By Mark Edwards, Scott Smith, and Todd Wirt

Find out how Mooresville Graded School District improved student achievement and revolutionized teaching with its Digital Conversion program.

Go Digital

Mooresville Graded School District (MGSD) in North Carolina, USA, was in a tough situation that is all too common for districts across the country. Our student poverty ratio rose significantly from 2007 to 2011 because of the economic recession, and we were ranked 99 out of 115 school districts for per-pupil expenditure in the state. No less than 40% of MGSD students qualified for free or reduced-price lunch, student test scores were low, dropout rates were high, and the digital divide was wide.

We knew we had to come up with something to turn the statistics around, and the solution had to be effective and financially viable. In 2007, we began planning our Digital Conversion program, a six-year strategic plan that set clear goals for using technology in classrooms and focused on academic achievement, engagement, opportunity, and digital equity.

The program has revolutionized our learning and teaching, despite family income, school funding, and resource disadvantages. Since 2008, student achievement at MGSD has skyrocketed, test scores have increased in all of the district's eight schools, and four-year graduation rates have soared.

One-to-One Laptops

At the core of our program is a one-to-one laptop initiative. In 2007, we had a significant digital and economic divide. Some students had access at home to technology and resources, and some did not. Since then, we have distributed laptops to every student (more than 5,000) in grades 2–12 and to nearly 500 licensed educational staff across the district. The driving concept has been to have students "own" these district-provided devices during the full school year, taking them home after class and bringing them back in the morning for classroom use. For many Mooresville students, the school-issued laptops are the first that their families have "owned."

In addition to our seven technology department employees and four help-desk managers who provide maintenance for the laptops and another 1,000 desktops, we allow high school students to work at the help desks

The Sylvia Charp Award

Mooresville Graded School District in North Carolina, USA, won the 2012 Sylvia Charp Award for District Innovation in Technology. Presented jointly by *THE Journal* and ISTE at ISTE's annual conference and exposition, the award recognizes U.S. school districts that exhibit effectiveness and innovation in the application of technology.

Winners demonstrate consistent district effectiveness, use of the NETS or a local or statewide derivative of ISTE's standards, effective and innovative technology implementation, and commitment to participate in dissemination to and support of other districts. For more information, visit iste.org/awards.

as an elective. About 10 students per class block have taken a position to learn about technology maintenance from IT staff as part of this program. Students work on various IT projects, such as creating maintenance handouts, installing software, and disassembling machines. The program equips MGSD students with the knowledge they need to properly care for and maintain their digital devices.

Integrating laptop computers has significantly enhanced the level of student interest, motivation, and engagement in learning. By offering students the technological resources they need, our digital conversion has leveled the playing field and changed the way teachers instruct and students learn. Via challenge- and project-based learning, students demonstrate transformative learning

on a daily basis, moving beyond mere proficiency in both scope and depth.

Tools for Collaborative Learning

To execute the Digital Conversion program, teachers and administrators use Angel, an online learning management system with web 2.0 tools, including blogs, discussion forums, wikis, chats, and email. They also use instructional resources, such as Discovery Education, icurio, and BrainPOP, extensively to meet the needs of students and keep them engaged. The use of digital tools has carved the path for an open, shared learning environment across its eight campuses, fostering collaborative two-way learning. For example, we encourage every student in grades 4–12 to create a digital portfolio. Students create projects for display, such as movies, songs, and art samples. They also convert creative materials to digital formats and then share them with their peers, teachers, and parents across the district and community.

The Digital Conversion program provides the tools for students and teachers to collaborate in new ways and extend learning beyond the classroom. For example, in early 2011 a snow day kept MGSD students home from school with a large exam looming for one class. Using Angel, the

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teacher was able to log in online and host a virtual review session with students at home.

The reach of our program has only just begun. We are already planning to connect MGSD students with other learners internationally. In 2012, foreign language teachers have elected to use Cisco WebEx as a means of connecting their language students with children and museums in countries with native speakers. Foreign language educators envision using WebEx as a platform to bring cross-cultural communication and foreign language learning to a new level.

Because MGSD has made technology a key tool for education, students now view their teachers as collaborators. Instead of educators dictating what they want their students to know, they have become facilitators, allowing students more freedom to discover and explore.

Connie Austin, a fifth grade teacher at Mooresville Intermediate School and a 32-year veteran, came to realize the advantages of this new paradigm:

> I discovered that I didn't always have to be the teacher in the classroom. I could assume many roles, and so could the students. I saw teachers become collaborators using technology, willing to share and learn.

This program affects all facets of student life, including extracurricular activities. MGSD uses its technology to communicate anything from changes in club schedules to directions for sporting match locations. One example is the Mooresville football team. The team uses technology and software to conduct film reviews of their games. Coaches video record plays, edit content, and comment on strategic points. They then post the edited materials online, and students can log in and review the coach's feedback individually.

"Dr. Edwards! You have to see this!" came their excited reply. Knowing that the students had cut their recess short, the superintendent sensed that something seismic was afoot.

Professional Development

To encourage buy-in to MGSD's sweeping paradigm shift with teachers, administrators, and staff, the school board voted to implement a comprehensive professional development effort. One component of this effort is giving 10 early-release professional development days throughout the school year to provide training and reinforcement on the effective and safe use of technology.

In addition, MGSD holds summer teacher institutes to help facilitate the safe and effective integration of technology within classrooms. We also encourage teachers to participate in curriculum creation using new technology tools. The goal is to empower educators to customize their learning (and that of their students) according to need. Professional development is differentiated by content level, grade level, and each teacher's response level. Today, Mooresville doesn't have just two or three leaders in each school; they have 15 or 20 in each who are acting as ambassadors and agents of change for the conversion program.

Funding

How does a school district that ranks 99th out of 115 in per-pupil expenditure fund such an all-encompassing program? The answer is simple: Involve the community. One resource is Lowe's Home Improvement, which maintains its corporate offices in Mooresville. Lowe's responded to our plea for assistance with a jump-start fund of $250,000. Our civic and community leaders also contributed to the technology purchases. One small example is that all local businesses, through the work of the Chamber of Commerce, have agreed to provide

free Wi-Fi in shops and restaurants. Students know they can travel almost anywhere downtown and get online. The city of Mooresville similarly supports our program at the public library, fire departments, police stations, and public parks.

Even without such generosity on the community's part, the Digital Conversion program still would have been possible because we relied on our operating budget for 98% of the funding. We were able to divert available resources to get this done without a new infusion of funds.

Technology expenditures for each child at MGSD run approximately $1 per day, exclusive of infrastructure, which is funded through capital expenditures. This covers all hardware, software, maintenance, and training associated with each student's technology access.
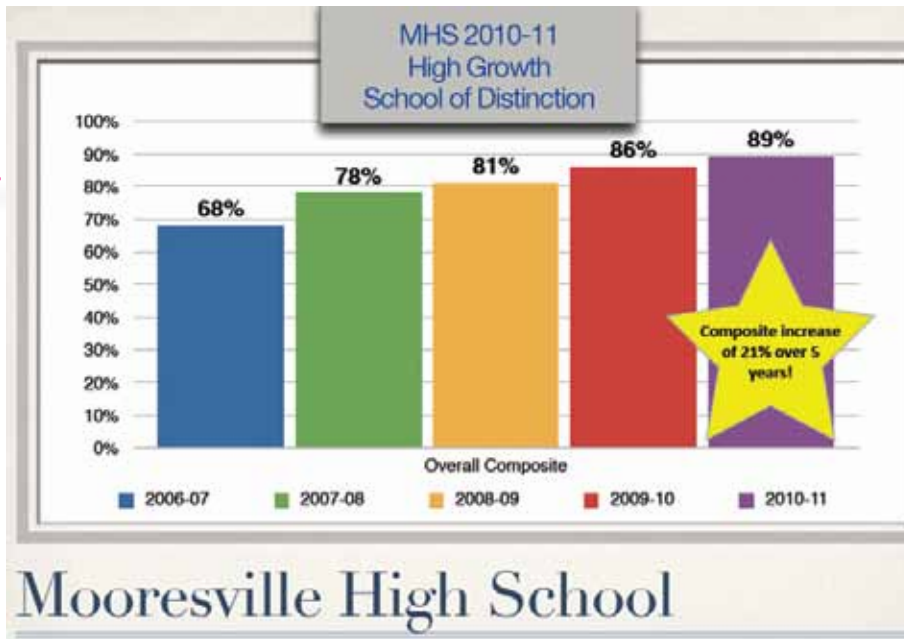
One of the most significant aspects of this model is the near elimination of spending on textbooks. Although AP classes still use traditional texts to comply with state and national standards, nearly all other knowledge stores are contained online. These resources are not only timely, but also extremely cost effective. Two years ago, we were paying $80 for a U.S. history book. Now we pay less than half that for a huge media reference library that's available to students 24/7.

Student Success

MGSD's districtwide success is a direct result of this program. In 2011, our district tied for third in North Carolina's "Schools of Distinction" ranking. MGSD as a whole continues to improve in this ranking, after having started at 38th (out of 115) in the first year of our digital conversion.

MHS 2010-11
High Growth
School of Distinction

Mooresville High School

This bar graph shows the steady improvement of end-of-course exam scores for Mooresville High School students across five consecutive years.

Test scores across individual schools and subjects continue to improve with every passing year. At Mooresville High School, end-of-course (EOC) composite exam data reveal an increase of 21% since the start of the program, and this trend is replicated across age groups. For MGSD third graders, reading, math, and composite EOC scores have all improved significantly over the past four years. Likewise, for Mooresville Middle School, EOC composite test scores improved to 85% in 2011, marking 13% growth since the program began.

Narrowing the Digital Divide

One of the primary goals of our program was to decrease inequalities or discrepancies in student learning driven by factors such as income and racial heterogenity. Since our implementation, disparities in achievement have decreased. From 2010 to 2011, MGSD saw an impressive 15% growth in math proficiency among struggling students, an 11.1% growth among black students, a 4.7% growth among Hispanic students, and a 5.6% growth among economically disadvantaged students.

Graduation and college rates. Another exciting result of our program has been the increase in our graduation rate, decrease in our dropout rate, and increase in college attendance. In 2011, MGSD's graduation rate was second in North Carolina, after improving from a 77% graduation rate during our first year of the program to a 91% graduation rate in 2011.

Simultaneously, the Mooresville High School dropout rate has decreased by 48 students per year since 2005, and the college attendance rate among graduates has increased by 12% since 2006.

Qualitative learning. It is only by stepping into a Mooresville classroom and observing the learning in progress that the true value of tech integration and student engagement is apparent. The following story might illustrate what we're talking about.

During a visit to Mooresville Intermediate School, our superintendent saw a group of fifth graders sprinting down the hallway in his direction. Always concerned for students' safety, he inquired why the boys were in such a rush. "Dr. Edwards! You have to see this!" came their excited reply. Know-

ing that the students had cut their recess short, the superintendent sensed that something seismic was afoot. The crew soon clustered around a laptop computer, eagerly perusing a website that tracks global earthquake activity.

The rest of their class was out playing, but they had been inside monitoring quakes around the world and had pinpointed tremors in Southeast Asia. They said that they thought a big earthquake was going to happen somewhere in the area, and about two weeks later, a devastating quake and tsunami struck Japan. What's important about that is that our students had access to real-time data, so they were able to make real-time observations. We had never seen kids running in from recess back to their classroom before. That type of learning, which is possible now that our students have access to powerful technology tools, has brought everyone to a new place.

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