, and of an engineer, and were asked to rate a series of statements about STEM and about the program.
5. Engineers as Teachers (EasT) Student Survey: An online survey asked EasT students about their past teaching experience, their majors, and their past teaching experiences and their thoughts about teaching and engineering.

CCT researchers reviewed relevant project documents (e.g., meeting notes, videos, course syllabi, descriptions of new program components, student work), and held meetings with the project's staff. The majority of data were collected during two site visits. On visit to Los Angeles included attendance at several Family Science events, and meetings and interviews with BAS staff and EasT students. A second included a visit to the New York Hall of Science to observe the Family Science event there and to interview the two New York EasT students. In addition, Iridescent staff distributed and collected parent and student surveys, and EasT students participated in group interviews.

Data Collection Challenges:

There were several challenges to data collection throughout evaluation activities. While project staff and participants were available and interested in supporting all evaluation

activities, the range of ages among child participants, different levels of engagement and English proficiency among parents, and informal nature of the Family Science sessions, made completion of the parent and child surveys somewhat variable. In many cases parents clearly completed surveys for their young children, this was evident in the quality of writing and information provided. In many cases children did not appear to read or respond individually to the rating scale questions, and often simply checked Agreed for all items. In many instances parents appeared to do this as well. Because of these issues the survey findings may not accurately represent children's or parents' experiences during the Family Science events.



5th grader

Findings

Student Survey Responses

In total, we received 134 surveys from students, the majority of whom participated in the complete five week programs, while 19 from students at Western Avenue Elementary only completed 4 weeks.

We received completed surveys from students at the following BAS program schools:

- Western Avenue (19)
- Frank Del Olmo (18)
- Norwood Elementary (18)
- Synergy Charter (14)
- 32nd Street Elementary (12)
- Quincy Jones Elementary School (11)
- Betty Plasencia Elementary School (7)
- Vermont Elementary (5)

The remaining respondents attended 13 different schools in the area including:

- Alexandria Avenue Elementary School
- Berntwood Elementary School
- Downtown Value School
- John Mack
- John Marshal High School
- Justin Elementary School
- Logen Street School
- Magnolia Place
- Richard Merkin Middle School
- South Region Elementary
- The Accelerated School
- Virgil Middle School
- West Adams Preparatory High School

For the purposes of analysis, we only looked at the surveys from students who completed the full five weeks (n=119). Of those, 63 were male and 71 were female. 78% of the students were between 6 and 10 years old, 13% were between 1 and 5 years old, and 9% were 11 or older. More than half of students came to the program with their mother or another family member or multiple family members (see Table 1), and nearly 60% of students had attended a prior Family Science program (see Tables 2 and 3).

Table 1: Student Survey: Who Brought You? (n= 119)

Mom	54%
Mom and another family member	12%
Dad	4%
Other (grandmother, aunt, other family member)	15%
Relationship of adult to child not clear	14%

Table 2: Student Survey: Have you attended a prior Family Science Event? (n=119)

Yes	57%
No	43%

Table 3: Student Survey: If you have, how many have you attended? (n=70)

One Family Science Event	61%
Two Family Science Events	14%
Three Family Science Events	16%
Four Family Science Events	4%

Students attending the family science program expressed a strong interest in science topics and hands on activities. Participants' survey responses suggest that the Be A Scientist program did not so much draw them into subjects and activities that they were previously uninterested in, as provide a space for them to pursue existing interests with high quality scaffolding in a supportive environment. For example, many students

agreed with statements about science activities such as watching science related shows, visiting science museums, and building things (see Table 4 below).

Table 4: Student Survey: Circle the choice that most truthfully tells how you feel about that statement. (n=119)

	Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Disagree
I like to watch television programs or movies about science.	75%	11%	10%	2%	2%
I like studying science in school.	76%	17%	3%	1%	3%
I like to visit zoos, museums, nature centers and parks to observe things.	83%	14%	2%	0%	1%
I like to ask a lot of questions in school.	69%	13%	13%	2%	3%
I like to touch different things to learn more about them.	75%	16%	6%	1%	2%
I like to build things.	85%	11%	3%	0	1
I think I would be a good scientist or engineer.	67%	21%	7%	3%	2%

- Percentages have been rounded and as a result may not equal 100%.

Parent Experience

We gathered evidence regarding parent experiences in the Be A Scientist program in two ways. Parents were given surveys to fill out on their own at the final Family Science session they attended, and during visits to three different Family Science sessions, evaluators asked parents (in some cases one parent of a child, in others both parents) a series of questions about their own and their children’s experiences. In some instances a translator assisted during parent interviews. In total, nine parents were interviewed, and 126 parents completed the Parent Survey, 68% of whom spoke Spanish as their primary language at home, 29% of whom spoke English primarily, and 3% of whom spoke another language.

Most of the parents we spoke with were repeat attendees to Family Science. Five families had come three times, one family had come for the fourth time, one family had come all of last year and three times this year, and two families had been coming for three or four years. While this sample included more returning families than the overall program included, close to half of all families responding to the Parent Survey indicated that they have participated in at least one prior Family Science event (see Tables 5 and 6 below).

Table 5: Parent Survey Question: Have you attended Family Science before? (n=124)

Yes	48%
-----	-----

No	52%
----	-----

Table 6: Parent Survey Question: If yes, when? (n=59)

Spring 2012	51%
Fall 2012	37%
Spring 2013	75%
Fall 2013	19%

During interviews, one of the first questions we asked parents was why they decided to attend Family Science. We received a range of responses, but in general, parents said that they believed it was important to expose their children to science, and were interested in learning about new things they could try with them. Their children either like to build and do small engineering projects on their own, or have expressed some interest in science before, and this encouraged parents to try the program. Some had heard positive things about the program from family or friends.

When asked about how they liked the program, parents universally had positive things to say, and all but one would recommend it to their friends. They found the science and engineering information interesting, and the activities engaging. One mother explained that her daughter has learned new vocabulary, and the program helped her come up with an idea for a school science project. Another parent appreciated that her children were learning about science careers.

The parents, most of whom primarily spoke Spanish, appreciated that the presentations were bilingual. One mother said, "I like spending time with my daughters, seeing how their minds work and how they challenge themselves." Another mother really hoped that her daughter would end up in a science career one day, and she felt this program was a good way to support that.

Based on survey responses, the parents who attended Family Science tended to be parents who have an interest in science and take an active role in their children's lives and education. When asked if they like to visit zoos, science museums, nature centers, science fairs, etc. 91% of parents agreed or strongly agreed. 76% agreed or strongly agreed with the statement "I like to talk about science topics with friends and family." 90% of parents also reported never missing a parent teacher conference, and 70% reported never missing a PTA meeting.

Differences between returning and first time parents:

Repeating and first-time parents responded similarly to survey questions. Returning and first-time attendee parents reported similar levels of talking about science with friends and family, and attending PTA meetings. However, parents who had participated in at least one prior Family Science experience were more likely to report doing STEM activities like reading science books, talking about science, watching science shows and visiting science museums daily than did parents who were new to the program. And fewer returning parents reported never doing these activities than did parents who

were new to the program. Returning parents were also more likely do three of the four activities in Table 7 more frequently than were new parents. For example, only 31% of first time parents reported talking about science either daily or one time a week, as compared with 49% of returning parents. These findings do suggest a trend toward increased science-related activities among families who participate in the Family Science program, they must be interpreted with caution. Families choosing to return to Family Science events are a self-selected group and may not represent typical families with children enrolled in the program’s schools.

Table 7: Parent Survey: Mark the box that most truthfully tells how often you do the following with your child/children, with responses from all parents, and from those participating for the first time and returning.

Respondents	Never – all			A few times a year - all			At least once a month - all			At least once a week - all			Daily - all		
	Never – all	First time	Returning	First time	Returning	First time	Returning	First time	Returning	First time	Returning	First time	Returning	First time	Returning
Read Science Books	7%	9%	5%	32%	28%	18%	28%	25%	29%	21%	25%	14%	11%	9%	11%
Talk about science	7%	8%	5%	22%	18%	20%	29%	35%	17%	28%	25%	29%	14%	6%	20%
Watch science shows	5%	8%	2%	18%	17%	14%	25%	23%	22%	34%	30%	37%	14%	8%	17%
Go to zoos, science museums, nature centers, science fairs	0%	0%	0%	51%	52%	49%	35%	31%	39%	8%	9%	7%	6%	3%	8%

While parents were consistently enthusiastic about Family Science and its activities, the ones we spoke with were divided as to whether the program had inspired them to do science activities at homes. Some parents told us that if they were unable to finish a project during the Family Science session, they’d try to complete it later. One mother explained that her family has always done little science and design projects for fun, but Family Science had given them some new ideas. Other parents tried to change the projects, using different materials at home or altering the design.

Other parents, however, said they didn’t do any science projects at home. Two of the families simply felt they didn’t have time to do any projects at home. Between the other after school programs the children participate in, and their schoolwork, there was barely enough time in the day as it is. One father explained that he thought they might do projects at home some time in the future, but for now they didn’t want to simply repeat the projects, and didn’t know how to alter them.

All the parents we spoke to told us that the primary challenge to participating in Family Science is time constraints. It seemed typical that both parents work and both the children participating in Family Science and their siblings participate in multiple after school programs. When asked what she would change about the program, one parent answered, “Maybe a more convenient time...but I can’t think of what a better time would be.” This sentiment seemed common. Parents felt like the day or time of the program was less than ideal, but also could not think of when a better day or time would be – they simply have very busy schedules.

A few parents, however, told us about challenges other than time constraints. One parent was unable to get her child to the program by the start time because she was unable to leave work early, and then she and her child were confused for the rest of the program because they missed the introduction to the activity. She wished one of the EastT students could take some time to explain what she had missed. Another mother has daughters of very different ages and said it can be hard to help all three on their projects. She wished they all just worked on one project together. Finally, one parent wanted more challenging projects.

Engineering Student Experiences

Engineering student (EastT) teachers in Los Angeles were all enrolled at the University of Southern California and 21 responded to an online survey in the spring of 2014 that asked questions about their background and experience with the BAS project. Fifty seven% of the EastT students were seniors, 19% were juniors, and 24% were sophomores. Almost all the EastT students came from the engineering department, but their majors varied. Most were mechanical engineers, some were in biomedical or aerospace programs, and one student was pre-medicine. EastT students completed an online survey, participated in in-person interviews, and were observed leading Family Science sessions.

Table 8: USC-based Engineering (EastT) student majors (n=21).

Mechanical	Biomedical	Aerospace	Pre-Medicine
76%	10%	10%	4%

The racial diversity was as follows:

Table 9: USC-based EastT student ethnicity (n=21).

White	Asian	Latin/Hispanic	Other
57%	23%	10%	10%

In New York, one teacher came from Fordham University, and one came from Cooper Union.

EastT teachers had a range of reasons for taking participating in the Family Science program, from the practical to the idealistic.

"The opportunity to work with children and help inspire the next generation"

"I really enjoy working with children and giving back to the community. I wanted to become an engineer because of the projects that I did with my dad when I was a kid and I wanted to give the same opportunity to underprivileged children so they might gain the love for math and science that I have."

"Looked like a fun, easy course to balance the much more serious engineering curriculum."

"I have never taught before and I wanted to try it out."

"It sounded fun and interesting. And I was greatly influenced as a child by inspiring science educators. It would be nice to help pay that forward."

East students' hopes for what they'd gain from the class had a similarly broad range. Some were primarily concerned with personal gain, while others were focused on helping others.

"I hope to learn more about teaching and the community, especially what might be lacking in the school system that may deter kids from choosing careers in science."

"Good grade."

"Broadened communication skills and a chance to help inspire a few more young people in the same way I was inspired at their age."

"I want to ultimately get better at public speaking and be more approachable."

"I am hoping to spark the children's interest in engineering and encourage them to work hard in school. I want the children to walk away with new confidence know that they were able to complete the engineering challenges. I would also like to improve my public speaking skills."

The group was split between those who had any teaching experience, and those who did not. Only 6 of the 22 students East students had ever taught science. In other areas of the class, East students had a mix of experiences that prepared them well for the class, but also left some holes in their experience. Ninety percent of the participants had worked in teams to complete engineering or science projects, and this likely prepared them well for their instructional teams. Conversely, 16 students reported they had never done any public speaking on engineering topics before participating in this program. Eighteen respondents also said they had never created science content for non-engineers before joining the BAS project.

Impact

Overall, the BAS project has met its program goals. During the 2013-2014 school year, BAS staff and partners successfully completed the following tasks:

- Supported the implementation of the Family Science courses
- Recruited underserved families
- Trained undergraduate engineering students
- Refined key program components and reflected on best practices
- Maintained partnerships with the University of Southern California, Fordham University, Cooper Union, the New York Hall of Science, and the Natural History Museum of Los Angeles
- Ensured dinner was provided for all participants at each session as a way to support regular attendance
- Monitored families' attendance at each site systematically

In the spring of 2014, the Be A Scientist program included a total of 9 (8 in Los Angeles and 1 in New York City) sites in both New York City and Los Angeles. Teams of EastT facilitated sessions where children and their parents were able to collaboratively develop solutions to design challenges, building, testing, and redesigning their creations. A significant number of families were regular visitors, returning to program sessions each week. Project partners continued to play an important role in the project, both by providing a location and access to children and families, and by providing support through access to engineering students, or resources to support the development of a comprehensive website that includes video stories about family experiences with the BAS program.

While researchers will not systematically look for changes in participants until next year, multiple interviews and observations indicate that the program is enjoyed by both family participants and EastT students. One EastT student said, "[I]t's been a really positive experience, children were extremely enthusiastic, more than I thought they would be." Another EastT student explained, "Everyone finds it fun. It's rewarding, and as a last semester class, it's nice to be reminded why engineering is fun."

We asked parents about how they thought the program was affecting their children, and they told us that their children were more likely to talk about science, and do science activities at home. "I think they ask more questions, for example they always wonder how things work, they didn't ask questions before even if they had them, and didn't feel safe explaining things because they were worried of being wrong, not afraid

of that anymore,” one mother told us. Parents expressed a perception that both they and their children are learning about science.

When asked about what they’d gained from the program, students had a number of positive things to say. 85% of participants either agreed or strongly agreed with the idea that participating in the program helped them understand science and engineering better. 92% agreed or strongly agreed that participation increased their interest in science in school. Iridescent staff and EasT students all expressed that teaching students about the design and re-design process, and helping them practice persistence were major goals for the program, and 87% of participants said the program made them “more likely to keep trying if I don’t figure something out after the first attempt.” Similarly, 97% of respondents said that they were more excited about doing challenging activities.

While most EasT students began the program with little or no experience teaching science and engineering to a lay audience, by the end, they had become quite confident at both tasks. 86% reported they either agreed or strongly agreed with the statement, “I feel proficient teaching complex science ideas to a non-scientist audience.” Similarly, 90% of the students agreed or strongly agreed with the statement, “I feel proficient working with children,” and 95% with “I feel proficient working with professionals outside my normal class schedule.”

Many of these students talked about how they benefitted personally from this experience, citing practice with public speaking, explaining scientific concepts in non scientific language, working collaboratively, tackling a design challenge, and finding the experience of working with children and families to be more rewarding than expected.

Program Progress

Successful educational projects improve each year by studying past experiences in order to bolster what was successful and change what was ineffective. Iridescent staff members have been committed to such a process with the BAS project. Despite staff turnover each year, the project has undergone gradual iterations and has worked to implement recommendations from prior evaluation reports. Because of this, the Be A Scientist program has improved in a number of ways from year 3 to 4.

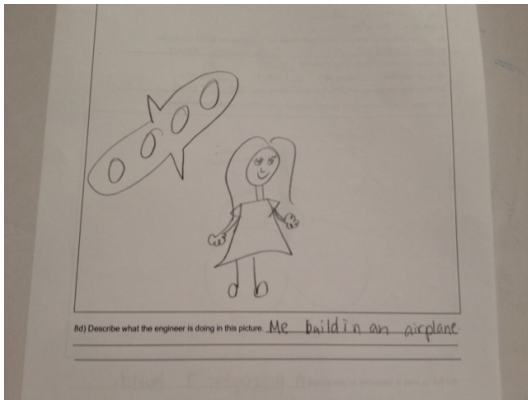
The Natural History Museum’s implementation model, in particular, progressed significantly this year. Initially, the NHM program tried to use EasT students to facilitate sessions, as they do in schools. There were some problems with this, however. The museum wanted all the engineering design challenges to relate to biomechanics, but the EasT students struggled to adjust the engineering lessons they wanted to teach to fit with the museum’s content needs. This year, the museum hired EasT student alumni who had prior experience with developing challenges that were engaging and accessible to children. This allowed them to adapt these challenges to match the resources of the

museum and to engage children in relevant activities that would connect to museum exhibitions. Additionally, the museum has involved some of its research scientist, including a paleontologist who helped develop some of the bio-mechanics content. East student alum were then able to take this content and develop design challenges for it.

Outside of the museum, Iridescent staff feel that their relationship with school administration and teachers has improved. Initially, the Iridescent staff had expected that schools within the LAUSD system would be fairly homogenous, but in fact each one had different needs and requirements. This recognition has made coordinating sessions, getting resources from schools, and recruiting much easier. Coming to understand these differences has been a significant improvement for the program. Iridescent staff also improved their communication with schools about what they would provide and what was expected of the schools. Some schools have volunteered to provide food or drinks, and this has been a cost-savings for Iridescent. For schools that are particularly excited about the program, Iridescent has offered more resources and PD for staff if the schools agree to take on more responsibility for the program. Thus far, two schools have agreed to this new arrangement.

Additionally, the EastT students themselves make progress each year. At the program's first session, the teachers are generally uncomfortable talking with parents, presenting, and answering questions. As the sessions continue, however, they grow more comfortable mixing with the families, explaining difficult concepts, and helping students find their own solutions to challenges. Integrating returning EastT students with new students helps build on past knowledge and experience with developing effective design challenges, and those EastT student teams with a returning program alum were often more confident in their tasks and design challenge development than were groups without an alum to provide guidance.

Iridescent also continues to work with USC faculty to develop a recruitment video to show parents and others interested in the program. The video's purpose was to make the program seem less intimidating to prospective participants, and explain some of its benefits. Considering that many of the potential BAS program participants do not speak English as their first language, a video can be a particularly useful recruitment tool. A video was also produced to recruit EastT students and help them understand what sessions really looks like.



4th grader

Recommendations

Family Recruitment and Retention

- Parents can be included in the program and given more responsibility without being burdened. Within any session, there are a number of tasks like handing out food or distributing materials that EastT students currently handle, but could instead be performed by parents. This would reduce the workload for EastT students and increase parent investment in the program without placing excessive demands on their time.
- The fact that parents primarily speak Spanish while EastT students primarily speak English is a challenge. Having translators present is a big help, but EastT students rely heavily on Powerpoint presentations and these can be a comprehension barrier. During observations we saw slides that were text heavy and included confusing visuals. Clear, simple slide design that emphasizes visuals rather than text could go a long way to improving comprehension.

EastT student Training and Support

- EastT students would benefit from more structure in the training class. A number of students felt like the topics of the class did not build on each other, but rather felt scattered, and expectations for assignments and due dates were not consistently communicated. Additionally, a number of students wanted instruction on classroom management techniques and practice working with translators before starting to make their presentations.
- EastT students would like opportunities to learn from their classmates once they begin teaching. Once the EastT students begin teaching, they only talk to their teammates, but they would like to be able to share experiences with and learn from classmates outside their teams.

- Transportation can be a challenge for students. EasT students requested clearer communication about transportation expectations, and possibly some facilitation of ridesharing.
- EasT student groups would benefit from having a designated team leader to keep everyone on track. These could be returning EasT students who understand how the program works.
- In the current program structure, EasT student teams all invent their own class activities with little reference to what past teams have done. Consequently, teams frequently duplicate similar design challenges (gliders, boats, etc.) using different materials or themes. Instead, there could be a repository of past projects that were particularly successful that EasT students could use as references for future projects. EasT students could draw on these past successes, iterate them, or branch out to develop design challenges around new topics.

Program Scaling

One of the main interests of Iridescent staff is how to reduce the resource and personnel needs of the BAS program in order to make it more scalable. While this is an understandable goal, the program in its current iteration has a number of benefits that should be examined before considering any changes.

First, there is significant value in giving elementary students and their families from low-income communities exposure to college-age engineering students. The Family Science programs often provide a first exposure to young adults pursuing science careers. In one session, we observed Family Science teachers introduce themselves, state their specific major within engineering, and explain what career they plan to pursue using their degree and why they chose it. This introduction gave participants the chance to learn a little more about what opportunities are connected to STEM subjects and made the purpose of STEM education more concrete. While the Family Science program could still provide value to participants if it were led by parent volunteers or professionals working in the field, there is something unique about having the class taught by college students. This is particularly relevant when the EasT students are ethnically diverse as the elementary students included in the program are predominantly non-white and for many English is their second language.

The program also has great value for EasT students. By participating in the BAS program, these students practiced skills that they often do not have the opportunity to develop in other engineering classes, but are valued in the workplace. Working in groups, learning to communicate engineering concepts to non-engineers, connecting with a community, and tackling a design challenge that has specific requirements such as cost and materials constraints. Again, while the program does not have to be facilitated by engineering students, these students add a unique value to the experience for children and their families.

Another way to think about program scaling would be families doing more science activities at home. Even if a greater number of families wasn't reached, deepening the existing families' connection to science would be an improvement. One family who said they currently don't do science at home explained that this was because they couldn't think of how to alter the design challenges, and didn't want to repeat activities they'd already done. Perhaps if EasT students were reusing some activities that had been successful in previous years, they could spend time thinking about variations or extension activities that families could do at home.

Partnerships

For the BAS program, Iridescent has partners that primarily help implement the program, and partners that primarily conduct research around the project. University of Southern California is a research partner that has been following a group of three families since they participated in program's first year. Two other families who were involved the first year, but dropped off along the way may return for the program's final year. Another research group is studying videos of BAS family sessions and trying to code them for student engagement.

Collaboration with museum partners has also gone well, but certain considerations could be made for future implementation. In LA, the Natural History Museum has been supportive of the program, but because of their content focus, the program has not always been an easy fit. This year, the museum chose to focus their program around the theme of biomechanics. While this has been a successful way to connect engineering concepts with the museum's core content focus, they are not sure of other ways to connect STEM lessons to biology. Iridescent might want to make a decision soon about whether to couple the program more closely to partner museum content, or to shift away from partnering with museums and towards running the program exclusively in schools.

Conclusion and Next Steps

The BAS program has filled a significant gap in young children's learning, particularly for children living in communities where careers in STEM fields are uncommon. Teachers at partner schools, and Iridescent staff, often commented that for many participants, these Family Science events are the only times when these children and their families come into contact with someone working in the sciences or a STEM field. This experience can not be underestimated for many of the families who return for multiple Family Science seasons.

The experience for EasT students is also a powerful one because it provides these students with a chance to share their interest in a STEM field with others, and it also provides them with an opportunity to step out of their academic environment and view their field from a very different perspective. The challenge of trying to make complex

scientific information understandable to a young audience is difficult and can be frustrating, but when done well it can be very rewarding and can also help consolidate understanding for the EastT students. While the program is focused on providing STEM experiences for young children, EastT students appear to be benefitting as much from the experience as their young students.

While this evaluation has documented the program's activities, and collected predominantly qualitative data about program impact on children, parents and EastT students, there are more questions that can be asked about how the program is integrated into young children's thinking about themselves, STEM activities, and their experiences in and out of learning environments. We suggest that a plan for year 4 activities include a more focused examination of the program on a small sample of participants including both elementary students and EastT students. This focus will include conducting observations and interviews, and also focus groups with a subset of project participants. In addition, a revised pre and post survey for EastT students can be administered to provide context for interview and observation findings. We also suggest working with one or more schools to explore the possibility of sharing data about student engagement in science activities among those who are and are not participating in the BAS program.

Evaluators will work closely with Iridescent staff to develop a comprehensive plan for program evaluation for the coming year, and will work to insure that timing of the Family Science program and evaluation activities are well synchronized.