Digitally Aided Education, Using the Students' Own Electronic Gear

Middle-school students using their own electronic devices during a science class at New Smyrna Beach Middle School in New Smyrna Beach, Fla.

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Educators and policy makers continue to debate whether computers are a good teaching tool. But a growing number of schools are adopting a new, even more controversial approach: asking students to bring their own smartphones, tablets, laptops and even their video game players to class.

Officials at the schools say the students' own devices are the simplest way to use a new generation of learning apps that can, for example, teach them math, test them with quizzes and enable them to share and comment on each other's essays.

Advocates of this new trend, called B.Y.O.T. for bring your own technology, say there is another advantage: it saves money for schools short of cash.

Some large school districts in Central Florida and near Houston and Atlanta have already signed on, and they are fielding calls and providing tours to administrators from hundreds of other districts that are considering whether to follow their lead.

But B.Y.O.T. has many skeptics, even among people who otherwise see benefits of using more technology in classrooms.

"The schools are hoping, hoping there's going to be a for-free solution because they don't have any money," said Elliot Soloway, a computer science professor at the University of Michigan who consults with many school districts about the use of computers to promote learning.

"If you look at initiatives in public education, this has the momentum."

But Mr. Soloway also said he was "frightened" by the notion of schools using B.Y.O.T. as a quick budget fix because there was no evidence that a classroom full of students using different personal devices would enhance learning. Roy Pea, a professor of learning sciences at Stanford University, also has doubts. He is the co-author of a White House-backed National Educational Technology Plan published in 2011 that advocates for technology-centric classrooms.

But he said the B.Y.O.T. approach could be counterproductive if teachers were forced to build lessons around different devices — in effect, subverting curriculum to technology.

"Why are they so happy to have these devices when just a few years ago they didn't want them in the classroom?" Dr. Pea asked about school administrators.

The Volusia County School District in Central Florida, bordering Daytona Beach, is one of the places that used to have signs around its schools that admonished students: no cellphones allowed. But the signs have been replaced over the last two years with new ones that read: B.Y.O.T.

Volusia school officials say that they realized they should take advantage of, rather than fight, students' deep connections with their devices. At the same time, the district found that the cost of providing and maintaining computers for students was becoming prohibitive.

Since the change, Volusia officials say, they have not encountered many tech support problems or complaints from teachers. Rather, students are more engaged, they say, and the only problem that regularly crops up is that students forget to charge the batteries in their devices.

"It's almost like bringing your homework," said Jessica Levene, manager of learning technologies for the Volusia district, where 21 of 70 schools are using B.Y.O.T. "Make sure you have your device and that it's charged."

She conceded that students could text each other more easily now but said the school was keeping them busy on their devices. And while district administrators worried initially that poorer students would not own devices, they discovered something of "an inverse relationship" between family income and the sophistication of their devices, particularly smartphones, said Don Boulware, the district's director of technology services.

At Woodward Avenue Elementary School in the Volusia district, fifth-grade teacher Dana Zacharko said her students tended to bring in smartphones or iPod Touches. She said she had found apps that allowed her to teach all kinds of subjects.

For instance, a recent assignment entailed learning about fractions by using an app called "Factor Samurai." A number appears on the screen, and the student is supposed to cut it with a finger — as if slicing with a Samurai sword — so that it gets cut into smaller values. But students lose points if they try to slice through prime numbers.

Ms. Zacharko will also start class discussion on a reading assignment by asking students to use their devices to write comments in an online forum. "Their typing is amazing on these devices," she said.

The fact that students in the same classroom can use many different devices is not a handicap because they are all using the same lessons on the Internet, said Lenny Schad, former chief information officer in the Katy Independent School District near Houston, which started a program with a different moniker: B.Y.O.D., for Bring Your Own Device.

"The Internet is the great equalizer," Mr. Schad said.

He added that students' devices were not meant to be a substitute for teachers, but could be used as tools for assignments. He noted that the concept was catching on; he said he had given dozens of presentations to other districts and educators about his district's initiative.

"My message: It shouldn't be 'if' we do it, it should be 'when' we do it,' " said Mr. Schad, who this year moved to the nearby Houston Independent School District, where he plans to employ a similar strategy. "I don't know how districts can't look at this model."

He said that policy makers who opposed B.Y.O.T. were holding on to an unrealistic notion that districts should equip students with computers themselves.

"On a smartphone, there are no limitations," Mr. Schad said. "This is the world they live in and we're bringing it into the classroom."

Another district that has adopted B.Y.O.T. is Forsyth County in Cumming, Ga., near Atlanta. Because its B.Y.O.T. program started in 2008, more than 300 people have visited in the last year from other districts around the country to learn from the district's experience. The Forsyth district has a tour planned this spring with 160 spots for visiting educators from around the country that is fully booked.

In Forsyth, the most common devices are iPhones, iPod Touches, Android phones and tablets. They are effective for students answering multiple-choice questions on math Web sites or taking a quiz, said Anne Kohler, a special-education teacher at South Forsyth High School. She says that policy makers and others who oppose the idea of using devices in classrooms are behind the curve.

"They don't understand how kids acquire knowledge," she said. "They're not the people actually doing it."