

Early Childhood Active STEM Learning: *Lessons Learned*

In 2017, 100Kin10 encouraged all 280+ of their diverse network partners to devise “moonshot” ideas that answer a crucial question to improve STEM education: *How should we support teachers to create active STEM learning environments for young students across the country?* In response, 10 projects led by 18 organizations across the country received Early Childhood STEM Learning Challenge Grants to help make these moonshot ideas reality. The grants were structured to be flexible, allowing grantees to continuously adapt their approach as they learned from achievements -- and just as importantly, failures -- resulting in transformative work.

These organizations have identified core challenges in their work with students, teachers, administrators, and other stakeholders; developed hypotheses of how they might improve active learning in pre-K through 3rd grade; and implemented unique, experimental projects, gaining insight and finding success through their projects.

For organizations who seek to increase or improve active STEM learning in early childhood, these grantees have some hard-won advice to share. As one grantee put it, *“These are not finished lessons that we’ve learned - these are rocks that we’ve hit! There will always be rocks, and you’ll always hit them - but now we know a little better how to deal with them.”* Read on to learn from their successful projects!

Think about the WHO

Effective programs are contextually-relevant and responsive to the needs of all stakeholders -- including our young learners.

- Center the needs of your teachers and stakeholders and the constraints of the real-world. In order to be effective in planning, you should think about the “who”: who you are, who the teachers are, who the administrators are, and who the students are. In different contexts, these answers will be different, so aim to build a program that is culturally and contextually relevant and specific, rather than something that is one-size-fits-all.
- Take an ecosystem approach, working with folks within each part of that ecosystem - from administrators, to teacher leaders, to teachers, to external partners and programs. Identifying partners is the first critical step to reaching your target audience.
- Take time to build relationships with stakeholders -- and be mindful of how much time it takes to architect relationships with people and institutions. Teachers have a lot of demands on their time; recruiting them for programs requires trust, community, building on existing opportunities, flexibility, and avoiding overplanning. Face-to-face recruitment is powerful, and making contacts at local and state conferences is an effective way to reach out to educators.
- Early childhood programs should be designed and tested based on the unique strengths of young learners. Children will be immediately honest about what works for them and what doesn’t. Couple that honesty with their sense of confidence in their ability to do nearly anything you put in front of them, and you have active engagement with continuous feedback. Design programs with this in mind and anticipate ways in which you might scaffold the activity depending on the feedback you receive.
- Developing early childhood programs isn’t about meeting students where they’re at -- it’s about inspiring them about where they might go. Spark students’ imaginations by designing activities that push slightly beyond what they might be able to achieve at that point in their development.

Think about the WHAT

Be concrete in terms of what the program aims to do, but maintain flexibility throughout its development and implementation.

- Set common goals, and continuously observe, reflect, and adapt those goals based on feedback from your stakeholders. While it's important to structure models of professional development, you have to maintain flexibility -- if you stay too structured, you'll lose your ability to adapt as things inevitably change.
- Science, technology, engineering, and mathematics are all process-oriented subject areas - they are not end states. These process skills aren't always valued in the same way that the content is valued, particularly in early elementary STEM professional development. STEM is about questions, inquiry, and discovery, as well as outcomes. Both are important, and you must strike a balance.
- Make sure that what you are asking for is reasonable within the community and ecosystems of your stakeholders. Always stay mindful of the multiple roles and positions that people hold in their lives and communities.

Think about the HOW

Educational programs should center humility, community, and continuous learning.

- Remember that everyone is a learner in the room. Ask mentors to step back, and be sure not to present yourself as the 'expert'. Instead, focus on valuing teachers' expertise, treating them as co-professionals.
 - Be patient. Building relationships and making progress takes time. Both wins and failures are opportunities, as long as you make space to acknowledge them and consider what you can learn from them.
 - Cohort models improve both in-program learning as well as institutional support. Too often, teachers seeking to improve upon active STEM learning or implement new techniques engage in a program and then return to an institution where they don't have the support to act on what they've learned.
 - Keep a list of tactical wins and solutions as they emerge so that you can continue to learn, adapt, and expand on what's working.
 - For example, programs are often impacted by attrition. A sample tactical win from our cohort in keeping folks engaged is to institute an emergency fund that provides small (read: \$250 and under) grants to program participants, which can help folks show up fully. Whether it's used to pay for public transit, medicine for a sick family member, or to supplement their rent, these relatively small supports can have a big impact on teachers' ability to remain in your program.
 - Document everything! Continuous learning is made much easier if you document what's happening and have regular opportunities to reflect and adapt. As you collect and document your data and observations, the goal should be to establish understanding and to continue both your learning and that of your participants. Remember, stories can be as powerful as data - so don't rely solely on quantitative data.
 - Plan for post-program outcomes where scalability is not the sole outcome. You don't need to always scale and go big - the focus can be on teachers owning their professional development. Rather than a focus on scalability, explore how teachers can step up as leaders and how the community you've built can take ownership of sustaining active STEM learning.
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The individuals below developed this set of lessons. They are all participants in [100Kin10](#)'s Grantee Community and were awarded funds to support innovative and experimental projects within the early childhood active STEM learning space. Over the course of 2 years, these grantees developed deep experience and insight into what it takes to increase and improve upon active STEM learning in a variety of early childhood spaces. For more information on their projects, please click [here](#).

Fernand Brunschwig, [STEMteachersNYC](#)

Eun Kyeong Cho, [University of New Hampshire](#)

Kiki Donis-Wahl, [University of New Hampshire](#)

Kate Hiester, [Ignited](#)

Pattie Hulse, [The New York Botanical Garden](#)

Jenny Ingber, [American Museum of Natural History](#)

Bentley Kapten, [ExpandedED Schools](#)

Peggy McNamara, [Bank Street College of Education](#)

Philip Molebash, [Loyola Marymount University](#)

Lizzie Murchison, [ExpandedED Schools](#)

Elsbeth Pancrazi, [New York Hall of Science](#)

Richard Pearson, [Colorado School of Mines](#)

Jason Sullivan, [STEMteachersNYC](#)

Veena Vasudevan, [American Museum of Natural History](#)