



Traditions of Excellence: An Intel One-to-One Computing Success Story about MacArthur High School

Bringing technology to MacArthur High has helped students develop the skills necessary to succeed in the 21st century. In handing students laptops, MacArthur High School hands students autonomy and life skills that can't be bought but can only be experienced. MacArthur High and Irving Independent School District advocate on behalf of student learning by giving each student access to adequate resources and information by way of technology.

Strong leadership, adequate planning and funding and thorough professional development guided MacArthur students and teachers to successful results in their one-to-one computing program.

In 2004, MacArthur High won Intel and Scholastic's Schools of Distinction award. MacArthur ranked in the top 20 schools in the nation and went on to place first among those 20 schools, awarding them the title of Intel and Scholastic's "Best of the Best" School of Distinction.

Now in their fifth year of the implementation, MacArthur High School exceeds Texas state standards. MacArthur's successful graduation rates, attendance rates and standardized test scores have drastically increased since the implementation.

MacArthur's graduation rate is exceptionally high at 99% and standardized test scores show 50 to 100 point gains.

MacArthur High achieved these results while successfully managing challenges such as students' economic disadvantages and teachers' unfamiliarity with new resources.

It is the hope that MacArthur has turned out such capable students because technology bred new attitudes among students on campus and incited an evolution in students' learning processes. Teachers now face students who demand an enlightening learning experience with tools they will need later in life.

Background

MacArthur High School takes pride in their traditions of excellence. The Cardinals have impressive win streaks in football, cross country, and now, an impressive winning streak using technology to improve learning excellence.

District-Wide Success

The following schools in Irving Independent School District have implemented one-to-one computing programs:

- The Academy of Irving ISD
- Irving High School
- MacArthur High School
- Nimitz High School
- Union Bower Center for Learning

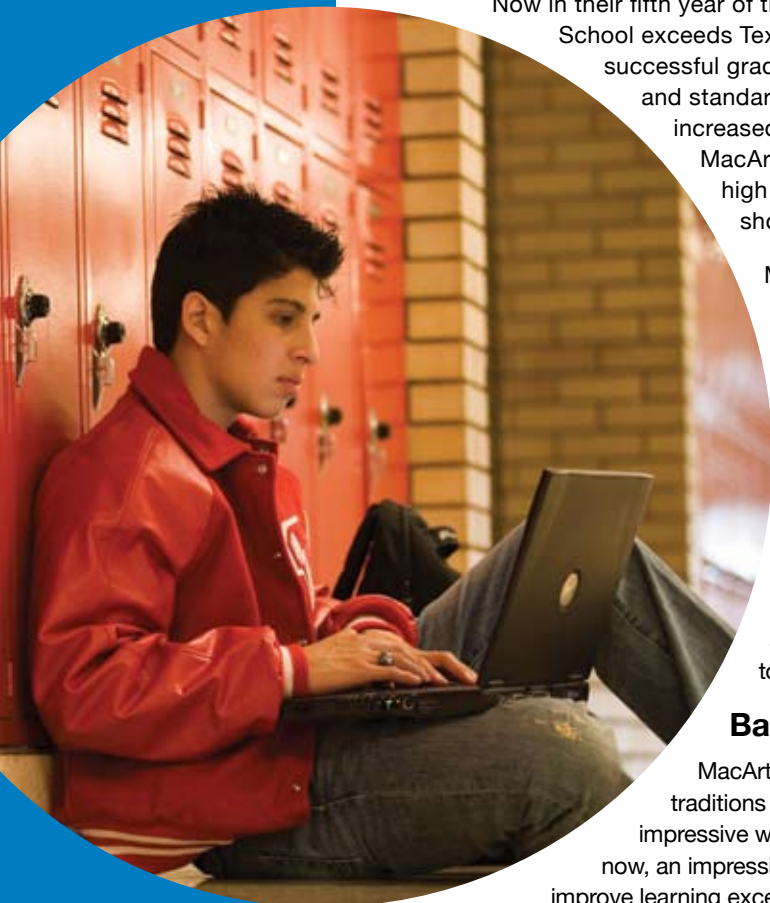
About Irving ISD

- 32,000 students
- 58% Hispanic
- 55% limited English speaking
- 66% from low income families
- 9,600 laptops in the hands of students 24/7
- 2,500 laptops for teachers

The district-wide one-to-one computing program is in its fifth year.

In 2004, Irving ISD was awarded a Technology Immersion Pilot (TIP) grant which funded one-to-one computing programs at Irving High School, DeZavala Middle School and Lively Elementary.

Irving ISD annually hosts a national One-to-One Symposium, inviting other districts from around the nation to participate in dialogue about technology use. For more information, visit www.irvingisd.net/symposium



MacArthur High places student learning first and has implemented a one-to-one computing program to increase student achievement and transform the way students learn. One-to-one computing programs provide access to a fully functioning computer, the Internet, software, online resources, and materials that promote collaboration 24 hours a day, seven days a week, so learning can take place anytime, anywhere.

The Irving Independent School District wanted to expand learning possibilities for students. In 1996, the district began laying the foundation for a long-range district technology plan that included securing one laptop for each teacher and student. District leaders wanted to improve student enthusiasm toward learning and engage students in the learning process. MacArthur High School, in line with district goals, hoped to transform learning into an active experience for students. At the beginning of the initiative, leaders shared the vision of advancing education through new skills and opportunities for both teachers and students.



When Principal Tracie Fraley arrived in 2000 she was in full support of the technology implementation. Fraley was ready to embrace the changes technology could bring to the school and knew MacArthur needed a new approach to get results from students.

In the current 2005-06 academic year, students at MacArthur High and three additional high schools in the district have the option to obtain a laptop with a \$50 deposit. If

disadvantaged students cannot afford the deposit, four desktop computers are available in every classroom. The laptops are not a requirement.

Situation

MacArthur High School enrolls approximately 2400 students from racially and socio-economically diverse backgrounds. More than sixty languages are represented among MacArthur students and about forty percent of students are at or below the federal poverty line.

This situation made MacArthur's implementation that much more significant. In an area where resources differ from home to home, the school district saw an opportunity to act as community leaders and level the playing field by providing technology resources to all students. The desire to bridge the digital divide for students who do not have access to technology outside of school is a common motivation behind one-to-one computing programs.

The novel idea behind MacArthur's implementation was to use technology as a constant resource to transform how learning occurred. From providing equal resources and accessibility for each student to developing critical thinking skills and promoting collaborative and project-based learning, MacArthur High

became dedicated to graduating a higher caliber student with profound potential for the 21st century world.

However, the new technology necessitated a series of changes at MacArthur. Initially, the changes appeared as challenges that effective leadership needed to manage.

Pre-Implementation Challenges

MacArthur High faced three major challenges prior to the implementation: access, level of familiarity with technology, and how to transform learning using the new resource.

Access

The initial challenge included providing all students the necessary access to resources. MacArthur's one-to-one program has bridged the digital divide for about 1,000 students.

For non-college bound students, the laptops help them acquire necessary skills that qualify them for real-world jobs. For college-bound students, the technology prepares them to enter college with early familiarity of tools required in college classes.

Level of Familiarity with Technology

Not all teachers and students knew how to use computers. For teachers to be able to give adequate help to students, MacArthur needed a strong professional development program to ensure teachers received proper training, leaving them comfortable and knowledgeable about the resources at their disposal.

How to Transform Learning

Perhaps the largest challenge among the three, transforming learning involves all aspects of an implementation, from effective teacher-training to adequate user support and strong infrastructure, student use and classroom management, and online resources and collaboration. The results section will focus heavily on how student learning has been transformed in the wake of the implementation.

Solution – The Implementation

The area's diverse socio-economic population was willing to support the local schools' effort to increase education opportunities for children. In 1996, the first Irving ISD community bond issue was approved, which allocated funds for technology in the school district.

To that end, the school purchased Dell laptops for every student. Each classroom is equipped with a minimum of four desktop computers as replacement machines for laptops because about ten percent of machines are down at any given time. The package includes a warranty for each laptop at an annual fee of \$50 — ten dollars is a maintenance fee and the \$40 remainder covers insurance. The campus is equipped with full wireless accessibility inside and outside classrooms, and hosts a private network where students are encouraged to back up and save data, teachers can post assignments, and administrators can easily make announcements.

To cover technical support needs, the school employs two full-time campus technicians to repair computers. MacArthur also facilitates student support, where students work less than three days a week and earn elective credit. This cost-saving approach

is also a learning opportunity that helps students achieve real-world skills.

Additional support staff includes a full-time statistician who tracks each student numerically by recording and analyzing test scores, attendance and other data to monitor student progress.

In 2003, Texas Education Agency was awarded an \$850,000 federal grant to analyze student progress and provide results of the effectiveness of one-to-one programs. Part of the allocation went to MacArthur High.

The 2005-06 school year is MacArthur's fifth year of the implementation. Students do not keep laptops upon graduation. This is the first year of the replacement cycle has been introduced, providing this year's senior class with new laptops.

How to Get From Here to There, From New to Know

Professional Development

A one-to-one implementation requires ongoing professional development to ensure teachers have their questions answered. According to Instructional Technology Specialist and teacher Brandy Wall, "everything changed with the one-to-one implementation." MacArthur's professional development program exists for that reason: to offer teachers guidance and support in the effort to transform the learning process.

Changes in classroom environment highlight the need for ongoing professional development. For teachers like Dave Schrantz, a MacArthur U.S. History teacher of ten years and former football coach, training was an absolute necessity. Prior to the implementation, Mr. Schrantz knew nothing about technology and was fairly resistant to change. He feared technology would replace teachers. When the district announced plans to instate the one-to-one program, Mr. Schrantz decided to face the challenge of an entirely new method of teaching. At that point, he didn't have a computer in his home.

Professional development can help uncomfortable participants understand that technology is used as a resource. This understanding can quell fears that technology will replace teachers. Dave Schrantz no longer holds onto his fear that teachers could become obsolete with the "threat" of technology. He now describes technology as a bonus and champions the resource because it "takes you places you can't go otherwise."

The professional development program at MacArthur does address basic training and insecurity issues pertaining to technology, but is primarily comprised of hearty training on technology-curriculum integration and hands-on skills training. Teaching methods have had to adjust as well. "Old-fashioned lectures no longer work," Mr. Arencibia, a newer teacher to MacArthur, says.

To stay current with the changes technology brings to campus, the professional development program tracks teacher progress and encourages development through a method called "T Cubed" — team-building, technology and teaching best practices. T Cubed advises teachers how to incorporate a variety of media into instruction and draw on both virtual and traditional resources. Teachers learn how to use electronic management tools to track grades and attendance. Instructors

also learn how to use an electronic tardy system that has resulted in a drop in daily tardies from 500 to 42 students.

Professional development is key to help teachers learn to manage classrooms and discipline problems technology may introduce. All teachers struggle monitoring students' Internet and instant message use. Training urges teachers to implement visible, well-established usage guidelines in the classroom and online, that can help students be aware of boundaries. Other effective solutions call for teachers to move around the classroom more than usual, especially during testing.

MacArthur's professional development program is run by a team of instructional technology specialists who meet with teachers once a month on Tech Tuesdays. Irving ISD conducts training sessions at the school as well.

Post-Implementation Challenges to Address

Changes naturally imply challenges. Teachers at MacArthur have learned to deal with students who have an advanced level of familiarity with technology by asking students questions in the classroom. This burgeoning teacher-student interaction is a new exchange going on in classrooms equipped with technology and may likely require humility on a teacher's part. These issues can be addressed in professional development workshops.

Theft and loss posed an additional challenge. MacArthur charges students a \$40 insurance fee annually, but it is a good idea to keep an additional 10 percent inventory available for students, teachers and staff when computers are out for repair or go missing. MacArthur administration also use Computrace, a GPS tracking device installed on each machine, to monitor the location of the laptops.

Aside from human interference, MacArthur faced another challenge with the existing infrastructure. For students, administrators and teachers used to technology, the network bandwidth and Internet speed are a source of frustration. More than 2400 users logging on to the MacArthur network simultaneously can create a delay or interrupt classroom, student and administrative activity. This challenge drove educators to prepare a backup plan when network failure becomes an issue. The school is currently trying to secure funding for a future network upgrade.



Dave Schrantz helps students use laptops in his U.S. history class.

New considerations for room design posed the challenge of how to best physically integrate equipment, raising concerns such as where power outlets and lighting are best used with new machines. “The classroom layout changed to help teachers be aware of what students are doing on their laptops,” says Brandy Wall. In a traditional classroom, the teacher would sit in front of the class and give a teacher-directed lesson. “With the laptops, teachers need to move the desk to the back of the room to see all the screens and to move around the classroom at all times,” Wall explains.

Positive Changes and Results

Curriculum

The one-to-one implementation includes tools such as Blackboard, a software platform that manages the MacArthur portal and enables Web-based course management.

Student success with tools like Blackboard are part of a new learning style that involves convenient access to materials students need in order to study from anywhere on campus or from home at anytime. Students appreciate the convenience of being able to learn when and how they choose, and are equally as excited about new ways to demonstrate learning through mixed-media classroom presentations that draw on a number of skills.

Laptops enable differentiated and student-centered, student-driven learning through software applications, spontaneous online research, student evaluation of sources and Web sites, and offer potential for various multi-media presentations.

Teaching

Information and communication, both fundamental building blocks of learning, are more reliable because the technology in place at MacArthur allows teachers to give students more one on one attention and answer questions in a less disruptive, more efficient manner.

Teachers also benefit from the technology. For Mr. Arencibia, Blackboard “made teaching a whole lot easier.” If he’s out sick, a substitute can refer students to expectations and classroom assignments online. The software increases student accountability. “Blackboard is definitely an enormous advantage,” says David Arencibia. “It truly does make education easier and convenient for everyone, while keeping content rigorous and relevant to students’ needs.”

David Arencibia, along with most MacArthur instructors, keeps his curriculum on his Web site. He touts the new Holt Rinehart Winston textbooks as the key to his success integrating technology into his curriculum. The new curriculum allows students to take textbooks home, but in class students use the online text. In fact, most homework and test-taking can now be done online.

The old method of teacher-as-expert directing the classroom doesn’t work anymore. The new classroom approach at MacArthur is student-directed and student-engaged, which means student-centered. This approach brings tremendous and unexpected benefits into the classroom.

According to Brandy Wall, after the implementation suddenly shy, quiet students were contributing and participating during class.

“Some of the more introverted students have become valuable to others for their unmatched technical expertise,” says Wall.

Learning

Despite challenges, students have thrived in an environment that validates who they are and how they learn by providing irreplaceable opportunities through access to technology.

MacArthur High School senior Aida Jobe says she is dreading not having a laptop when she goes to college. “I’ve had one for four years,” she says, “and I can’t imagine living without it.”

“[The technology] truly does make education easier and convenient for everyone, while keeping content rigorous and relevant to students’ needs.”

**David Arencibia, teacher,
MacArthur High School**

Because students can take laptops home, equal resources are ensured after school. The ability to bring the laptops home also strengthens the home-school

connection, breaking down traditional barriers and preconceived notions of where, when and how learning can occur.

Aida Jobe is a student who could have been a victim of the socioeconomic digital divide if she hadn’t had access to the technology MacArthur provides. Aida Jobe’s laptop will enable her to apply to colleges online – something she can’t do from home. Aida is among half the school’s enrollment for which the implementation provides special advantages, including offering students Internet access from the MacArthur campus before or after school hours.

The laptops are an excellent resource for students, providing easy access to research, saved documents, and communication for school and life work. But beyond ease and convenience, laptops provide a doorway to a better future for all students.

Summary

The transformation at MacArthur High has been a transformation in student learning. Technology provides students the opportunity to actively experience what they learn rather than passively receive information.

The implementation at MacArthur required students and teachers to become more invested in education by being accountable for student learning. With broad access to resources, MacArthur students now face the future confident in the 21st century skills they’ve cultivated to help them succeed in the workplace and higher education. ■

Please visit the following Web sites to explore the potential success one-to-one computing can have for your school:

Irving Independent School District – www.irvingisd.net/one2one

MacArthur High School – <http://www.macards.com>

Intel Schools of Distinction Awards – www.schoolsofdistinction.com

Intel Education Resources – www.intel.com/go/education

Dell – www.dell.com/k12

Blackboard – www.blackboard.com