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Technology as a Tool for System-wide Transformation

The 21st Century Learning Initiative at Auburn City Schools

Part 2. Enacting Change: Infrastructure, Professional Development, and Curriculum

Contents

Introduction

"It's a lot easier with the laptops. You get to see things like right in front of you. You can take your notes. I'm a visual person so it makes it a lot more understandable."

Skylar
10th Grader
Auburn High School

One of the nation's outstanding school systems, Auburn City Schools (ACS), has undertaken a two-year pilot of one-to-one mobile computing. Under the district's 21st Century Learning Initiative, Auburn Junior High (AJH) and Auburn High School (AHS) are wirelessly networked, and over 1,000 ninth- and tenth-graders use personal laptop computers. Teachers at the two schools have spent hundreds of hours in individual, departmental, and large-group professional development (PD) to advance their ability to incorporate technology effectively across the curriculum.

The initiative is part of transformative efforts across the district to increase use of technology for effective 21st century learning. All teachers undergo extensive, ongoing professional development on how best to incorporate technology into their teaching. Every school has a full-time, certified teacher dedicated to providing instructional technology coaching for teachers. Each K-9 classroom has Internet access, several computers, and an interactive whiteboard.

Midway through the pilot, an Intel communications team interviewed more than two dozen students, teachers, school media and technology specialists,

administrators and school board members from Auburn City Schools, as well as vendor representatives and Auburn University faculty. Our report follows the framework of *Blueprint Solutions for K-12 One-to-One Computing Initiatives* and is published in three parts. Please refer to www.k12blueprint.com for *Part 1, Preparing for Change*, which provides an overview of Auburn's initiative and addresses policy, leadership, and funding issues. *Part 3, Evaluating Change*, which discusses the results of the initiative and the district's future plans, will be published in Spring 2008.[1]

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1.   Blueprint is available at www.k12blueprint.com.

Infrastructure: Robust Technologies, Collaborative Relationships

Whether in the classroom or data center, school systems need reliable, cost-effective technologies that keep the focus on teaching and learning. Auburn City Schools (ACS) meets these needs by choosing highly regarded products from vendors with a track record of commitment to education.

"Gateway has been very responsive and willing to work with us. They've been right there with us every step of the way."

Debbie Rice
Director of Technology
Auburn City Schools

Vendors as Partners

Vendors can be sources of best practices and knowledge transfer as well as sources of appropriate educational technologies. In keeping with its collaborative organizational culture, Auburn chose vendors such as DyKnow, Gateway, Intel, and SMART Technologies, which are deeply involved in education and value collaborative, long-term relationships with customers.

Intel has been an intellectual collaborator from the district's earliest consideration of one-to-one computing. "Intel is the cornerstone we've held onto," says Joyce Morgan, associate superintendent, Auburn City Schools. "They brought a lot of resources to the table to look at what we are really doing, and they're so good about emphasizing that it's the student, the teacher, the parent, the community—not just the technology. They have suggested many of the best practices that we have followed."

Intel has also provided practical advice and connections to other resources. "Intel has been a very credible resource and sounding board," says Debbie Rice, director of technology. "They pointed us to resources, and they would suggest multiple companies who could help us out with something like the gap analysis. They saved us a lot of research and helped us proceed more quickly."

Rice lauds Gateway for its attentiveness to customer feedback. "We suggested some changes based on our environment, and Gateway is incorporating them into its next-generation products," she says. "That's the type of collaborative relationship you want to have with your vendors."

The best vendors provide robust and timely training and support that can be an important success factor. "It's not the one-time vendor training that's important, as much as having a person on the vendor's staff who is immediately available to answer my questions," says Michael Smith, instructional technology coach at Auburn Junior High. "It's invaluable to be able to e-mail our DyKnow trainer and know he's going to respond almost instantly."
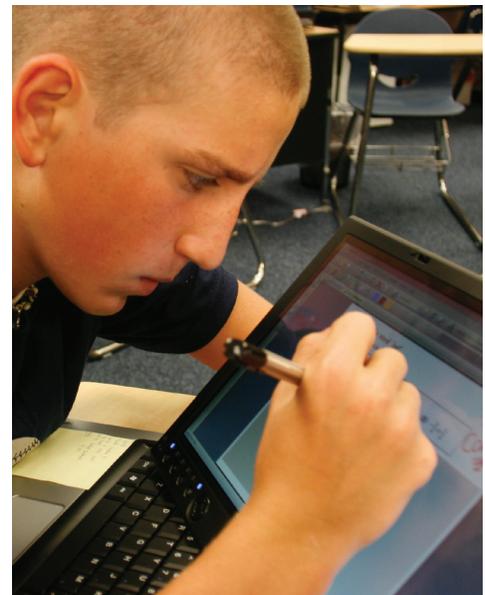
Key Technology Choices

Students and teachers were actively involved in choosing platforms for the 21st Century Learning Initiative. "Once we researched the specifications, we narrowed it down to a few systems, and had students and teachers try them out," Rice recalls. "Luckily, both groups came to the same conclusion."

Auburn standardized on the Gateway M285e convertible notebook powered by the Intel® Core™ 2 Duo processor. "We needed laptops that would last for a full four years, and we knew we couldn't afford the top of the line," says Rice. "We set a mid-range price and allowed for sufficient memory and hard drive storage. We wanted an Intel® dual-core processor because of the heat factor."

The combination of the Intel Core 2 Duo processor and Gateway convertible notebook delivers outstanding performance while minimizing heat consumption and extending battery life. The 14-inch screen provides plenty of space for multiple windows without eyestrain. The system swivels to convert from laptop to tablet and allows data entry via keyboard or pen/stylus. A full-size keyboard minimizes frustration

for students with limited fine-motor coordination. Laptops run Microsoft Windows XP* Tablet PC Edition, enabling students to build skills using technologies they are likely to also encounter in the work world and at college.

Gateway embeds Absolute Software's Computrace* solution into each laptop's firmware, enabling ACS to protect more effectively against theft and loss. Auburn relies on McAfee* Enterprise for virus protection, and uses 8e6 Technologies Internet filtering and monitoring solution to protect students from accidental or intentional exposure to inappropriate content. Parents are encouraged to monitor their child's online activities, and students are encouraged to share concerns about content or behavior they encounter online.

Key Products and Collaborators

Companies	Technologies
8e6 Technologies	Internet filtering and monitoring
Absolute Software	Laptop security and inventory management
Cisco	Network routers and switches
Dell	Servers
DyKnow	Collaborative note-taking and classroom management software
Futurekids	Assessment and professional development
Gateway	M285e tablet computers
Intel	Intel® Core™2 Duo processor for notebooks
Intel	Dual-Core Intel® Xeon® processor for servers
MacAfee	Virus protection
Microsoft	Operating system, Office suite, educational tools, remote management
SMART Technologies	Interactive white boards
Trapeze Wireless Solutions	Wireless access points and smart switches

Technology Foundation

Auburn has standardized its back-end infrastructure to simplify its IT environment and stretch its IT dollars. The district relies on Dell servers based on the Dual-Core Intel® Xeon® processor, and a network backbone comprising Cisco switches and routers.

The district's junior high and high schools have transitioned to a wireless environment, and all schools are following suit as budgets allow. The district uses Trapeze access points and smart switches for Wi-Fi connectivity within the schools. Auburn Junior High has approximately 75 access points, with 128 at the high school.

Rather than investing in significant numbers of surge protectors and plugs so students can recharge their laptops at school, Auburn asks students to be responsible for charging their laptops at home. "They're used to charging their cell phones, Rice says. "It makes sense to ask them to charge their laptops too."

Maintenance and Support

The more technology becomes integrated throughout the curriculum, the more important it is to keep technologies up and running. Auburn High and Auburn Junior High each have a full-time technician, so there's always ready access to service. Other technicians cover three schools apiece. Students can serve as technology aides, acting as peer helpers to students and assisting with troubleshooting.

Each school also has a technology coordinator who is responsible for technology oversight. Technology coordinators such as Ann Harrell of Auburn Junior High School work closely with the central IT staff to ensure the school's purchases and practices align with district guidelines. They report to the principal and are often media specialists or assistant principals doing double duty.

"I translate teachers' needs to Debbie's team," is how Harrell, who is also the school's media specialist, describes her job. "I'm involved with all

technology at AJH—troubleshooting, answering questions, managing the technology budget, making budget recommendations. I keep my fingers on the pulse of all technology needs." Harrell oversees technical work orders and prioritizes them for the technician, who makes needed repairs to the school's 500+ laptops, 160 desktop PCs, and other technologies.

IT technicians use the VNC remote management capabilities of Microsoft Windows* to manage systems. The standardized environment, along with remote management technologies, enables the district to support thousands of PCs, laptops, and servers with minimal staff resources. "Remote management allows us to work smarter," Rice says. "For a lot of problems, we don't have to send a technician. We can remote onto the unit and fix the problem. It's also a great tool for professional development. Teachers can watch what we're doing and do it themselves if the problem comes up again."

To hold maintenance costs down while keeping technologies available to students and teachers, ACS became a Gateway Authorized Service Provider. Rice's staff performs repairs and receives reimbursement from Gateway. Gateway also provides a two percent loaner pool, and students and teachers receive a replacement laptop if repairs will take more than an hour or two. Laptops are refreshed, repaired, and reimaged over the summer, and reissued to students at the start of the school year.

Best Practices

- Vendors as ongoing collaborators

- Vendors with demonstrated commitment to education

- High-performance, reliable, industry-standard technologies

- Technology coordinator and support resources at each school

Professional Development: Empowering Every Teacher

Continuous learning and change are inherent in teaching, and great teachers are always on the lookout for new methodologies and approaches. But even for the most dedicated teachers, system-wide technology transformation can bring intense new demands. ACS supports teachers in meeting those demands through professional development (PD) that spans individual, departmental, and school-wide training. Reflecting the strength of the district's commitment to educational technologies, junior high and high school teachers experienced a year of professional development before they went live with the laptops—and with the 2007/2008 school year, each ACS school has a full-time instructional tech coach. The goal: Empower teachers to become competent, comfortable, and creative at integrating technology into their teaching.

> "Professional development is the single most important aspect. You can invest in all the technology you want, but if teachers aren't on board, nothing's going to happen. We all recognized that early on, and committed the time and resources to make it work."
>
> Jason Wright
> Principal
> Auburn Junior High

Changes for Teachers

Professional development started with acknowledgement that teachers' roles in the classroom are changing, and that laptops and other technologies accelerate the changes. "The stand-and-deliver mode of instruction that was prevalent when I started as a teacher 14 years ago has just about disappeared," says Jason Wright, Auburn Junior High School principal. "Teaching today is much more about student-centered, inquiry-based, collaborative learning. Our job is to make sure we prepare teachers to implement new methodologies that support this, including those that incorporate technology."

Dr. Cathy Long, principal of Auburn High, continues the thread. "The teacher has to step back and become the guide and facilitator instead of being the giver and knower of all knowledge," she says. "You're trying to create a learner, not just give them information. It becomes not so much about *what* you teach, but about *how* you teach."

Technology in the classroom can also put teachers in the position of knowing less than their students at times—a situation that may feel threatening. "For many teachers, there's a fear factor—I didn't grow up with this, and the kids will know more than I do in the classroom," Dr. Long says. "My response is: Use that. Change is part of being a teacher—we have to just hang on and keep learning. It's an ongoing journey."

One ACS teacher who's not afraid to do that is Shannon Brandt, a Milken Award-winning fourth grade teacher at Wrights Mill Road Elementary School who holds a Ph.D. in elementary education. "I love to learn, and I'm the first to try something new if I think it's worthwhile and it's good for children," Dr. Brandt says. "If I don't know how to do something, I don't hesitate to ask my kids for help."

Gap Assessment and a Strong Foundation

Auburn approached professional development using the same best practices that are effective in the classroom. They focused on a constructivist approach and used individualized learning plans based on individual assessment, along with a mix of whole-group and hands-on activities and flexibility to modify plans based on real-world experience.

They began by assessing current skill levels and mapping the results against desired skill sets. ACS used Futurekids Inc's iAssessment*, which offers teachers an online survey to evaluate their technology competence. The survey provided teachers with individualized learning plans that they shared only with their principals. Other administrators examined aggregate results.

"The assessment helped us identify where we needed to focus our professional development without singling anyone out," says Rice. "It also let us identify teachers who were ready to step up and be peer teachers. Some of the most effective training was done by other teachers."

Gap analysis reinforced the understanding of the broad range of teacher abilities and comfort levels. On the whole, ACS teachers were relatively tech-savvy. All new teachers take a three-day Great Beginnings training workshop on technology basics—how to use e-mail, record grades, set up a Web page and so forth. Every classroom had at least two computers in addition to the teacher's computer.

In addition, the Intel® Teach Program[2] has been an integral part of the system's professional development since 2003. The district typically sends one teacher per school per year, and 47 teachers have completed one or more of the three courses offered. "It's a demanding course—I feel like I'm back in graduate school," says instructional technology coach Michael Smith, who is currently enrolled in the program. "It's been a valuable source of new ideas and concepts to bring to my teachers about using technology resources in the classroom."

Still, many ACS teachers hadn't moved beyond technology basics, and the district wanted all teachers to be successful with technology.

Investing Time, Building Confidence

The district's response was to invest significant time and resources in professional development, and to maintain an atmosphere in which teachers would be eager to go further with technology. "We have worked hard to avoid the Do or Die mentality," Smith says. "Some teachers are taking baby steps, some are making giant leaps. It all depends on their comfort level. Some are already so expert all we've done is add a few extra tools to their arsenal. But everyone is moving forward."

Every ACS school has conducted extensive PD, but preparation has been most intense at the junior and senior high schools. To prepare for the one-to-one mobile computing initiative, all AJH teachers devoted an hour every Tuesday out of their 96-minute daily planning session to technology-related PD. Training followed a laddered approach that covered:

- **System and software basics**—how do I create hyperlinks or use specific application capabilities?

- **Curriculum tools**—how do I incorporate or create e-curriculum materials such as WebQuests* into my current teaching?

- **Behavioral**—how do I keep kids safe on the Internet; how do I maintain control when kids have a computer in front of them?

- **Transformation**—how do I rethink my whole approach to teaching?

These "Tech Tuesdays" started in January 2006 and were held every week. Teachers received their laptops in March 2006. This gave them the summer, with plenty of PD under their belts, to prepare for incorporating laptops into the coming year's curriculum.

"Time is one of the biggest challenges for technology adoption—teachers have so many

demands on their time," says Smith. "Our system has been wonderful in respecting teachers' time. Teachers are allowed to go at a pace that's comfortable for them. Some districts say, 'You have to use this software by next week,' but the teachers have already got their lessons planned for next week. We are clear on our direction, and there's accountability to use the technology, but teachers basically move at their own pace as long as they're going in the right direction."

In the 2006/2007 year, high school teachers followed suit. All teachers were part of "Wi-Fi Wednesdays," weekly professional activities to prepare for the one-to-one initiative for tenth graders. Even teachers who don't work with tenth graders participated. "Computers are here to stay," says Dr. Long. "Regardless of what happens with the pilot, whether we end up with one-to-one laptops, mobile carts, or computer labs, we are embracing technology. It is more and more going to be part of every aspect of the curriculum."

Training started with school-wide sessions, and became more individualized as teachers progressed. Tech Tuesdays and Wi-Fi Wednesdays are continuing, although on a less frequent basis.

Make-up sessions were held to accommodate teachers' scheduling conflicts. Teachers also received release time to attend conferences, both to present their work and to learn from others.

Expert Support

ACS teachers led many professional development sessions. "We get the teachers who are proactive in adopting technology to be part of the solution," says Wright. "When teachers talk, other teachers listen. We get them to do formal presentations, or just to share informally what they tried that week."

Leveraging that fact led ACS to place a full-time instructional technology coach at each school. Coaches are Master Teachers who are knowledgeable about technology and curriculum, and expert at finding resources and methods to integrate the two. They present whole-school training sessions on tools and approaches that are relevant to all teachers, as well as departmental sessions that focus on curriculum approaches geared to particular subject areas.

Shannon Brandt, Wrights Mill Road Elementary School

Coaches and school media specialists also work with teachers individually. They may suggest resources prior to a lesson, assess and troubleshoot afterwards, work in the classroom alongside the classroom teacher, and, above all, be role models for success. Coaches and media specialists also give teachers a chance to bring up questions they might be reluctant to ask in front of their peers.

Principals offer additional support and guidance, often reviewing lesson plans and working one-on-one with teachers. "They send me what they're teaching," says Debra Beebe, principal of J.F. Drake Middle School and an Alabama Middle School Principal of the Year. "My job is to push them and make them feel comfortable as well. I might investigate teaching tools or suggest ways to make the lesson more interactive. And I hold them accountable—it is part of their evaluation."

Addressing Teacher Concerns

Another best practice for ACS is its recognition of the importance of hearing and addressing teacher concerns. "The administration does a great job of listening to us," says Julie Wentworth, who teaches English and language arts at AJH. "They're always asking, 'Is this working for you? What do you need? What are you planning next?'" Teachers are surveyed after each PD activity, and their feedback guides subsequent sessions.

One issue identified early on was classroom control. Michael Smith, who was a science teacher when the initiative was under discussion and who is now a huge proponent of the laptops, confesses he was initially unhappy about the prospect. "I didn't want laptops in my classroom, just from a responsibility and classroom management perspective," he remembers. "How could I teach my class if students had laptops in front of them and I had no idea what they were doing on their machines?"

ACS found a classroom management solution from DyKnow. DyKnow Monitor* allows teachers to see what students have on their screens, send notes to individuals and groups, and block a program or Web site that a student shouldn't be using. DyKnow Vision* fosters student-teacher interaction through note sharing, student response tools, and collaborative group support.

"With DyKnow, the teacher maintains control of students' screens," Rice adds. "Teachers can see if someone is doing something they shouldn't, and they can respond by taking control of the unit, messaging them to get back on task, or locking the unit out if they choose. That was a big selling point for us with our teachers."

Best Practices

- Initial gap analysis

- Year-long professional development

- Mix of formal and teachable-moment instruction

- Instructional technology coach

- Teacher-led and peer-to-peer activities

- Teacher concerns heard and addressed

- Accountability

- Teachers receive laptops well ahead of students

- Teachers have software tools to support classroom control and communication

Curriculum: Expanding the Walls of Learning

"When you take your students to a computer lab, you're taking them out of their natural environment. It's almost like a field trip, and it's an inefficient use of time. When you have technology in the classroom, it becomes a normal part of your world, like it is for most people nowadays."

Julie Wentworth
English and Language
Arts Teacher
Auburn Junior High

Many Auburn teachers were already skilled facilitators of project-based, student-focused learning. Now, they say, the integration of technology into the classroom is empowering them to take their teaching to the next level. Instead of experiencing technology primarily in a computer lab or media center, teachers and students can interact with online resources whenever educational needs require.

Transformational Learning: History Comes Alive

Auburn teachers are using technology to enhance curriculum across subjects and grade levels. Mac Matthews, for example, has accomplished the impossible: he makes adults want to be junior high students again so they can sit in his history classes at AJH. Matthews makes history come alive for his ninth graders by using technology to give them firsthand experience with primary source materials. He and Professor John Saye of Auburn University are collaborators in Persistent Issues in History, a national program that makes history matter by focusing units of study around fundamental issues that are still relevant in today's world.

Matthews says pervasive technology is key to making the past real for his students and allowing them to engage with a past reality. "Technology has radically altered the way I teach," he says. "I have much more flexibility to design group work. I can put primary documents in the hands of students and have students evaluate them and make up their minds for themselves. I can design an exemplary mix more easily."

Teachers like Matthews use technology to help students think for themselves. "Technology thins out the barrier to interacting with complex documents," he says. "I can build a scaffold that helps students think critically and climb higher intellectually than they could before. The past becomes much more real for them."

Mac Matthews, Auburn Junior High School

Julie Wentworth, Auburn Junior High School

With scaffolding, teachers use annotation tools to embed prompts and notes that give students cultural context, raise questions, or point out contradictions—much like information balloons on VH1's *Pop-Up Video.* "Scaffolding can help students interpret and make sense of historical documents, synthesize different documents and points of view, and reason about big questions," says Professor Saye.

Emotional Connections

Having technology readily available enables teachers to create experiences that deepen students' emotional connection to their learning. A great example is the way Matthews and Wentworth, who work with the same students and closely coordinate their curriculum, approach the teaching of the Holocaust.

"Students have a hard time grasping the human impact of the Holocaust," says Wentworth. "Technology enables us to present it in a way that truly is emotionally profound for the kids."

Wentworth had her English students use their laptops to research people who had either died in or lived through the Holocaust. "We asked them to use the Microsoft Office Publisher* baseball card program to make memorial cards to represent each person they researched," Wentworth remembers. "They included the individual's photo and facts about them, and we hung them around the classroom while we were reading Elie Wiesel's Holocaust memoir, *Night.* It made it much more personal, and the kids were more somber than they ever were before."

At the same time, Matthews had his history students analyze photographs taken by concentration camp liberators, examine diaries kept by Nazi officers, and watch survivor video testimonies. At the end of the unit, students were asked to visit the Web site of the US Holocaust Memorial Museum with a parent; watch a short, online video on the genocide in Darfur; and discuss the moral issues it presents. "Now, that's homework!" says Matthews. "The students learned so much. They were tremendously engaged and emotionally involved. And it wouldn't have been possible without the technology. It would be dead and undoable."

Science and Math

Teaching of science and math is changing as well. Mandie Matheny incorporates laptops into her ninth-grade algebra and geometry classes on a daily basis. She says classroom technologies allow her and her students to use time more efficiently and promote learning.

"So much of math class used to be taken up with me writing problems on the board and students copying them down and trying not to make mistakes," Matheny explains. "With the laptops and DyKnow, I can transfer my notes to their screen, and the kids can annotate them. It gives me more time for teaching and gives them more time for thinking about the problems and not just copying them."

DyKnow also allows students to review a lesson, keystroke for keystroke—a particularly beneficial capability when the class is working with complex equations. Students who prefer to work with paper and pencil are free to do so. Students may also use Microsoft Office OneNote* to record, organize, and share information.

Matheny posts her lesson plans on her Web page, enabling students to catch up more easily if they miss class. Her math department colleague, Kerry Killingsworth, podcasts his lessons and links them to his Web page. At Drake Middle School, Cynda Fickert, an Alabama Teacher of the Year, sets up evening chat sessions when her math students are working on particularly challenging assignments.

ACS teachers say the laptops make it easier to adapt their lesson plans in response to educational need. Even science teachers can respond to current events quickly, when student interest is high and learning is more meaningful. "Look at the bridge collapse in Minneapolis," says Smith, citing a recent example in the news. "As a science teacher, you can have students research and compare what the experts are saying. You can look at bridge modeling software and have a virtual bridge-building competition. It could lead into a wonderful few weeks of rigorous and very engaging physical science activities."

Science students use their laptops to conduct virtual experiments that wouldn't be safe or practical in a physical lab. "They have the benefit of doing the experiment and seeing the results, but it's much safer," says Superintendent J. Terry Jenkins. "It's hands-on learning without the risk of injury."

With one-to-one technology, teachers focus more on research-based assignments and on independent and small-group projects. In classes where ninth or tenth graders are mixed with other grades, laptops provide a basis for small-group interaction.

Revolutionized

While the laptop initiative is the capstone of the district's technology efforts, the entire school system is being transformed. Just ask Lynda Tremaine, principal of Wrights Mill Road Elementary School, where all classrooms have SMART* Boards and the new media center includes a wireless network and six laptops.

"We have been revolutionized," Tremaine says. "Children take to technology like naturals. For those who have computers in the home, it is an extension of what they are already doing. For others, it is a new and very exciting experience."

Even for elementary school students, laptops provide a flexibility that facilitates teaching and learning, Tremaine believes. "Laptops mirror their home world better than stand-alone computers," she observes. "Instead of having to sit in one place, teachers and students can move around the school and around the classrooms. They can work more easily in small groups, which we're doing in younger and younger grades. One of my favorite memories of last year is seeing first graders on pillows on the floor in our library—they were studying snakes, and they were in the non-fiction section of the library working with the books and with the information on their laptops. There's an excitement about technology that is just contagious."

Dr. Brandt's fourth-grade classroom at Wrights Mill Road has five computers and a SMART Board, and they're almost always in constant use. Her students "can do anything in PowerPoint*," she says, and are on the edge of their seats with eagerness at the opportunity to interact with the SMART Board. In a typical day, children might use technology to manipulate virtual 3-D shapes, interact with an on-screen manipulative to cement the concept of place value, search online for pictures of vocabulary words, and practice capitalization. Each child is on the computer at least once a day and in the school's computer lab once a week.

Dr. Brandt loves the added flexibility provided by in-room technology. "I'll have two kids at each computer, a small group working with me, another group playing a game, and others doing a paper-and-pencil assignment, and we'll rotate every 20 minutes," she comments.

She also values technology's role in bridging the district's economic divide. "I have one student who's going to Paris on spring break, and one who probably won't get a good meal that week," she says. "I want every one of them to succeed. I want to open the world to them and convey to them that they have a voice that's worth being heard. With technology, I can connect them to the world and provide them with an audience—and it's so motivating for them."

Debra Beebe is equally enthusiastic and committed. "Technology is part of everything we do," she says of Drake Middle School. "For Black History Month, we're playing a computer version of *Jeopardy*, complete with the theme song. We're starting to have kids produce video announcements that will be shown on the SMART Boards every morning. We've created interactive mini-lessons on bullying and other character education topics. Our music, art, and other exploratory classes will get SMART Boards this year. Every team has its own Web site. It goes on and on."

Media Centers, Media Specialists Evolve

The district's heavy use of classroom technologies doesn't mean media centers or media specialists become passé. "The media specialist continues to serve as a resource to students and teachers," says Ann Harrell. "We're another one-to-one resource to help teachers not feel that they're all alone in the classroom with the computers. We can come into their classrooms, they can come into the lab or media center—they can even bring the laptops to the lab and we'll both work with the students. It's all a matter of what works for that teacher at their current stage of expertise."

Harrell believes one-to-one computing initiatives challenge media specialists to find new ways of keeping the media center vibrant and relevant. "I don't think the media center will ever become obsolete," she says. "There will always be a need for print materials, and a good media specialist will always be a source of great resources. You just have to remain flexible—but that's been a key requirement for media specialists for the last 15 years. Media centers have to grow with technology to stay exciting and meaningful— which means media specialists need to keep growing just like the teachers."

Best Practices

- Using technology as a tool to support best practices such as student-centered, project-based learning

- Use of technology in the classroom on a daily basis, throughout the curriculum

- Collaboration with innovative curriculum-development initiatives

- Evolving the media center and media specialist's role

Among Harrell's evolving responsibilities: coaching students and teachers on projects that involve digital cameras, digital video cameras, or advanced software such as Microsoft Windows* Movie Maker 2, and educating teachers on copyright and licensing issues.

"If We Can Do This with Kindergartners…"
Even kindergartners get in on the technology act at ACS. In fact, Auburn's commitment to increase its use of educational technology arose from conversations that occurred after the Auburn Early Education Center (AEEC) was named an Intel and Scholastic School of Distinction in 2005.

"The discussions we had with the Intel® Education team and the resources they pointed us to —that was our tipping point," says Joyce Morgan. "Things started to come together and we seized the day. I'd love to say we've been all vision driven, but really, we're just trying to hold on to the shirttails of a very fast-moving project."

Today at AEEC, every room has a SMART Board, and kindergartners incorporate online research and resources into their project-based learning. For example, one class planned a trip to Brazil. Children used the Internet to find information on Brazilian wildlife and watch videos of oceanographers at work. They visited the local airport and sat in an airplane, then filled out online job applications to work for the airline. Another class built a shark and used computers and digital cameras to document the process. Teachers also incorporate technology into interactive games that build specific academic skills.

"With technology, we've been able to expand the walls of learning," says Lilli Land, Ph.D., principal of AEEC and a former kindergarten teacher herself. "Teachers go well beyond just what they have in the school or in books, and take project-based learning to another level. They do more and go further—and go well beyond the classroom walls. It makes learning real for the children, and it's very motivating. Teachers are always saying, 'Let's find out. Let's look on the Internet.' And, you know, if we can do all this with kindergartners, it's really time for the rest of the world to get on board."
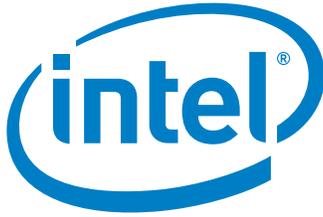
Learn More

How did Auburn teachers prepare for the 21st Century Learning Initiative? What changes are occurring as a result of the initiative? Please refer to www.k12blueprint.com for the other sections of our three-part report. *Part 1, Preparing for Change*, provides an overview of Auburn's initiative and addresses policy, leadership, and funding issues. *Part 3, Evaluating Change*, discusses the results of the initiative and the district's future plans, and will be published on www.k12blueprint.com this spring.

For more information, please see:

Auburn City Schools: **www.auburnschools.org**

K12 Computing Blueprint: **www.k12blueprint.com**

Gateway in Education: **www.gateway.com/education**

Intel Schools of Distinction:
www.intel.com/education/schoolsofdistinction/index.htm

Intel® Teach Program: **www.intel.com/education**