These seven tried and true factors can help drive the success of a 1-1 computing program.
The Center for Advanced Technologies (CAT) is a public school magnet program located at Lakewood Senior High School, located in the southernmost part of Pinellas County on the west coast of Florida. With a focus on STEM courses, the center opened its doors in 1990 to a class of 85 freshmen. Since then, the program has grown. Enrollment for the 2015-2016 year was 450 students in grades 9-12.

The college-preparatory program—100 percent of students plan to attend college—prepares students for careers in engineering, medicine, science, multimedia, communications, and computer science. Students work at engaging and hands-on projects that include robotics, 3D and virtual reality programming and multimedia technologies, among other things.

Louis Zulli Jr., technology coordinator, IT instructor and network administrator for the school, has led a technological transformation beginning over two years ago that has resulted in a highly regarded magnet program—ranked as one of the top five STEM programs in the country by the University of Connecticut—that makes heavy use of current technologies like Dell tablets and computers running Microsoft Windows 10.

Zulli is a technology leader in education who has won two different categories in the Microsoft Innovative Educators Worldwide Competition (for both collaboration and for cutting edge use of Microsoft technology for learning). He recently spoke with Campus Technology about the program, now in its second year of one-to-one computing.

He stressed seven key areas of focus for ensuring success in a one-to-one program, including getting a program started (spend plenty of time on planning), getting teachers on board (allocate time for training well before devices are distributed and help with curriculum changes), and a critical factor—letting students test the computing devices themselves and offer input before device selection is made.

1. Don’t Skimp on the Planning Phase

More than two years ago, the CAT Program faced a significant drop in enrollment due to changes in the district’s busing program. In response, it worked on updating its technology in order to better attract students. “We had to do some hard-core soul searching at what we were teaching and more importantly, how we were teaching it,” Zulli.

They concluded both their teaching methods and classrooms, consisting of five to 30 desktop computers in each class and a few computer labs, along with as few mobile carts full of computers, were woefully behind the times. That hard look produced a document that Zulli authored on the drastic technology changes they needed to make.

“It was obvious in many ways,” he says in retrospect. “Our kids wanted something different, and we were missing the opportunity to change what we were delivering—and to change the pedagogy.” After plenty of staff input on the plan, Zulli and his team presented it to the superintendent.

The document’s core points included the following factors:

- The district needed to create a personalized learning experience for students.
- They needed to accomplish that by going to a one-to-one computer-student structure.
- They needed to incorporate use of the cloud to ensure that students had anytime, anywhere access.

The one-to-one and cloud aspects
of the program were crucial. “We hadn’t settled on a device yet, but from the start, we realized we needed to let students take ownership of these devices and take them home,” says Zulli. “And we needed the cloud in order to give them access to learning materials on a 24/7 basis.”

2 Let Students Test Potential Devices Hands-On Themselves

Based on Zulli’s paper, the administration gave the go-ahead, but asked for ample due diligence in selecting the computer to distribute to students in grades 9-12. Zulli picked devices for the students to test themselves, ranging from Apple iPads to a wide range of Chromebooks, devices made by various vendors and running Google’s Chrome operating system, to Dell laptops running Microsoft Windows and the full Office suite of products.

The devices had to be portable, affordable for the district, they had to connect seamlessly to the existing infrastructure such as digital probes, and let students write serious software code. For example, the curriculum specifically requires writing software in languages and platforms including Microsoft Visual Studio and C#, along with the open source platforms Eclipse and Java. “All of that led us right back to a Microsoft solution,” says Zulli. “Creativity, the ability to create, was absolutely huge for students. They are designing and writing code for robots right on the tablets.”

The Dell Venue 11—and now the Dell Venue 10—won out in the end. “[They] met all the requirements of our students and of our very specific curriculum,” says Zulli. With its tablet-style design, long battery life, detachable keyboard, active stylus, and touchscreen, “it gave us the most ‘bang for the buck.’” The center started with the Windows 8 operating system, but has now re-imaged all devices with Windows 10.

3 Give Students a Sense of Ownership

A key part of the one-to-one program is giving students a strong sense of ownership of their device right out of the gate. “Students treat these devices better when we allow them to personalize them up to a point, to change icons and their desktops according to how their mind works and how they learn,” says Zulli.

“And it’s important that Office 365 gives them access to all their data at any time in the cloud.” Each student also gets a terabyte of storage for storing and accessing schoolwork whenever needed—including in the wee hours of the morning.

Another big success story with the tablet program is the extensive and unlimited use of Skype for Business, which includes the ability for messaging and screen-sharing during meetings. This is highly useful for collaboration and communication. Zulli calls Skype “the must-have tool in the classroom.” He also says that within limits, the center doesn’t restrict student use of Skype for Business. On the bus after school, “kids are tethering their tablets to their phones and working on them. Or they are on the bus and putting on headphones and getting a homework tutoring session from their teacher over Skype while the teacher is still there in the classroom.

The emphasis having a device accessible at any time helps them be more creative and to make a difference, says Zulli. “Making the device their own is so important. This is their device and no one else’s. That gives a sense of, ‘Hey, what can I do with this?’”

Collaboration and sharing among students, regardless of gender, is important in pushing technology acceptance, since students watch what others do and want to emulate their peers. “Hey, what did you just do? Can you show me how to do that?”

4 Train Teachers First, and Help Them with Curriculum Changes

Before putting a single device in anyone’s hands—whether teacher or student—Zulli stresses it’s critical to set aside time for adequate teacher training. He estimates having spent close to 50 hours training teachers, spread out over many weeks. That includes training on the device itself, on the types of software programs that would be used such as Office 365, and—most critically—helping teachers alter the curriculum as needed to make the best use of the devices in the classroom. To help teachers further, Zulli says the center is now moving to using Microsoft Classroom, which is part of Office 365 for Education, as its general learning management system for teachers.

While not overly complex, the move to Windows 10 did take some cooperative training. “I first lined up two to three teachers who are my early adopters to start using it on their devices; then they started training others,” says Zulli. From there, teachers started asking specifically for the new operating system, and within a year, every student tablet was being converted before being handed out to students.

For dealing with reluctant new technology adopters, Zulli counsels “patience and time.” In his program, he says, peer pressure from colleagues, as well as pressure from students, also proved effective. On the other hand, training students proved to be almost completely unnecessary, he says. “They took to the devices like ducks to water. We
said, ‘Here are the devices, here’s the on/off switch, here’s the volume, here’s what to do in case of a freeze,’ and that was pretty much it.”

5 Be Creative in the Role Students Play – Such as Repair Techs

The district has a support contract with Dell, but students serve as the first line of support for computer problems. In fact, an additional important point about the Dell Venues came up during the trial period. Dell designed the Venue 11 to be field-serviceable. That’s a critical point, because some of the students have been trained on computer repair. So the center is now a Dell-certified warranty repair center. Six of Zulli’s students are currently certified as able to repair any tablet, once it falls out of Dell’s blanket one-year warranty. “[Our students] can field-strip the Dell Venue tablet in less than 15 minutes in the field,” he says proudly. “The superintendent loved this idea when I presented it to him. We want to expand and become a warranty repair center for other high schools in the district.”

Students also maintain the network and servers, including patches and software updates. They have also written the entire inventory and ticketing system used for hardware repairs. They used Office 365 on the project, says Zulli, along with SharePoint, JavaScript, and other tools. “It was a great exercise in writing code for a specific need, and understanding how our hardware people work.”

Students also use their technology skills to work with the community. This year, nine students designed and rolled out a solution to help the county with its emergency shelter management and hurricane alert program. Using Office 365, the student-designed and created site includes information for county citizens, including communications through Skype and Office 365 Groups.

6 Look to the Cloud for
24/7 Access

Right from the start, a key tenet of the technology program was to give students access to all their schoolwork at any time, day or night. Some students are night owls, Zulli points out, and need access to materials at unusual times—perhaps when classrooms and labs are long closed and teachers have gone home. Using the cloud for storage ensures students have that level of access. With a video channel residing in the cloud in Office 365, for example, “students can fire up their tablets at any point and do homework. It’s all done by having the tablet and having all that data online,” he says. With older styles of offline learning, Zulli says, students were forced to learn based on a set schedule that might not work for all of them.

7 Structure the Program
Based on How It Is Funded

How a one-to-one program is funded is important in determining how it should be structured, says Zulli. Funding for his program comes from Pinellas County Public Schools, local corporations, and partnerships, and is part of the district’s capital outlay. Tablets are purchased as needed for students. Seniors relinquish them when they graduate. Then the devices are reclaimed and rebuilt with updated software as needed, then allocated to incoming ninth-graders. “You can get away with using Windows devices longer in a K-12 environment than you would in the corporate world,” says Zulli. “If the devices are maintained properly and you can get parts, you could use them over and over.”

In retrospect, Zulli sees advantages for students in a program that leases instead of buying devices. With a four-year leasing model in place, for example, he’d like to see graduating students given the ability to purchase their device at a reduced price. The district could then buy updated devices for incoming students and move ahead from there.

“Most funding for one-to-one programs seems to come from a one-time capital outlay,” says Zulli. With a leasing program such as the one he describes, districts need to ensure they have a renewable source of funding. “You have to be very careful about where the funding source is and where the money is coming from, all the way down the line, including how well-qualified [the funding source] is. Is it capital outlay? Is it part of the operating budget?” he says. If funding comes from the operating budget and the source is repeatable, a leasing program is more feasible.

By finding creative ways to get and keep the right kind of computers and software in students’ hands, Lakewood High’s Center for Advanced Technologies is helping prepare its magnet students for future careers in science, math, technology and electronics. Zulli’s byword has been and continues to be planning—whether than means including students in the selection process, ensuring teachers get adequate training before launching a one-to-one program, or eventually launching an innovative a repair program that will have students repairing classmates’ devices—planning is essential.

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