

**Laptops for Learning:**  
**The Maine Learning Technology Initiative**

Mike Muir  
University of Maine at Farmington  
252 Main St.  
Farmington, ME 04938  
207-778-7179 (office)  
207-778-7157 (fax)  
[mmuir@maine.edu](mailto:mmuir@maine.edu)

**Laptops for Learning:**  
**The Maine Learning Technology Initiative**

**Introduction**

Maine's middle level students have a unique distinction. They are the first. They're the first to be part of a statewide learning with laptop initiative. There have been other large-scale technology initiatives, but no matter where you go in Maine, you'll find *all* middle schoolers wandering halls carrying their computer cases over their shoulders. You'll see all the students collaborating on multimedia projects, or looking up information to supplement what the teacher is presenting. You'll see all the students making movies, and writing papers, and analyzing data. Most importantly, you'll see learning and engagement improving.

In the third year of the Maine Learning Technology Initiative (MLTI), every 7<sup>th</sup> and 8<sup>th</sup> grade student and teacher in Maine has a wireless Apple iBook. Each is a regular, fully functional laptop with a full array of software. Students can word process, create spreadsheets, send email, look up information on the Internet, produce movies, and fashion multimedia presentations. Year One (2001/2002) was a planning year that culminated in establishing one Exploration School in each of Maine's 9 Superintendents' Regions. Year Two (2002/2003) rolled out laptops to 7<sup>th</sup> grade students and teachers across the state. A second round of laptops were delivered to Maine's middle schools for the 2003/2004 school year ensuring that every 7<sup>th</sup> and 8<sup>th</sup> grade student and teacher had one. There are now more than 37,000 laptops in Maine's 239 middle level schools.

The results so far seem positive. Parent and community opinion has done a 180° turn. When first proposed, the governor's email ran 10 to 1 against the idea. But once the laptops hit

classrooms and parents could see the positive effect it was having on their children, feedback changed to 10 to 1 in favor. Further, student engagement and attendance are up and behavior referrals are down (Silvernail, & Harris, 2003). There are even early indicators that MLTI is having a positive effect on achievement (Muir, Knezek, & Christensen, 2004).

### **Establishing Learning with Laptops**

The man responsible for providing every 7<sup>th</sup> and 8<sup>th</sup> grade student and teacher with a wireless laptop is former Governor Angus King. Coming from the world of business, he understood that you don't get ahead of the competition by struggling to keep up with them. He understood that only radical initiatives would bring jumps in improvement. At one point Governor King consulted educational technology guru and Maine resident, Seymour Papert about increasing the computer to student ratio as a way to improve education and to build a better workforce. Don't bother increasing it a little, asserted Papert. He went on to explain that only with one-to-one computing will you see technology's potential realized.

Shortly thereafter, Governor King's finance and budget people let him know that there was likely to be an unexpected 70 million dollar surplus. Governor King was quick to propose that a large portion of that surplus be put into an endowment to procure portable, wireless computer devices for students. A Task Force report and some legislation later, the governor had his radical idea and the state was on its way to transform education.

One of the key goals of the project was that it would address the Digital Divide. As a state with diverse demographics, both in terms of geography, and in terms of socioeconomics, MLTI proposed to eliminate the rift between the technology "have's" and "have not's." As Governor King reflects (2003), "One of the most important ideas is that this is 'every kid.' Big

school, small school, big town, little town, north, south, affluent community, poor community.

It's an equity tool.”

An early dilemma was deciding which age group to target. These were expensive tools that would be entrusted to students. They would have to be mature enough to take appropriate care of them. But this was also primarily a learning initiative. What age group could we best impact by introducing ubiquitous computing? It was decided that middle level students were the perfect age group, since they were both old enough to be responsible for the equipment and were still intellectually curious. We were concerned that elementary students were too young to care for the equipment and that many high school students were already jaded against school and learning. Middle school seemed an age when students' attitudes toward learning could still be positively influenced. After considering the many different grade configurations of schools in Maine that served middle level students, it was clear that all configurations housed both 7<sup>th</sup> and 8<sup>th</sup> grade students. Seventh grade then became the target for starting the project.

There were also questions of which technology should be distributed to students. Governor King's original idea was to purchase desktop computers, but teachers responded firmly that they still wanted their desktops for other kinds of learning activities. Every student having access to technology did not mean that students would do all of their learning on computers. It wasn't even a requirement of the Request for Proposals (available at <http://www.state.me.us/mlte/history>) that the device be a laptop. The RFP simply described what we would like to do with the devices (not hardware and software specifications). Of the nearly 100 companies at early informational meetings, some represented laptop companies, some Palm-type devices, and others specialty electronics. Apple Computer won the rigorous bidding process and their solution included the regular iBook laptops described above.

The contract, however, did not simply include computers. This was never meant to be a hardware distribution program. Apple was responsible for providing the infrastructure for wireless connectivity and for initial training for teachers. Apple made sure 7<sup>th</sup> grade teachers had their laptops in April 2002, (months before the contract required), so that they could become comfortable with them. In the summer, 2-day training events were held all over the state. Over 1200 of the 1700 teachers who participated in MLTI that year took advantage of the training. Although never intended to be more than introductory training (everyone realized that teachers would need many more professional development opportunities), the 2-day trainings were successful in orienting teachers to the iBooks and to teaching with them. Only a couple of hours were spent on straight “how-to” technical training. The bulk of the workshop focused on how to teach with the technology and on how to teach (and learn) technology skills within the context of using the laptops for academic work. Training sessions were repeated in the summer of 2003 for 8<sup>th</sup> grade teachers.

Three years has given us the chance to reflect on the lessons learned from such an ambitious educational initiative. Below are four of those lessons.

### **Lesson 1: Focus on Learning**

When looking at other large-scale technology initiatives, it quickly becomes clear that they fall into two categories: those that focus on the hardware and software and those that focus on the teaching and learning. Those that focus on hardware and software seem to have very little impact on achievement and engagement, where those that focus on teaching and learning do improve the education of their students. Analyzing over 700 studies, Schacter (1995) concludes that technology initiatives have to focus on teaching and learning, not the technology, in order to

be successful: “One of the enduring difficulties about technology and education is that a lot of people think about the technology first and the education later”

Maine has stayed focus on learning in several ways. By selecting a Teacher Leader in each school to function as a 2-way conduit for information between the Maine DOE and the school, teachers were placed at the core of leadership for the project. Also, MLTI staff have devoted extensive resources to professional development offered to teachers within their teaching context. Sessions focus on sharing resources and best practices, group problem solving of classroom challenges, and technology skills taught within the context of how they can be used to teach academic content. Even the RFP focused on what kinds of academic activities we wanted students to be able to do with the technology, not hardware or software specs.

## **Lesson 2: It’s about Technology Enhanced Curriculum, Not Technical Training**

Perhaps the most significant way the initiative has remained focused on learning is in the ways the laptops have allowed educators to enhance their curricula. Some people outside the schools mistakenly think that because we also view MLTI as an economic development opportunity, that the initiative is about making sure that all students are trained in the use of technology. I recently spoke with a state legislator about expanding the initiative into Maine’s high schools when he asked, “But isn’t it true that the students won’t need them as much since they will already be familiar with how to use computers?”

It is true that a benefit of MLTI is that all of Maine’s students will graduate knowing how to use technology. But that technological competence comes not from direct training in technology but in using it daily to learn math, science, social studies, language arts, and other subjects. Or, as *Does Technology Improve Student Achievement?* (Educational Research

Service, 2001) states, "...The true value of technology for learning lies not in learning to use technology, but in using technology to learn."

Virtual mathematical manipulatives, for example, allow teachers to present mathematical concepts to students via multiple representations instantaneously. Simply by accessing a pull down menu, students can switch between numerical, graphical, and set representations of different ideas. Not only does it open multiple pathways to understanding, it allows students to approach mathematics how they understand it best. In science classes, students can plug in microscopes and compare different samples by capturing a photo of the slides. The older version of this work had to be done with students' hand sketches that relied on individual artistic skill to insure any level of accuracy. Teachers now can even easily check to make sure that students are looking at the correct part of the sample and seeing the intended elements. In the past, because of the single eye piece, teachers couldn't be sure what students were seeing. Many writing teachers know that having students read their papers aloud can help them clarify and clean up their writing, especially when someone else is doing the reading. Now, students can plug in headphones and using "Text to Speech," have the computer read their paper to them. Students are crafting higher quality drafts before they are being brought to the teacher for review. In social studies, students are using the Internet to look up information on the topic being covered in class, often finding online resources better than those the teacher had identified.

Students will leave school knowing how to use technology. But they will also leave being better students of their academic subjects.

### **Lesson 3: Increase the Relevancy of Schooling**

School is having a relevancy problem. Too many students feel that school doesn't have much to do with their lives or with the real world. Too many students are asking every day, "Why are we learning this?" or "When will we ever have to use this?" The laptops are helping to add relevancy to the students' education. In some ways, the laptops are simply a long overdue upgrade to schools. Students see technology in regular and sometimes extensive use in every other aspect of their lives, but prior to MLTI often had few opportunities to use computers in school. They email and instant message at home, but still had to write out their school assignments by hand. They learn about their favorite team or performer on the Internet, but had to conduct their school research using often outdated encyclopedias and under stocked libraries.

The laptops make learning more relevant in other ways, too. Computers are a diverse medium for diverse learners. Project based learning with multimedia allows students to bring their own learning styles and strengths to a project. Think of students working on research projects: looking up information on a topic related to their current unit, then using the laptops to make a movie, presentation, or website. Some students will love the topic being researched. Others will be drawn in by the reading. Others will enjoy the technology itself. Others will enjoy the construction of the project. And still others will be hooked by the images and visual elements they add to the project. Each student has something about the research activity that will engage them and be a hook for the learning.

Place-based learning, learning focused on elements of the students' own communities, is a powerful way to increase the relevancy of learning for students. Students in northern Maine are studying the potato harvest and creating materials to help others discover Aroostook County's most important industry (<http://www.tateract.org/>). Other middle schools are working

with Maine Lakes Conservancy Institute to use their laptops and the latest scientific tools to monitor the health of their local lakes (<http://www.mlci.org/students/default.aspx>). The Maine Memory Network (<http://www.mainememory.net/>) is working with local historical societies to train middle school students to digitize primary documents. The historical societies get a digital archive of their collections (much more robust than fragile, old paper), and the middle school students get to do the work of real historians, learn more about their towns, and use the digital artifacts in their class projects.

Through the Maine Learning Technology Initiative, students are feeling more connected to their towns and their studies.

#### **Lesson 4: Send the Laptops Home**

Many of Maine's middle schools allow students to take their laptops home. But others do not. Maine is a local control state, and although the MLTI Design Team for Curriculum and Professional Development would like to have every district make the laptops available for students to take home, each district must make that choice themselves. It is a challenging decision. The state does not provide insurance on the laptops and districts must establish their own policies and ways to deal with the liability issues. Many districts have overcome those hurdles.

The benefits of sending laptops home with students are profound. Students can have as much as four times the access to educational materials and tools when they have access both at school and at home. In many cases, access at home is as powerful an equity issue as access at school. As one principal put it, "How would you feel if I said Child A could take her text books, notes and homework home to continue working and studying, but Child B could not?" MLTI technology at home could benefit the whole family. One of the Exploration Schools discovered

that their GED and Adult Education enrollments increased as soon as they started letting students take the laptops home. A case study of one middle school conducted jointly by the University of Maine at Farmington and the University of North Texas discovered that students who did not have a computer at home and were not allowed to take a MLTI laptop home scored lower on computer skills, on attitude toward school, and on self concept than other students at the same school.

## **Conclusion**

Maine is working now to expand the initiative into their high schools, and other states, such as Michigan, New Hampshire, Texas, and Massachusetts, are looking to implement large-scale technology initiatives, as well. Maine's high schools and other states will be looking to what Maine's middle schools have learned about giving students a powerful educational tool. Focusing on learning, creating technology enhanced curriculum, increasing the relevancy of schooling, and sending laptops home with students are only four of the lessons that should be carried over into new initiatives.

## **Resources**

Educational Research Service. (2001). Does technology improve student achievement? (Available at <http://www.ers.org>).

King, A. (2003). Can I have my laptop so I can email my lawyer? Presentation at Noble High School, Berwick, Maine, on November 25, 2003. (Available at <http://www.sad60.k12.me.us/king/>).

Muir, M., Knezek, G., Christensen, R. (2004). The Maine Learning Technology Initiative: An exploratory study of the impact of ubiquitous technology on student achievement. Maine Learning with Laptop Study (Available at <http://www.mcmel.org/MLLS>).

Schacter, J. (1995). The impact of educational technology on student achievement. The Milken Exchange on Educational Technology, (Available at <http://www.mff.org/publications/publications.taf?page=161>).

Silvernail, D. L., & Harris W. J. (2003). The Maine Learning Technology Initiative: Teacher, Student, and School Perspectives Mid-Year Evaluation Report. Maine Education Policy Research Institute. (Available at <http://www.usm.maine.edu/cepare/pdf/ts/mlti.pdf>).

### **About the Author**

Dr. Mike Muir has worked with teachers to integrate technology for 20 years. He has been a district computer coordinator, a middle school computer integration specialist, and has worked with teachers around the country. Mike is assistant professor of Educational Technology and Middle Level Education at the University of Maine at Farmington and Director of their Preparing Tomorrow's Teachers to use Technology (PT3) Project. He serves on the Design Team for Curriculum and Professional Development for the Maine Learning Technology Initiative and is Principal Investigator for the Maine Learning with Laptop Study (<http://www.mcmel.org/MLLS/>).