

# Maker Corps Case Study

PROGRESSIVE ARTS ALLIANCE, CLEVELAND, OH

By Alice Anderson, Science Museum of Minnesota  
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**Progressive Arts Alliance Mission Statement:**

*Progressive Arts Alliance deepens the learning experience for students, educators, and artists by designing and implementing innovative, arts-integrated, project-based learning programs.*

<http://www.paalive.org>

<http://www.paalive.org/makercorps>

**Maker Corps Contact:** Santina Protopapa, PAA Founder and Executive Director

**Maker Corps Member:** Diana Bowman

**Years in Maker Corps:** 2014, 2015, 2016

## What's in the mix

- Curiosity about how new tools can supplement rigorous arts integration projects
- Solid administrative structure for supporting Maker Corps members
- Summer programming provides lots of room for project experimentation and iteration

## What's ahead

- Growing their school partnerships
- Connecting to more funders in the intersection of arts education and making
- Documenting the impact of their program on students

## Maker Education at Progressive Arts Alliance

Progressive Arts Alliance places teaching artists in local K-8 schools to develop arts integrated projects throughout the school year. During the summer they offer summer camps and partner with a public library system to provide programming at various branches for youth ages 11-18 years old. Their artists specialize in all of the arts – from hip-hop to the visual arts, to modern dancers to book-makers. Projects are developed collaboratively with classroom teachers, tied to academic standards and the standards of artistic disciplines, and use any tools that will help the project succeed.

Executive Director Santina Protopapa encountered the ideas of maker education in multiple professional spaces, including Twitter, conferences, and her graduate school network. Her curiosity about how some of the new tools and technologies might support her teaching artists and a desire to know more about how maker education was similar or different to arts integration led her to sign up to be a Maker Corps site in 2014. Santina approached the experience with an open mind, but always keeping a perspective on how the artistic process and products would remain high quality and rigorous.

After three years participating in Maker Corps, there is little distinction of when their artists use “maker” tools and when they don’t – the process and perspective have been integrated into how artists approach projects. That said, during their summer programming, when they have dedicated Maker Corps members to test out new materials, projects and document their process, has been an essential time to experiment and learn.

## Developing their maker program

Santina viewed joining Maker Corps as an opportunity to push their programming to incorporate different materials and tools with new and established teaching artists, many of whom did not come to PAA with expertise in maker tools and technologies. In addition to their seasons with Maker Corps, PAA has also partnered with a few organizations both locally and nationally to explore partnerships and informal co-learning experiences. Locally they have collaborated often with think[box]<sup>1</sup>, a makerspace at Case Western Reserve University. Nationally, Santina has taken some of her teaching artists to other organizations in the Boston area, including Project Zero<sup>2</sup> and MIT. PAA has also partnered with the Lifelong Kindergarten group at MIT to co-develop a hip-hop dance coding and animation project in Scratch<sup>3</sup>.

But one of her challenges has been to find other arts education organizations who are embracing maker education and finding ways to keep the artmaking rigorous. Progressive Arts Alliance is one of just a handful of arts organizations that have participated in Maker Corps. The field of arts education has tended to view maker education a bit warily. Organizations that have embraced the association have brought in routines from artistic disciplines to strengthen the process of creation. For example, teaching artists facilitate art critiques of student work and process.

## Maker Corps at Progressive Arts Alliance

Because using tools like 3D printers, Scratch and Arduinos have now become tools that PAA teaching artists use regularly, Santina views Maker Corps as a great way to get new teaching artists involved. She appreciates the professional development Maker Corps Members receive from Maker Ed and the increased responsibility they have to develop, deliver and document projects. She has also found it to be an effective pipeline for hiring full-time teaching artists; over the past three summers, three of their Maker Corps Members have joined the PAA staff permanently. The Maker Corps Members co-teach with PAA teaching artists. Santina explained that this strategy is intentional: “We have such a mix of teaching artists that being able to have the Maker Corps Members interacting with them helps to see

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<sup>1</sup> <http://thinkbox.case.edu/>

<sup>2</sup> <http://www.agencybydesign.org/>

<sup>3</sup> <https://scratch.mit.edu/info/codingforall/>

different perspectives to the work. We try to introduce them to all the different things that we do.” Their Maker Corps Member in 2016, Diana, had been a teaching artist assistant during the 2015-16 school year and was encouraged to apply to be a Maker Corps Member.

Diana described PAA’s approach to developing and delivering programming as one that values reflection and revision. She documented the lesson plans and activities she developed on the PAA blog (<http://www.paalive.org/makercorps/>)<sup>4</sup>. It was expected that she would contribute ever week, which wasn’t hard. She said, “I never felt or struggled to come up with an idea. It was always something that was already on my mind.”

The pedagogy that drives PAA programming draws from artistic practice, with extra emphasis on iteration and challenge and holding kids to high standards. She said, “I [am] expected to always be pushing the kids and not be lax about it. They were always pushing like ‘Oh how can we perfect this; how can we make the lessons better.’ And so that was a really heavy expectation which I think I got a lot better at too, [which] was learning how to be more engaged in the same activities. After ten weeks they can become a little bit stale but the progression of always how can we make this better made them always engaging.”

Diana said that PAA programs are designed to challenge kids to have goals be intentional in their making activities. She explained, “They can struggle getting to those goals and even when get to the goal, we always say, ‘Well can you expand upon that?’ ...It’s never something that kids usually think about themselves. They’re usually more like what’s next, what’s next, new activity, what’s next, I did this, done, what’s next. So we’re always trying to emphasize that you can work on the same idea but expand upon it.” She reflected that the programs are good at teaching work ethic. When Diana would ask kids if all their challenges or struggles were worth it, she reported that kids would say “Oh yeah!”

## A peek inside the program

During the summer of 2016, Maker Corps Members developed and delivered two types of programs: one-hour design challenges at a local community center, and a 2D to 3D Design Camp through the Cuyahoga County Public Library. The design challenge workshops covered activities like using patterns and fractions to create art and using electronics to design wearables. But the majority of their work was spent in the ten camps held through the library system. The camp moved to a different branch every week, and the PAA teaching artists and Diana Bowman, the 2016 Maker Corps Member, could tinker with the curriculum and materials throughout the summer to make sure all youth would be successful.

*Join professional artists from Progressive Arts Alliance for this dynamic camp that explores a variety of two-dimensional and three-dimensional art techniques. Experiment with different materials while using your imagination to create original work. Discover how to bring 2-D designs to life through building, digital sculpting, 3-D printing and more.*

In the camp, youth worked with many media to explore how shapes are combined to create three dimensional objects. The first few days they used cut paper and platonic solids to rough-out shapes

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<sup>4</sup> See also: <http://www.paalive.org/makercorps/?p=482> <http://www.paalive.org/makercorps/?p=514>  
<http://www.paalive.org/makercorps/?p=575> <http://www.paalive.org/makercorps/?p=585>

for their inflatable sculptures. Next there was lots of experimentation with fans and balloon-like plastic sheeting connected with tape that were constructed to make inflatable sculptures. In the final days, the group turned to technology tools, included Tinkercad, 3D printers and 3D glue guns.

Throughout the week, the teaching artists pushed youth to talk about their process and work. On the third day of camp, when pairs of students presented their inflatable sculptures, Frances and Diana led the group in modified artistic critique. “Your comments should be constructive criticism. It has to be helpful to the person, something they can take away as a suggestion,” Frances began. “Tell us what base shape you use, your strategy for making your sculpture, what worked and what didn’t.” As the groups share their process for making the sculptures, the teaching artist add their comments too. “I want to complement you on that scalloped edge on the wings,” Frances says. “That’s good craftsmanship!” One camper says she would like to figure out how to make her horns stand up. “How do you think you could do that?” Diana asks. As she noodles through some ideas, Diana reminds her of a previous activity that explored building supports for shapes and balancing weight. The girl seems proud of her sculpture, and also has ideas for how to keep going.

A parent waiting to pick up her child whispers to me, “It’s really incredible what they’ve done here!”

## Sustaining their maker program past summer

PAA’s teaching artists deliver the most programming during the school year in collaboration with K-8 teachers across the city’s public schools. They face two challenges transitioning from the summer to the school year. First, the school learning environment is very different from the summer programming in many ways – more students in a classroom, academic expectations, close collaboration with a classroom teacher, and the increased need for classroom management routines. While Maker Corps Members may be able to tinker with projects, tools and materials during the summer classes, they have few opportunities to practice working within the constraints of often-chaotic public schools. Schools also have less expertise with maker tools and materials; as Santina reflected, “They want this kind of stuff but they don’t even know how to get there.” PAA teaching artists will demonstrate how to use tools and materials to teachers first, while at the same time talking about how to use them with students. They have found that teachers are generally open to learning, which has made the projects more collaborative. While PAA provides embedded professional development in its school-year residencies, they also have provided opportunities for educators and librarians to learn about their pedagogies and materials in various contexts.

Their second challenge is having sufficient ongoing training and exposure to tools, materials and solutions that come from the maker education field. Because they are one of a very few arts education organizations engaged with the maker education community, it has been hard to find a community outside of Maker Corps with which to consistently engage with throughout the year.

## Learning from Maker Ed and the Maker Corps Community

Because of Santina’s involvement in Maker Corps for the past few years, she feels that she has a good sense of the professional development and resources Maker Corps provides to the Maker Corps Members. While she has stayed involved with Maker Corps, Santina has also delegated some responsibilities for the program to the former Maker Corps Members who have now become full-time PAA teaching artists. In the past year, Santina has found communities outside of Maker Corps to be more valuable for her professional growth. For Diana, learning from what Maker Corps Members

were doing around the country was interesting but not essential to her work; like Santina, she found other communities of makers to be more practical.

As for support, inspiration and comradery, Santina values the community of maker education organizations that Maker Ed introduced them to in-person at the SXSWedu conference. As a result of that meet up, she said she found peers that she now communicates with over Twitter and emails. The in-person experience elevated and deepened the connection that had been introduced through Maker Corps Google Hangouts. Santina said she felt like she could explain the work that PAA does to other people who get it – and who can suggest ways to push their practice further, both in tactical and pedagogical terms.

Diana participated in the national Maker Corps network mostly as a learner, reading other people's documentation of their programs and expanding her understanding of terms like tinkering. She found the resources to be easy to read and she could learn much of the new materials quickly. But she found the resources she had access to locally – former Maker Corps Members at PAA, friends at Think[box] and CIA – to be more valuable to her. However, she saw the value of the Maker Corps online community for newer organizations without a strong local community.

Within PAA, Diana found the mentorship from a former Maker Corps Member who was her co-teacher during the summer, to be valuable on many levels. They also looked locally for support when they were trying to figure out how to improve their program, including a local artist and professor at the Cleveland Institute of Art who specializes in inflatable art. Diana explained, "He just gave us all a 'How to do Inflatables 101.' That really inspired us to change how we taught and how we could teach them." Diana described how hearing his feedback on their project prompted them to change not only the tools they were using, but the presentation of the idea and supports, such as a handout of basic shapes.<sup>5</sup>

PAA now has the expertise to mentor and support Maker Corps Members in the ways that maker education integrates with arts education more broadly. Santina wonders if the Maker Corps training and community-building might be more effective as an in-person retreat or workshop with other Maker Corps Members prior to their service, to establish that community from the beginning.

## Outreach and Collaboration with Community and other Organizations

The city of Cleveland has a few organizations that do maker education for youth, including the Cleveland Public Library and Great Lakes Science Center (also a Maker Corps site in 2014, 2015, and 2016). While these organizations have had infrequent contact, they are generally focused on different angles of maker education, due to their organization's core missions. As a collaborator or partner, PAA works most closely with think[box] at Case Western Reserve University. The makerspace is open to the public but does not offer youth programs. PAA has brought in youth to work on projects in the space, such as a recent Rube Goldberg machine. PAA staff has also come to think[box] to try out new ideas or materials before they bring them to students. Santina explained, "They have helped change the face of our programming. Our artists were building light boxes with fifth graders this past semester, and just testing it out with a [CWR] Engineering undergrad. Having that opportunity to collaborate with that community has been really great." This partnership allows PAA to explore the possibilities and realities of materials and tools with other makers.

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<sup>5</sup> See Diana's blog about their collaboration: <http://www.paalive.org/makercorps/?p=523>

During the summer, PAA works most closely with the Cuyahoga County Library<sup>6</sup> system, which doesn't currently have capacity to provide their own programming despite growing interest from patrons and staff. They offer 15-hour summer camp programs free to residents. As a result of their summer 2015 camps that included additional maker materials and tools, the library asked PAA to train their librarians. Santina described that the library told her, "This is our best summer camp ever! Parents are asking if they can come back to a different library because they loved it so much because they know it won't be the same thing every time.' [This partnership] is pushing our thinking that I think we definitely provided more value to our partners if nothing else. So we ended up training the librarians which was cool as a result of that so I hope they'll put it into use. They were nervous about the tools and everything."

Becky Ranallo, the Information & Technology Literacy Manager for the system, has seen the rise of digital technology in public libraries first-hand over the past 10 years. The system has 27 branches and employs nearly 1,000 staff. They have opened three Innovation centers, which Becky describes as all-ages makerspaces with a focus on entrepreneurship and supporting small businesses (see <http://www.cuyahogalibrary.org/Services/Innovation-Centers.aspx> for more). The goals for these spaces include making connections between other makerspaces, such as think[box]. She described, "Our focus is on being a bridge to those places, to ensure that our customers get a taste of what they can do and if they need to do something past that, they can move on and explore there. We're also looking at being ... a bridge to some of the start-up incubators in the area that are looking for entrepreneurs." One of their strategies is to offer summer programming in half-day camps, such as the one that PAA facilitated. Becky says they fill up quickly. Aside from organized learning opportunities, libraries also offer access to technology and materials with the support and encouragement from staff to figure out the process collaboratively.

As part of this focus on innovation and technology literacy for all library patrons, Becky has pushed for ways to get her staff more experience with maker tools and projects. One of the most effective ways has been to contract with other organizations to provide training, including with PAA teaching artists. Library staff are also paired with the PAA teaching staff in the summer camps, so they gain first-hand experience in delivering programming.

**"[Progressive Arts Alliance is] wonderful and the programs are fantastic. We love that we can go to Santina with the vaguest of ideas, and she'll be like, 'Yeah, sure, let me talk to my staff.' And then they come up with this amazing program from it. ... The other piece we really love from them is they are always willing to offer a program but teach our staff at the same time. And we are always looking for ways to take our staff knowledge that next step forward and get them more comfortable. So they've done professional development for us, but they also welcome as many staff in the program as we want. That's one of the pieces that we really value with them." – Becky, Cuyahoga Library System**

The programs that the library offers with PAA roughly falls into the category of STEAM learning. Becky said she had only one request for PAA as they developed their 2016 camps: kids should create

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<sup>6</sup> <http://www.cuyahogalibrary.org/>

something with their hands and then create something digitally. Becky explained, “That has been an awesome selling point to parents too because parents who get making, and parents who don’t understand right away that I’m showing their kids two sides of the same thing. I use [the 2D to 3D camp] all the time as an example of what we’re really trying to do. Technology programming might be our thing, but I’m always looking for that kind of pairing that creating with your hands and creating digital.”

The feeling is mutual; Santina and Becky both spoke about the partnership in terms of how they could learn from one another and the different settings they work in. Becky said that when Santina has approached them with a new idea, “We give her where our boundaries might be around that, and they kind of run with it again. I feel that we’ve helped them develop as well. We’re a test case for a lot of programs, but they know us, they know what it’s like working in libraries.”

Currently, library staff are encouraged to develop and deliver their own technology programming at their branch, supplemented by programs provided through the county system. Becky’s expectations are that all staff will have competency working with new technologies, equipment and leading programming for all patrons. She looks carefully across the branches to understand the current staff capacity for and interest in some of the new technologies, and encourages each branch to find ways to explore their community’s own interests. One strategy she has used to build momentum and interest in these programs is to share what all the branches are doing with one another. She described, “One of the things we’ve done is take a map of the system and show everybody who’s doing making programs, who’s doing coding programs, who’s doing technology training. And I make a distinction between these are programs we’re running right now and there are staff-led.” She said this has helped branches take ownership over developing their own programs and capacity when they see what is possible at other locations and with staff-led support.

As more library staff have become involved in technology and making programs, Becky has realized how important it is to emphasize that they need not become expert in all technologies. She explained, “I see our biggest challenge in the next couple of years, really impressing upon our staff and selling that idea that they are facilitators and not experts. ... Our staff who still want to be the expert are struggling with technology in general because you just can’t be an expert in everything anymore. It’s too much; there is no way to be the expert. And frankly it’s not our best role, certainly not with teens and really not with kids. One of our most successful connected learning programs in the last couple months was one at our Garfield branch where our librarian paired up a bunch of volunteers and adults with the kids so the kids could teach them Minecraft. And it was a bunch of adults who wanted to learn Minecraft, and it was a bunch of kids who were excited to teach them.” She would like to see more communities of mixed expertise of makers develop at each library.

Becky said she has never perused Maker Corps because of the cost and the hurdles she might have to go through to pay her unionized staff through other means. However, she feels she has definitely been indirectly impacted by Maker Corps. For example, Santina introduced them to someone who was then hired for one of the library’s innovation centers. Their collaboration has continued; PAA will offer workshops to make LED Clouds in the winter of 2017 to youth ages 11-18 years-old at various library branches.

## Funding Maker Corps and Maker Programs

While PAA has consistently received funding from local and national agencies for their work, Santina has found it challenging to find funding for maker residencies and Maker Corps. She sees this as a

two-part problem: first, that arts education organizations don't know much about maker education and second, that the materials are more expensive for their maker residencies. Additionally, she feels that the local donor base in Cleveland lacks investment in new technologies or materials that has driven the interest in funding maker education programs in other cities. To address this, she has found success in educating donors and educators herself, often demonstrating a project to "build the awareness and see why it's something that's worth providing support for."

Because of these challenges, Santina would like to see Maker Ed help make connections to corporate and national funders that understand their goals and would help them scale up their work and be more sustaining in the long term. She explained, "We know the technical stuff, and we have a lot of infrastructure in our city to get there. ... But we're not a super progressive town. Even though we have infrastructure for this stuff, we're not like the [west] coast where there's new money." Furthermore, there is demand for their programming, especially in schools and communities that don't have funding to support the program. She continued, "Right now, if we had a sponsor or a donor, we could have three more of them in the neighborhood that told us we want this, but we can't pay for it. So it's not that the need and the interest isn't there. ... [Cleveland] parents are still trying to figure out how to get by. So that's where we're thinking, how do we provide the access to this so these kids can be more successful and go on to post-secondary and all that, you know?"

### Building their maker program

Over the past three years, the teaching artists at PAA have increased their understanding of maker materials and technology through participating in Maker Corps and making connections with local makers. At this point, Santina sees PAA's involvement in maker education growing in two ways: to build awareness and understanding for maker education in the arts education field, and to better understand the impact their programs have on students in ways that align with 21<sup>st</sup> Century Skills.

She feels like she does not have many peers in the arts education field, who question whether projects that have a making or tinkering philosophy produce high quality artwork. She has faced this within national networks of art educators as well as her own staff and board members. She explained, "We have board members, they're like well, it's not even really arts, it's just education and science stuff and it just happened to have art in it. I say, we are an arts education organization with teaching artists; we don't have anybody who went to school for science. This is the way artist think. I think there's a lot of perception and awareness building we can do. ... Particularly around how to create interesting art that's not just from a kit. We're trying to do something a little different."

To build support and awareness, Santina would like to be able to demonstrate how their programs influence students' problem solving skills, persistence and if those skills translate between contexts. Arts integration can be a difficult educational approach to measure, but many schools now collect survey data on constructs such as school climate, support and challenge, which have been found to be associated with participating in high quality arts programming. Santina would like to better understand what outcomes are associated with their program, and explore differences among age groups and length of programming.