Every Child, Every Day:
Mooresville's "Digital Conversion" Puts Kids First

Executive Summary

MOORESVILLE GRADED SCHOOL DISTRICT
Mooresville, North Carolina, USA
http://www.mgsd.k12.nc.us

· K-12 Education
· 750 employees
· 5,600 students in:
  - 3 elementary schools (K-3)
  - 2 intermediate schools (4-6)
  - 1 middle school (7-8)
  - 1 high school
  - 1 technology & learning center (9-12)

After more than three decades in education, Dr. Mark Edwards has amassed a trove of fond memories. But few can compare to what he witnessed just after the second semester of the current school year began.

During a visit to Mooresville Intermediate School, Edwards – who is Superintendent of Mooresville Graded School District (MGSD) in North Carolina – glimpsed a group of fifth-graders sprinting down the hallway in his direction. Always concerned for students' safety, Edwards inquired why the boys were in such a rush.

"Dr. Edwards! You have to see this!" came their excited reply.

Knowing that the students had cut their recess short, Edwards sensed that something seismic was afoot. And indeed, the crew was 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'd been inside monitoring quakes around the world, and had pinpointed tremors in Southeast Asia," Edwards marvels. "They said 'we think a big earthquake is going to happen somewhere in the area.' About two weeks later, the devastating quake and tsunami struck Japan."

"What's important about that," Edwards continues, "is that our students had access to real-time data, so they were able to make real-time observations. To see kids running in from recess, back to their classroom...that was something I'd never seen before. That type of learning – which is possible now that our students have access to powerful technology tools – has brought everyone to a brand new place."

A Visionary's Perspective

Edwards knows a thing or two about spotting significant trends in the classroom. Revered in the educational field, he was the architect of a landmark, one-to-one computing program in Henrico County, Virginia. This 2003 initiative included the distribution of laptops to 26,000 students, dramatically transforming teaching and learning in the county. In the ensuing years, the Henrico deployment has been singled out by international researchers as an exemplary model of technology integration.

Long a champion of leveraging educational technologies to equip students with 21st-century skills, Edwards believes that providing access to online tools is the key to creating a generation of informed, lifelong learners. "We must ensure that what our kids do in school is aligned and relevant for their futures," Edwards advises. "That means using 21st-century tools, and understanding how to collaborate and build projects together."

The greatest potential for change existed in the district's level of academic achievement. In the 1980s and 1990s, MGSD had been one of NC's top-performing districts. But in recent years, the composite pass rate had dipped to the low 70's. Says Edwards: "I was extremely fortunate to have a community and a school board that was clearly synergized to move in the right direction to correct this. Everyone was in agreement that what was needed was equal access to resources."

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> Dr. Mark Edwards, Superintendent, Mooresville Graded School District

High Hopes in a Low Economy

With Edwards in place, key hires made in administration and IT, and with all stakeholders on board, MGSD was poised to launch its "digital conversion." Funding would be the next major hurdle. But thanks to comprehensive outreach done by Edwards and the school board, the community gladly stepped in to help.

Lowe's Home Improvement, which maintains its corporate offices in Mooresville, responded to Edwards' plea for assistance with a "jump start" fund of $250,000. The Town of Mooresville and other community leaders also contributed to the technology purchases. Most remarkably, this wallet opening took place just as the U.S. economy began its downward slide. But Edwards notes that even without such generosity on the community's part, the MGSD initiative still would have been possible.

"We relied primarily on our operating budget; 98 percent of the project was funded in this way," Edwards explains. "Mooresville actually ranks 99th out of 115 districts in state funding. But we were able to repurpose resources that were already available to get this done, without a new infusion of funds. So it's really in the realm of possibility for most districts."

District Prepared for Success

When Edwards joined the Mooresville district, which is home to some 5,600 students in grades K–12, he found a school board galvanized around a single goal: creating the same type of academic environment that Edwards had effected in Henrico County. In 2007 the board had adopted a six-year strategic plan, setting clear goals for the utilization of technology resources in all classrooms, and focusing on academic achievement, engagement, opportunity and equity. Edwards confirmed that a transformation similar to Henrico's was possible in MGSD, especially given that a number of important success factors already were in place.

"A big part of this type of initiative is building awareness and consensus within the local community and the teaching community," says Edwards. "At our first public symposium we had about 1000 parents in attendance. So everywhere there was a real sense of 'let's step up and create better opportunities for all.'"

"Mooresville is a much smaller district than Henrico," he continues. "In districts with a more manageable size, your probability of success goes way up. There was also a significant digital and economic divide: There were students who had access at home to technology and resources, and some who had none. That was a real driving component for me in coming to Mooresville: to create equity of opportunity for all."

Phased Timetable, Rollout Ensures Successful Transition

2007	2008	2009
All district teachers receive laptops; Mooresville HS English classes take delivery of laptop carts	First summer institute for all instructional staff; early release days incorporated into school calendar	All MGSD students in grades 4–12 now have laptops 24/7

A Dollar a Day

The MGSD funding model is elegant in its simplicity: Technology expenditures for each child run approximately one dollar per day, exclusive of infrastructure (which is funded through CapEx). 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 expenditures for textbooks. Although AP classes still utilize traditional texts (in order to comply with state standards), nearly all other knowledge stores are contained on CDs or online. These resources are not only timely — offering the ability to be updated as new developments and discoveries warrant — but also extremely cost effective.

"Two years ago, we were paying $80 for a U.S. History book. Now we are paying $33.50 per student per year for a vast variety of content. That's less than half the cost of one book, for a huge media reference library that students have available to them 24/7." Edwards says.

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>
> Dr. Randy Bolton, Principal, Mooresville Intermediate School

Professional Development Speeds Technology Integration

It's one thing to have an excited visionary at the helm, championing change. It's another thing entirely to ensure acceptance of that change at every level. To encourage buy-in to MGSD's sweeping paradigm shift by teachers, administrators, and staff, the school board voted to implement a comprehensive professional development effort. Initially approving six early release days — which freed up afternoons for training — the board eventually increased that number to ten.

"I would say our professional development was the biggest, most important thing we did," says Dr. Scott Smith, MGSD's chief technology officer. "That was what really redefined our whole culture. Of course we had teachers who thought 'oh gosh, I'm not prepared for this.' So the whole staff development piece was really huge."

Creating a Leadership Team

Mooresville's teacher training was unlike anything district teachers had seen before. For the first time they were empowered to customize their learning (and that of their students) according to need. They were also encouraged to take a leadership role in creating an innovative, engaging curriculum using the new technology tools.

"The professional development was differentiated by content level, grade level, and each teacher's response level," says Edwards. "Then we did a lot with building 'distributed leadership' capacity, in every part of the district. Now Mooresville doesn't have just two or three leaders in each school; we have 15 or 20 in each who are helping their colleagues, and helping refine their work."

Cisco Provides "Pristine Infrastructure"

Ensuring that all students and teachers would have reliable, real-time access to rich multimedia content, MGSD also installed a Cisco® wireless network. According to Edwards and his staff, the district's expenditures for networking infrastructure were (and continue to be) mission-critical. "To me, making appropriate investments in computing infrastructure is as important as investing in wiring or lighting," Edwards says. "I think we were the first district in the nation to use Cisco's wireless 'N' technology…and it's been absolutely flawless. One of the reasons we're so enthusiastic about recommending Cisco is that it just works. It almost guarantees what I call a 'pristine infrastructure.'"

Mooresville High School Principal Todd Wirt believes that without his school's Cisco network, the shift in academic environment would never have been possible. "When a teacher gives a project now, a huge component of it is some sort of multimedia. So at any given time, we have anywhere from 1200 to 1600 students making movies and podcasts, and accessing streaming video on the network. It's really key to our culture here; it simply has to work."

"Having that kind of bandwidth is vitally important; you have to have a networking infrastructure that can support that type of usage," says Smith. "Really, kids could care less whether they're downloading a 4KB email, or a 25MB video. They just want to know that 'when I click it, it works.' My job is to make sure that happens...and because of Cisco, it does."

From Lecturer to Facilitator

Connie Austin, who has overseen a fifth grade classroom at Mooresville Intermediate School for 32 years, admits that her own digital conversion wasn't exactly seamless. As a teacher whose career began with chalk, a blackboard, and a set of textbooks, she says the very idea of preparing a brand new, computer-based curriculum was "unthinkable." "Teachers in general do not like change," Austin observes, laughing. "I had begrudgingly started to use email, and that was enough for me. But I began to realize that this 'conversion thing' was going to move forward with or without me. So I threw myself into learning as much as I could."

"Connie bought in, and became one of the biggest users of our Angel learning management system," Smith says admiringly. "She eventually became a trainer for her colleagues. When you have a veteran teacher who says 'I get it; this is what's right for the kids'...that was huge for her, and for us."

Austin says she was surprised and exhilarated by the potential of the new technologies. "Not only did I find it valuable, I actually enjoyed it! 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, willing to share and learn."

MGSD's Top Apple and Cisco Technology Tools

- Apple MacBook laptops
- Apple iLife and iWork software suites
- Cisco 802.11n wireless network, with 1252-N access points in each classroom and the Cisco ACE Application Control Engine working as a load balancer
- Cisco Catalyst® 3560-E and 3750-E Series Switches
- Cisco Unified Communications System™ platform and Cisco Unified IP Phone 7945G and 7965G

An Open, Collaborative Learning Environment

Spend any amount of time in conversation with any Mooresville educator, and this notion of teacher-as-collaborator becomes a consistent theme. "It's difficult for me to let go of what I want my students to know, and let them discover it on their own," says MHS science department chair Scott Bruton. "But I'm learning that they're capable of doing much more than I've given them. Once kids get these tools into their hands, they do an unbelievable job."

Dr. Randy Bolton, principal at Mooresville Intermediate School, also sees evidence of this trend on a daily basis. "When I go into classes, it amazes me that instead of the teachers being the focal point, they're now facilitators, guiding their students to where they need to go. Learning is much more of a collaborative effort, versus the teacher being in charge. It's a beautiful thing to see."

Assessment Tools Enable Individualized Learning

Another pervasive theme is the individualized learning that is now possible at MGSD. Given teachers' access to comprehensive, easy-to-use assessment tools, they can quickly gauge areas of improvement needed, and tailor lesson plans to help ensure each student's success.

"This notion of 'individualized instruction' is incredibly difficult when you have 1600 students in a school," Wirt says. "But we do online assessments every four and a half weeks, which gives us the data to analyze down to the individual student. Then we can give the kids assignments based specifically on their results, and the areas they need to strengthen. This has allowed us to be very precise about our interventions."

Statistics Document District's Success

It's difficult to contest the success of Mooresville's digital conversion. Once in the 60-percent level of competency in all subject areas, the district has pushed well above 85 percent – and Edwards and his colleagues expect to close in on 90 percent during the 2011–2012 school year.

Edwards, very familiar with the "technology makes no difference" mantra, offers irrefutable proof that MGSD's technology infusion has had a dramatic impact: Out of 115 school districts in NC, Mooresville was one of only six to make all Adequate Yearly Progress (AYP) targets during the 2009–2010 school year, and had the highest number of targets met. Also, during the same year, all MGSD schools were recognized as "Schools of Distinction."

Mooresville Graded School District
NC State Performance and Academic Composite Data
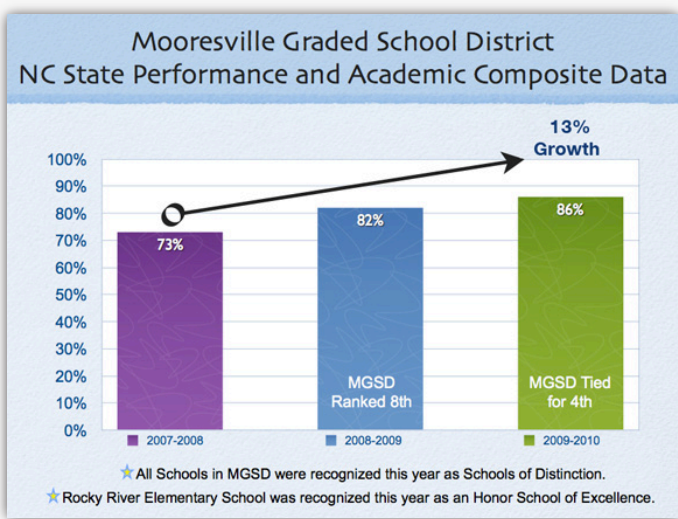
"We've seen significant gains in achievement in every grade level, every content area, and by every data point imaginable – from state assessments to SAT and ACT scores, graduation rates, rates in reduction of dropouts, and the reductions in disciplinary suspensions," says Edwards. "We've had over 1000 visitors this year, and everyone has been compelled by our achievement data."

> "We have kids showing 20, 30, 40 percent gains in reading, math, and science. They may not get there all at the same time. But they will get there."
>
> Dr. Randy Bolton

Bruton, also, has seen noteworthy improvements, especially in high school science. "Three years ago, as a school we were in the low 60th percentile in biology," Bruton says. "This past year we were at 92 percent, and during the first semester of this year we went up to 95 percent. I can't attribute all of that to technology...but technology has opened the door to teacher collaboration, assessment, and analysis, which in turn have helped us target kids who need assistance."

Teen Techs Lend Helping Hands

With 1600 laptops to maintain, Mooresville High School found a budget friendly way to ensure that every student has continuous technology access. Led by teacher David Sherrill and an Apple-certified technician, teams of MHS students troubleshoot and service the Macs throughout the school day.

During Sherrill's "Help Desk" classes, 10 students are available to diagnose any computer problems, and perform the necessary repairs. "The kids do everything from imaging desktops to actually taking a laptop apart and fixing it," Sherrill notes.

It's all in keeping with Dr. Edwards' vision of distributed leadership, Sherrill adds. "We're giving the kids responsibilities that allow them to be leaders in their classrooms, while saving time and making things more efficient. It would be very difficult for our laptop program to be successful without this piece of the puzzle."

Students "Leaning Into" Technology

How do students feel about their district's technology infusion? Predictably, the Internet Generation is energized by its new learning model. MHS senior Katie Amos, who says note taking and research are "a breeze" with her Apple MacBook, can't imagine returning to the traditional curriculum.

"Having the laptops has made everything so accessible," she confirms. "We have so many more resources than when we used textbooks. I can connect with my teachers, and the Internet has helped me find things like the SAT website. This has really changed the way I learn; everything is so much easier."

Mooresville High School 4 year Cohort Graduation Rate

Graduation Rate is reported as the percent of students who graduate in 4 years

22% Increase

2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
64%	76%	79%	79%	86%

"One word we always hear from visitors is that our kids are so 'engaged,'" says Smith. "A researcher who came and observed several classes said he was amazed at how our kids 'lean into' what they're doing." Smith, whose son attends MHS, adds that an upcoming exam on cellular reproduction led the younger Smith to use GarageBand (part of Apple's iLife suite) to a very positive advantage. "Andrew came home, and he was so excited because his assignment was to create a multimedia project about mitosis and meiosis. He recorded a rap song about it, which helped him learn the lesson in a way that was compelling for him…and he aced the test."

District Values Cisco Partnership

At MGSD's upcoming summer institute, Edwards and his colleagues will host 300 attendees from 40 school systems, all of whom are eager to hear how they can implement similar initiatives. Edwards can be counted on to deflect the credit to his faculty and staff, as well as MGSD's partner ecosystem: Apple, Lowe's, the Chamber of Commerce, other business leaders –and especially Cisco.

"It's important to share with our guests our formula for success… and a key part of that is Cisco," says Edwards. "When you blend the type of caring that is a part of the culture at Cisco, it's extremely motivational for us as a district."
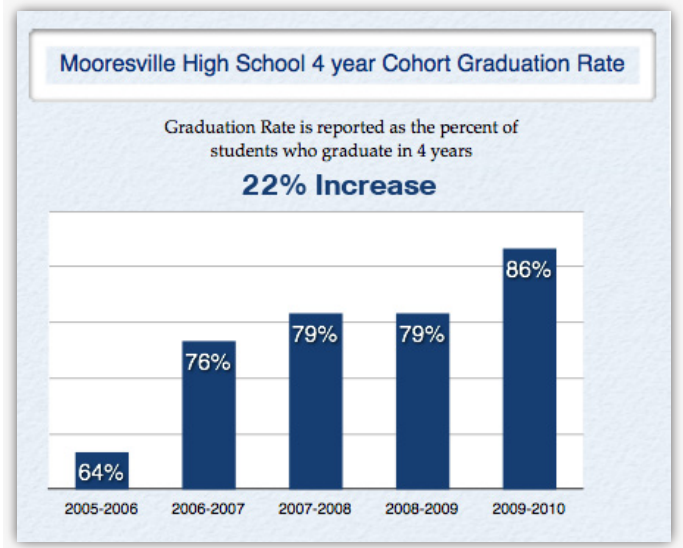
Influencing Educational Thought-Leaders

With continuous media coverage — including profiles in the Wall Street Journal, on PBS and several local affiliates — the Mooresville district has sparked the interest of educational thought-leaders nationwide. Representatives from the U.S. Department of Education and the North Carolina State Superintendent of Schools have toured the district on several occasions, along with educators and administrators from over 30 states. All have witnessed a climate brimming with possibility.

"Everyone's so excited; you can feel the momentum here," says Edwards. "We've had researchers in from all over the country, and their observations are consistent: We have students who are highly engaged and highly motivated about their work, and there's a connectivity with that work because they believe it will be a part of their future lives."

"When I'm in the classroom," he finishes, "I see this type of synergy and energy around learning, and I see teachers who have a lilt in their step. Every day at Mooresville is the best day ever, because we're creating huge opportunities for children. Clearly, we're focused on the future."

> "We're proud to say that Cisco is a true partner in our efforts. When I have conversations with other superintendents, I always say 'there's one word, and only one word: Cisco."
>
> Dr. Mark Edwards