2018-19 was a break-through year for CitySprouts School Partnership Program with a remarkable 30% increase overall in students time in the garden. We brought our Early Start with STEM Initiative to two of our Boston Public School partners this year, launching a new era in CitySprouts professional development support for the teachers we collaborate with in our partner schools.

Results from our end-of-school year evaluation highlight what is possible for the CitySprouts model and for the garden-based education movement. Our success this year benefitted 8,000+ children, strengthened more than 300 teachers’ instruction, and fostered communities of engaged science practice in schools. CitySprouts shows the real potential for making STEM education integrated with social emotional learning accessible to students in public schools.

About CitySprouts School Partnership Program

The CitySprouts mission is to cultivate wonder for all children with hands-on learning through urban gardens. Our innovative partnership with public school districts gives thousands of children on-going opportunities to learn from nature during their elementary education. Environmental science, including learning about food systems, is effectively integrated with districts’ curricula and embedded into students’ learning time. Our program’s positive impact is greater for high-need students¹; teachers report that CitySprouts facilitates learning for students on special education plans and English language learners, and children with little or no access to nature where they live.

From September to June, we provide twice-weekly support to our partner schools. Our garden educators co-teach inquiry-based lessons in the garden with classroom teachers and support meaningful follow-on in the classroom in STEM (science, technology, engineering and math) and other curricula. Our program:

¹ A student is high needs if he or she is designated as either low income, economically disadvantaged English Language Learner (ELL) or former ELL, or a student with disabilities. MA Dept of Elementary & Secondary Education
CITYSPROUTS SCHOOL PARTNER PROGRAM
2018-2019

- Ensures all children have on-going opportunities to learn from nature during their elementary education
- Builds students’ STEM and social emotional skills directly through inquiry-based activities in the garden and by building teachers’ capacity to integrate garden-based learning in their practice
- Teaches students about food systems and encourages them to make healthy food choices

**Our School & District Partners**
In School Year 2018-19, CitySprouts partnered with 21 public elementary schools in Boston and Cambridge:

- Cambridge Public Schools districtwide (11 elementary and Amigos K-8)
- Boston Public Schools: (Baldwin Early Learning Pilot Academy, David Ellis Elementary, Haynes Early Education Center, Henderson K-12 Inclusion School Upper & Lower, Higginson-Lewis K-8 School, Orchard Gardens Pilot School, McKay K-8 School, and Winthrop Elementary)

CitySprouts has a service contract with both school districts. CitySprouts is a charter community partner in **Boston Public Schools Opportunity Portfolio** signifying that it is vetted as a high quality program that aligns with Boston Public School District goals (see partnerbps.org).

**Early Start with STEM Initiative**
CitySprouts is pioneering an innovation to level the learning field for young students by ensuring that all children have school time opportunities to achieve a strong STEM foundation. **Early Start with STEM Initiative** is an inquiry-based science education program for 3-6 year olds designed to build a foundation for life-long STEM engagement and proficiency. The initiative includes developing new program material addressing the particular needs of young students; a series of 6 site-based professional development workshops for early grade teachers structured to build their STEM knowledge and effective teaching strategies; and a family engagement component to extend young children’s science learning beyond the school day. Outcomes from Early Start with STEM Initiative are being evaluated by Sun Associates (www.sun-associates.com), an organization experienced with working with schools and school districts throughout the country to evaluate the impact of educational initiatives and innovations.

**Key Learnings: CitySprouts Takes Off!**
Elementary students in CitySprouts partner schools across both districts experienced significantly more garden-based learning in 2018-19 than in previous years (Chart 1). We also saw a real shift in how frequently children had garden-based lessons (Chart 2). More than a third of students in our partner schools now experience CitySprouts at least 6 times a year and as much as weekly. On average, students were in the garden 7 times this year, compared to 5 times last year. The chart organizes the 2,195 distinct
garden-based learning times in 2018-19 by 6 categories of frequency.

Why is this significant? Because research on how children learn overwhelmingly indicates that children build knowledge and skill from frequent and repeated positive learning experiences.

We believe several factors propelled this phenomenal increase. The most outstanding one is that after many years our Garden Educators are now providing service to their schools through the winter as well as fall and spring. Because there was no break CitySprouts’ programming, many more classes came out to the school gardens later in the fall than ever before. They also tended to make garden visits earlier in the spring. In the cold months in between, Garden Educators and teachers brought garden-based learning inside. Window sill gardens were set up and plant experiments were carried out. Worm bins and snail houses visited classrooms. Vertical garden structures were designed. Garden Educators also supported other science projects happening during the winter months.

CitySprouts’ Investigations in the Garden pilot is clearly another factor in the leap in garden-based learning. Our Investigations in the Garden are inquiry based activities designed around science standards and practices at each grade level from pre-kindergarten through 5th grade. Garden Educators lead these activities with students in the garden or classroom, and work with teachers to ensure integration with curriculum. While this new program material spans all elementary grades, we concentrated on the youngest students (ages 3-6) as part of our Early Start with STEM initiative. In concert with the professional development workshops for early grade teachers at three of our Boston schools, our new Investigations in the Garden program material has impacted both the quantity of students’ garden-based learning and the quality of it.

Finally, because our staff is now year round, we were able to take advantage of a number of rich training opportunities. This year CitySprouts staff participated in weekly conversation series on equity and culturally responsive teaching, while program staff participated in a 3 month training on working with youth through a lens of racial justice. Additional training was in engaging families as partners, on working with trauma-sensitive students, and on using Restorative Circles to build relationships and community. While this may not have been an immediate factor in the bump in garden-based lessons this year, we view it as an important investment in our long-term relationship with our school partners.

CitySprouts Gets Children Learning Outside
Our model is based on research that shows that experiential, hands-on learning helps children build the foundation of science skills and knowledge they will need for future success. Studies also show that

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opportunities to explore nature in children’s early years makes a positive difference in healthy social emotional development.3

Overwhelmingly, teachers confirm that CitySprouts fosters their students’ curiosity about the natural world. This may be the most meaningful measure of CitySprouts’ impact—connecting children to nature regardless of their background or prior experience.

Teachers confirm that CitySprouts levels the learning field for their students by increasing children’s comfort with learning outside as the top change; benefits to students with different learning abilities and to English language learners follows close behind.

The majority of teachers report that CitySprouts is a positive factor in their students’ social emotional development.4 More than 80% reported that CitySprouts strengthened their students’ relationship skills, such as communication, social engagement and teamwork.

Most teachers saw improvements in their students’ science skills5 because of CitySprouts but not as much or as consistently as we envisioned. One factor is the variation in how science instruction takes place across the 172 classroom surveyed this year: some schools have science specialists for specific grades, and in other schools classroom teachers are responsible for science instruction. Moving forward, we anticipate that our new Investigations in the Garden program material will positively impact outcomes in this area next year.

Evaluation Findings

Learning Time in the Garden
Since September, 328 elementary classes across Boston and Cambridge public schools participated in 2,175 lessons with CitySprouts during the school day (an additional 685 garden lessons were led by teachers alone).

8,175 children participated in at least one CitySprouts lesson and 38% of these students participated in at least 6 CitySprouts garden-based lessons.

Through our Early Start with STEM Initiative, 19 Boston teachers at Henderson Inclusion School and Winthrop School completed a six workshop series designed to build the capacity of early grade teachers to confidently and effectively provide their young students with age-appropriate and high quality STEM instruction using the district science curricula.

Data: 172 teachers responded to CitySprouts annual survey this year. Their responses are reflected below.

Connecting children to nature where they live, learn and play

● 97% of teachers report that CitySprouts increases their students’ curiosity about the natural world.

4 The measures are the 5 social emotional learning core competencies in the CASEL framework used by both school districts.
5 The measure are 4 of the 8 Next Generation Science Standards (NGSS) science practices.
“The garden helped my students realize we learn in more places than the classroom.” Kindergarten Teacher, Cambridge

“Using the garden and investigating in the garden has allowed my students to grow and appreciate the world around us. I think that the most powerful experience that we had this year was our worm bin and a deeper exploration into vermiculture. Students who began the unit saying, “EEW!” ended up asking to feed and check on the worms during choice time.

Once the weather changed we were able to let our worms go into the garden bed in hopes that the worms and the rich soil would nurture our pea plants. Later on we actually measured the pea plants with unifix cubes and noticed that they grew over 20 cubes in a month. We think it could be due to the soil!” Kindergarten Teacher, Cambridge

**Improved students’ science skills as a result of CitySprouts**

“Working in the garden gave my students a chance to carry out longer scientific investigations that would have been difficult or impossible to manage in the classroom.” Kindergarten Teacher, Cambridge

“Great connections to concepts learned within the classroom, in a more multi sensory approach.” Kindergarten Teacher, Boston

“[CitySprouts] gave my students real world experiences with connections to pollination, sustainability and community.” Grade 2 Teacher, Boston

“[CitySprouts] investigation time gave kids choices and the chance to investigate their own questions. Our topics were very abstract - garden investigations made them real, and allowed us to follow our own ideas more.” Grade 5 Teacher, Cambridge

“The real experiences support kids learning - cider making, planting, using our senses - all amazing! The garden fits beautifully with the new K science curriculum and is amazing for kids.” Kindergarten Teacher, Cambridge

- Students ask deeper questions (86%)
- More confident planning and carrying out investigations (84%)
- More confident analyzing and interpreting data (75%)
- More confident engaging in argument from evidence (70%)

**Strengthened social emotional competencies**

“Exposure to a garden is extremely important for my students. Socializing and learning about the garden with their peers is crucial to their educational growth.” Special Education Teacher grades 1-3, Boston

“The garden fits in nicely with our mindfulness curriculum.” Special Education Teacher, Cambridge

“I have found that I can incorporate all strands of curriculum into garden based learning experiences. Also, being outside and moving carefully or freely around plants and each other helps to increase self regulation and cooperation.” Kindergarten Teacher, Cambridge

- 83% Relationship skills, such as communication, social engagement and teamwork (16% report no change)
● 72% Social awareness, such as empathy, respect for others and appreciating diversity (27% report no change)
● 62% Self-awareness, such as self-efficacy, self-confidence and recognizing their own strengths (38% report no change)
● 63% Responsible decision-making, such as identifying problems, solving problems and reflecting (36% report no change)
● 59% Self-management, such as impulse control, stress management and organizational skills (38% report no change)

Equity for nontraditional learners (English language learners, students on special education plans, and those with limited prior nature exposure)
“[CitySprouts] Gives all kids the opportunity to have an outdoor experience.” Kindergarten Teacher, Cambridge

“Having the hands on experience was critical for my students, who are newcomers and have limited schooling experience. CitySprouts is awesome with all different kinds of learners.” Sheltered English Immersion (SEI) Teacher grades 3-5, Boston

“It was nice to get students outside during multiple seasons. They enjoyed making observations and using their science journals. Growing garlic was also a great experience for students.” Sheltered English Immersion (SEI) Teacher grades 3, Boston

“Going to the garden on a regular basis helped build children’s background knowledge overall - especially our English Language Learners. This in turn gave them topic ideas for writing, reading, etc.” Kindergarten Teacher, Cambridge

● 84% Increased students comfort outside (15% report no change)
● 79% Facilitated learning for students on special education plans (16% report no change)
● 75% Facilitated learning for English Language Learners (21% report no change)

Improves healthy food choice and food knowledge
“Students are more knowledgeable about where vegetables and fruits come from and are more eager to eat them.” Grade 1 Teacher, Boston

“Students have taken an interest in improving their family’s diets as well, for example mom and dad.” Grade 4 Teacher, Boston

“Although many were still unwilling to try new foods, they asked a lot more questions after our trips to the garden. Especially where foods came from/how they grow.” K0 Teacher, Boston

● 75% of teachers saw students’ interest in fruits and vegetables increase (22% report no change)

Strengthens teachers’ practice
● 76% of teachers feel increased confidence in teaching outside (21% report no change)
● 72% of teachers are more comfortable doing science with their students (22% report no change)
● 113 teachers reported taking their students to the garden independently of the CitySprouts Garden Educator
“I have loved all of the hands-on experiences, because they really help me to imagine how I could apply it in my own classroom.” (Teacher’s response to CitySprouts Early Start with STEM initiative, Boston)

“I am excited about the learning that my colleagues and I have brainstormed and the opportunities we can provide for our students.” (Teacher’s response to CitySprouts Early Start with STEM initiative, Boston)

CitySprouts’ (www.citysprouts.org) Early Start with STEM initiative aims to support K0 through Grade 2 teachers in Boston Public Schools in developing meaningful science learning experiences for children. This initiative was piloted at Baldwin Early Learning Academy in 2017, and the Henderson Inclusion Lower School and Winthrop Elementary this past year.

At the conclusion of Year 1, the evaluators (www.sun-associates.com) find that CitySprouts has been effective in increasing teachers’ confidence around their ability to integrate garden-related activities in their classroom practice. This confidence is measured on several different dimensions and teachers showed gains in all post-professional development measures. The evaluators also observed class activities facilitated by teachers and/or CitySprouts Garden Educators and saw first-hand students engaged in a variety of activities that positively align with NGSS definitions of inquiry-based instruction. The full Year 1 report is available upon request.

**Goals for the Coming School Year**

- Build on our success this year to increase the percentage of children experiencing garden-based learning. Our goal: 50% of the children we reach (8,000 elementary students) will experience a garden-based lesson at least once a month (i.e. more than 10 times). Our benchmark is 38%.

- Bring our Early Start with STEM Initiative to the Orchard Gardens Pilot School, a programmatic deep dive that includes six professional workshops for the kindergarten teaching team. Our goal: build a community of engaged science practice in the school and further develop a model that can be shared statewide.

- Take our Investigations in the Garden program material for pre-kindergarten through 5th grade to the next level. Our goal: develop an evidence-based model for hands-on learning in the garden that can be integrated with school and district curriculum.