

Lessons Learned - DRAFT
1:1 Learning Initiative Pilot
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If your school or school system is contemplating a 1:1 learning environment, you may wish to heed the following Lessons Learned from the 1:1 Learning Initiative Pilot:

First and foremost: Take Time to Plan!

- Six months to a year is a reasonable planning timeline.
- Make sure that sustainability is part of the overall plan at the beginning of the project.
- Think infrastructure first! Do not deploy computers until the building has reliable high-speed Internet access throughout the campus.
- Make sure technology personnel (building-level technology facilitator and technician) are hired and in place before any computers are ordered.
- Create a climate of buy-in at all levels of the project: central office, building-level teachers and administrators, parents and students, and the community. Involve all stakeholders in the planning process.
 - Watch for wi-fi hotspots to pop up across your community. Reward those merchants/ non-profits, etc. with special recognition for their support.
- Simultaneously, temper expectations.
 - While student attendance and discipline incidents should decrease early in the project, the effects will probably level off over time.
 - Student achievement may gradually improve—or it may wait until state testing formats and content are revised to reflect the way students are learning in the 1:1 environment.
 - Learning to teach in a 1:1 environment takes time, energy, and commitment. Initially, not every teacher will be thrilled with this new way of doing business.
- Plan to give every faculty member and administrator the same technology. Modeling and consistency are important, and everyone needs the same device whether it is a laptop, PDA, cell phone, etc.
- Focus on teacher professional development and empowerment.
 - Give teachers their laptops first, preferably in the spring before whole-school roll-out at the beginning of the upcoming school year.
 - Provide professional development opportunities throughout the summer before whole-school roll-out.
 - Rely upon the school's Media and Technology Advisory Committee (MTAC) and/or the school's Leadership Team to help make logistical and professional development decisions. This improves teacher buy-in.

Consider these specific recommendations:

Infrastructure

- You will need more access points than you initially plan. Consider at least a wireless boost in every classroom.

- Make sure you have wireless access in classroom trailers, the gym and cafeteria, and even the school parking lot if possible. Students and teachers will use the 1:1 devices constantly, everywhere. Be prepared!
- CIPA, E-Rate, and the federal government will be watching; viruses are opportunistic. Route all Internet traffic through your servers, even when the devices are off-campus.
 - Provide a secure server to house student work rather than relying on individual student flash drives.
- Consider core classroom equipment (interactive whiteboard, projector, digital camera, video camera, classroom response systems, and digital science equipment) as a primary part of your initial infrastructure. Installing this equipment in classrooms as teachers are given, or even before they are given, their laptops gives them opportunity to learn how to use the tools effectively before adding student computers into the equation.
- Include electrical upgrades a part of the infrastructure investment. Ensure that all classrooms have adequate plugs for individual charging of batteries—or invest in a charging station/cart for each classroom.

Hardware

- 1:1 does not have to be laptops. Consider other devices such as smart phones, iPads, even eReaders. Make your decision on your goals for the project. Is it access, cheaper textbooks, to foster creativity, differentiated instruction? Your decision here will determine the best device for your project.
- Adoption seems to come more rapidly with tablets, especially from the teaching community because a large portion of the teaching community still prefers to hand-write instead of type. It has been an easier transition, especially for math and science teachers, because writing mathematic equations and scientific notation is much faster than typing. Of course, the major concern with tablets is durability, especially of the styluses and screen latches..
- Include loaner computers, extra battery chargers, replacement batteries, electronic textbook fees, and laptop bags in your initial budget—and make them a part of your TCO sustainability figures.
 - Consider purchasing at least 10% additional laptops to use as loaners
 - Purchase machines with different color covers, so everyone can spot a loaner or a day user—or even the freshman class.
 - Configure loaners so that students cannot save their work on those machines. This strategy discourages planned loaner use to avoid paying fees/repair costs.
- Consider a cart of devices for day users.
 - These should be a different color from loaners and permanent student machines
 - Carefully manage the check-out/check-in process each day.
 - Configure these machines so that students cannot save their work on them.
- Laptop screens are fragile and expensive; consider mandating separate laptop and book bags if it is impossible to acquire electronic textbooks and resources in all courses.

- Consider allowing students to purchase their own bags from a list of acceptable bags. Mandate school/district luggage tags on the bags to aid identification.
- If the system purchases bags, don't have them turned in when you take up the equipment for the summer. Storage is a headache and the possibility of "varmint" is even worse!
- Consider leasing computers, with each 9th grade class receiving the newly leased machines. At the end of the same students' senior year, the machines are sent back to the company and a new lease (for the next class of 9th graders) begins.
- If you have purchase machines, be aware that repairs will increase with the age of the device. Decide what you will fix and what you will just ignore, based on functionality and safety.

Personnel

- Leadership, Leadership, Leadership! This project cannot be successful without strong leadership from the technology facilitator, the media coordinator, and *especially the principal*
- Choose the principal who will implement the 1:1 environment carefully. Individuals who tend to be the most successful administrators of a technology-rich school share the following traits:
 - They are familiar and comfortable with the change process,
 - Have a vision of what 1:1 learning in a school can do—and can inspire teachers to embrace that vision,
 - Model technology use, and
 - Are at ease with shared decision-making.
- Both a technology facilitator and technician should be hired to partner with the school library media coordinator to collaborate with teachers to create an effective, efficient teaching and learning environment. The North Carolina Educational Technology Plan (2007) recommends the following ratio:
 - One Technology Facilitator per school, per thousand students.
 - One Technology Assistant per school, per thousand students.
 - One Technician I, II, or III for every 400 computers. At least one of the technicians should be a Technician III.
 - One media coordinator per school, per thousand students.
- Consider forming a student technology team as soon as possible so that teachers and fellow students, as well as the media and technology team, have assistance quickly (and techie students have an opportunity to channel their expertise and experimental nature in positive directions). Consider giving students service learning credits or hours for their service on the student technology team.
 - This is also an excellent opportunity for summer employment. Students can help repair and re-image while earning extra dollars for their work.

Professional Development

- Don't overwhelm your teachers during initial training. Consider offering PD in small doses, perhaps concentrating on a single application/website per PD session and

sending teachers off to use that one resource in their classrooms. This strategy seems to bring even resisters on board.

- Both general and content-specific professional development (PD) should be provided for all participating teachers and administrators.
 - Occasional general PD for all teachers should be required so that everyone can embrace and absorb a shared vision, understanding, and approach to learning related to the 1:1 learning initiative.
 - Administrators should participate in PD sessions to create buy-in for the project. They should also look for and comment on teachers who use the tools in their classrooms to set expectations for the project.
 - Most PD should be differentiated, based on individuals' abilities, needs, and content area.
 - Ideally, collaborative project opportunities will arise during general, grade-level, and/or content-area PD that can be facilitated by the media and technology personnel team.
- The technology facilitator and the media coordinator can provide the ideal 1:1, just-in-time PD environment necessary for this project's success.
- Technology and media personnel should regularly survey staff for PD needs/requests and plan PD opportunities around the survey results.
- Technology and media personnel should ask staff to evaluate all PD sessions and use those evaluations to meet the needs of participants during future training.
- Learning to teach in a 1:1 environment takes time. Provide as many opportunities as possible for teachers to carve out larger blocks of time for lesson planning and collaboration. This time does not include teachers' daily planning periods.
 - Consider highlighting technology resources and applications regularly during common planning time or during PLC meetings.
- Assessment in a 1:1 learning environment is very different than in a traditional environment. Common rubrics, crafted by teachers together over time, help everyone move into this new strategy for evaluating student work.
- Copyright is difficult for teachers to conceptualize, understand, and teach their students. Find various, differentiated, and frequent opportunities for teachers to learn and articulate these concepts to their students.
- Use the 1:1 technology to provide training and support for teachers, making sure that they have opportunities to learn from and enjoy each other virtually as well as face-to-face.
- Include parents, students, and even the community in your professional development plan.
 - Parents need initial information sessions so that they can join the school in supporting the educational focus of this 1:1 learning initiative.
 - As the project moves forward, the same parents (and community members) may benefit from learning how to use the technology for job skills and personal productivity.
 - Students need formal training on the use of the computers for educational purposes and the academic and social expectations that accompany this privilege.

- Plan on teacher turn-over. Provide opportunities for PD and support immediately before the school year starts and early in the school year.
 - It appears that an interesting phenomenon is at work: In a technology rich environment, students assume that only the classes that use technology are important; only teachers who use technology are “smart.” It’s important not to compromise new teachers’ reputations inadvertently by not acknowledging, even insisting upon if necessary, their need for training.

District and School Policies

- While many school and district policies will have to be clarified and/or augmented, computer policies should reflect general school policies (ex. Bullying and cyberbullying are both similar; both should have immediate, severe, and identical punishments).
- One of the greatest challenges is the dual responsibility of keeping students safe and enabling the use of educationally appropriate, digital resources. Consider the following:
 - If possible, allow teachers the privilege of unblocking appropriate websites immediately from their desks so that instruction, especially the teachable moment, is not interrupted.
 - Insist that teachers learn how to monitor student use of computers.
 - Also encourage teachers to determine when it is appropriate to request that students close their laptops or keep them in their bags--and empower them to do so.
 - Make sure that district and school technology personnel understand and appreciate the educational uses of online resources and services as well as their technical characteristics.
- Have an understanding with educators, school board members, and the community that your district and school AUPs are perpetual works-in-progress. Revisit, and amend if necessary, at least once yearly.
- Make sure that everyone—students, teachers, administration, and parents—sign appropriate AUP documents *after* being provided appropriate training as to meaning and necessity.
 - Re-emphasize at the beginning of every school year for all concerned.
- Provide district-managed insurance policies for all computers, but consider asking students/parents to contribute a nominal amount toward the cost of that policy. Provide an easy-payment opportunity or even special service-learning projects for families that cannot afford the fee.
 - Some districts are moving to self-insuring their technology. By making sure that technicians have proper repair certifications, systems can purchase parts much more cheaply and do most repairs inhouse in a far more timely manner.

District and School Procedures

- Begin early to plan for laptop imaging, maintenance, storage, and distribution. Re-visit these plans at least yearly.
- Consider the 1:1 project an entirely new way of doing business. Think about such issues as:

- How the school system's support for education can move to 24/7 since students and teachers will work 24/7.
 - Can school continue on snow days? Should those students and teachers get credit when others in the LEA do not have this advantage?
 - Can students keep their computers over the summer? After all, if we believe that learning is life-long and continuous, shouldn't we model this by allowing students to continue their educations, both formal and informal, throughout vacations?
- How to provide a 21st Century, Web 2.0 teaching and learning environment within the constraints of student safety and the district's technology and personnel capacity.
- Which student documents will be saved to the school and/or district server(s).
- Whether or not to provide portfolio software for all student work or just each student's Graduation Project.
- How to facilitate teacher and even student downloading of software and/or documents at point of need.
- How to deal with parents who opt out of their child's 1:1 opportunity either at school and/or at home so that the student still has the possibility of a successful academic experience.
- Similarly, how to deal with parents who want to load printer drivers, etc. on their child's computer to facilitate their own ease and efficiency.
- How to calculate the Total Cost of Ownership for the 1:1 initiative so that the entire project can move forward, be maintained and upgraded, and sustained for future benefit of all students and teachers.
- Almost immediately you will confront the dilemma of students who want to bring their own devices to school. Make a plan. Consider the savings and convenience of BYOD (Bring Your Own Device) while putting in place policies and resources that protect your network and reputation.
 - Ideally, you will have 3 networks: a secure network for data, a student-only network, and a guest network for individuals visiting the school for PD or monitoring.
- Fair warning! Students will quickly lose interest and stop bringing their devices to school/class if teachers do not prepare technology-rich lessons with the expectation that everyone in class will have and use them.
 - Avoid forcing teachers to provide paper/pencil replicas of their lessons. Nothing creates teacher technology burn-out than having to prepare duplicate lessons.
 - Have carts for day users
- Reality check! Make a visit to your local pawn shop, even your DA and police/sheriff's departments.
 - Provide all organizations with the serial numbers of your devices.
 - Talk with pawn shop owners about procedures for holding devices under the guise of pricing, polling the market, etc. (It is against the law for pawn shops to buy stolen equipment; without at least trying this strategy, the machine will disappear again.)
 - Involve your School Resource Officer in these conversations.

- Emphasize to all concerned the importance of getting the equipment back rather than simply filing a stolen goods report.

Resources

- Provide resources such as secure servers for teachers and students to blog and post videos. Consider protected digital resources such as TeacherTube, fizz, the NC LOR Project, and VoiceThread so that students may work within a protected Web 2.0 educational environment.
- Learning management systems such as Moodle and Blackboard provide platforms and an organization system for teachers. If using Moodle, designate a server to house the platform.
- Choose a classroom monitoring system carefully, making sure it is compatible with your network configuration, equipment, and ways of doing business. You may even consider whether the expense and distraction of a monitoring system outweighs the reassurance of surveillance.
- Set aside a graduated budget for resources. Teachers need time to become familiar with their machines before they can understand what additional tools might be useful. Likewise, technology changes rapidly. Allocate amounts over time rather than in a single budget largess.
- Provide e-mail accounts for all students as a part of doing business in a 1:1 environment.

Public-Private Partnerships

- Schools and school systems cannot and should not do a 1:1 learning initiative in isolation. Everyone in North Carolina can learn from each other and will benefit from this forward-thinking project.
- While private partnerships can help fund hardware and software, only the state can provide the technology personnel necessary for the success of this project.
- State funded resources such as NCVPS, Learn and Earn Online, NC WiseOwl, and other resources that will be provided as part of the Connectivity Project are invaluable to both teachers and students. Every state-funded resource is an investment in equity and quality information for all students and teachers in the state.
- Conversations must begin immediately about how to sustain the 1:1 learning initiative over the coming years. This should include refresh plans, ramped up personnel for schools and districts, and continued commitment to connectivity and state-funded resources.

Low-hanging Fruit (or Higher Test Scores May Not Be the Best Measure of Success)

- Laptops remove student excuses—work is always there even if a student or teacher is absent; assignments are posted for all to see, including parents; neither students nor teachers lose homework or papers; assignments can be tracked, even submitted at all hours of the day or night.
- Students are more organized, but oftentimes teachers need to assist in early adoption of organizational habits. Many pilot school teachers and students recommend OneNote, and teach its finer points in AVID classes. Another option is Evernote, often used with the iPad.

- Consider the credibility factor. Many students have confessed that they have a new respect for their teachers and education in general since their teachers began teaching and communicating with them digitally. One student stated, “They seem to learn like we do. It makes me think they might have something to teach me.”
- Another young man said that he and his fellow students feel like they are important because someone cared enough to invest in their educations.
- Equity cannot be overstated! Providing computers and access go a long way in addressing the very real digital divide in this state and nation. As one young woman said, “Lord knows it’s been a blessing!”
- The web is replete with videos that explain complex concepts in a variety of ways. Students who struggle can replay a video or a teacher presentation as many times as needed for comprehension.
 - Some teachers are beginning to record mini-lectures to introduce a concept, assign the viewing for homework, and then focus class time on working individually or with small groups to ensure understanding.
- Never underestimate a motivated student’s ability to complete supplemental online courses or explore additional information for her own knowledge. Classes are much more interesting for both teacher and student when new, rich content can be added to the discussion. Their futures are more positive when they can begin college with additional courses and/or content.

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