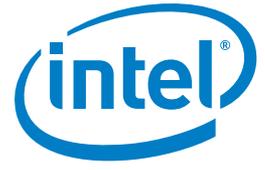


## CASE STUDY

Lilla G. Frederick Pilot Middle School  
Boston Public Schools



# Fulfilling Student Promise at an Inner-City Middle School

Technology access and eLearning best practices help bridge the digital divide and increase achievement at Lilla G. Frederick



## Executive Summary

At Lilla G. Frederick Pilot Middle School (LGF) in Boston, 1:1 eLearning and an innovative approach to technology access at home are increasing opportunity for children from a tough Boston neighborhood. Following best practices for technology adoption laid out in the K-12 Computing Blueprint<sup>1</sup>, LGF is using 1:1 eLearning to deliver individualized instruction, increase achievement, and develop 21st century skills. In addition, hundreds of LGF families each year receive 25 hours of technology training and are able to purchase an inexpensive mobile PC and Internet connectivity, thus bridging the digital divide at home. Among the key results to date:

- Disciplinary referrals have dropped 30 percent.
- Attendance prior to H1N1 flu rose 2 percent.
- On the Spring 2009 Massachusetts Comprehensive Assessment System (MCAS) test, LGF made Adequate Yearly Progress for the first time.
- Nearly 20 percent of students increased two grade levels in reading in a single year.
- Teachers have increased their use of technology and their confidence in their ability to use technology to achieve educational goals.
- Parents and teachers communicate more.

## Having an Impact through Technology

Middle school is a time of high energy and hormones. But walking the halls of Lilla G. Frederick Pilot Middle School, things are so quiet you might have a hard time believing you're among hundreds of sixth through eighth graders.

Located in the Grove Hall area of Dorchester and named after a long-time community activist, "the Frederick" belies every stereotype of a chaotic, inner-city public school. That's because, as Principal Deb Socia explains it, "People make

assumptions about urban children, and they're wrong. My kids are fabulous. They're brilliant and talented and respectful, and their level of discourse is very high. If you were to visit, you would not guess that we have 650 children in the building, because the school is so quiet. You wouldn't see much middle school angst, because the children are so engaged and focused. And this is not a selected population. These are neighborhood children - the children of Boston."



*Deb Socia*

“Technology is the most innovative, revolutionary, and exciting change I have seen in 30 years in education. It engages students and families, transforms teaching and learning, and enables us to provide our students with the same level of engagement and opportunity that wealthier children in the suburbs experience.”

– Deb Socia  
Principal  
Lilla G. Frederick



Yet LGF students face steep hurdles to fulfilling their promise. Nearly 90 percent are poor enough to receive free or reduced-price lunches. Thirty percent have special needs, 30 percent are English language learners, and 95 percent are children of color. Gang activity has been widespread in the neighborhood.

LGF’s success speaks to the power of dedicated teachers, broad community support, and visionary leadership that stretches from the schoolhouse to the State House. It is also a testament to technology, which plays a vital role in helping the school equalize opportunity, extend learning time, and meet individual needs. LGF has had a pervasive 1:1 eLearning environment since 2007. Since 2005, its use of Boston’s Technology Goes Home (TGH) program has extended home computing to hundreds of families and brought parents into the school community in ways that are proving extremely powerful.

These initiatives are having an impact. Attendance is up, or was, before the H1N1 virus struck. Parents are more deeply involved. Achievement is rising, and is reflected in higher scores on standardized tests. “I am in awe of the impact we are having through the opportunity to have technology in our school and our students’ homes,” Socia says.

### **Differentiated Instruction, Equal Opportunity**

Some schools see a conflict between developing basic academic mastery and equipping students with 21st century skills such as critical thinking and problem solving. The Frederick uses technology to do both—and more.

“Technology helps us deliver differentiated instruction and teach children at multiple levels more efficiently and effectively,” explains Socia. “That is extremely important as we work to raise student achievement. But our big push is that if we expect our children to compete for jobs with wealthier students from the suburbs, we need to give them the same opportunities. We are passionate about providing our students with access to technology as a gateway to all sorts of learning and opportunity.”

Leadership and policy	<ul style="list-style-type: none"> <li>• Strong commitment and leadership at all levels, including principal, teacher-led implementation teams, Boston Public Schools, the Dorchester and Grove Hall communities, Boston Mayor's Office and the Massachusetts State Legislature</li> <li>• In-depth planning, including a 7-month collaboration with the Massachusetts Technology Collaborative to develop a Wireless Learning Master Plan</li> <li>• Students and parents sign a "rules of the road" document that spells out acceptable use and consequences for inappropriate use</li> </ul>
Funding	<ul style="list-style-type: none"> <li>• \$1.25 million in legislative funding, supplemented by a range of community groups, nonprofits, and private companies</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>• Intel® Core™ 2 processor-based Apple MacBook*</li> <li>• Intel® mobile processor-based Asus EEE* netbooks for Technology Goes Home</li> <li>• Wireless networks at school and in the community</li> <li>• Custom technology portal for student, teacher, and family collaboration</li> </ul>
Professional development	<ul style="list-style-type: none"> <li>• Extensive pre-deployment activities plus ongoing differentiated and small-group workshops, many led by teachers</li> <li>• Video documentaries show LGF teachers using technology effectively in the classroom</li> <li>• Teacher-coach position created to consult with teachers</li> </ul>
Digital content	<ul style="list-style-type: none"> <li>• Tools include Achieve3000,* Rosetta Stone,* iMovie,* Garage Band,* Scholastic Fast Math,* Lexia,* Study Island,* Google and Office applications, and many more</li> <li>• Portal encourages sharing of resources and best practices</li> <li>• Teachers use Apple Remote Desktop to monitor student use of laptops and help keep students on-task</li> </ul>
Results	<ul style="list-style-type: none"> <li>• Collaboration with Boston College Technology and Assessment Study Collaborative to systematically assess impact</li> </ul>

LGF opened with four computer labs in 2003 and evolved toward its current 1:1 environment. "Labs are hard to manage and create a scarcity model," recalls Socia. "Carts were an improvement because they're more easily managed and don't take up real estate, but they don't give students the sense of ownership and responsibility that a 1:1 environment does. We've realized 1:1 is the only way to go, and the Wireless Learning Initiative enables us to do that."

Championed by State Representative Marie St. Fleur, the Frederick was chosen to be Massachusetts' first urban 1:1 school in 2005 and remains one of only two in the state. Each LGF teacher and student has a personal, Intel® Core™2 processor-based Apple MacBook\* that they use throughout the day. Wireless networks provide access to the Internet and other resources from anywhere in the facility. After-school and Saturday programs are also technology-rich.

LGF follows best practices for effective technology adoption laid out in the K-12 Computing Blueprint. Its migration to a 1:1 eLearning environment has been accompanied by strong leadership by administrators and teachers, collaborative planning, extensive professional development,

teacher-led implementation teams, and a focus on using technology in meaningful ways across the curriculum. "Technology is not the focus for itself," says Socia. "It is ingrained in everything we do. It's part of who we are."

### More Options for Teaching and Learning

Although LGF started from a high baseline of technology use, the 1:1 environment has expanded the options for developing 21st century skills, as well as for delivering individualized instruction and improving basic skills.

"To start with, having technology in the classroom provides more time for learning," says Aja Jackson, a Humanities, Social Studies, and English teacher who now serves as eLearning implementation coach. "With the labs, we would have to walk to the lab, and then it takes 10 minutes to calm the class, plus you have to review the mechanics such as how you save your work. With the laptops right in the classroom, we can make technology more of a seamless process. Students take out their laptops and go right to work. They also have more time to refine their work than they did with the typical once-a-week lab usage."



“The need to teach 21st century skills is pushing us along. We are becoming a more global community. This is the way the world is going, and it’s the direction education is moving. If we care about the future of our students, we have to prepare them for this world.”

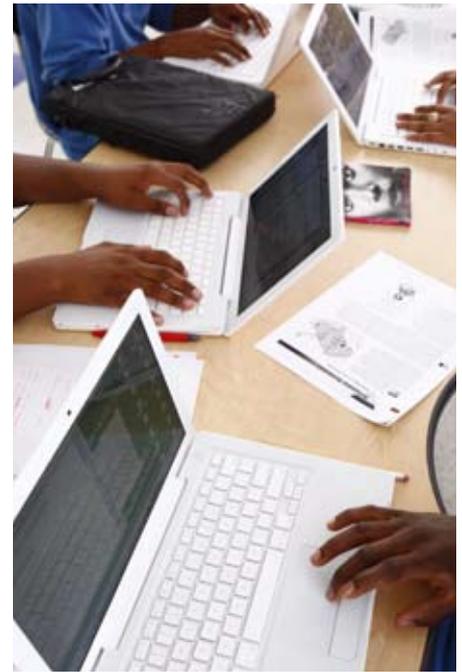
– Aja Jackson  
Teacher and eLearning  
Implementation Coach  
Lilla G. Frederick

One of Jackson’s initial technology projects was to use Google blogging as a “Do Now” activity to get students settled into class. “They would come into the room, open their laptops, read a question, and start blogging their answers,” she remembers. “I could see what they were writing and respond in real time. They would be silent for half an hour sometimes, having a complete dialog online. That’s when I said, ‘Wow, we’re really on to something.’ It was monumental.”

### Meaningful Use across the Curriculum

In addition to providing more instructional time, Jackson says 1:1 allows teachers to use technology more meaningfully. “With the labs, technology seemed to be one-dimensional, more of an add-on,” she recalls. “We only went to the lab if students needed to write a paper or do specific tasks on the Internet. With a laptop in front of each student, we have learned that we can fully integrate technology over the curriculum.”

Students don’t just consume content – they create it. They routinely conduct complex research, blog their analysis of reading assignments, and make movies and presentations that demonstrate their work and are shared with the community. “Students think more about their writing and what they want to say when the community can see their work, and are very enthusiastic about having their work be viewable,” says Jackson.



Especially impactful are projects with real-world relevance, such as creating public service announcements. For one project, students measured wireless signal strengths in the neighborhood. They presented their analysis to the mayor’s office, combining science, math, language arts, mapping, video production, project management, and public speaking—and wowing their audience. Students studying the First Amendment studied protest songs from different eras and used iMovie\* and Garage Band\* to write and perform their own protest songs. Many projects are publicly posted.





### Raising Achievement, One Student at a Time

For students whose performance is below grade level, the 1:1 environment enables teachers to use software such as Achieve3000\* and Lexia\* to tailor lessons to each child's reading level and abilities, and websites such as Quizlet.com\* to develop and present customized assessments. Struggling students read assignments at an appropriate level, but can come together with their team or class to discuss the assignment and do project-based follow-up.

"The laptops make it easier to modify the assignments for each student," says Molly Dallaire, who teaches special education. "If we're researching Antarctica, I might have one student reading MSN and another reading Time Magazine for Kids, but they're all studying the same topic, and they'll all participate in the discussion. Easily distracted kids can concentrate



better on the laptop that's right in front of them than something that's projected on the wall or the screen, yet still be part of a whole-group activity."

An added bonus: "Laptops remove the stigma," Dallaire says. "Nobody knows what's on your screen. For middle school students, that's highly valuable." The 1:1 usage model has enabled Dallaire to customize elements such as cursors and backgrounds to meet individual needs.

Other resources include the use of Rosetta Stone\* by English language learners to increase comprehension and vocabulary, and digital manipulatives in math classes. Teachers frequently communicate with students via email and chat, offering immediate feedback, guidance, and encouragement.

### Equity, Access, and Trust

Students' technology needs don't end when children leave the building. In Grove Hall, however, few families have home computers and Internet access, and students would risk injury and theft if they carried their notebooks home.

LGF has been aggressive in bridging this digital divide. Acting on the school's commitment to the whole child and backed by community support, LGF makes maximum use of the Technology Goes Home program, which at most Boston schools serves just a handful of families. Since 2005, hundreds of LGF families each year have attended a 25-hour TGH course that

"Laptops make it easier to modify the assignments for each student. ... I might have one student reading MSN and another reading *Time for Kids*, but they're all studying the same topic, and they'll all participate in the discussion."

- Molly Dallaire, Special Education Teacher,  
Lilla G. Frederick



"I think Technology Goes Home is one of the best programs we have, because besides teaching the parents and the children technology, it brings families together and builds stronger ties between the parents and the children."

– Thomas M. Menino  
Mayor  
Boston

guides them to use common applications, websites, and school computing resources. The program also offers a chance for technology access at home through the purchase of an inexpensive mobile PC and Internet connectivity.

The training is held at the school and taught by LGF teachers, yielding a rich environment in which to build teamwork and trust. Boston Mayor Thomas Menino, who inspired Technology Goes Home and made Grove Hall a priority as the City of Boston expanded its connectivity options, has called TGH "one of the best programs we have."

### Technology-Supported Transformation

The combined impact of the two technology initiatives is proving transformative. Students are engaged and interested. Disciplinary referrals have dropped 30 percent. Before the H1N1 virus swept through the school, attendance had risen 2 percent. Students feel empowered and respected. Their laptop has their name on it, and they take the ownership of it seriously. "We're saying to the kids: I trust you, not only with this piece of equipment, this tool - I trust you to take control of your education," says Representative St. Fleur. "That's powerful."

Teachers have increased their use of technology, which was high to begin with. Surveys show they also gained confidence in their ability to use technology to achieve

educational goals. "We have moved from, 'There's a great program online we can use,' to sharing best practices for using the laptops as tools that facilitate literacy skills, critical thinking, writing—all the skills that our students need to develop," says Jackson.



Family engagement is associated with student achievement, and TGH has led to significantly more communication and collaboration with families. Parents are quick to email teachers with questions or suggestions, and teachers can easily communicate with parents about progress toward goals.

Standardized test scores are rising. On the Spring 2009 MCAS test, the school made Adequate Yearly Progress for the first time, both in the aggregate and



for all subgroups in English, and in the aggregate and for all but one subgroup in math. "Literacy skills are definitely on the rise," Jackson says. "We saw students last year who jumped up two grade levels in reading. The software we use on the laptops provides immediate feedback and has played an integral role in improving reading achievement levels."

LGF and its technology initiatives are also a source of pride and empowerment in the community. When a family participates in TGH, the entire household gains technology access. Children use the computer to do homework and explore the Internet, and parents use it to meet goals such as improving their language or technology skills, applying for a job, exploring a new interest, or creating a movie to share with relatives. All Grove Hall residents know the state is looking to their school to show technology's impact.

### Looking Forward

As LGF looks forward, Matt Mervis, an education consultant and Wireless Learning Initiative project director for the Frederick, sees the school as the front edge of a rising wave. "With 1:1 at school and technology in the home, we're getting close to a wraparound environment," Mervis says. "We're increasingly seeing this as the way to extend the school day and get the next big bump in what we can do for kids."

To Mervis, the lessons from LGF—and its sister project, the Berkshire Wireless Learning Initiative in rural western Massachusetts—are clear. "One-to-one works—period," he says. "With strong leadership, vision, infrastructure and collaboration, it works, and the results are exciting. The last barrier—price—is falling. We need to stop talking about whether it works, and start doing it."

"Isn't it beautiful that through this medium, these children are finding their voices?"

*- Representative Marie St. Fleur  
Massachusetts Legislature*





## Learn More

- The Lilla G. Frederick Pilot Middle School and its technology initiatives:  
[www.lgfnet.org](http://www.lgfnet.org)  
[www.vimeo.com/channels/lgf](http://www.vimeo.com/channels/lgf)  
<http://www.bc.edu/research/intasc/researchprojects/fwle/frederick.shtml>
- Blueprint for successfully implementing 1:1 eLearning: [www.k12blueprint.com](http://www.k12blueprint.com)
- Intel in Education: [www.intel.com/education](http://www.intel.com/education)

CASE STUDY PROVIDED BY:



<sup>1</sup> <http://www.k12blueprint.com/k12/blueprint/index.php>

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH INTEL® PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS PROVIDED IN INTEL'S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS, INTEL ASSUMES NO LIABILITY WHATSOEVER, AND INTEL DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF INTEL PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. UNLESS OTHERWISE AGREED IN WRITING BY INTEL, THE INTEL PRODUCTS ARE NOT DESIGNED NOR INTENDED FOR ANY APPLICATION IN WHICH THE FAILURE OF THE INTEL PRODUCT COULD CREATE A SITUATION WHERE PERSONAL INJURY OR DEATH MAY OCCUR.

Intel may make changes to specifications and product descriptions at any time, without notice. Designers must not rely on the absence or characteristics of any features or instructions marked "reserved" or "undefined." Intel reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to them. The information here is subject to change without notice. Do not finalize a design with this information.

The products described in this document may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request. Contact your local Intel sales office or your distributor to obtain the latest specifications and before placing your product order. Copies of documents which have an order number and are referenced in this document, or other Intel literature, may be obtained by calling 1-800-548-4725, or by visiting Intel's Web site at [www.intel.com](http://www.intel.com).

© 2010, Intel Corporation. All rights reserved. Intel, the Intel logo, and Intel Core are trademarks of Intel Corporation in the U.S. and other countries.

\*Other names and brands may be claimed as the property of others.

Printed in USA

1009/EL/CMD/XX/XX

Please Recycle

322818-001US