

# Blueprint Solutions

## for K-12 One-to-One Ubiquitous Computing Initiatives

A resource for education leaders and others interested in implementing one-to-one anytime, anywhere computing in K-12 education.



### Inside:

1	Policy.....	1
2	Leadership.....	3
3	Funding.....	5
4	Curriculum.....	6
5	Infrastructure.....	7
6	Results.....	8
7	Professional Development.....	10

### Definition:

**n. one-to-one computing** - each teacher and student has access to a computer, the Internet and software anytime and anywhere.

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# 1 POLICY

## THE IMPORTANCE OF POLICY

Policy provides the foundation that enables planning to take place. The test of a successful policy is in the examination of the program accomplishments to determine whether the intended beneficiaries are truly profiting from the policy; and a judgment about the fairness of the policy to all parties it affects.

An essential aspect to policy is that it should be constantly evaluated and modified as needed in order to be the most beneficial. A systematic approach to policy formulation will enable policymakers to establish realistic policies in reasonable time frames. Central to the process is the goal. The evaluation element enables the process to be checked continually for adherence to the stated goals and objectives.

Participation in public education policy is on the rise at the federal, state and local levels, and there are countless avenues for such participation in educational policy. According to the Virginia Commonwealth Educational Policy Institute's *Public Participation in Education Policy: Changing Roles*, the "opportunities for such participation often depends on the degree of decentralization or local discretion allowed or provided by the state and local education authorities. The degree and extent of public participation may also be affected by the structure and relationship between the governor, the legislature, the state board of education and the state superintendent and also in how these entities and persons interact with local school boards and local school superintendents. Whether these entities are elected or appointed can also affect the degree of participation in policy making."

People can get involved in educational policy either as individuals or as a member of an advocacy group or association. According to the CEPI report, "Perhaps the greatest area of influence on educational policy comes from those who participate in the legislative process. Which programs receive federal funding or federal scrutiny in local and state practice is motivated in large part by public participation in the legislative process. The efforts of focused educational lobbying has resulted in greater funding for specific programs as well as mandates for services without complete funding. This takes place in the form of both professional lobbying and also individuals testifying and participating in hearings on educational issues."

Ways to get successfully involved in educational policy include:

- Public opinion surveys and polling (use surveys to discover support strategies for your initiative)
- Direct mail and media
- Community development and support
- Grassroots field operations
- Press strategy
- Fundraising plans
- Create community committees
- Activate a political action committee
- Invite VIPs to your schools. Show them what is going well and where help is needed.
- Always have visitors talk with students – students may tell your story in a way that administrators would never think of.
- Get students on the school board. Many states have enacted legislation providing for student members of the local school board so the student voice has greater representation in the formation of educational policy.
- Get to know the mayor's chief of staff; visit your local state congressional or assembly representatives and education policy advisors.
- Participate in public meetings

The importance of policy goes beyond the initial development of systemic change. Strong leadership will recognize the need for policy that addresses the do's-and-don't when using technology as a primary resource, and by doing so create an "Acceptable Use Policy" that is the foundation for all stakeholders involved in the use of the technology. Such a policy should address the topics of:

- Appropriate usage definitions
- Inappropriate usage definitions
- Consequences for misuse
- User liability expectations
- Security instructions
- Protocol for technical support needs

### Sample State Legislation:

#### *Texas Technology Immersion Pilot (TIP)*

Developed by Anita G. Givens, senior state technology director of the Educational Technology Division in the Texas Education Agency, TIP is an example of policy that creates systemic immersion in the school setting. Funded by leveraged Title II, Part D (NCLB) federal technology funds, TIP affords schools in Texas the opportunity to apply for competitive grants that will cover the cost of providing all teachers, administrators and students within the school access to the six crucial elements (as identified by Givens) of total technology immersion:

- Wireless mobile computers with internet access
- Productivity software
- Online learning software
- Formative assessment software
- Professional development
- Technical support

This policy originated through Senate Bill 396, passed by the 78th Texas Legislature. It is just one Bill in a series of ongoing policy contemplations about making technology tools more prevalent in Texas education. TIP already reaches some 23 school districts within the state, as well as an additional 22 grade 6-8 middle school campuses throughout Texas that act as control campuses for the eventual evaluation project (eTxTIP).

### **Sample State Legislation:**

#### *Henrico Teaching and Learning Initiative*

The Henrico Teaching and Learning Initiative was launched in 2001, beginning with wireless laptops for every high school teacher and student, and every middle school teacher. In 2003, the program expanded to provide wireless laptops to every middle school student and elementary teacher.

The Henrico County Public School District deployed its Teaching and Learning Initiative without resorting to special tax levies or funding sources. The initiative has been funded by a combination of general, state, and federal monies, with around one third coming from federal and state funding sources.

The initiative:

- Equipped all teachers and administrative staff with wireless laptops and provided a range of ongoing training opportunities.
- Leveled the playing field for technology access by deploying 30,000 laptop computers to middle and high school students, as well as to faculty and administrative staff across the district.
- Provided wireless Internet access to 65 school buildings and 10 public libraries through 1,800 access points.

The Virginia legislature did (and continues to) offer substantial state funding for building toward such an installed base of computers and the networking infrastructure for robust connectivity. Still, the 2003-09 State Technology Plan for Virginia established a connectivity goal to ensure that “all public schools have access to integrated instructional and administrative services across interoperable high-speed networks” (see: <http://www.pen.k12.va.us/VDOE/Technology/>). The state technology plan emphasizes the importance of integrating technology into instruction. The plan provides the structure for the development of other components of an effective technology program: professional development, connectivity, educational applications, and accountability.

To learn more, read *Five Years, 30,000 Laptops* at [http://www.k12blueprint.com/k12/blueprint/cd/8380\\_IN\\_Henrico\\_Final.pdf](http://www.k12blueprint.com/k12/blueprint/cd/8380_IN_Henrico_Final.pdf).

### **Other Legislation: Digital Content**

In the Texas Education Code, the definition of “textbook” has been expanded to include digital content and a wide variety of technologies and delivery options.

### **Also under consideration:**

- Changes to the review and adoption cycle.
- Changes to the funding and purchasing processes.

During the regular legislative session and two special sessions in 2005, several bills were introduced outlining these changes. Reform legislation was not passed due to the school finance debate.

However, several common themes regarding textbooks and technology appeared in the 2005 proposed legislation:

- Change “textbook” to “instructional materials” throughout the code, and expand this definition.
- Grant districts permission to purchase subscription-based online materials.
- Provide Section 508 compliance for electronic materials.
- Define targeted technology programs.
- Review state and federal grants and costs for effective use of technology programs.
- Create an advisory committee with members from the business, industry and education sectors to advise on technology and monitor district implementations.

*From [www.tea.state.tx.us/technology](http://www.tea.state.tx.us/technology)*

*From the “Education Technology Campaign Kit,” available at <http://www.convergemag.com/story.php?id=100758&issue=2:2006>*

## 2 LEADERSHIP

### THE FACTS:

Twenty-first century job skills demand the use of computers to be competitive in the global economy. While nearly all U.S. schools currently have access to some computers, the demand to create one-to-one access for all teachers and students is increasing and is essential to compete in this global economy. A structured change management approach toward ubiquitous computing enables systemic change – changing entire school systems, not just school districts. This approach is necessary to change the culture of learning in the United States.

Bringing systemic change into a school requires much more than just building a computer lab or bringing in mobile carts into a particular classroom within a school district. Systemic change requires the development of an entire school system based on the vision that technology can reach all students, teachers and administrators at all times, creating a full-time, one-to-one environment. This environment enables teachers to teach to their highest abilities, and students to learn the skill-sets needed to succeed at the highest levels in the 21st century workforce.

This systemic change is not only limited to bringing in new technology, but also the software needs. According to Mark Schneiderman, the Director of Federal Education Policy for SIIA, "Introducing the computer as an access source is not enough. Districts need to account for software, bandwidth and infrastructure as well." SIIA has developed a toolkit that works as an excellent example of the thought processes behind development of policy prior to implementation. Suggested planning steps include:

1. Determine a program's objectives before planning proceeds.
2. Plan before implementing any of the program.
3. Involve all program stakeholders in the planning process.
4. Include criteria for evaluating the program's success in alignment with the program's objectives in the plan.
5. Assign an effective leader, with appropriate decision-making authority, to manage the implementation.

To read the full toolkit, visit [http://www.siaa.net/education/foreducators/toolkit\\_0407.pdf](http://www.siaa.net/education/foreducators/toolkit_0407.pdf).

To ensure access to technology, school leaders must create an inspired vision, enlist stakeholders and successfully develop a strategic plan to accomplish educational objectives that maximize technology and accelerate gains in student achievement through data-driven decision-making and individualized learning.

### Build a Task Force:

- Start this conversation at the state or school district level with administrators, board members, IT staff, curriculum specialists, facilities and procurement staff, teachers, students, parents and community leaders.
- Enlist the support of all key players who will play crucial roles in the development of the one-to-one initiative.
- Define short and long-term goals for the initiative that demonstrate to stakeholders how the one-to-one initiative will improve the quality and effectiveness of teaching and increase student achievement.

### Identify Stakeholders:

A one-to-one initiative impacts the entire district – administrators, teachers, students, parents, board members, IT staff, facilities and procurement staff and curriculum specialists and its community.

### Develop Teacher Buy-in:

Since teachers are charged with delivering the change to the students, it is essential to involve the professional teaching staff within each school in the development phase. By allowing for teacher input and giving the teachers a voice in the decision-making process, the result will be a collaborative adoption of an objective rather than an ill-received directive. Teacher morale is very visible to students, so their acceptance of change is important in the overall success of an objective. If a teacher has a negative outlook on the change, students will receive information through a clouded filter.

### Considerations:

- Everyone impacted by one-to-one computing has the potential to become a champion for the project.
- Clarity of messaging the impact of the initiative and early buy-in is mission critical for the initiative.
- Limit the number of people on your task force.
- Devise questions that will lead to discussions to help target key objectives, ideas, needs and important input from all stakeholders.
- Find teachers that will become advocates for your vision and develop them as situational leaders to foster the change among their colleagues.

## DETERMINE OBJECTIVES:

### Teacher Objectives:

- Utilize data-driven decision-making performance solutions
- Improve technology skills
- Enhance teacher proficiency and effectiveness
- Align curriculum, assessments and instruction with standards and each other
- Develop a repository of content-neutral supplemental teaching materials, item banks and content
- Individualize and accelerate student learning
- Monitor progress and differentiate instruction via easy-access classroom dashboards to real-time performance and diagnostic data
- Deploy classroom assessments to track students' mastery of skills and standards and adjust instruction to impact progress
- Involve parents through Web-based communication, collaboration tools and parental outreach programs
- Increase 21st century job skills

### Student Objectives:

- Extend access 24/7 throughout the community
- Revitalize student interest
- Improve technology skills
- Improve communication and collaboration with peers
- Reduce absenteeism and dropout rate
- Narrow achievement gaps

### Administrative Objectives:

- Constant evaluation of results from data collected in the classroom
- Constant evaluation of input from teachers, students and school community as a whole
- Provide professional development to meet the needs of your faculty, staff and student body
- Develop a curriculum that will maximize the learning potential of all students
- Provide the tools necessary for teachers to teach to their highest capabilities
- Provide students with the skill-sets needed for success in the 21st century

### Align Existing Policies

- Create a strategic and sustainable plan
- Consider long-term funding
- Create a policy document
- Review security policies
- Review procurement policies
- Establish usage policies
- Evaluate district technology standards

### Create a Strategic Plan

A successful strategic implementation considers four elements: people, process, technology and data.

- Do a gap analysis of all four elements
- Research and learn from the experiences of others
- Forecast technical infrastructure needs – expect to increase capacity
- Consider beginning with a smaller-scale pilot implementation or use a phased approach
- Seek vendor expertise and partnerships to estimate project cost
- It is critical to know why you are implementing a one-to-one program, and crucial to know what success looks like

### Maximize Communication

- Form a task force
- Communicate to collaborate with stakeholders
- Communication needs to be continuous with milestone reports to keep stakeholders informed of major progress
- It is crucial for people to understand what is changing, when the change will occur and the successful impact the implementation would ultimately have

### Change the Culture

**TIME...** Informed and gradual change is easier to accept and implement. Allow those involved adequate time to communicate questions and concerns, and to make adjustments and suggestions that strengthen the mission and ensures success

**TALK...** Hold special briefings for key stakeholders, detailing project progress. Share written information and data collected -with peers and other stakeholders

**PLAN...** Prepare an accountability plan to communicate change management progress. Identify and include change readiness tactics, impacts to individual jobs, policies and procedures, and an information flow chart outlining channels of communication

**TRAIN...** What additional skill sets does the new equipment and data-driven decision-making solutions require? Provide training for all skill levels

**LEARN...** Study the successes and failures of others. Be open to large and small-scale technology implementation ideas and solutions that other types of businesses use

**EVALUATE...** Review your vision on a regular basis, making changes as needed. Measure results and use them to drive data-based decisions that have a solid foundation.

## 3 FUNDING

### CREATING OPTIONS & FINDING RESOURCES:

Schools must determine the total cost of ownership (TCO) when considering a one-to-one program laptop acquisition. Some schools set aside a percentage of operational budgets to fund one-to-one initiatives. Now that textbook publishers offer supplemental software and online curriculum, textbook and technology funds may have some overlap.

The adoption of a one-to-one learning environment and all of the tools it entails are not solely a capital investment. While it may seem like bringing in a huge quantity of laptop computers and software applications would fall into the capital portion of a budget, they also fall into categories for textbooks, professional development, curriculum development, technology funding and facilities upgrades. By spreading out the cost of implementing a one-to-one initiative, it is much easier to achieve than to lump the purchase into one category of the budget. This re-inventing of the district budget can make a huge difference in the success of funding such an initiative.

An important realization is that the initial impact upon a budget is just that – initial. The long-term effects of a one-to-one adoption can actually bring many parts of an annual budget down after year one. Such expenditures as replacing textbooks, purchasing school supplies and even communication costs will drastically reduce. Schools or students will not need to replace a damaged textbook because they own it electronically. Think of the convenience of communicating with parents via e-mails to the computer provided to their students rather than the thousands of copies reproduced daily. The benefits of one-to-one learning are not only educational, but economical and efficient as well.

Community bonds and initiatives have been successful in locations such as Irving ISD in Texas. Educate parents and community members on the positive effects such measures could have for students and the economy.

There are numerous foundation grants available to school districts or school sites that apply for them. Millions of dollars are available – some of which is given on a one-time basis, while other grants are renewable on an annual basis depending on the results of the implementation of grant funds. There are many foundations in the private sector that allocate funds to schools that will take the steps to bring in innovative learning environments that will develop students to be successful workers in the 21st century.

Create or search for special funds or foundations to provide funding for your one-to-one program. Look for service discounts to provide technical assistance – consider student support as an option. Vendors may find it beneficial to partner on projects to gain experience and recognition. Consider instating nominal student fees, particularly to aid with lease programs or in the case of outright purchase.

As an outgrowth of Michigan's Freedom to Learn (FTL) Program, the One-to-One Institute developed the "Dynamic Technology Planning Program. The purpose of the tool is to facilitate the state's sustainability and replicability of highly-enhanced education technology learning environments – specifically that of one-to-one teaching and learning programs.

The Dynamic Technology Planning Program is a technology projection tool that gives school leaders the ability to easily and systematically plan and communicate their short and long term technology vision, needs, costs and funding sources. The software program is a multi-year planning tool that provides a step-by-step approach to:

- Develop a short and long-term vision for systemic funding of technology;

- Determine resources needed to implement the vision;
- Calculate current and future implementation costs;
- Identify funding sources; and
- Communicate the technology plan.

For more information, go to [www.one-to-oneinstitute.org](http://www.one-to-oneinstitute.org).

Another valuable tool, partially funded by Intel through CoSN, is the Value on Investment tool, used to project the costs and related benefits of specific proposed technology projects. TCO looks at the installed (and optionally the planned) computer environment costs, while VOI looks at the anticipated costs and benefits of technology projects. For more information on the VOI tool, visit <http://www.edtechvoi.org/>.

### METHODS FOR COMPUTER DEVICES:

**Purchase** — most beneficial when ongoing funding is uncertain. This approach does not easily allow for upgrades or replacement strategies.

**Lease program** — lease machines for two to five years.

**Lease/Purchase** — some installment financing is available and some hardware companies support upgrades over the life of the lease.

**Individual/Family purchase** — contracts can be negotiated per state or district. Grant money or foundation funds can offer assistance.

**District Implementation** — created through special bond appropriation within the district's operating budget or through community bond approval.

The financial investment of one-to-one computing underscores the need to protect equipment. Some schools limit computers to on-campus usage. While this approach does limit risks, it also limits potential benefits. One-to-one achieves maximum results when computers are available for use anywhere and anytime to maximize teaching and learning potential and opportunity.

## 4 CURRICULUM

### The Next Level of Learning Looks Completely Different...

Simply integrating technology into existing instructional methods is an exchange of medium, but not an advance in method. For learning to progress, we need to transform the method. Integrating technology means developing a systemic approach to the use of technology so that it is used as the primary tool rather than a secondary supplement. Technology has this potential.

Technology enables richer understanding and deeper learning beyond what current methods provide because technology lets students access amazingly precise and detailed data. In order to use technology to transform how students learn, an instructor must know the extent to which the tools and resources can help. This makes teacher buy-in and professional development key aspects to the adoption of any curriculum.

- Technology should support student activities that are otherwise impossible.
- Technology should be equitable and reach all types of learning styles.
- Develop curriculum with the vast new set of digital content in mind.

### Digital Content Democratizes Education...

- Digital content packages can:
  - Address individual learning styles
  - Be flexible
  - Be quickly adjusted to fit ability levels
  - Be translated into different languages
  - Be reformatted for presentation and dissemination in various ways
  - Include graphic, video, virtual reality, animations, simulations, audio, music, interactive, and gaming elements
  - Engage students through a rich and varied array of intelligences

Once instructors are properly trained, they should feel well prepared and be well equipped to inspire or require some of the following activities during class time:

- Spontaneous research
- Stream of consciousness searching
- Evaluate reliability of various sources
- Take notes quickly and efficiently
- Peer mentoring using multimedia presentations
- Add slides and visuals to lectures
- Fuel excitement for learning

## DIGITAL RESOURCE RESULTS

The white paper *Effective Access: Teachers' Use of Digital Resources in STEM Teaching* addresses what STEM educators can and are doing with digital resources. Content was found to be the determining factor that teachers use to plan technology integration into instruction. Teachers also report using digital content to align curriculum to state standards.

The following tables from the *Effective Access* report illustrate what has changed in teaching due to technology integration and provide a glimpse into resources currently used to plan curriculum and instruction.

*How have Web resources changed your planning or instruction?*

My Curriculum Planning Has NOT Changed	My Instruction Has NOT Changed	My Curriculum Planning and/or Instruction Has NOT
25.3%	28.6%	62.3%

Resources Often Used by Teachers During Curriculum Planning & Instruction

Resources Used During Curriculum Planning	Use Frequently or Always (%)	#
Web Sites	71.3	181
Textbooks	70.2	178
Colleagues	52.8	178
Books	52.2	180
Other Print	39.8	123

Resources Used During Instruction	Use Frequently or Always (%)	#
Web Sites	68.4	177
Textbooks	58.5	176
Colleagues	43.7	119
Books	34.9	175
Other Print	33.1	172

Check the State Education Technology Directors Association (SETDA) Web site for an excellent list of curriculum integration strategies and ideas ([www.setda.org](http://www.setda.org)).

## 5 INFRASTRUCTURE

Infrastructure supports technology-enhanced teaching and learning.

District and school leaders have become performance management experts, utilizing data to help their teachers increase academic achievement.

Now that technology and software have been mobilized to go anywhere, teaching and learning is individualized and accessible anytime.

### About the Computing Devices:

- lightweight
- provide protective carrying case
- sturdy
- minimum battery power of two hours
- consider storage
- implement a battery exchange plan
- provide written usage guidelines
- consider security
- provide onsite docking stations
- three to five-year equipment life
- standardize hardware
- standardize software
- establish reasonable specs
- allow for flexibility
- base specs on project goals
- make maintenance convenient
- make software upgrades easy
- use wireless cards
- buy the best machines you can afford
- use USB ports

### About the Network:

- A stable, reliable and secure network strongly influences user's trust in a system.
- The network should easily perform daily operations.
- Plan for extra physical space needed for added computers, servers, and peripheral equipment.
- Ongoing professional development, sustainability and maintenance are equally important.
- The infrastructure must be easily scalable to allow for future growth; therefore, project your needs well into the future. Be sure to consider the needs of your server and its ability to provide for your projections.
- Install instructor workstations that permit viewing students' screens during class time.
- Perform stress tests on the system to make sure that the system can support a large number of users simultaneously.
- Test wireless signals in multiple settings and conditions.
- Consider software licensing agreements. Heed computer licensing requirements and policies.

### About Support:

Provide teachers and administrators with laptops and necessary performance management solutions to prepare for one-to-one implementation at least one year prior to kickoff.

Operational budgets should allow for ongoing staff and teacher training and professional development. Data on district and school's professional development must manage both immediate needs and growth.

Efficient problem-solving upfront prevents minor issues from escalating into major problems. Schedule regular communication and collaborative meetings with parents, teachers, students and support staff to address issues.

Consider all support issues and staff resources available. Log, track and analyze reports.

Utilize student support. This approach challenges advanced students while reducing the load on IT staff.

*Consider This:*



- Data-driven decision-making helps individualize teaching and learning
- Anytime, anywhere: ubiquitous and mobile learning environments
- Lighter, thinner and faster notebooks and tablets
- Technology and education are mutually complementary

- Facilitate collaborative and connected learning environments
- Reliable and accessible student-teacher collaboration
- Individualized learning where students determine their own pace

## 6 RESULTS

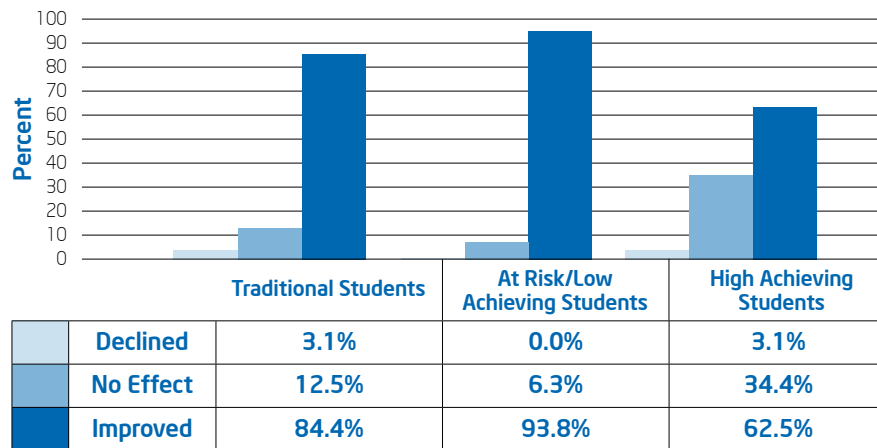
### Michigan

Michigan's one-to-one Freedom to Learn (FTL) initiative, implemented in the fall of 2004, reported increased student achievement. Progress and results of the program evaluation, released Feb. 2, 2007, show improvement in students' math and reading scores and evidence that Freedom to Learn students have developed key skills and knowledge needed for the 21st century workforce. For example, there are significant instances of FTL students outperforming non-FTL students on the 2006 Michigan Educational Assessment Program.

For more information, see the Metiri Michigan profile online.

### New Hampshire

*Teacher's Beliefs on the Impact of 1:1 Computing on Students' Participation In Class*



For more details about New Hampshire's one-to-one initiatives, see the in TASC publication, *Technology Promoting Student Excellence: New Hampshire's 1 to 1 Laptop Program*, online.

## UNINTENDED RESULTS

### Indiana

Indiana reported three major surprises from their Tech-Know-Build one-to-one initiative:

- improvement in student-teacher relationships
- increased parent and community involvement with students
- heightened teacher enthusiasm

For further information, see the Metiri Indiana profile online.

## EXPECTATIONS

### Virginia

Expectations of Virginia Policymakers	Expectations of Educators in Henry County	Expectations of Educators in Henrico County
<p>To date, state policymakers have not expressed specific expectations for one-to-one computing. However, their general expectations for technology use include:</p> <ul style="list-style-type: none"> <li>▪ Preparing the next-generation workforce for knowledge-based jobs that utilize cutting-edge information technology</li> <li>▪ Supporting technology literacy at the 5<sup>th</sup> and 8<sup>th</sup> grade levels, as called for in NCLB</li> <li>▪ Facilitating higher student academic achievement</li> <li>▪ Professional growth for teachers and administrators</li> <li>▪ Closing academic — including digital —</li> </ul>	<ul style="list-style-type: none"> <li>▪ Improving academic achievement (as linked to Standard of Learning scores)</li> <li>▪ Preparing students for the real world/ economic viability for communities</li> <li>▪ Improving learning and teaching</li> <li>▪ Closing the digital divide</li> </ul>	<ul style="list-style-type: none"> <li>▪ Improving academic achievement (as linked to SOL scores)</li> <li>▪ Developing 21<sup>st</sup> Century Skills</li> <li>▪ Meeting the needs (and maximizing the benefits) of multiple learning styles</li> <li>▪ Facilitative, collaborative instruction using digital tools (both hardware and content)</li> <li>▪ Closing the digital divide</li> </ul>

Virginia's Henrico and Henry counties are national leaders for one-to-one initiatives.

Henrico County pursued the initiative to achieve better returns on technology investment because reduced computer lab time was limiting student access to technology. Their goal was to transform the high school, and they started by creating more lab time access for students to focus on advancing 21st century learning skills.

Henry County focused on improving test scores and economic viability to narrow the digital divide in its community. Student scores improved by 20 percent on state Standard of Learning (SOL) tests during the first year of the district's laptop program in Henry County.

*For more information, see the Metiri Virginia profile online.*

### **Data-driven Decision-making In Philadelphia**

The School District of Philadelphia implemented a data warehouse to integrate student progress and school effectiveness data into their daily operations and enable data-driven decision-making across the district. The school district's data warehouse provides integrated information to create a monthly report for use across the district to drive school improvement

### **School Performance Management Systems**

Teachers need more than laptops to successfully monitor gains in student achievement. They need a School Performance Management System (SPMS) that will empower the entire school district – from school leadership to teacher, parents and students – to help foster data-driven decision-making. SPMS encourage instructional effectiveness and administrative efficiencies and thus produce organizational excellence.

All stakeholders need to be properly trained on easy-to-use, role-based dashboards that have access to key performance indicators (KPIs) at the district, school and classroom levels. Once administrators, principals and teachers all have the necessary resources to understand and utilize data-driven decision-making solutions, they will be equipped to:

- Provide an accurate and actionable picture of districts progress
- Deploy formative and summative benchmark testing
- Track and monitor student progress and mastery of skills, then adjust and individualize instruction
- Manage standard-based curriculum and individual instructional plans
- Use and share standard-based resources and an online repository of third-party teaching materials and assessment items in an open, content-neutral and SIF-certified platform
- Utilize compelling, insightful student growth/decline in proficiency reports
- Monitor professional development planning and effectiveness, and also optimize instruction and staff productivity
- Evaluate reliability of various sources
- Take notes quickly and efficiently
- Use multimedia presentations
- Add slides and visuals to lectures
- Fuel excitement for learning

## 7 PROFESSIONAL DEVELOPMENT

Provide teachers and administrators with laptops one year prior to an implementation and begin training early and often. Early access to the technology will allow for crucial professional development management data to be collected and analyzed. This can open new opportunities to explore and understand the environment, even if they begin with personal and recreational use.

Teachers need guidance to integrate technology into instruction and become data-driven educators. Help them to understand the importance of making data-driven decisions to help individualize the learning process. Help can take many forms, from software training by IT staff to teachers' pedagogical and methodological exchange, to implementing mentoring programs.

Teachers should be provided sufficient technical instruction to also be able to address minor interruptions of connectivity in the classroom. This is very important when every minute of class time is precious.

Create master usage guidelines to help teachers identify when the technology becomes a distraction. Offer solutions.

Don't make assumptions about users' skill level, even with the simplest functions, such as "How to use the keyboard."

Post a Q&A data-coach session online to direct teachers on how to use student data to track instructional planning, assessments and student progress.

Save time by using pre-formatted, user-friendly templates for administrative details and routine reporting.

Professional development is an ongoing process. Prepare staff to see issues as challenges rather than obstacles, and offer encouragement for improvement.

Manage and report professional development effectiveness to optimize teacher skill growth and student achievement through a human capital management solution, where all aspects of professional development can be managed and tracked. Manage professional development budgets and develop a data-driven environment to improve the quality and consistency of teacher education through measurement, accountability and increased technology resources.

### Examples from the Metiri NSF Profiles:

#### VIRGINIA

Henrico County Public Schools professional development package offers teachers and staff college credit, tuition reimbursement, and financial incentives for attending professional development offerings outside of the school day (at \$18 an hour). HCPS budgets \$300,000 annually for tuition assistance and training for teachers and staff.

Every middle and high school in the county has full-time technology trainers on staff that facilitates teachers' learning and understanding of the curricula.

Henrico County Public Schools offer technology integration workshops during the academic year and the summer.

Evidence of informal professional development is seen in frequent teacher collaboration, usage discussions and idea exchange at departmental meetings.

Instructors are free to bring laptops home with them and have professional development opportunities available to them 24/7.

#### MICHIGAN

Michigan's Freedom to Learn program addresses adequate professional development as a necessity to achieve success. This approach can encourage reluctant teachers to become proactive in their own learning, while enabling enthusiastic teachers to explore the vast potential of one-to-one access.

*"The students are riveted now – even the ones who couldn't sit still!"*

Teacher,  
Riddle Middle School,  
Lansing School District

*"Teachers are now talking the talk and walking the walk. I think this is going to make a real difference in our schools."*

Teacher,  
Lakeshore Middle School,  
Berrien ISD



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