



K-8 Learning by Design Chapter Grant Project Report

2017-2018

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Executive summary

Architects use the power of design to solve problems, transform lives, and create a better world. However, research has shown that the field is missing input from segments of society, in particular underserved and underrepresented communities. With the support of the Armstrong World Industries Foundation, The American Institute of Architects (AIA) is working to change this narrative across the country through K–8 Learning by Design Chapter Grants.

In 2015, the AIA Board passed Resolution 15-1: Equity in Architecture, which resulted in the formation of the Committee on Equity in Architecture. The commission—a 20-person panel of leading architects, educators, and diversity experts—released the 2016 Equity, Diversity, and Inclusion Report, which focuses on five areas for insuring a more diverse future in the architecture profession:

- Leadership development;
- Firm/workplace/studio culture;
- Excellence in architecture;
- Education and career development; and
- Marketing, branding, public awareness, and outreach.

AIA aims to increase visibility of the architecture profession and design-thinking process among K–12 students through hands-on programming. AIA chapters engage children and their families through educational experiences that introduce them to the profession in all communities, especially those that are underserved. These grant-funded programs also include developing architecture and design-thinking curricula (project- and problem-based), training educators in design thinking, and a plan to enlist architects to engage in communities to conduct architecture and design education programming.

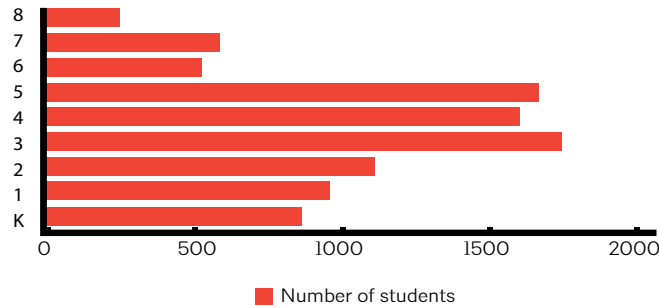
The project has its primary target audience as students grades K–8 in underserved (at-risk or in-need) communities and/or underrepresented in the field of architecture. Funding in 2017 from Armstrong World Industries Foundation provided an opportunity to launch the project administered by the AIA Member & Component Services department. The project was announced to the Council of Architectural Component Executives (CACE) in February 2017 via a listserv posting. A formal announcement was made at the AIA's Grassroots 2017 conference in March 2017, with a deadline for final submission in April 2017. Chapters submitted a total of 24 completed applications, of which 18 were selected by a jury of five volunteers with backgrounds in education, architecture, and philanthropy.

Data

Number of students

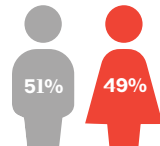
Each of the chapters continued or developed new partnerships with schools, educators, and communities to deliver hands-on opportunities with architects to students. These partnerships engaged 9,280 students in architecture activities by July 2018.

Students per grade

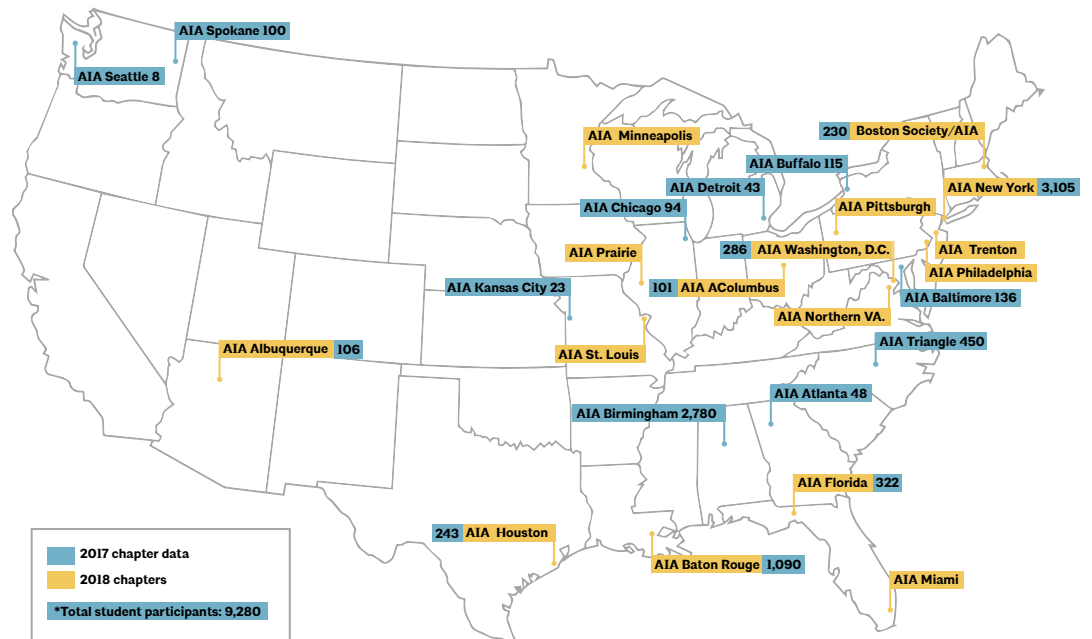


Student demographics

- Student makeup was 51 percent male and 49 percent female.

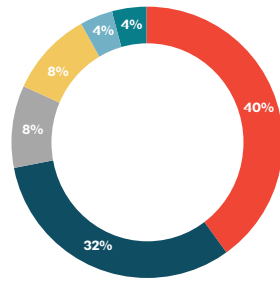


- 11 chapters served a population that consisted of at least 51 percent students of color.
- two chapters had 100 percent participation from students of color.
- five chapters served student populations of color of between 21-50 percent.



Engagement types

AIA encouraged chapters to form partnerships with local schools and educational organizations in an effort to raise awareness of the architecture profession and bring education about the built environment to the broadest possible audience of students. These partnerships provided many chapters with an opportunity to offer more than one type of engagement. Chapters primarily engaged with classroom educators by providing architecture projects and activities to supplement the academic curriculum offered by the school. The second-largest program delivery type was out of school time (after-school and summer camps), which provided students and architects more time to engage with each other about the profession and the importance of architecture to the community—a model that also facilitated more in-depth exposure to the design-thinking process. Community engagement involved local school fairs, city fair activities, and community events in which chapters provided students with hands-on experiences of architecture. Lastly was engagement with educators, either by developing an architecture workbook or through educator workshops, to encourage using architects as resources in everyday curriculum activities.



| Total types of engagements offered (n=25) | |
|---|----|
| In-school | 10 |
| After-school | 8 |
| Summer camp | 2 |
| Community engagement | 2 |
| Competition | 1 |
| Workbook | 1 |
| Educator workshop | 1 |

AIA chapters

AIA currently has approximately 220 chapters in the United States and seven international chapters. The K–8 Learning by Design Chapter Grant supported and expanded the work of 18 AIA chapters. This work focused on increasing engagement with students, communities, and educators, particularly in communities of underrepresented and underserved students in architecture.

Chicago, Illinois

AIA Chicago was awarded a grant to support its Architects in Schools (AIS) program. The initiative focused on bringing AIA Chicago members into Chicago-area classrooms to introduce middle-school students to the field of architecture and discuss the broader theme of architecture as a change-maker. AIA Chicago volunteers worked with over 90 students, encouraging them to critically analyze their neighborhood for opportunities to create positive change and utilizing architecture as a means for implementing solutions. Through hands-on tasks and projects, students were introduced to design-thinking skills, taught how to communicate their ideas, and encouraged to be thoughtful about planning and designing in their own environments/neighborhoods. Students of color comprised about 90 percent of the participants.

Birmingham, Alabama

AIA Birmingham developed dreamArchitecture, an annual art competition that since 1995 has encouraged children to think about architecture and the built environment. Each fall AIA Birmingham and the Alabama Center for Architecture (ACFA) sends a packet of information to every art teacher in the Birmingham, Huntsville, and Mobile areas. The packet contains information about the dreamArchitecture program, how they can participate, and an invitation to a teacher workshop. The Architecture 101 workshop teaches the educators how to effectively engage students with the yearly theme of the dreamArchitecture program. Taking their knowledge back to the classroom, the teachers then work with their students to develop artwork for the program theme and submit it to a jury in each community comprised of architects and the workshop artist. Classes whose entries are selected are invited to an awards ceremony, where they are honored for their designs and creativity. Almost 3,000 students participated in this year's dreamArchitecture program.

Detroit, Michigan

Through a robust 10-week curriculum, Architecture Building Communities: DETROIT (ABC:D) engages K–6 children with AIA Detroit members who serve as volunteer mentors. The program serves up to 50 K–6 students from the Center for Success (CFS) through its after-school program. Participating students visit a community in Detroit that is currently undergoing, or scheduled to undergo, planning and design work resulting in community-driven neighborhood framework plans; create their own design proposals for the community; and present their ideas to a panel of invited community members, AIA Detroit leaders, professionals from architecture and planning, and public officials. Ninety-five percent of students in the program are African-Americans who fall below the federal poverty line.

Albuquerque, New Mexico

By pairing architects with educators, AIA Albuquerque's K–8 Architecture & Design Program inserts design thinking directly into the classroom for a sustained time period. The participating 12–15 AIA Albuquerque members and K–5 teachers at the Mark Twain Elementary School in Albuquerque together attend two professional development workshops

where they partner in teams of two to undertake 10 design projects which they will teach in their assigned classroom. Teachers help educate architects on how to integrate design thinking into the common core of science, technology, engineering, the arts (architecture), and mathematics (STEAM), and the architects provide teachers with insights that elevate design discussions in the classroom. The purposes and goals of the program are to install a proven architecture and design education program created by the School Zone Institute, a 501-c-3 nonprofit partnering with AIA Albuquerque and Mark Twain Elementary School.

Spokane, Washington

The goal of AIA Spokane's Box City initiative is to establish an early appreciation of architecture and the built environment by engaging students in STEM discussions and generating ideas. Students are coached through a series of design approaches, from drawing and sketching to model-making, to create an edifice of their own imagining. The students begin with guided exercises with AIA Spokane volunteers in sketching and drawing at various scales. This introduces them to the concepts of scale and proportion, while encouraging an iterative attitude towards design work. During this process, students must conform to rules governing setbacks and similar zoning requirements for their imagined city. They learn that these guidelines are not impediments, but rather opportunities to adjust their design to fit a certain canvas. The rest of the program is dedicated to assisted-building sessions. Students receive sheets of foam core and access to markers, Popsicle sticks, glue, and other essential crafting supplies. They are also encouraged to bring in other materials, such as cardboard and colored construction paper. At the end of the building period (approximately five sessions), students get to display their buildings as part of large city blocks in the city created by the volunteers. This city is displayed for two weeks at a major downtown Spokane shopping center. Students have the opportunity to bring their friends and parents to see the projects, and to talk to their volunteer mentors about the completed whole.

Seattle, Washington

AIA Seattle's Architects in Schools Program is designed to expose K–8 students of underrepresented racial, ethnic, and gender backgrounds to architecture and engage them in the design process. The objective is for the youth to gain understanding of design basics through hands-on experiences and discussions. Program leader Marijana Cvenček, AIA, established a collaboration between AIA Seattle's Diversity Roundtable (DRT), St. Edward School, and the University of Washington. The weekly one-hour program works with 20 female 8th graders, of which some are ethnic minorities. The curriculum for the pilot is divided into four- to six-week quarterly sessions. The sessions engage students with the basics of the design process and architectural drawings, followed by taking a project from concept through design, learning SketchUp, and concluding with a public presentation. The strategy is to develop students' problem-solving and computer skills as well as to help with math and artistic development. St. Edwards School is located in Columbia City, one of the Seattle metropolitan area's most diverse neighborhoods in terms of ethnicity as well as income. Because the professional volunteer members of the AIA Seattle DRT committee are themselves from these targeted backgrounds, their presence helps open the door of architecture as a potential career choice by introducing the students to professionals with whom they can identify.

Boston, Massachusetts

The Boston Society of Architects (BSA) Foundation's We Design Together program directly complements a Boston School Department kindergarten unit called Construction. This program will bring architects into classrooms to work with students on the Our Boston phase of the unit. In Our Boston, children begin to use the design process to analyze, research, and offer possible solutions to challenges they see facing their city. The goals of the program include: raising awareness and appreciation of architecture and design of children who may have never heard of it; allowing architects to teach their unique skill sets (design thinking and collaboration); and helping Boston Public Schools (BPS) meet its goal of introducing students at an early age to community members representing multiple life opportunities. During the 2017–18 school year, We Design Together was piloted in classrooms throughout Boston. The pilot objectives include producing a curriculum developed with BPS teachers as well as materials and a training program for architects. Additionally, the BSA Foundation will coordinate classroom visits, and support visiting architects.

Buffalo, New York

The Architecture + Education (A+E) program utilizes architectural concepts as a multidisciplinary form of active learning in elementary classrooms within Buffalo Public Schools (BPS). To date the program has involved over 3,500 BPS students in 115 classrooms at 25 different schools, and engaged 117 volunteer architects from firms around the Buffalo area. Over the course of three months, the classroom teams bring together architectural principles that coincide with a common core subject being taught in a complementary manner. The A+E program includes a daylong symposium for the teaching teams, in which participants explore architectural principles and concepts through a series of lessons and activities. Following the symposium eight to 10 in-class sessions are taught by architects and university students where they lead classroom discussions about the profession and how it relates to the topic the students are focusing on in the classroom. During each class the architect teaches a short lesson and the students complete an activity related to the lesson and overall project. All activities are hands-on and encourage students to creatively explore the task. Each week is built off the previous one so that at the conclusion of the in-class sessions the students have produced tangible projects that show their progress. Lessons that extend beyond the classroom walls include field trips on which children explore architectural sites around Buffalo, expeditions that strengthen and provide unforgettable examples of what they learn in the classroom. The culmination of each program is an exhibit of the students' work at a local art gallery located close to the subway line so as to be accessible for all the participants' families. It is imperative that that every project from every student be displayed in a gallery setting, which typically includes over 400 pieces. The exhibit is well-attended by the students, their families, and community leaders from across the region as well as the teachers and superintendent of schools.

Florida

The overall goal of AIA Florida's Architecture in Education program is to introduce fourth- and fifth-grade students, teachers, and families to the concepts of architecture and design, and its very real impact on communities. It is anticipated that the Architecture in Education statewide initiative will continue its successful programming in conjunction with AIA components throughout Florida, with the ultimate goal of hosting programs in all Florida school districts. AIA Florida has partnered with the Florida Foundation for Architecture,

a 501(c)3 organization with a mission to advocate for the value of architecture to the public, and it is working towards an endorsement by the Florida Association of School Administrators to bring the program to school principals and administrators statewide. Architecture in Education would not be possible without the support of the many volunteers—both AIA members and AIA associate members—who have lent their time and expertise to teaching more than 550 children since 2015. With almost 75 volunteers, this program appeals to members who have an interest in making a difference—not only in the lives of children, but also their parents and teachers, by providing lessons for understanding and protecting our built environment. The program has the potential to serve all 67 counties in Florida through AIA components. Programs include Tallahassee, Tampa, and Sarasota, with additional programs in Tampa, Palm Beach, Melbourne, and Fernandina Beach, and with interest from Miami.

Atlanta, Georgia

D-ARCH: Public Library Edition design workshops represent a dynamic partnership between AIA Atlanta, the Department of Architecture at Kennesaw State University (KSU), and the Cobb County Library System to offer the innovative design education of the D-ARCH program in underserved communities of Cobb County, Georgia. A recipient of numerous awards, the AIA Atlanta D-ARCH program has provided high-quality design education to over 500 elementary school students in the Atlanta Public Schools through the volunteer work of 350 AIA Atlanta volunteers. In 2014, AIA Atlanta volunteers in the program developed a book based on the dynamic curriculum, called D-ARCH. Applying the institutional knowledge of the D-ARCH after-school program from AIA Atlanta, the KSU volunteers, with the venue and the communications network of the Cobb County Library System, 40 elementary and middle school students in Georgia's third-most-populous county, received awe-inspiring design education during the summer of 2017 at four local public libraries.

Baltimore, Maryland

AIA Baltimore's Future Architects Resources (FAR) Committee promotes collaboration among professionals and educators (middle and secondary schools, universities, and community colleges) towards the education of future architects and enlightened citizens about the built environment. FAR programs for elementary and middle school students include the Adopt-A-School programs wherein AIA architecture firms, along with Baltimore City Public Schools, adopt a school to forge a sustained relationship to provide outreach, design education, and mentorship for individual schools and students. Six firms currently participate with six adopted Baltimore City public and public charter elementary and middle schools located in disadvantaged and primarily minority communities.

Baton Rouge, Louisiana

AIA Baton Rouge's Building Blocks: If Kids Ruled the City is an interactive experience in which children ages 7–12, their parents, and siblings—aided by architects and construction professionals—get to build a small-scale version of their ideal city. This educational event introduces children and their families to the importance of planning, designing, and applying smart growth principles in community development. The free event reaches out to children of all ages, with a particular focus on elementary-age children, to educate them about the possibilities in their future and encourage them to participate in the broader environment

in which they live. The program is free and open to the public on one Saturday in March and in October from 10 a.m.–2 p.m. at the Louisiana State Museum and the Columbia Theater, respectively. With the assistance of additional funding, the school system is also pairing Building Blocks with teachers in the classrooms and incorporating it into the class curriculum in multiple subjects, from social studies and English language arts as well as math and science. By creating kits and partnerships with teachers, volunteers bring architecture and design to children who can't attend the off-site events. This provides a safe and fun environment that exposes otherwise underserved populations to career possibilities they may never have considered.

Columbus, Ohio

Camp Architecture was launched in 2010, based upon an earlier successful program developed by AIA Columbus architect, Marcia Rees Conrad, AIA, and started in a handful of central Ohio elementary schools. Based upon Conrad's programming ideas, the first weeklong camp session (grades 3–8) held at The Center for Architecture and Design was a success, with 20 campers. Three years later, AIA Columbus added the High School Design Studio for grades 9–12. In 2014, due to growth, the camp moved to the Knowlton School of Architecture on The Ohio State University campus, which is centrally located in Columbus and easily accessible to students throughout the city. In 2016 approximately 100 campers attended Camp Architecture and High School Design Studio over a two-week period. In 2017 the camp was expanded to three weeks. During each weekly daylong camp session, campers are exposed to architecture and the associated fields of interior design, landscape design, and city and regional planning through field trips, hands-on projects, imaginative games, and presentations by professionals in these fields.

Washington, D.C.

The Architecture in the Schools (AIS) curriculum enrichment opportunity focuses on concepts, skills, and problem-solving in mathematics as it fosters development of critical thinking skills. Mary Katherine Lanzillotta, FAIA, a founder of the program, continues to be actively involved. Teachers and volunteer architects receive training, resource materials, curriculum guides, and basic supplies (rulers, tape measures, scissors, construction paper, tape, etc.), all of which remain in the classroom following the AIS program. Teacher "graduates" help extend the program's reach by continuing to integrate new architecture-focused teaching strategies into their classroom teaching strategies. AIS is supplemented by children's programming on Saturdays and during summer months at the District Architecture Center in downtown Washington. In addition to individual AIA|DC members, member firms are active participants in and supporters of children's programs.

Houston, Texas

AIA Houston developed a new materials-themed activity book to teach sustainability and design to students in their K–8 programs. The activity book will use the new LEED Platinum Architecture Center Houston (ArCH) building, which opened in summer 2017, in the Main Street/Market Square Historic District of downtown Houston, as the primary subject. AIA Houston will use the design and building materials of the new ArCH to teach design and sustainability. Each new concept will be presented in two parts: a demonstrative exercise that uses the ArCH as an example; and an explorative exercise that encourages students to apply the knowledge by exploring materials and design in their homes, schools, and neighborhoods.

This two-part approach will allow the chapter to use the activity books with students who visit the ArCH as well as at schools and libraries where AIA Houston partners to teach at-risk youths. Activity instructions in the book will be presented clearly, so that students can complete exercises on their own and continue to learn after leaving the programs. All of AIA Houston's programs engage volunteer associates and architects to teach students.

New York City

StudentDay@theCenter, a two-hour hands-on design workshop for K–8 school groups held at the Center for Architecture in Greenwich Village, introduces youth to concepts in architecture and the built environment. Its goals are to engender in students an appreciation for architecture, empower them with new knowledge and skills, support classroom-based curricula, and deepen student understanding of architectural concepts through the design process. During the 2017–18 school year, it served 125 classrooms in 49 schools—a total of 2,476 students. Thirty percent of the students—totaling 743—were from Title I-classified public schools or schools with similarly underserved populations. StudentDay@theCenter sessions follow a sequential three-phase methodology, which supports the NYC Department of Education's Blueprints for Teaching and Learning in the Arts, and state and federal standards.

North Carolina Triangle

The AIA Triangle's K–12 Architecture & Design program ScaleUP is organized under the K–12 Education Outreach Task Force led by chair Emmie Tyson, AIA, a young local architect. The objectives of ScaleUP are to nurture real-world skills such as critical thinking, problem-solving, and the creative process, and to promote team-building and strategizing. The program spans multiple months, which allows students to spend more time and develop more impactful relationships with their architect mentors. ScaleUP workshops involve a small kit of PVC pipes and connectors, with a matching large (full-scale) set of the same parts. Students receive a design problem and use the small-scale parts to ideate and create their design. They then transfer their design to paper, creating plans and elevations (construction documents). Once their design has been developed at the small scale, they use the full-scale kits to build their design using the construction documents they have created. Students are then able to walk through and stand in what they designed earlier in the workshop. This process allows students to tackle design challenges and confront issues of scale and constructability.

For more information on AIA's K-12 Initiative please go to aia.org/k12.

Project impact



"Architects who have worked with our students in the classroom engaged the students in analyzing their neighborhood using google maps, evaluating two chosen sites during a walking tour for opportunities to create positive change in their neighborhood and creating models of building for those sites. Students have learned how to cooperate in their groups, share their ideas and implement them to create a final product." —8th grade teacher, AIA Chicago

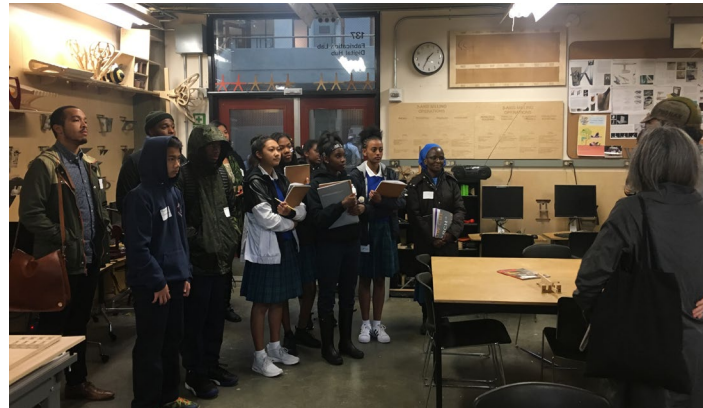
"We had one winner from the 5th grade who had a developmental disability. Since the judging is blind, we had no way of knowing this ahead of time. Seeing his face light up when he arrived and saw his artwork hanging on the wall was very special to see." —AIA Birmingham/N. Alabama/Mobile

"Of significant note is the immeasurable benefit of strong partnerships with 1) existing educational institutions, experienced in delivering this type of curriculum (Cranbrook Academy), 2) existing after-school programs, already engaging with exactly the type of at-risk and underserved youth we'd hoped to benefit with this program (Center for Success), and 3) The City of Detroit Planning & Development Department." —AIA Detroit



—AIA Albuquerque, New Mexico

"We have watched volunteers discuss the basic concepts of architecture with their students, learning to break down advanced terminology and the logistics of planning into their elementary basics. We think this helps volunteers—many of whom are young professionals in Architecture and allied fields—reconnect with the fun an innovation that sometimes gets stifled by our need to complete deadlines and lose ourselves in construction details." —AIA Spokane



"Thank you, Marijana, Dr Khedam, and the rest of the organizers and sponsors for giving my student the opportunity to present his class project in last night's wonderful event. I didn't expect the presentations to be that great. The audience is very supportive of his first time presenting in front of very talented and kind professionals. It's an honor for our family to attend such an event. This experience has increased my children's curiosity and interest in the field of Architecture and Math. One has changed from the School of Life Sciences (SOLS) to School of Engineering & Design (SOED) that he registered for the coming school year." —8th grade parent, AIA Seattle



"My students were surprised that a woman was an architect. How do we make it known that jobs like that seem to include heavy lifting or math isn't just for men." —Elementary school educator, AIA Boston



"She is so excited when she comes home from school on the architecture days," she said. "She is really into this." We both looked on as she explained in great detail the ways that her project might help people "think about the shape of space." —Elementary student and parent, AIA Buffalo



"Most important thing, you have to work well with people" –4th grade Student, AIA Florida



–AIA Atlanta, Georgia

"The principal, stated that this was the first time an outside entity hosted an event for them, and that the school was "blessed to have such an enriching experience for her kids." –K-5 school principal, AIA Baltimore

"We were surprised by the number of parents that said how much they themselves learned while assisting the kids as "construction workers". Many of them were even unaware of the multiple facets involved with architecture." –AIA Baton Rouge

"My least favorite part of camp was leaving because I had so much fun!" –Elementary student, AIA Columbus

"We have presented at two regional STEAM conferences and have an overwhelming request for classroom resources to teach architecture or incorporate it into other subjects from math to science to language arts." –AIA Houston

"One of the funniest comments I have heard was from a 2nd grader during our Building Bridges Workshop. While he was on the final step of constructing a cardboard model of a suspension bridge he confessed to me: "Just so you know, this is the hardest I have ever worked in my life! But now I know work can be so fun sometimes!" –2nd grade student, AIA New York



“She was inquisitive about the path to becoming an architect, what colleges offer architecture programs, what she would need to do to start preparing herself to apply, etc. We exchanged contact information so we could stay in touch and we could help her with a portfolio. As the students were preparing to go, the director of the after school program approached me to let me know that he has not seen her so passionate about learning before. She would be a first generation college student in her family.” –AIA Triangle