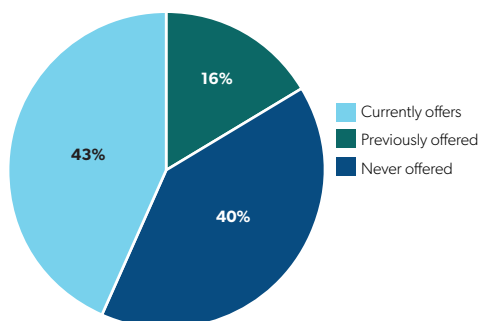


Computer Science in Afterschool: Current Opportunities and Challenges

Key findings from the 2016 “*Growing computer science education in afterschool: opportunities and challenges*” survey and report¹ are highlighted below. 376 afterschool programs, across 46 states, completed the survey. On average, these programs operate for 4 hours per day, 4.4 days per week, and primarily represent comprehensive² afterschool programs, as opposed to clubs or extracurricular activities that might only meet once per week. As defined by the 2010 Census, roughly 52 percent of programs were located in urbanized areas, 35 percent in urban clusters, and 13 percent in rural areas.

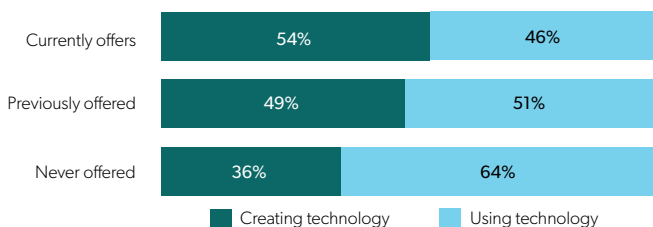
Many afterschool programs have a history of offering computing education. Overall, 59 percent of the afterschool programs surveyed were either offering computing to their students at the time of the survey (43 percent) or had previously offered computing (16 percent). The remaining 40 percent of respondents had never offered computing education to their students for a variety of reasons, including having specialized education missions unrelated to science, technology, engineering or math (STEM). *See the full report for more details.*

Afterschool programs’ experience with computing



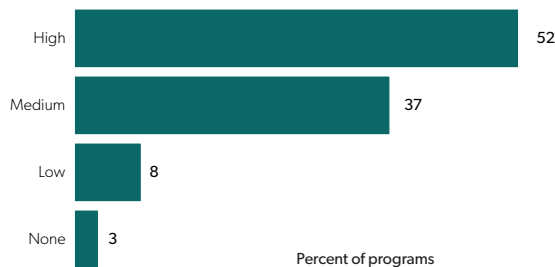
Afterschool programs have a mixed understanding of what constitutes computing education. Afterschool programs with experience offering computing were more likely to mention words and phrases related to the creation of technology than those who had never offered computing.

**Creating vs. using technology:
Afterschool programs’ understanding of computing education**



Interest in offering computing education is high. Almost all of the afterschool programs (97 percent) that had offered computing in the past said they are either extremely likely or likely to offer it again in the future. Among the programs that had never offered computing education before (40 percent of respondents), 89 percent indicated a high or medium level of interest in offering computing in the future.

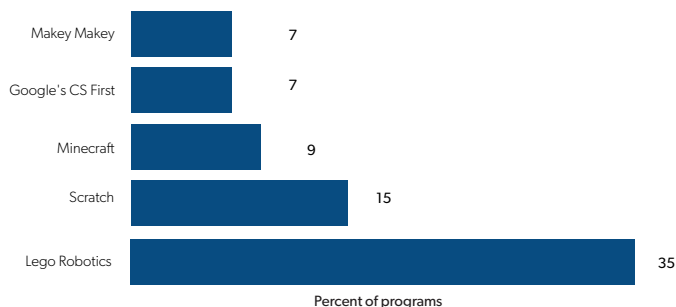
Interest in computer among afterschool programs that haven’t offered it before



An array of computing activities are being offered by afterschool programs, using a variety of teaching products and platforms.

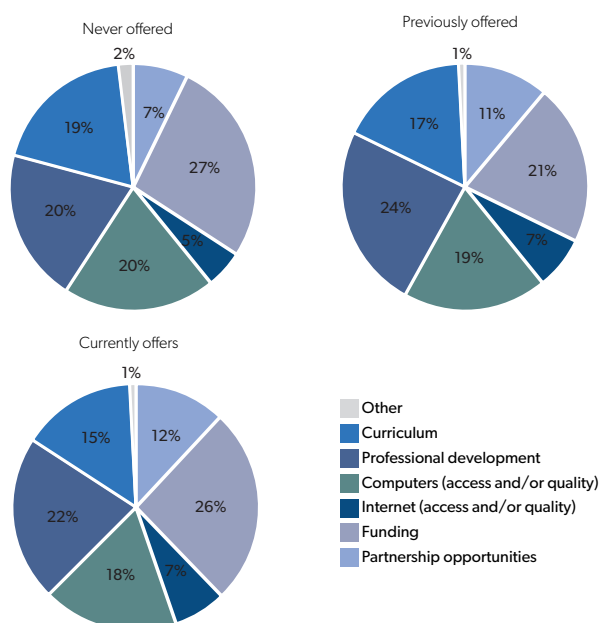
Robotics is the most popular activity across all afterschool programs that have either previously offered or currently offer computing, and is available at almost 75 percent of programs currently offering computing. The next most frequently offered activities were creation of animations and other media; video game design; and activities featuring hardware integration such as Makey Makey, Arduino, or Lilypad. Afterschool providers collectively reported having used more than fifty of the numerous products and platforms available for teaching computing. The most popular were Lego robotics, Scratch, Minecraft, Google’s CS First, and Makey Makey.

Commonly used products and platforms



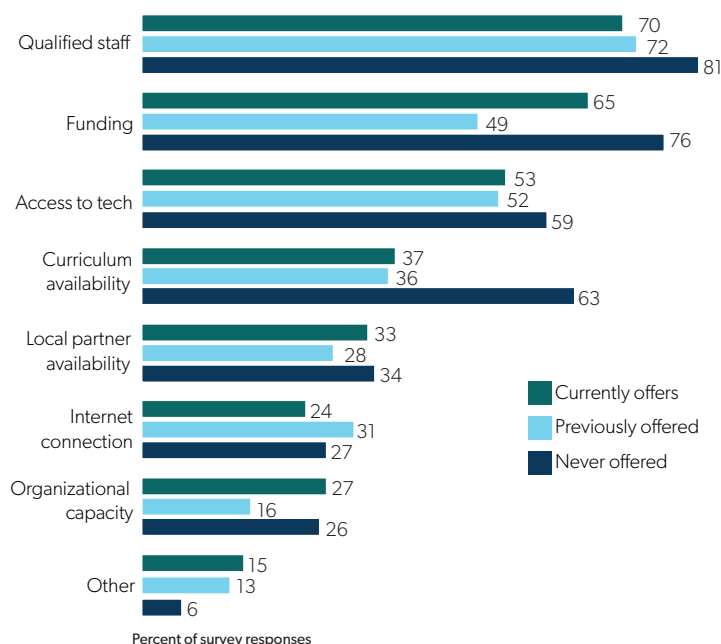
Afterschool programs need a variety of resources to execute computing programs. Survey participants were asked to identify the most helpful resources for starting or maintaining computing in their afterschool program. For all groups, the three most important resources were funding, professional development, and access to quality computers, though some variation existed in their order. Curriculum was a close fourth for all groups.

Resources helpful to afterschool programs starting or maintaining computer initiatives



The biggest challenges within afterschool computing reflect the commonly needed resources. Survey respondents indicated that the biggest challenges facing computing in the afterschool environment mirrored the four most important resources they identified. These included, in rank order, qualified staff, funding, access to reliable computers or technology, and curriculum availability.

Challenges to offering computing in afterschool setting



Recommendations: Our research into the state of computing in the afterschool field reveals widespread interest and support, as well as several serious challenges. While we address these recommendations to specific groups most likely able to enact them, all are best achieved through partnerships among the many stakeholders in computer science education.

- **Afterschool leaders and practitioners** can (1) document promising practices, (2) share existing resources more broadly, and (3) support each other's capacity for partnership development.
- **Computer science education experts** can (1) conduct target outreach to educate the afterschool field on computing, (2) increase professional development opportunities for out-of-school time educators, and (3) develop engaging curricula designed for the afterschool environment.
- **Industry partners and grantmakers** can (1) engage and invest in meaningful partnerships with afterschool providers, (2) support training for employee volunteers, and (3) provide and promote a diverse array of funding opportunities.

Resources for afterschool computer science providers.

View the Afterschool Alliance "[Connecting to Computer Science: A Resource for Afterschool Practitioners](http://afterschoolalliance.org/documents/AfterschoolCS_ResourceGuide_2017.pdf)" at http://afterschoolalliance.org/documents/AfterschoolCS_ResourceGuide_2017.pdf³.

Within the guide you will find:

- Activities and curriculum
- Ways to develop your skills and connect with others both online and off
- Standards for computer science and technology, and ways to position out-of-school time as a partner in standards adoption efforts
- Materials to help grow your understanding of the state of K-12 computing education

References:

- ¹ Afterschool Alliance. (2015). *Growing computer science education in afterschool: opportunities and challenges*. http://afterschoolalliance.org/documents/Growing_Computer_Science_Education_2016.pdf.
- ² We define comprehensive afterschool programs as sites that a child regularly attends and that provide a supervised environment that typically includes a healthy snack or meal and homework help along with enrichment activities. Comprehensive afterschool programs most often take place in schools or community-based organizations and are different from individual activities such as sports, special lessons, or hobby clubs, and different from childcare facilities that provide supervision but not enrichment.
- ³ Afterschool Alliance. (2017). *Connecting to Computer Science: A Resource for Afterschool Practitioners*. http://afterschoolalliance.org/documents/AfterschoolCS_ResourceGuide_2017.pdf.