Teaching in the One-to-One Classroom

It's not about laptops, it's about empowerment!

No longer do students need to wait for us to be the purveyors of information. They now have the world at their fingertips. Putting a laptop in the hands of every student has far-reaching implications on the way we educators have to think about our classrooms. Old models of stand and deliver are no longer effective. We must learn to be facilitators to guide student choices and learning experiences. This sets the stage for differentiated instruction and engaging work, but only if we let go of old paradigms. If we do not, our one-to-one classrooms are likely to be chaotic and meaningless.

By Alice Owen, Sam Farsaii, Gerald Knezek, and Rhonda Christensen

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One-to-One in Irving ISD

Irving Independent School District (IISD) is an urban public school district in north Texas composed of 58% Hispanic and 66% economically disadvantaged students. The district began phasing in laptops for high school students beginning in 2001. The 2005–06 school year marked the fifth year IISD provided laptops to high school students in a one-to-one environment—more than 9,600 laptops in the hands of students 24/7!

Two bond propositions have funded technology infrastructure and equipment since 1996. The community has a corridor of technology businesses in the area, so there is pride and commitment in helping our students gain the knowledge and skills they need for future work.

Our evaluation surveys indicate that students are enthusiastic and eager to learn using the technology, though our teachers grapple with the changing environment and have a steeper learning curve. What one-to-one has done for our students is to put the power of information at their fingertips. No longer do they have to make a trip to the library, thumb through a textbook, or ask a teacher for information. They can look anything up online at any time.

More than a third of our students share their laptop at home with someone else and assist that person in using the laptop. The potential benefits are obvious: not only do our students have a competitive edge, but imagine what this ripple effect could do for a community and its economic development!

Program Evaluation

From March to May 2004, IISD had the laptop program externally evaluated to find out what effect it had on teaching and learning. The evaluation consisted of both quantitative and qualitative measures: an online teacher survey, an online student survey, focused group interviews with teachers, and classroom observations. The evaluation was conducted by researchers from the Institute for the Integration of Technology into Teaching and Learning at the University of North Texas. Data were analyzed and triangulated for emerging themes. The response rate was good; 370 of the teachers (68%) and 3,996 of the high school students (50%) responded. Comments from teachers and students on the surveys, during group interviews, and direct observation of classrooms provided commentary for this article.

Teacher as Learner

The one-to-one laptop initiative in Irving public schools is clearly causing changes in instructional practices. Before laptops, teachers reported having students work in groups 48% of the time. After laptop implementation, teachers reported 58% of class time was spent in small group work rather than direct teaching. After full laptop implementation, the single most frequently used instructional strategy was guiding/facilitating student learning (38% report using every day), higher even than whole class instruction (28% report using every day). The previously dominant role of whole class instruction is being replaced by guided/facilitated learning. It was the most common of nine strategies used on a daily basis—more common than whole class instruction or direct teaching/learning. This indicated to us that teachers are beginning to shift away from lecture toward more small group participation and collaboration.

Teachers also believed that students learn better with laptops and can find and present information more effectively. Teachers embraced laptops as tools for students to conduct research and communicate ideas with others. Both teachers and students reported that the majority of their time using laptops is spent on the Internet for research.

One of the major contributions of the laptop implementation is that it has been a strong professional development experience for teachers. The change in the classroom environment has forced teachers to learn more about technology to stay ahead of the students. Teachers reported that they have learned a great deal alongside the students. Teachers also reported using their laptops at home on a weekly basis, which extended their learning time outside of school hours.

Stages of Adoption of Technology	
Stage 1.	Awareness.
Stage 2.	Learning the process.
Stage 3.	Understanding and application of the process.
Stage 4.	Familiarity and confidence.
Stage 5.	Adaptation to other contexts.
Stage 6.	Creative application to new contexts.

Source: Christensen's 1997 doctoral dissertation "Effect of Technology Integration Education on the Attitudes of Teachers and Their Students," available at http://courseweb.tac.unt.edu/rhondac/. The Stages of Adoption are based on those put forth by A.L. Russell in his article "Stages in Learning New Technology" in vol. 25 no. 4 of *Computers in Education.*

Levels of Use	
0	Non-use.
1	Orientation.
2	Preparation.
3	Mechanical Use.
4A	Routine.
4B	Refinement.
5	Integration.
6	Renewal.

Based on G.E. Hall, S.F. Loucks, W.L. Rutherford, and B.W. Newlove's article "Levels of Use of the Innovation" in vol. 26 no. 1 of the *Journal of Teacher Education.*

A result of the program has been that IISD teachers ranked themselves higher on Stages of Adoption and Levels of Use scales than neighboring districts without one-to-one environments. The longer the teachers had taught using laptops, the more comfortable they became and the higher they ranked themselves on the measures. Adjustment to the program usually occurs by the third year, indicating that change takes time. The implementation of the program itself provided the impetus for teachers to take charge of their own learning and improve themselves.

Challenges for Teachers

Classroom management is an issue in one-to-one classrooms. An unanticipated result of the program was that it dramatically affected how it immediately changed the locus of control from the teacher to the student when the students were given laptops of their own. For some teachers it was difficult to relinquish some of the control to the students. Some felt they were inadequate to teach using the laptops because they were not yet comfortable themselves in using the technology. Others grappled with the notion of how much leeway to give students in their freedom to research, communicate, and collaborate with other students. For many teachers it appeared that students were constantly off task, e-mailing their friends, or not participating in their lessons. What teachers need to realize is the power students have when they have control over information. Teachers cannot be the sages on the stage but must be the facilitators of learning experiences for students. Teachers need to change their methods of teaching to hold students' interest and guide them in the right direction using the technology. Lecture does not work anymore.

The district provided a course management tool, Blackboard, to maximize the use of the laptops in the classroom. This tool allows teachers to post their syllabus, class assignments, homework and even quizzes online for students to access using their laptops. The district has also worked with textbook publishers to provide as many digital versions of adopted texts and supplementary materials on a server that can be accessed by students and teachers. Teachers also have access to a variety of online library resources, streaming video, and databases to aide classroom instruction.

Though teachers sometimes get frustrated by the one-to-one environment, few reported wanting to go back to the way things were before. For two years in a row on our district Personnel Survey, our new teachers have ranked technology higher than salaries as a reason for coming to work in IISD. Teachers see technology as a benefit of employment. Districts with a technological advantage may also have a hiring advantage.

Support for Teachers

Teachers report getting their main source of support from their campus instructional technology specialist. Each high school has two such specialists who are full-time, certified teachers dedicated to supporting teachers using technology during the school day. This additional staffing to provide job-embedded support is essential to the success of any technology program. Access to the Internet at home is also an important factor in the success of a one-to-one program. The better access teachers had to the Internet at home, the higher they ranked themselves on Stages of Adoption. If there is one thing that districts could do to promote the use of technology in the classroom, it would be to provide their teachers with a laptop and find a way to provide low-cost broadband Internet for teachers at home.

Clear expectations and consistently enforced consequences are needed with this new kind of program. Appointing a campus administrator (i.e., vice principal) to be the point person to manage the campus laptop program has proven to be helpful at the high school level. This person became the liaison between the campus and central administration to deal with issues, develop rules and procedures, and handle inappropriate behavior on laptops. This discipline support at the campus level is necessary to help teachers through management issues they experience. Find samples of the IISD laptop rules and procedures at http://www.irvingisd.net/technology/publications.htm.

Initial training is vital to the support of the project. Several steps help teachers make this change. Providing e-mail and online resources are the first steps to get teachers hooked on why electronic devices are important. Irving ISD teachers have had laptops since 1996. This provided them ample time to get accustomed to using the equipment before it was rolled out to students in 2001. The next step was to provide data projection systems for teachers to use in their classrooms. Access to the right tools enables teachers to model effective technology use. Intensive training prior to laptop implementation is also critical to the success of the program.

The Importance of Staff Development

Especially at the high school level, teachers need training in how to use laptops within their content areas. In IISD, collegial groups called Job Alike Teams were formed. Outstanding teachers from across the district were put into content area teams to share best practices and plan teaching activities within their content areas. The teachers were recommended by their principals to be the leaders for their campus in the specific content area. These teams have worked collaboratively at the district level and are being formed at the campus level to build learning communities and continue the dialogue at the campus department or grade level. These teams have been instrumental in finding the best technology resources and developing lessons to align with the content of our district curriculum. The teams have gone through the entire process of group dynamics (norming, forming, storming, and performing) and have gelled into collaborative working groups.

Teachers also need training in classroom management before laptops are handed to students. One-to-one implementations require a different kind of teaching and a change in classroom practice. Teachers need to find ways to incorporate these new tools into their daily teaching if the program is to be successful. This also means giving up some control and letting students have some choice in how they learn. We have created classroom management resources for teachers on our Web site (http://www.irvingisd.net/one2one) to help them manage their classrooms. Video clips of teachers discussing their strategies for managing a one-to-one classroom and clips of teachers working with students in their classroom are posted on the site. Teachers can go to the Web site anytime to listen to what veteran teachers do to make their classroom orderly and engaging.

The district has also hosted a national symposium for two years in a row to invite other districts with similar projects to discuss with our teachers the challenges and successes in the programs. It is helpful for teachers to see they are not alone in the process and that we all need to work together to find the best solutions for these innovative instructional designs. Visit http://www.irvingisd.net/symposium to find out more about this unique event.

Lessons Learned

Any major implementation is not without its challenges. We would recommend these points to school

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districts thinking of implementing similar projects:

- Provide extensive training for teachers, especially in classroom management, using laptops before the implementation. Not only do teachers need to learn techniques for keeping students on task, they also need good instructional ideas to keep students focused on learning. If lessons are engaging, then students will stay on task and learn more. Content area teams are especially helpful in designing instructional materials for secondary campuses.
- Policies and procedures need to be developed in a consistent manner so that campuses can apply the rules equitably to all students. Rules and consequences need to be communicated clearly to parents and students through orientations, handbooks, contracts, and acceptable use agreements. Assigning a campus staff member to manage the program is beneficial.
- Change is hard and takes time. Don't give up too soon! It takes at least three years to begin to make changes in an organization and at least five to begin institutionalizing those changes. Adequate staffing to provide ongoing, job-embedded support is essential in changing teacher attitudes and practice.

One-to-one implementations can be a way to bring about needed change in our high school curriculum and bring real-world relevance to the classroom. Putting a laptop into the hands of every student empowers students to learn and challenges teachers to rethink the way they teach. Technology can transform education into current, highly engaging, and relevant experiences for students if implemented through careful planning and sustained support. Are you ready to accept this challenge? Join us in a collaborative discussion on our MediaWiki site (http://www.mediawiki.org/wiki/One2one/) to share ideas and discuss best practices of one-to-one implementations.

One-to-one implementations require a different kind of teaching and a change in classroom practice.

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