Executive Summary

Afterschool Alliance

Science Club (Chicago, IL) *Photo courtesy of Science Club.*

Full STEM Ahead: Afterschool Programs Step Up as Key Partners in STEM Education

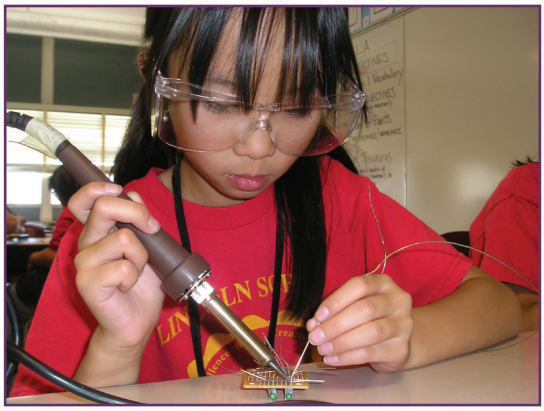
The interconnected content areas of science, technology, engineering and math (STEM) touch all aspects of our lives. They underpin much of modern society and the economy and their study also hones observation and analysis skills, which are crucial in developing better problem-solvers and citizens in a complex and changing world. But there is great concern that without access to adequate educational experiences in STEM fields, large segments of the population will be ill-prepared to participate effectively in the modern STEM-based workplace. Consequently, improving the quality of and access to STEM education is a high priority in the United States and across the globe.

As afterschool programs have expanded their offerings, many providers and funders have embraced STEM as a natural fit for the afterschool setting. The strong focus on youth development in afterschool allows for youth-driven exploration that complements school day teaching and learning and provides students with opportunities to immerse themselves in STEM learning. Afterschool offers room for experimentation and failure and time for children to develop strong relationships with mentors and peers, all while gaining knowledge and skills. These experiences are all vital for future access to and participation in STEM fields and careers.

Research also shows that what happens outside of school can be equally as important as what happens in school to set a child's direction and activate his or her interest in STEM. Thus, science education improvement leaders recognize that afterschool programs can play an important role in STEM learning, especially when it involves real science and engineering practices such as running science experiments, analyzing data and developing explanations, or designing engineering solutions.

AMERICA AFTER 3PM
STEM

SECTION 1: THE SURVEY



Techbridge (Bay Area, CA) *Photo courtesy of Techbridge.*

The *America After 3PM* survey is the nation's most comprehensive household survey of how children spend the hours after school and asks parents and guardians of school-age children in the United States a number of questions about availability and access to afterschool programs.[1] The 2014 survey, which followed prior surveys conducted in 2004 and 2009, reveals that over the past decade, the number of children in afterschool programs has grown from 6.5 million to more than 10 million children. Parents of an additional 19.4 million children would enroll their children in a program if one were available to them.

In addition to asking for information about afterschool programs generally, the 2014 *America After 3PM* was the first to ask about children's participation in programs offering STEM learning opportunities, making it possible to produce this special report on STEM. "*Full STEM Ahead: Afterschool Programs Step Up as Key Partners in STEM Education*," describes parental attitudes and perceptions of STEM programming in their child's afterschool setting. Given that improving STEM education is a national priority and afterschool programs play an important role in this effort, the report also takes a look at some of the challenges in providing or accessing STEM learning opportunities and provides recommendations for overcoming them.

SECTION 2: FINDINGS

The large number of households surveyed allows us to report responses across regions as well as demographics including income, race and ethnicity, and gender; to analyze differences in the demand for, access to, and satisfaction in afterschool programs by income, race and ethnicity; and to determine the opportunity gaps that persist. Key findings of the report are as follows:

- **STEM programming has become widespread in afterschool.** A majority of parents of afterschool participants (69 percent) report that their children have STEM learning opportunities in their afterschool program, with math being offered at the highest rates and technology and engineering at the lowest rates.
- **Parents consider STEM when choosing their child's afterschool program.** While parents report that many factors were important to them in selecting their child's afterschool program, more than half (53 percent) said that STEM learning opportunities were very important in their decision. Of parents who shared that STEM learning opportunities were very important in selecting their child's afterschool program, 85 percent were satisfied with their afterschool program's STEM learning opportunity.
- **There is a high level of satisfaction with afterschool STEM programs.** Close to 7 in 10 parents (69 percent) are satisfied with their child's afterschool STEM learning opportunities. Parents who report their children have afterschool STEM learning opportunities are more satisfied, with 8 in 10 reporting satisfaction with STEM programming.
- **Afterschool programs activate student interest in STEM.** Approximately 2 in 3 parents (65 percent) agree that afterschool programs can help children gain STEM-related interests and skills and 70 percent of parents think that afterschool programs should provide hands-on STEM learning opportunities for young people.

[1] Surveys were completed through an online survey using a blend of national consumer panels. All survey participants live in the U.S. and are guardians of a school-age child living in their household. *America After 3PM* was first conducted in 2004, with follow-up surveys in 2009 and 2014. A detailed description of *America After 3PM's* survey methodology can be found in *America After 3PM: Afterschool Programs in Demand*, available at: http://afterschoolalliance.org/documents/AA3PM-2014/AA3PM_National_Report.pdf. All references and citations can be found in the full STEM report, available at http://afterschoolalliance.org/AA3PM/STEM.pdf.

- **Afterschool programs allow students to be immersed in STEM and build fluency in these subjects.** For those children who were offered STEM activities in their afterschool programs, parents report that 52 percent were offered them more than once a week and three quarters had them at least once a week.
- **Afterschool programs contribute to fairness across places** by reaching populations traditionally underrepresented in STEM. Among parents who report that their child is offered STEM learning opportunities in afterschool:
    - Parents report that 69 percent of both boys and girls are offered STEM learning opportunities in afterschool programs and parents of boys and girls both report similar satisfaction with their child's involvement in his or her afterschool STEM program. 80 percent of boys and 73 percent of girls participate in afterschool STEM programming once a week or more.

The Southside Garden Club (Providence, RI)
Photo courtesy of Sarah Summers, PASA.

    - Parents of children from low-income families express strong support for afterschool STEM programs, more so than affluent parents. For example, 57 percent of low-income parents place an emphasis on STEM when selecting their child's afterschool program, compared to 50 percent of more affluent parents, and 73 percent of low-income parents also agree that afterschool programs should provide opportunities to explore and engage in hands-on STEM learning, compared to 68 percent of more affluent parents.
    - African-American and Hispanic parents have a more positive opinion of and experience with afterschool STEM programs compared to Caucasian parents. For instance, 60 percent of African-American and 57 percent of Hispanic parents consider the availability of STEM programs as an important factor when choosing their child's afterschool program, compared to 47 percent of Caucasian parents, and 70 percent of African-American parents and 68 percent of Hispanic parents report higher levels of satisfaction, compared to 63 percent of Caucasian parents.

SECTION 3: RECOMMENDATIONS

It is important to consider the implications of these findings within the broader context of STEM education in the United States today. A remarkably rapid shift is taking place from a focus on science and mathematics to inclusion of engineering and technology in the curriculum. New science education standards are taking root that allow equal roles for scientific inquiry and engineering design. Support for the new standards has been strengthened by reports that STEM jobs are growing three times faster than non-STEM jobs. There is also increasing attention being paid to the creation of ecosystems for STEM learning that knit schools and communities together more intentionally.

Afterschool programs around the United States have stepped up to offer innovative programming that engages young people in a diverse array of STEM topics and are increasingly recognized as integral members of the STEM education ecosystem. Nonetheless, as *America After 3PM* reveals, needs are still unmet, and opportunities are being missed. Key recommendations are listed below:

- **Engage and educate parents about the important role that high-quality afterschool programs can play in supporting STEM learning.**

  It is extremely encouraging that parents are aware of the STEM opportunities in their children's afterschool programs and are supportive of these programs. However, it is still very much a secondary factor when choosing their child's afterschool program. It could be very helpful for parents to learn about the characteristics

of high-quality STEM programs and see how hands-on, inquiry-driven STEM programs can make afterschool enjoyable for their children and offer learning that looks and feels different from the school day.

- **Increase the technology and engineering programming available in afterschool.**

  This *America After 3PM* report makes it clear that technology and engineering programming lags behind math and science programming in afterschool. Yet afterschool programs often provide an ideal environment to engage in hands-on building, coding and programming by providing a venue where students can apply science and math principles to design and implement solutions to real world problems. Indeed, there are many examples of high-quality engineering and computing programs in afterschool but they are relatively few and far between. The popularity of "making and tinkering" programs is a testament to the demand for project-based learning and construction.

- **Strengthen partnerships between the larger STEM education community and afterschool programs to advance practice and policy.**

  Given that most afterschool STEM programs are offered in schools and by youth serving groups, stronger partnerships between the afterschool STEM providers and STEM-rich institutions, STEM-based corporations and the larger STEM education community can help ensure greater availability of programs and boost the quality of and satisfaction with STEM offerings. In addition, these vital partnerships positively impact policy initiatives that expand and support STEM in afterschool.

- **Improve assessment measures.**

  STEM serves as an excellent vehicle to support social-emotional learning and 21st century skills in addition to developing STEM-specific knowledge and skills in afterschool programs. It is therefore vital that the impacts of afterschool STEM programs are measured by their contributions to a broad set of skills, rather than focusing narrowly on school achievement data. New assessment instruments must reflect the current research on measuring the range of impacts of afterschool STEM programs.

- **Increase investment in afterschool programs.**

  While the number of children in afterschool programs has grown over the past decade, the demand for programs has also grown. For every child in a program, two more are waiting to get in. To increase and improve STEM programming in afterschool, parents need to have a choice of afterschool programs where their children can access STEM learning opportunities.

ACKNOWLEDGEMENTS

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The Afterschool Alliance is a nonprofit public awareness and advocacy organization working to ensure that all children and youth have access to quality afterschool programs. More information is available at afterschoolalliance.org