



Case Study:



Chatham Middle School, New Jersey Campus
SMARTdesks Powers Up Its Collaboration Furniture
for Robotics, Coding, and Computer Aided Drafting & Design (CADD)



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By John Kessell, SMARTdesks Creative Director

Danielle Romero Dagounis, Supervisor of Instructional and Design Technology (K-12) was interviewed November 28, 2018 to describe the design process that led to the grand opening of the Innovation Lab in September of that year. She says that the need for this new facility became evident soon after the iSTEM Program was adopted by the District in 2013.

"The process started over five years ago," Dagounis explained. "We historically had a computer lab, and that was just used for teachers to come visit with their classes. There weren't any scheduled classes that went on in there. Five years ago, we started our STEM Program—Science, Technology, Engineering and Math program— offering a wide array of programs: an integrated 6th grade STEM robotics course, 7th grade creativity and innovation course, CAD—Computer-Aided Drafting & Design—and coding, or digital game design class. Three of these necessitated computers with robust processing capability. To accomplish this, we had to take over the computer lab. The downfall of that is: it's a computer lab. As such, there are no supports to allow the students to collaborate."

Another issue was the inefficiency of three teachers sharing a computer lab that wasn't serving any of them well. Danielle notes, "We had three STEM teachers and only two classrooms. They were constantly running between the different classrooms during passing time. We would be having robotics in [the computer lab], then the teacher would have to run to teach another class in another room, making it very difficult for them to keep everything set up."

After two years of operating with these deficits and inefficiencies, Dagounis presented her analysis to the administration indicating the need to resolve the "serious space issue." The Administration responded by issuing a referendum. Dagounis explains, "The District was moving forward with a referendum, which the tax payers vote on, whether they wanted to provide additional funds for certain projects. We first did a referendum that had six different projects built within it. School District of the Chathams referendum included a bunch of different things: update the fields, fund a new Performing Arts Center, and a new STEM facilities for the middle school. Unfortunately, that bundled referendum did not pass, so we decided to separate the questions. After doing so, the STEM question passed with flying colors, as did every one of the individual questions that we asked. Once that was approved, we had to go through the whole process. It took about two years to get the referendum together. Once everything was passed, we started working with the architect to come up

with our plans and designs. We also visited other districts to see what we liked and what we thought could work in our space."

Dagounis continues, "The plan was to make a new STEM focus area with classrooms set up to serve different purposes. The classroom we are talking about today is what we call our Innovation Lab. It houses our sixth grade Robotics class, our seventh grade CAD Computer Aided Drafting and Design course, and our eighth grade Digital Game Design, or Coding course.

"The Innovation Lab is the room that features SMARTdesks collaboration furniture. Our Creativity Lab—right next to it—houses our Creativity Innovations course and our 6th grade iSTEM course. Our Design Lab—all the way at the end of the hall—is a workshop for materials processing, and has band saws and drill presses. Each room has its own purpose. Our hope is that, over the next couple of years, the classes can flow between these three rooms, so if they need to do some designing on the computer, they can come into the Innovation Lab. We would approach it as a micro campus within the school."

With the design of the pedagogy defined, Danielle's next task was to break away from the computer lab approach and find collaborative learning furniture to support robust CPUs and provide top-side power for Robotics, CAD and Digital Game Design & Coding. Dagounis tells her story this way, "I went through the process and listed my criteria for collaborative desks. First of all, they needed to handle the full desktop computer set-up, with the memory necessary to run the software. We are a 1:1 Chromebook District, so every student has a Chromebook device that they use for all of their classes. They normally take it home to do homework, but in our STEM classes, we have specific software that we require.

"We didn't want the desks set in normal traditional rows. We didn't want the kids lining the classroom walls—not being able to look at the teacher because they are facing the wall. We needed open table top space because the kids were working with robots. They need to be able to design them, move them around, and plug them into the computer.

"We also needed to locate the keyboard and CPU under the table top. We wanted mounting systems, and a lot of the other desks we reviewed didn't have that capability. The scale of the tables was also important: not too big, not too small. We needed just the right combination of table top space and floor space to test out the robots on the ground."

With these requirements in mind, Dagounis began her search for the perfect collaboration furniture to realize her vision. She soon realized that, as she put it, "Apparently, if you want collaborative computer desks, they're like unicorns. Nobody really makes them, except for you guys." Asked how she found SMARTdesks, she remembered, "I went to the New Jersey School Board Convention two or three years ago, and I presented with our District, and saw some of SMARTdesks' products being demonstrated in person. And when I 'Googled' collaborative computer tables, SMARTdesks was the most relevant result. So I got some measurements and gave them to my architect and asked if these SMARTdesks collaboration tables would fit—before I got my hopes up. And they did. And that was awesome."

Jeffrey Korber, SMARTdesks CEO, added, "Yes, we had interface with the architect. They called us. We have our own design department, so we did a layout."

Dagounis continued, "Which was perfect, because we were able to finalize framing for the space and determine the placement of the power, which was in the floor.

"Another thing—we wanted to have a color scheme for each space. In our Innovations Space, everything is green. We also have butcher block counter tops around the edges— so, we wanted to stick with a certain color scheme and a certain look. The other rooms are blue and red. We were looking for a certain level of customization. We went with a maple looking top to go with the butcher block."

Korber observed, "So, customization was a factor in your decision making?"

Dagounis responded, "Yes. Even though that might seem silly and trivial, when you are spending as much money as we did on this space, and we are trying to go for a certain look—it is important to be able to realize everything in the vision. We wanted the kids to be excited about the new innovative space where they would do new, innovative things. Paying attention to the little details was really important to us. Or at least to me, because I was the one selecting all of the final finishes."

Korber observed, "That is one way we differentiate ourselves. I was directly involved in the engineering. We don't normally put computers into these tables. They are usually built for all-in-ones or laptops. So we had to find a space for the CPUs, and make sure it worked. We had six CPUs in each of those pods. And we needed to drill all of the holes in the right place. I worked with my engineer to make it so."

Dagounis answered, "And that is good, because now we have an effective collaborative learning classroom. It is so super important for our students to be able to collaborate with one another, and not just come in and work on their own without having to work with other people. Technology is really playing a huge part in education. I was getting a little disheartened when I was going through this planning process because we had all of these wonderful ideas. I knew I wanted a collaborative, pod-like computer table, and I thought, 'am I going to have to design something like this on my own?' I don't know how I would do that."

Korber said, "That is our job. That was the first time that we made our Collab table this way, but that's not unusual for us. That's how we always approach it. Everything is made to order, one installation at a time."

The important combination of collaboration space appropriate for the activities, supported by ergonomic placement of the technology and power/data connections was what Danielle was looking for. In her search, she found that many products that were offered as collaboration tables for active learning did not include a configuration for the robotics curriculum, saying, "People are forgetting the whole computer component of collaboration, including the use of laptops, or Chromebooks, or whatever the smart device is. I suppose one could get a rectangular table and collaborate—fine. But I

can't build-in all of these technological components that my kids need. They also need power. They are working with robots and I love the fact that in the middle of the table, we can push the top of the power data hub, and it pops up so we can plug in our robots. We have to. We need to, because they have to charge... and also, let's just pretend that the kids need to do some research for doing the coding on their computer for their robot, and they want to do some research on their Chromebook, they can plug their Chromebooks in there as well. So we needed that capability of providing power."

Mr. Korber spoke about the commonplace rectangle-shaped tables Dagounis referred to, "One of things we do is provide all of these power/data options within a choice of collaborative table geometry. That's why our service mark is "where design meets technology." Because you want the design—the space planning aspect of it—but you also need to integrate technology, and that aspect is somewhat custom. For us, it's standard practice. We have a wide selection of products that have room for customization for technology. That's our niche. The bigger guys can't do that. They just mass produce A, B or C, while we can pull different spices off of the spice shelf and season the soup the way you want it, including a full range of colors and textures and finishes. If you need to match existing finishes in the space, we can do that, too."

We asked the Innovations Lab Teacher Jessica Liatys what the "before and after" experience was like. Liatys said, "It's a big difference. Before, I was teaching out of two different classrooms. I had to move around. I didn't have proper storage for the equipment that I had. One of my classrooms used laptops and we didn't have proper tables or workspaces for the kids to build robots on. The classroom I was in before was really tight. And it was hard to move around, and I didn't have enough floor space to really run robots on the floor with the kids."

When asked how she was involved in the design process, Liatys said, "I talked to my supervisor and got to explain what I wanted in the space to make it work for all three of my different classes. One of the big things that I wanted was a lot of floor space—a lot of open area to move around and work on projects. I got to help pick out and discuss what kinds of furniture and storage and what I would need for each class. The actual choice of the furniture was made by my supervisor. It was actually a surprise. I didn't know what actual furniture was picked out until it was in my lab. We had a hard time trying to find furniture that would fit in the lab and do exactly what we wanted. Because of that, my supervisor made it a surprise. I didn't see it until I walked in."

When asked how the students responded to 'the reveal,' Liatys commented, "They loved it! I remember the first day they came into the lab. They walked through the entire room and were in awe of the big space, the high ceilings, the furniture. They wanted to explore everything that was in the space. The tables are nice because they have those curved edges. The kids can slide their chairs around and look at the computer next to them if they are not seated on the same side. The pods are spread out across the room with enough space to move around them. Best of all, they really opened up the floor. I have 24 kids in this space, and if they were in rows, I wouldn't have any open floor area. Now I have a whole bunch of floor space they can move around in without worrying about chairs clanking into each other."

Dagounis added, "The space that we created in all those three rooms is so different from anything else they have in the District. The kids were aware of it being built, but they weren't allowed to see it. We had it cordoned off because we didn't have our certificate of occupancy—we didn't get our certificate of occupancy until the second or third week of school—so, the kids started their classes in other classrooms.

"That first day that we were actually open and they could take their first class in that classroom that was designed for them—their faces were priceless. We have super high ceilings, with exposed ductwork. We're a STEM Lab. We want you to see all the different inner workings. We have whiteboard walls. So they walked in and said 'This is amazing!' And the looks on their faces! They didn't even need to say anything—you could just see it in their faces. They were so excited. They couldn't wait to find out what computer was theirs and where they could sit down. Attached to this room that we are talking about is also a little prototyping lab. We have our 3D printers in there. We have our laser engraver in there. We have our vinyl cutter in there. So, it was fun for them to see all of the different prototyping tools that they have access to—and attached right to the room they are working in.

"Other people are now coming in from other districts, and they are asking 'where did you go to find these tables?' Because you want the tops clean, and you only want the monitor on the top. We need the work space. The kids are cutting. They're gluing. They're building. They're engaged. They're learning with joy. What more could you want?"



Twenty-four students are accommodated in the Chatham Middle School Innovation Lab. This arrangement was chosen because it allows floor space for testing robots. The Collab Pod tables were chosen and customized for this criteria:

- Sized to fit the space
- Shaped to facilitate collaboration around the curved corners
- CPUs and keyboards located under the desktop to make room to build robots on the top
- Displays are supported on their own stands so they can be positioned for convenience in collaboration
- Pop-up power and data connections for charging robots, Chromebooks & laptops
- Finished to coordinate with butcher-block built-in cabinets

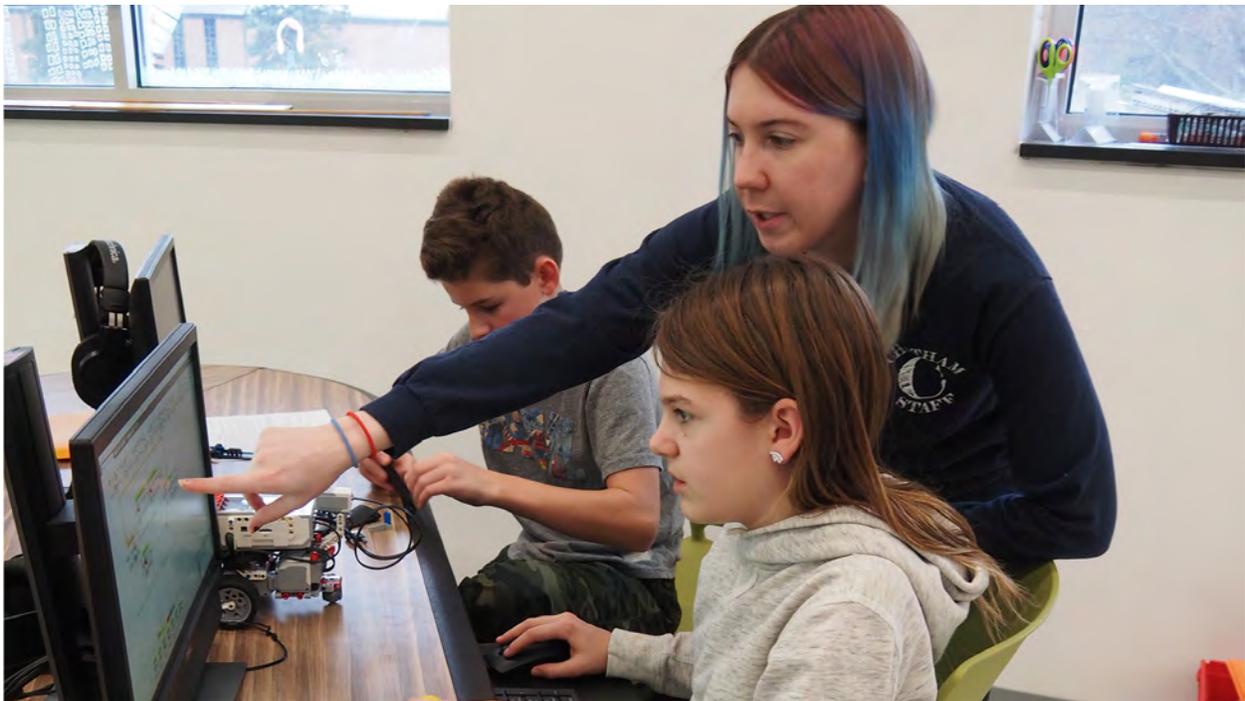


The SMARTdesks Collab Pods customized for Chatham Middle School's Innovation Lab feature:

- Triangular collaborative learning shape with rounded corners for teaming and building robots
- Centrally located pop-up hub provides power for charging and data connections for downloading to robots
- CPUs are mounted under the table top
- Keyboard/mouse platforms allow more room on the table top for building robots
- Freestanding displays can be easily moved for collaboration
- Table finish choices complement interior design choices



Robot is being assembled in the team collaboration space at the curved corner of Collab's top. After charging and data download, robot is tested on the floor in the open space floor plan.

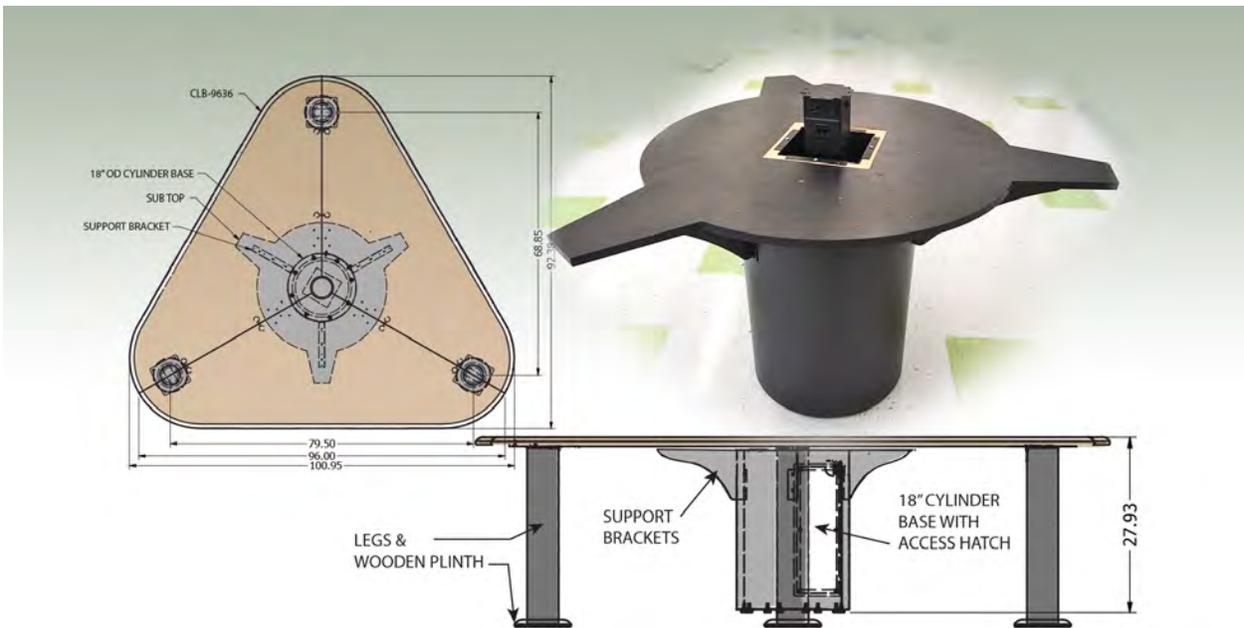


Innovation Lab teacher Jessica Liatys no longer has to negotiate the confines of an out-dated computer lab. The Collab floor plan allows more freedom for her to circulate and give assistance.





Pop-up power and data are located in the center of each Collab Pod.



The central wire management base captures power from the floor and manages computer data cables from the CPUs to the top-side RJ-45 cat6 connectors.