Case Study

Intel® Centrino™ Mobile Technology
Education
Wireless Schools

All-Staff Tablet Deployment Enhances Productivity and Education at Broadclyst Community Primary School

Solution Summary

Challenge	With a ratio of nearly one PC for every three pupils, Broadclyst was already one of the UK's most technologically progressive primary schools. But as the school's leadership team looked at wireless computing, they saw opportunities to derive even more value from information technology.
Solution	Broadclyst deployed a wireless local area network and provided all teachers and staff with Acer TravelMate* C111TCi convertible tablet PCs based on Intel® Centrino™ mobile technology.[1] The tablets' outstanding performance and lightweight design are enabling new ways to work, teach and communicate. A teacher can sit at a student's side to conduct Web-based assessments or review the pupil's individual assistance plan on their tablet PC. The entire staff – administrators, teachers, educational support staff, the school custodian – can access important data and stay in touch from anywhere on campus.
Business value	Broadclyst maximizes its previous technology investments by giving teachers and staff the ability to access computing resources from anywhere on the grounds. By providing the ability to work more flexibly, mobile technology has enabled Broadclyst to manage its day-to-day processes and deliver its curriculum even more effectively and efficiently. Communication and decision making are faster, and teachers have more time to work with students.

Challenge

Blending Old and New

Established in 1810, Broadclyst Community Primary School is one of England's oldest primary schools. It is also among its most technologically advanced and effective, with standardized scores that are well above the national average and visionary leaders who are committed to using information technology to equip students for the world in which they will live, work, and play.

"For the first time, the sum of human knowledge is only a mouse-click away," says Broadclyst head teacher Peter Hicks. "In a globalizing world, human capital is the major ingredient for success. If we want to prepare our students for success in this world, we must provide access to computers throughout the school day, and integrate their use into all aspects of the curriculum. The curriculum must reflect tomorrow's world, not yesterday's."

Not surprisingly, when Broadclyst's leadership team began to examine wireless computing, they were quick to identify its potential and exploit that potential for educational gain. Today, a wireless network covers the school, and every staff member uses an Acer TravelMate* tablet PC powered by Intel's flagship Intel® Centrino™ mobile technology to enhance communication, productivity, and most importantly, learning.

Leadership in Applying Technology

Broadclyst is located outside Exeter in largely rural Devon County. The school has 36 staff members and 350 pupils ages five to eleven. It also has 130 PCs – nearly one PC for every three students – and the Year 6 class has a PC for each child. Computers are integrated into the curriculum and used as a resource rather than studied as a special subject. "Computing is a core skill," deputy head Jonathan Bishop told England's prestigious Times Educational Supplement. "We don't just have a computer room, we have classrooms with computers in them. We don't have a computer budget, any more than we have a pencil budget."[2]

Using their PCs, Broadclyst students create their own home pages and videos, and publish papers and presentations electronically. They use Microsoft Outlook* to keep track of their projects, and use e-mail to collaborate on group projects, communicate with teachers and submit homework. Even the youngest children have their own e-mail addresses. Students who may have had behavior problems at other schools are consistently on task. "They are engaged by the technology, and are becoming independent learners," Bishop says. "Every student experiences success." It's no wonder Broadclyst has rising test scores and a long waiting list.

For its innovative and creative approaches to incorporating technology within learning and teaching, the school has been recognised by a number of public, private and educational establishments. The school is one of only three in the UK to be awarded "School of the Future" status by the National College of Leadership. Remarkably, Broadclyst has accomplished all this without special grants or funding sources.

Solution

New Ways to Work and Teach

In wireless computing, Broadclyst saw the opportunity to make a high-functioning staff even more productive. Broadclyst utilizes Web-based tools and technologies to enhance teaching and learning, and providing wireless tablets and a wireless LAN gives teachers more flexible, convenient access to those tools. The school also has interactive whiteboards and plasma screens situated in prime locations within the school.

"We've given all staff members a wireless tablet, and everyone's productivity is enhanced, but the big transformations are occurring with the teachers," says Bishop. "We're using wireless to support teachers in doing their teaching. For example, every student has an individual education plan, and we use Web-based assessment tools to track each child's progress against goals.

You'll see teachers sit down beside a child, pull up the plan, and conduct their assessment right at the student's side. It's motivating for the children, and efficient and enjoyable for the teacher."

Teachers also use their wireless tablets in direct teaching. "There are some science projects where sensors record light, sound, and temperature," Bishop says. "With the wireless network and the tablets, a teacher can take a group outside, collect results and enter them directly into the computer. It's a very engaging technology."

Teachers are enthusiastic about the school's wireless learning environment. "The network and the tablet enable me to be mobile, not tied to one spot or building," says teacher Alex Pulfer. "I can communicate with pupils at all times, using the tools as a teaching aid as well as a learning aid. This has reduced barriers between me and the pupils, as well as creating a better teacher-pupil relationship."

Enhancing Collaboration and Teamwork

The widespread use of computers has helped Broadclyst develop innovative curriculum in which 45 to 50 students and 5 or 6 teachers work together in an open room. This coordinated, team-oriented learning environment is highly effective for students, but it requires more collaborative planning than a traditional curriculum. A wireless learning environment paves the way to faster, friction-free communication and collaboration.

"It used to be that when teachers went into the classroom, they closed the door and did not communicate," Bishop says. "They were disconnected from e-mail. Now, they keep communicating, so there's less of a time lag in communications, planning and collaboration. The wireless environment gives staff the freedom to work with greater flexibility and fewer constraints. It supports staff in the management and delivery of curriculum, and it draws them together, leading to greater cohesiveness."

School processes have become more efficient and streamlined. "You'll see a staff meeting where everyone has their tablets, and everyone is on the network no matter where they're sitting or standing," he says. "If someone needs to check something on the Web or put up a presentation, they can do it easily. Minutes are taken electronically and distributed at the end of the meeting."

Communication among all staff members, students and parents is greatly enhanced. "There's much less likelihood that a message will be lost or misinterpreted or take too long to be actioned," says Bishop.

[2]Phil Revell, Not Full-Screen Ahead, Times Educational Supplement, Nov. 23, 2001, www.devon.gov.uk/eal/schools/future/media/tes.htm

Choosing Powerful, Lightweight Tablet PCs for Productivity and Convenience

In planning its wireless deployment, Broadclyst selected convertible tablets from Acer based on Intel Centrino mobile technology. “We’re always expanding our use of technology, and wireless tablets were a logical next step,” Bishop says. “Our thinking was: they’re small, portable, light, and you’re permanently connected when you’re on the school grounds. We increase productivity by investing in mobility, because it gives you the freedom to work wherever it makes sense. There’s greater flexibility in marking, in assessment, in creating assignments and assigning them to children, in communicating with other teachers, staff, children and parents. And the machine enables all that.”

Specifically built for wireless mobility, Intel Centrino mobile technology offers the opportunity to work flexibly and with greater freedom – breaking away from the constraints of desktop systems. Intel Centrino mobile technology combines breakthrough mobile performance with features that enable extended battery life, allowing teachers and other staff to work and roam longer without having to recharge their batteries or connect to a wall socket.

By integrating important wireless technologies, Intel Centrino mobile technology eliminates the need for a separate wireless card. “That alone is a great incentive to purchase a tablet or notebook based on Intel Centrino mobile technology,” Bishop says. “The built-in wireless saves so much thrashing about on maintenance.”

Intel Centrino mobile technology’s integrated wireless enables companies such as Acer to create thin, light designs that are easier for staff to use and transport. Acer’s TravelMate convertible tablets weigh just 1.4 kg (just over 3 lbs), measure a compact 257 x 216 x 29.7 mm (10.1 x 8 x 1.17 inches) in size, and come with a stylus pen that can be used for handwritten notes or tablet-optimized applications as well as handwritten and voice recognition software. They have won raves for their ability to convert from tablet to notebook form, enabling new and different methods of working. “It is fantastic to see the technology being used by such a diverse staff for such a range of applications,” says Sara Farthing, Acer channel manager for education. “Tablets have revolutionised the way the school operates on a day-to-day basis, freeing so much precious time.”

Security is paramount in a wireless system. Broadclyst has implemented high security measures such as VPN, encryption, https and Windows* authentication. The supply and integration of Tablet PCs at the school was carried out by Acer, which has a long established relationship with the school and has assisted Broadclyst on previous IT deployments.

Broadclyst also deploys powerful Intel® Pentium® 4 processor-based PCs for non-mobile use, along with powerful Intel processor-based servers to run software such as Microsoft Class Server*, which is the primary curriculum management tool. The school has five servers, with the newest based on the Intel® Xeon™ processor. Each server is rack-mounted with dual processors, 1 GB of RAM, and large, fast, hot-swappable RAID hard drives. “These are extremely reliable, powerful platforms which other organisations would be pleased to have,” Bishop says.

Wireless Increases Productivity

Broadclyst has joined the South West Grid for Learning (SWGfL), a government-funded broadband consortium that helps Local Education Authorities (LEAs) develop, purchase and use digital learning resources. One of 10 regional consortia, the SWGfL allows its members to aggregate their purchasing power and negotiate competitive prices for broadband connectivity. Thanks to the consortium, parents and students can access the school’s network via a 2-MB fibre-optic broadband link. The consortium also offers a variety of innovative digital learning resources that support England’s national curriculum.

The rising number of hot spots in the UK means staff can work and access the school data at other places in their extended community, such as in airports and pubs. Neighboring Exeter was recently named the Wi-Fi Capital of the UK.[3] Some staff members have established wireless LANs in their homes and can access school and Internet resources wirelessly from home. Pupils are able to access their school e-mail accounts, individual Web pages and the school network through the HSL (Home School Learning) Channel Initiative.

“Broadclyst School has tremendous experience in piloting new and emerging technology in ways that specifically impact the classroom environment,” says David White, Acer business manager for notebooks. “In this case, teachers and pupils are gaining hands-on experience with the technology that will define the future of mobile computing."

[3]http://www.intel.com/cd/corporate/pressroom/emea/eng/114481.htm

More Time to Teach

Already a national technology leader, Broadclyst has embraced wireless computing to deliver an even more effective and efficient educational service to its pupils. Bishop compares wireless computing's impact to that of a mobile telephone. "It's about lifestyle changes, allowing more flexibility and generating more productivity," he says. "These are very hard to quantify, but still very significant."

With constant connectivity and wireless access to electronic assessment, lesson planning, curriculum management and more, Broadclyst's teachers and other staff have in wireless computing a powerful tool to enhance the educational experience they deliver. "Best of all," says Peter Hicks, "Wireless mobility gives teachers more time to do what they are good at, which is to teach, and not deal with bureaucracy or paperwork."

Lessons Learned

- **Unwire to enhance communication, collaboration and education.** Wireless computing helped Broadclyst redesign the way the school and staff operate, accelerating communications and fostering teamwork. In an environment rich with online tools for planning, assessment, curriculum and record keeping, wireless access lets teachers work wherever it's convenient – without the hassle of cords and wires.

- **Maximise mobile benefits with Intel® Centrino™ mobile technology.** Based on Intel Centrino mobile technology, the Acer TravelMate convertible tablet PCs provide a lightweight design, advanced power management, high performance and integrated wireless functionality, enabling staff to work and remain connected anywhere on the school grounds or from a growing number of hot spots. Teachers can roam easily between small groups, large groups and individual students while staying connected to e-mail, the Internet, and networked school resources.

- **Leverage the power of partnerships.** In addition to its membership in a government-sponsored broadband consortium that allows parents and pupils to access school resources from home, Broadclyst has obtained cost-effective tools and curriculum by becoming a Microsoft partner school. Broadclyst is also seeking private-sector partners to develop more community hot spots.

- **Develop a practical plan.** Broadclyst uses a local, third-party company to manage and maintain computing infrastructure, helping to control costs, keep important systems and software in peak condition and let educators concentrate on education. The school leases its systems, finding that leasing helps them take advantage of advancing technologies.

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[1]Wireless connectivity and some features may require you to purchase additional software, services or external hardware. Availability of public wireless LAN access points is limited, wireless functionality may vary by country and some hotspots may not support Linux-Intel Centrino mobile technology systems. System performance measured by MobileMark* 2002. System performance, battery life, wireless performance and functionality will depending on your specific operating system, hardware and software configurations. http://www.intel.com/products/centrino/more_info for more information.

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