Public Schools of North Carolina
State Board of Education
Department of Public Instruction

Report to the North Carolina General Assembly

School Technology Pilot (1:1 Learning Technology Initiative Report)

SL 2007-323, Sec. 7.39(a)

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The North Carolina 1:1 Learning Technology Initiative

Legislative Update, March 2009

The North Carolina 1:1 Learning Technology Initiative (NCLTI) is a public-private partnership designed to address:

- *Equity*, providing all students access to *future-ready* teaching, learning, and technology;
- *Engagement*, involving students in active learning and thereby improving student achievement and increasing graduation rates;
- *Economic development*, providing all students with workplace skills such as communication, problem solving, and collaboration, along with content expertise, to make each region of the state more attractive to businesses.

The NCLTI builds upon and further enhances the successful planning and implementation of the School Connectivity Initiative (SCI), the North Carolina Virtual Public School (NCVPS), Learn & Earn Online (LEO), IMPACT Model Schools, and the NC New Schools Project (NCNSP).

The Model

The NC State Board of Education has created a vision for 21st century teaching and learning. Further, with the NCVPS, Learn and Earn Online, and the School Connectivity Initiative, the NCSBE has implemented several of the core elements defined in the *Joint Report on Information Technology* (January 2008). The NCLTI model addresses the most of remaining essential elements to future ready schools. Specifically, the NCLTI model includes:

- A laptop computer for every student and teacher (provided by SAS and Golden LEAF for the 1:1 pilot schools).
- Broadband connectivity to the school (provided through the North Carolina School Connectivity Initiative);
- Access to online services and resources including SAS® Curriculum Pathways®, NCVPS/LEO, and other CIPA-compliant content and tools available on NC Wise Owl and through the public Internet);
- Technology-enabled classrooms;
- Targeted professional development for teachers, administrators, and technical directors;
- Planning, design, coaching, and technical support services provided to LEAs.

Funding

In this public-private partnership, state funds have been leveraged against more than $8M in investments from the Golden Leaf Foundation (GLF) and SAS. While SAS has led the way in private sector funding, others have contributed as well including Lowe's ($1M to Wilkes and $250K to Mooresville) and the AT&T foundation. A core element of the NCLTI is building an effective long-term strategy that optimizes funding from local, state, federal, and private sector sources.

For NCLTI, SAS has provided funding for teacher laptop computers and the Golden Leaf Foundation has provided funding for student laptop computers and for LEA planning support.

Funds from the North Carolina General Assembly provide:

- Wireless Internet access throughout each school.
- Classroom hardware and software tools that provide for an integrated teaching and learning environment.

- Professional development and ongoing support for teachers as they reshape and update teaching practices and curriculum content, and for administrators and instructional technology facilitators
- School-based staff that provide instructional support for the use of technology to enhance learning and technical support to ensure that the technology is reliable and up to date.
- Program planning and evaluation by the Friday Institute (FI).

A detailed accounting of uses of state funds is attached to this report.

Pilots

The NCLTI model was initially deployed in pilots at 7 Early College High Schools and one traditional high school. An expansion of the initial pilots is adding 11 traditional high schools, one magnet high school, and one redesigned high school (The School of Inquiry and Life Sciences at Asheville - SILSA). In all, there are NCLTI deployments, in various stages of implementation, in 13 LEA's impacting more than 11,400 students and 770 teachers. Table 1 summarizes the status of each of the NCLTI pilot schools.

Table 1 NCLTI Pilot Deployment Summary

District	School	Laptops Distributed To		DPI Funding	Golden Leaf Funding	SAS Funding
		Teachers	Students			
Wilson	Hunt HS	March 2007	Sep. 2007	$482,700	$1,613,300	$169,317
Macon	Macon ECHS	Nov. 2007	March 2008	$194,500	$1,797,256	$112,626
Nash-Rocky Mount	Nash-RM ECHS			$181,400		
Wayne	Wayne ECHS			$198,700		
Davidson	Davidson ECHS			$187,800		
Hoke	SandHoke ECHS			$242,900		
Rutherford	Rutherford ECHS			$214,900		
Edgecombe	Edgecombe ECHS			$191,600		
	North Edgecombe HS Tarboro HS SW Edgecombe HS	Sep. 2008	Jan. 2009	$137,600	$1,917,000	$48,107
Wilkes	East Wilkes HS North Wilkes HS Central Wilkes HS Career Tech Ed Magnet HS	Spring 2009	Fall 2009	$152,600	$900,000	TBA
Chatham	Jordan-Matthews HS	Spring 2009	Fall 2009	-	$800,000	TBA
Whiteville City	Whiteville HS	Spring 2009	Fall 2009	-	$750,000	TBA
Asheville City	Asheville HS SILSA	TBA	TBA	$200,000	-	TBA
Mooresville GSD	Mooresville HS	Dec. 2007	Sep. 2008	$165,000	-	-
Total: 7 ECHS, 12 Traditional HS, 1 Magnet HS, 1 Academy (school within a school)				**$2,549,700**	**$7,777,556**	**$330,050+**

The NCLTI Pilot steering committee oversees and supports the pilot schools. Steering committee members are Mark Sorrells, Golden Leaf Foundation; Frances Bradburn, NC New Schools Project; Rob Hines and Neill

Kimrey, NCDPI; Caroline McCullen, SAS; and Phil Emer and Glenn Kleiman, Friday Institute. The Friday Institute has managed the evaluation of the initial (7 ECHS's and Hunt HS) NCLTI pilots and has provided reports for the end of year one (September 2008) and for mid-year of the second year (March 2008) – included with this report.

Work Underway

In addition to supporting the pilots and the ongoing evaluation there is significant work underway addressing sustainability of the NCLTI long-term. Specific work includes NCLTI feasibility study and plan development; Children's Internet Protection Act (CIPA) policy evaluation; Home broadband study and pilots; supporting LEA 1:1 planning needs; identification and deployment of shared services; web-based resources and online professional development; leadership team institutes; Redesigned Schools 2.0; and, communication and dissemination activities. Brief summaries follow.

Feasibility Study and Plan

The Friday Institute is documenting findings, recommendations, and actions in a comprehensive NCLTI study and plan. The FI completed an initial framework document (attached) in December 2008.[1] The NCLTI Framework outlines the essential conditions for success of the program and articulates a set of strategies for implementing a large-scale statewide initiative – strategic categories include:

1. Vision and support (consensus-building)
2. Support for school and district planning and implementation
3. Funding
4. Updating the education workforce
5. Core software and online services for teachers and students
6. Cost effective, scalable technology services and support
7. Technology specifications
8. School and district policy guidelines
9. Documentation and evaluation
10. Plan for widespread implementation of NCLTI

A more detailed study and plan document will be available in May 2009.

CIPA

The Children's Internet Protection Act (CIPA) is a federal law enacted by Congress to address concerns about access to inappropriate content and interactions over the Internet by school and library computers. Schools and libraries receiving e-Rate discounts on Internet access must certify that they have certain policies, procedures, and technologies in place in order to receive e-Rate benefits. However, There is a lot of room for interpretation as to what "CIPA-compliant" means. As a result of different interpretations of CIPA guidelines, the level of access to Internet content and tools varies widely across NC LEA's. Issues of access to Internet tools and content is further complicated in NC as students register for NCVPS and LEO courses, which may require access to Internet sites that are not accessible within some LEA's due to their Internet filtering procedures. School Technology Commission Chairman, NC Representative Joe Tolson, in January 2009 asked that the NCLTI team bring forward policy input related to ensuring child safety while allowing access to educational content and tools. The FI has convened a CIPA working group to that end. An initial report will be delivered to the School Technology Commission by May 2009.

[1] The NCLTI Framework for Planning was distributed and summarized at the January 22, 2009 meeting of the School Technology Commission.

Home Broadband

The School Connectivity Initiative addresses network access to and between NC public schools. As more content and educational resources are moved online the importance of broadband access at home becomes crucial to equity and to economic development. Early data from the initial NCLTI pilots shows that 83% of students involved across the initial pilot schools report having home Internet access, but nearly two thirds report that they access the Internet over a dial-up connection. MCNC has initiated a working group that includes the e-NC Authority, the Friday Institute, AT&T, Embarq, and Time Warner Cable to further investigate (and pilot) home broadband access in underserved areas of the state with 1:1 pilots in place. MCNC has committed $50K to the pilot work, which is currently being planned and will begin initial implementations in Fall 2009..

LEA Planning Support

NCLTI partners have provided funding to 13 LEA's across the state as part of the 1:1 pilot program. Another 13 LEA's applied but did not receive funding. The Golden Leaf Foundation has provided $300K in funding to the Friday Institute to provide planning support, coaching, and professional development to those LEA's: Beaufort, Craven, Jones, Onslow, Granville, Scotland, Weldon City, Rowan-Salisbury, McDowell, Mitchell, Watauga, Madison, and Surry. This type of front-end planning and design support is recognized by the NCLTI team as important to equitable and sustainable deployment of future-ready schools. MCNC has also provided technical planning support through the network engineering support service implemented as part of the SCI.

Web-based Resources and Online Professional Development

The NC 1:1 Learning Collaborative (http://www.fi.ncsu.edu/project/nc-11-learning-collaborative/) is providing online resources to teachers and administrators in 1:1 schools. As part of the *eLearning for Educators* project, a collaboration of LEARN NC, UNC-TV, NCVPS, DPI, and the Friday Institute, a series of online professional workshops are being offered specifically for teachers, instructional technology facilitators, and administrators in schools implementing 1:1 programs. GLF has recently committed funding that will expand the online professional development workshops offered.

Leadership Team Institutes

Evaluations from other states shows that effective leadership teams involving district and school administrators, curriculum leaders, and technology directors lead to successful programs. To foster this type of collaborative leadership and prepare leadership teams for 1:1 initiatives, the Friday Institute offers an intensive 3-day summer institute for leadership teams from schools implementing or planning 1:1 programs. The 2008 Institute was funded by BB&T and the 2009 Institute will be jointly funded by GLF and BB&T.

Redesigned Schools 2.0

In January 2009, SAS funded the New Schools Project and the Friday Institute to collaborate on the design of the *Redesigned Schools 2.0* model. Throughout the spring of 2009, staff from FI and NC NSP will collaborate to merge the NCNSP design principles, processes and strategies with the instructional technology expertise and resources of the Friday Institute and SAS. The model will fully integrate technology in support of the design principles of the NCNSP.

The partners will then collaborate to implement the *Redesigned Schools 2.0* model in a small set of pilot schools, selecting schools that will provide demonstration and dissemination sites to support spreading the model to additional schools throughout North Carolina and, long-term, in other states. The final results will leverage existing resources and successful initiatives to provide documentation, best practices, readiness criteria, and technology-enriched design principles—a roadmap to success—that may be replicated by many high schools.

Communications and Dissemination

All of the work underway is performed in collaboration with LEA's. NCLTI team members join educators, leaders, and technologists in regional meetings, at statewide conferences, and in dedicated LEA-based roundtable discussions. Further, we exchange strategies and lessons learned with our peers from around the country through the Consortium for School Networking (COSN), the State E-rate Coordinators Alliance (SECA), the Southern Regional Education Board (SREB), and through related outreach programs.

Next Steps and Recommendations

While the detailed planning for a large-scale NCLTI program proceeds, the number of schools involved in NCLTI-type programs is growing[2], with a variety of funding sources and implementation strategies. At this point, we recommend that efforts focus on building capacity to support a large-scale effort: (1) establishing a public-private funding mechanism, so that interested businesses and foundations can support pilot implementations of NCLTI programs throughout the state, in combination with state and local funds, through a coordinated effort; and (2) establishing the human infrastructure and support systems necessary for the successful, statewide implementation of NCLTI programs. This requires that focus be placed on: support for school and district planning and implementation; updating the education workforce; developing cost effective, scalable technology services and supports; providing school and district policy guidelines; and documentation and evaluation to inform the development of effective and sustainable programs. Such an approach is required to help ensure the success of current and planned 1:1 schools and to prepare for a rapid increase in NCLTI deployments in general. To this end we recommend that School Technology Pilot funds (from SL 2007-323 §§3.79.(a) and expansion funds from SL 2008-107) not revert until June 30, 2010.

In addition, to continue to increase the number of NCTI schools, the the 1:1 Technology Pilots Steering Committee (Mark Sorrells, GLF; Frances Bradburn, NC NSP; Rob Hines and Neill Kimrey, DPI; Caroline McCullen, SAS; and Phil Emer and Glenn Kleiman, Friday Institute) discussed the American Recovery and Reinvestment Act (ARRA) increase in Title IID funds and make the following recommendation.

Our understanding is that the standard Title IID funds, which have previously been used to fund IMPACT I-IV projects, primarily in K-8 schools, will continue with NC receiving about $6.75 million. Neill Kimrey (who manages the program at DPI) has been informed by USED that, unlike previous years, the entire amount can be used for competitive grants. We recommend that this funding be used to continue and expand initiatives started in K-8 IMPACT schools, so that NC continues this K-8 approach to enhancing education through technology that has proven to be successful.

We also understand that NC will receive an additional $16.4 million in Title IID funds as part of the ARRA. As required by federal regulations, 50% of this funding will be allocated to districts based upon Title I ADM, for use to further their educational technology programs. We recommend that the remaining 50%, $8.2 million, be used to further the NC 1:1 Learning Technologies Initiative at the high school level through a competitive grant program, consistent with the Title IID regulations. This use of the funding will build upon the NC School Connectivity Initiative, will support NC DPI's ACRE initiative, will augment and expand the use of NCVPS and LEO classes, and, overall, will further the State's efforts toward creating Future Ready Schools. Lessons learned and support structures developed throughout the NC School Connectivity Initiative, IMPACT Projects, and 1:1 pilot school implementations and evaluation will inform the guidelines for applications and project implementation plans.

Federal regulations require that at least 25% of all Title IID funds by used to support professional development around technology use in schools, so this funding will provide opportunities to further the professional development work in NC, including the use of online professional development. In addition to professional development for classroom teachers and technology facilitators, targeted professional

[2] Schools in at least 32 LEAs have deployed or are planning to deploy NCLTI-type strategies in FY2009.

development is needed for school and district leaders, focused on assessing 21st century learning and building sustainability.

To maximize use of the Title IID funds, a portion of the School Modernization funds provided through the ARRA could be used to provide the technology needed for 21st century classrooms, (i.e. wireless connectivity, projectors, electronic whiteboards, document cameras, digital cameras, scanners, etc.). That would enable the Title IID funds to be used for teacher and student computers, professional development, and digital resources. In addition, the NC 1:1 LTI will continue to leverage other contributions, such as those that have been provided by the SAS Institute and the Golden Leaf Foundation.

	SBE District	2	5	3	8	3	4	3	8	Total
	LEA	960	290	640	810	980	470	330	560	
	School	Wayne Early College	Davidson Early College	Nash-RM Early College	Rutherford Early College	Hunt High School	SandHoke Early College	Edgecombe Early College	Macon Early College	
Section A – Initial Allotments	Allotment for Personnel – October 2007*	$130,000	$130,000	$130,000	$130,000	$130,000	$130,000	$130,000	$130,000	$1,040,000
	Initial Funding Allotment December 2007 (NOT from allocation)**	$15,000	$12,400	$24,000	$12,800	$124,800	$13,700	$15,300	$10,300	$228,300
	Total of personnel and incidentals allotments	**$145,000**	**$142,400**	**$154,000**	**$142,800**	**$254,800**	**$143,700**	**$145,300**	**$140,300**	**$1,268,300**
Section B – Per School Allocations	**Total Classroom Tools Allocation*** **	**$121,000**	**$111,500**	**$120,000**	**$111,400**	**$230,000**	**$115,000**	**$113,000**	**$108,300**	**$1,030,200**
	January 2008	$0	$12,500	$27,400	$0	$0	$0	$0	$0	**$39,900**
	February2008	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	March 2008	$0	$0	$0	$0	$0	$12,400	$0	$0	**$12,400**
	April 2008	$0	$7,900	$0	$0	$0	$0	$21,200	$0	**$29,100**
	May 2008	$0	$0	$0	$72,100	$111,800	$17,400	$0	$0	**$201,300**
	June 2008	$53,700	$24,600	$0	$0	$0	$51,800	$14,400	$3,400	**$147,900**
	July 2008	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	August 2008	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	September 2008	$0	$400	$0	$0	$0	$3,800	$10,700	$50,800	**$65,700**
	October 2008	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	November 2008	$0	$0	$0	$0	$116,100	$6,100	$0	$0	**$122,200**
	December 2008	$0	$0	$0	$0	$0	$7,700	$0	$0	**$7,700**
	January 2009	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	February 2009	$0	$3,700	$0	$0	$0	$0	$0	$0	**$3,700**
	March 2009	$67,300	$7,400	$90,400	$35,800	$0	$1,300	$0	$0	**$202,200**
	April 2009	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	May 2009	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	June 2009	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	Total Allotments to Date	$121,000	$56,500	$117,800	$107,900	$227,900	$100,500	$46,300	$54,200	**$832,100**
	Available Balance	**$0**	**$55,000**	**$2,200**	**$3,500**	**$2,100**	**$14,500**	**$66,700**	**$54,100**	**$198,100**
	Percent of Total Allocation Alloted	**100%**	**51%**	**98%**	**97%**	**99%**	**87%**	**41%**	**50%**	**81%**

Section C – Program Support

	Budgeted	Expended/ Encumbered	Available
Evaluation – Year 1	$100,000	$100,000	$0
Instructional Director – full cost	$200,000	$200,000	$0
Professional Development	$108,000	$70,500	$37,500
Reserve Amount	$215,940	$13,090	$202,850
Total	**$623,940**	**$383,590**	**$240,350**

Program Summary	
Total funds allotted to date	$2,483,990
Total funds available	$438,450
Total	**$2,922,440**
Total program funds legislated	**$3,000,000**
Difference (over or under funding)	$77,560

***This amount was legislated for each school and is available for use during FY 08 and FY09.**

**** This funding was provided to cover the cost of "minimum requirement" items – Microsoft Office for each teacher and student, carrying cases for each machine, travel for initial teacher PD, and classroom**

***** This funding is based upon a $100,000 per school plus $100 per student formula.**

	SBE District	**7**	**7**	**3**	**8**					**Total**
	LEA	**970**	**491**	**330**	**111**					
	School	**Wilkes County**	**Mooresville GSD**	**Edgecombe County**	**Asheville High/SILSA**					
Section A – Initial Allotments	Allotment for Personnel – October 2007*	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Initial Funding Allotment (NOT from allocation)	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Total of personnel and incidentals allotments	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Section B – Per School Allocations	**Total Classroom Tools Allocation**	**$152,600**	**$165,000**	**$137,600**	**$200,000**	**$0**	**$0**	**$0**	**$0**	**$655,200**
	January 2009	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	February 2009	$152,600	$0	$0	$0	$0	$0	$0	$0	**$152,600**
	March 2009	$0	$0	$137,600	$0	$0	$0	$0	$0	**$137,600**
	April 2009	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	May 2009	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	June 2009	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	July 2009	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	August 2009	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	September 2009	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	October 2009	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	November 2009	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	December 2009	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	January 2010	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	February 2010	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	March 2010	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	April 2010	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	May 1010	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	June 2010	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
	Total Allotments to Date	$152,600	$0	$137,600	$0	$0	$0	$0	$0	**$290,200**
	Available Balance	**$0**	**$165,000**	**$0**	**$200,000**	**$0**	**$0**	**$0**	**$0**	**$365,000**
	Percent of Total Allocation Alloted	**100%**	**0%**	**100%**	**0%**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**#DIV/0!**	**44%**

North Carolina Learning Technology Initiative

Framework for Planning

Prepared by the Friday Institute for Educational Innovation, Dec. 1, 2008

In this document we present a framework for planning a strategic approach to technology-enabled learning in North Carolina public high schools. The planning for the *North Carolina Learning Technology Initiative (NCLTI)* involves pedagogy, technology, policy, professional development, community engagement, funding, and organization as necessary components of a sustainable model for supporting future-ready students in North Carolina. The NCLTI is designed to address:

- *Equity*, providing all students access to 21st century teaching, learning, and technology;
- *Engagement*, involving students in active learning and thereby improving student achievement and increasing graduation rates.
- *Economic development*, providing all students with workplace skills such as communication, problem solving, and collaboration, along with content expertise, to make each region of the state more attractive to businesses.

The Learning Technology Initiative builds upon the successful planning and implementation of the School Connectivity Initiative (SCI), the North Carolina Virtual Public School (NCVPS), Learn & Earn Online (LEO), IMPACT Model Schools, and schools and districts throughout the State that have begun 1:1 technology programs in which every student and teacher receives a computer.

Background

The North Carolina State Board of Education (NCSBE) has established as its guiding mission that "*every public school student will graduate from high school, globally competitive for work and postsecondary education and prepared for life in the 21st century.*" This mission is more specifically addressed by NCSBE through the following goals for the 21st Century:[1]

- NC public schools will produce globally competitive students;
- NC public schools will be led by 21st century professionals;
- NC public students will be healthy and responsible;
- Leadership will guide innovation in NC public schools;
- NC public schools will be governed and supported by 21st century systems.

Since September 2003, North Carolina leaders in education, industry and government have collaborated in the development of recommendations for supporting the NCSBE goals for the 21st century. These recommendations are documented in reports issued through the Business & Education Technology Alliance (BETA)[2]. For example, the *Joint Technology Commissions Report* from January 2007 recommended more effective and efficient use of state funding for

[1] NC SBE and DPI. Future-Ready Schools: Preparing Students for the 21st Century. 2004-2006 Biennial Report.

[2] All BETA Reports can be found at http://www.betanc.com/reports.htm.

technology in schools in order to create learning options for all North Carolina students. BETA, the School Technology Commission, and the Joint Legislative Oversight Committee on Information Technology supported this report. The *Joint Report on Information Technology*, January 2008, is a comprehensive report supported by the same groups that recommended state funding for high quality technology-enhanced education for all students across PreK-12, Community Colleges, Colleges and Universities. This report defines four essential elements for NC future ready schools[3]: (1) 21st century curriculum, instruction, assessments and accountability; (2) technology tools in the classrooms; (3) widely accessible and relevant professional development; and (4) pervasive high bandwidth connectivity and scalable networks. The North Carolina Virtual Public School (NCVPS) and Learn & Earn Online (LEO) provisions funded by the NC General Assembly in 2006 and 2007, respectively, deliver 21st century instruction to high school students through online courses. The School Connectivity Initiative (SCI) funded by the NC General Assembly in 2007 provides for the connection of NC LEAs to the NC Research and Education Network (NCREN) and provides funding for high bandwidth connectivity for all schools in NC. It is important to note, however, that while NCVPS, LEO, and SCI implementations provide for the online delivery of 21st century curriculum and content, they do not address the classroom technology tools (particularly computers for students and teachers), technology infrastructure within the school buildings, personnel, professional development for teachers and administrators, and other requirements, described below, for taking full advantage of the educational potential of information and communications technologies.

In order to address these requirements, Session Law 2007-323 §7.39 provided $3 million in non-recurring funds to be used with two grants from the Golden LEAF Foundation (GLF) and private sector funds provided by SAS to establish a school 1:1 technology pilot program. The school technology pilot program incorporates 21st century curriculum, personnel, professional development, and technology tools in the classrooms. The GLF grants provided funds for student portable computers, SAS provided funds for teacher portable computers, and state funds cover technology infrastructure, technical and instructional support, and program evaluation. Session law 2008-107 provides an additional $1.5 million for expansion of the pilot program and for the development of a strategic approach to technology-enabled learning as informed by the technology pilots.

The Learning Technology Initiative will provide technology resources and professional development that will support and extend other state initiatives moving toward future-ready schools, such as the new content standards and assessments being developed by DPI, the new teacher and administrator standards, the graduation project requirement, comprehensive data systems, LEARN NC, the NC Virtual Public School, the Early College and Redesigned High Schools, and other State and local initiatives.

Essential Conditions for Success of NCLTI

High Schools implementing the NCLTI will require all the elements of future-ready schools described by NCSBE and NCDPI. In addition, research on the impact of technology in high schools in general, and on 1:1 computing programs in North Carolina and in other states, shows that success in NCLTI will also require the following:

[3] A Joint Report on Information Technology, presented to the 2008 Session of the General Assembly, January 2008.

1. A well-articulated vision and rationale for the NCLTI approach, along with a strategic plan for implementing the approach.
2. Engagement and support from all constituents of the school community, including the LEAs, local government, the business community, and parents;
3. Collaborative school and district leadership teams comprised of instructional, curriculum, technology, and administrative leaders who are committed to the NCLTI approach;
4. Professional development and ongoing support for teachers as they reshape and update teaching practices to take full advantage of the available technology, as well as for administrators as they update school management practices and support the teachers;
5. School-based staff, such as instructional technology facilitators and media specialists, who provide instructional support for the use of technology to enhance learning;
6. A portable, wireless computer device for each student, teacher, and administrator;
7. Additional technology to support teaching and learning in each classroom, such as a scanner, projector, digital white board, document camera, and digital camera;
8. High bandwidth connectivity to the school and sufficient wireless connectivity throughout the school;
9. Digital education resources for teachers and students, including tools and resources that support productivity (e.g., word processing), web 2.0-based activities (e.g., blogs and wikis), e-learning (e.g., learning management and conferencing systems), curriculum planning, classroom management, student assessment, and teaching and learning in specific content areas;
10. School-based technical staff who ensure that the technology is maintained, kept up-to-date and repaired as needed;
11. Strategies for ensuring student safety and appropriate use of computers in accord with the Children's Internet Protection Act (CIPA) and local policies, while still enabling teachers and students access to a wide range of information and communication resources;
12. Sustainable funding to support the *total cost of ownership* (TCO) of the technology resources and the costs of ongoing professional development.

Current 1:1 Technology Initiatives as a Foundation for NCLTI

The NCLTI Framework for Planning builds upon lessons learned and resources developed in North Carolina high schools that are already engaged in 1:1 learning technology initiatives. Many of these schools will be able to serve as demonstration sites in the future, as well as provide teachers and administrators who can serve as advocates for the NCLTI approach and instructors and coaches in professional development programs.

There are currently a number of North Carolina schools implementing 1:1 learning technology initiatives, others planning to launch 1:1 initiatives, and many others seeking funding for 1:1 initiatives. Schools district that we have identified as having active 1:1 initiatives or planning to start one in the next year are listed in the table below. Many other schools throughout the state are moving toward future 1:1 programs, often starting with mobile carts of computers to provide 1:1 computing in some classes each day.

State supported 1:1 Pilots in partnership with Golden Leaf Foundation and SAS				
LEA	**Students**	**Funding Source**	**Type of Implementation**	**Implementation Phase**
Davidson ECHS	113	Golden LEAF/SAS/DPI	24/7 Access	Fully Implemented
Edgecombe ECHS	180	Golden LEAF/SAS/DPI	24/7 Access	Fully Implemented
SandHoke ECHS	152	Golden LEAF/SAS/DPI	24/7 Access	Fully Implemented
Macon ECHS	106	Golden Leaf/SAS/DPI	24/7 Access	Fully Implemented
Nash-Rocky Mount ECHS	222	Golden LEAF/SAS/DPI	24/7 Access	Fully Implemented
Rutherford ECHS	145	Golden LEAF/SAS/DPI	24/7 Access	Fully Implemented
Wayne EMCHS	168	Golden LEAFSAS/DPI	24/7 Access	Fully Implemented
Wilson Hunt HS	1375	Golden LEAF/SAS/DPI	24/7 Access	Fully Implemented
Additional Golden Leaf Foundation and SAS Funded 1:1 Projects				
Asheville City	-	Local/SAS	24/7 Access	Planning
Chatham County (Siler City HS)	800	Local/Golden LEAF	Cart Based Access	Partially Implemented
Edgecombe (Tarboro, North & Southwest)	2031	Golden LEAF/SAS	24/7 Access	Deploying
Wake	629	SAS/Local	New Tech/Cart-Based	Fully Implemented
Whiteville City	681	Golden LEAF	24/7 Access	Planning
Wilkes	620	Golden LEAF/SAS	24/7 Access	Planning
Locally Funded 1:1 Programs				
Anson	97	Local	New Tech High School	Fully Implemented
Camden	158	Local	New Tech High School Cart Based Access	Fully Implemented
Cherokee (BIA)	-	Local/Federal	New Tech High School	Fully Implemented
Craven	144	Local	Cart Based Access	Fully Implemented
Durham	186	Local	New Tech High School	Fully Implemented
Greene	1700	Local/Golden LEAF	24/7 Access	Fully Implemented
Mecklenburg	330	Local	New Tech High School	Fully Implemented
Mooresville City	2543	Local	24/7 Access	Partially Implemented
Polk	34	Local	24/7 Access	Fully Implemented
Robeson	107	Local	New Tech High School	Fully Implemented
Scotland	251	Local	New Tech High School	Fully Implemented
Warren	124	Local	New Tech High School	Fully Implemented
1:1 Programs in the Planning (fund raising) Phase				
Beaufort	-	Local		Planning
Granville	-	Local		Planning
Jones	-	Local		Planning
Madison	-	Local		Planning
Mitchell	-	Local		Planning
McDowell	-	Local	Cart Based Access	Planning
Onslow	-	Local		Planning
Rowan	-	Local		Planning
Surry	-	Local	24/7 Access	Planning
Watagua	-	Local	24/7 Access	Planning
Weldon City	-	Local		Planning

In all, more than 13,000 students are currently participating in 1:1 initiatives across at least 28 LEAs. During the next year, the number is anticipated to grow to more than 17,500 students with several projects growing in size and new ones starting. Implementations range from as small as 34 students in Polk Early College High School to currently over 2500 students in Mooresville Graded School District, which is the midst of deploying laptops to over 4300 4th-12th grade students.

Strategic Approach

There are 460 public high schools (grades 9-12), as well as additional combined and charter schools with students in these grades, with a total of more than 425,000 high school students, across the state of North Carolina.[4] Implementing the NCLTI initiative in all or most of these schools will require extensive planning, collaboration, and a multi-year rollout process. While the NCLTI planning process is at an early stage, we can articulate a set of strategies for implementing a large-scale statewide initiative. The specifics for each strategy will be developed during the planning process.

Strategy 1: Vision and support

a. Implement a consensus-building process to articulate the vision, goals, rationale, and core principles for the NCLTI approach.
b. Build broad-based support by disseminating the vision, goals, rationale, and principles and obtaining feedback from all constituents.
c. Incorporate effective practices from NC schools, as well as schools in other states and countries, into the NCLTI plan.
d. Engage high schools with successful 1:1 learning initiatives to serve as demonstration and professional development sites, and engage staff from these schools to serve as advocates for NCLTI and mentors or coaches for other educators.

Strategy 2: Support for school and district planning and implementation

a. Through strategy #1 and the 1:1 pilot schools, determine what resources are needed at the State and LEA levels to support schools in effectively planning and implementing NCLTI.
b. Develop and disseminate effective practices and resources to support the successful integration of 1:1 technologies to enhance teaching and learning in each content area, in special education, and in programs for English language learning (ELL) students.
c. Develop detailed guidelines for implementing and sustaining the NCLTI in high schools.
d. Develop a cadre of advisors who can provide mentoring and coaching to leadership teams in schools implementing NCLTI.
e. Provide academies to support district and school leadership teams planning to participate in NCLTI.
f. Connect school improvement plan and technology plan requirements to NCLTI.

Strategy 3: Funding

a. Develop a public-private funding model that enables businesses and foundations to help support the initiative during the pilot phase.

[4] http://www.dpi.state.nc.us/docs/fbs/resources/data/factsfigures/2007-08figures.pdf

b. Determine where there are potential cost efficiencies through statewide purchasing, licensing, and services.
c. Redefine existing funding streams to allow for use in purchasing equipment.
d. Determine existing and future sources of funding for technology, curriculum resources, professional development, and other functions that can be configured to support the NCLTI.
e. Determine potential savings in communications, special education, testing, ESL instruction, reporting, data systems, and other areas that can be obtained through the effective uses of technology, resulting in funding that can be reallocated to support the initiative.
f. Develop guidelines for state, LEA, and school level funding for the NCLTI programs.
g. Ensure that ongoing funding will be available for required staffing, technology, maintenance, and supports in order for schools to successfully sustain the NCLTI program.

Strategy 4: Update the education workforce

a. Implement a leadership development program, consistent with the new standards for administrators, to prepare superintendents, principals, curriculum leaders, technology directors, and other relevant district and school staff to lead the change process. This program should reflect the research-based principles of effective professional development and combine face-to-face workshops, online workshops, coaching, and professional learning community components.
b. Implement regional professional development programs to prepare teachers to use technology effectively to enhance teaching and learning. These programs should also reflect the research-based principles of effective professional development and combine face-to-face workshops, online workshops, coaching, and professional learning community components.
c. Provide a targeted professional development program, along with incentives, to increase the number of educators certified as instructional technology facilitators.
d. Engage Colleges of Education to increase the integration of technology into their programs to better prepare new teachers for NCLTI schools and to produce more educators prepared for the role of instructional technology facilitator.
e. Incorporate one-to-one technology training component into existing teacher training programs offered through NCCAT, the NC Teacher Academy, Centers for Quality Teaching and Learning, NC Center for Science, Math & Technology, and other established programs across NC.
f. Develop a central website to provide resources to teachers and administrators, provide opportunities for on-demand professional development, and foster online professional learning communities.

Strategy 5: Core software and online services for teachers and students

a. Select a core set of software and online services for productivity, learning management systems, web 2.0 tools, conferencing and collaboration, classroom management, student assessment, and content-specific lessons and other functions to be determined. Carefully consider the potential use of open-source software in each category.
b. Build on existing work occurring around the state around web 2.0 tools and open textbook initiatives through LEARN NC and other educational service providers.
c. Leverage existing statewide software licenses now available on NC Wise Owl and obtain additional statewide licenses for the selected software, for cost efficiency.

d. Provide technical support for the selected set of core software (under strategy 6), and incorporate the core software in the professional development programs (under strategy 4).

Strategy 6: Cost effective, scalable technology services and supports

a. Identify and deploy relevant services to support the education enterprise in North Carolina.
b. Define and highlight best practices at the local, regional, and state level for supporting the education infrastructure.
c. Develop a regional technical services and support model that provides economies of scale and reduces the burden on school and district technical staff.
d. Explore providing filtering at the NCREN level, with local overrides possible, to help schools meet the CIPA requirements with cost efficiency.

Strategy 7: Technology specifications

a. Develop specifications for student level computers, with careful consideration to the new netbook and mini-laptop computers that may provide sufficient functionality at reduced cost, as compared to laptops.
b. Develop a total cost of ownership model for evaluation of alternative technology platforms.
c. Develop specifications for teacher level computers, which may warrant a higher level of functionality than the student computers.
d. Develop specifications for classroom technology packages, including, for example, interactive white boards, projectors, printers, digital cameras, scanners, etc. The model from the IMPACT project will inform this analysis.
e. Develop guidelines for wireless networks in schools.
f. When appropriate, leverage NC ITS statewide bids and contracts for cost savings and consistencies across districts to simplify the support requirements.
g. Develop guidelines that specify minimum requirements for all new school construction and major campus redevelopments

Strategy 8: School and district policy guidelines

a. Disseminate state guidelines to serve as models for schools to use to meet CIPA requirements, as well as guidelines for schools about relevant state laws concerning educational privacy and data retention.
b. Disseminate state guidelines to serve as models for schools to use to address acceptable use requirements and student and parent responsibilities.

Strategy 9: Documentation and evaluation

a. Document implementation approaches in existing 1:1 schools to identify lessons learned, best practices, barriers to success, and useful resources.
b. Identify and assess indicators of progress, benchmarks, and measures of success for the NCLTI
c. Create recommendations for formative evaluation plans for school and districts to support local continuous improvement models.

Strategy 10: Plan for widespread implementation of NCLTI

a. Develop readiness criteria and assessment instruments to determine whether a school or district is ready to successfully implement a NCLTI program.
b. For schools that are not ready to implement NCLTI, define a series of steps and supports that will enable them to become prepared.
c. Determine criteria to prioritize schools for support to implement NCLTI.
d. Develop an application process for schools seeking support to implement NCLTI.

Next Steps

While the detailed planning for a large-scale NCLTI program proceeds, building upon the framework presented above, the number of schools involved in NCLTI-type programs is growing, with a variety of funding sources and implementation strategies. At this point, we recommend that efforts focus on building capacity to support a large-scale effort: (1) establishing a public-private funding mechanism (strategy #3a), so that interested businesses and foundations can support pilot implementations of NCLTI programs throughout the state, in combination with state and local funds, through a coordinated effort; and (2) establishing the human infrastructure and support systems necessary for the successful, statewide implementation of NCLTI programs. This requires that focus be placed on: support for school and district planning and implementation (strategy #2); updating the education workforce (strategy #3); developing cost effective, scalable technology services and supports (strategy #6); providing school and district policy guidelines (strategy #8); and documentation and evaluation (strategy #9). The other strategies all need to move forward to prepare for a large-scale statewide implementation of NCLTI, but those listed above need to take priority in order to help ensure the success of current and planned 1:1 schools and to prepare for a rapid increase in NCLTI schools.

Mid-Year Evaluation Report on the Progress of the North Carolina 1:1 Learning Technology Initiative (Fall Semester, Year 2) - DRAFT

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Executive Summary

The Friday Institute for Educational Innovation at the NC State University College of Education submitted an evaluation report of the first year of implementation of the One-to-One (1:1) Learning Pilot Initiative in September 2008. This report presents the evaluation of progress at mid-year of the second year as the next step in the planned three-year evaluation. These pilot schools include seven Early College High Schools (ECHS) and one large traditional high school, with a total across the eight schools of approximately 2300 students and 200 school staff. In these schools, every teacher and student received a laptop computer and wireless Internet access was provided throughout the school. The goal of the initiative is to use the technology to improve teaching practices, increase student achievement, and better prepare students for work, citizenship, and life in the 21st century.

A group of comparison schools, similar in type, size, student demographics, and student achievement on the prior year English and Algebra I End-of-Course tests were selected to provide comparative data from schools not implementing 1:1 programs. Many of the comparison schools had a significant amount of technology available for instructional purposes.

This report focuses on the schools progress toward implementing the 1:1 environment and the barriers, successes, and lessons learned in the early stages of implementation. A combination of teacher and student surveys, focus groups and interviews, classroom observations, and analyses of existing school-level data was used. At the time of this report, the 2007-2008 School Year (SY) End-of-Course test and other student outcome data collected by NCDPI were not yet available. The intent of the evaluation is to provide information about the value of the initiative to enhance student learning, as well as to identify challenges to the successful implementation of 1:1 programs, strategies for meeting those challenges, and services and supports needed to enable successful programs throughout the State.

The implementation of the 1:1 program proceeded on different timelines for the traditional high school and the ECHSs. In the traditional school, the steps required to prepare the teachers, the technology support staff, and the school infrastructure took place prior to the start of the 2007-2008 SY, so students were able to receive their computers in September 2007. The ECHS schools, on the other hand, were first informed of their involvement in the 1:1 pilot in September 2007, so that teachers did not receive laptops until November 2007 and students until March or April 2008.

At the mid-point in year two of this evaluation, we can see significant progress with implementation of the 1:1 pilot. The eight schools participating in the pilot (along with their matched comparison schools we are studying) allow us to draw the following conclusions:

Infrastructure and Support

- Most pilot schools have wireless internet access, printers, and projectors in most classrooms. Twenty percent of classrooms report not having printer access, and students report lack of internet access in temporary classrooms. We also observed that many school networks have difficulty keeping up with demands when many students are on the network at once. It is going to be a continuing challenge to keep up with connectivity demands as more students use more bandwidth-intensive internet applications.
- There has been almost no loss or theft of laptops, and limited breakage except for the tablet-style PCs, which experienced substantial breakage rates. We suggest using repair records to make future purchase recommendations.

- Students experiencing breakage sometimes had to go up to two weeks without a laptop when repairs required manufacturer involvement and there were no laptop loaners available. Schools should have plans to ensure smooth replacement of student and/or teacher laptops when they need repair (e.g., extra laptops that can be used as temporary loaned units, network backup of student and teacher work)
- Technical support personnel at the schools were generally considered to be doing an excellent job. However, more support resources are needed to help teachers move instructional technology to a more central role in classroom pedagogy. Teachers noted that principals and instructional technology facilitators were generally quite supportive.

Policies and Procedures

- Most schools made policy changes for this year to address issues identified in Year 1. These changes improved procedures and can help inform additional schools implementing 1:1 programs.
- One significant policy issue continues to be content filtering, which too often prevents students and teachers from accessing important internet resources. To the extent students are prevented from accessing important resources, 1:1 environments will not achieve full potential. Schools need more support in addressing the requirements of the Children's Internet Protection Act (CIPA) while providing access to valuable education resources.

Professional Development

- All schools engaged in substantial professional development. There is a clear need for ongoing professional development, customized to the participants' stage of developing in using technology to enhance teaching and learning. While overall teachers rated the professional development they received highly, evaluations of individual professional development workshops should be used to improve future workshops.
- An important aspect of professional development is the "just-in-time" mentoring a technology facilitator (TF) can provide. As these schools move forward, they need to ensure the TF is focusing on instructional support and professional development, not technical support that should be provided by technicians.
- Teachers want not only to learn how to use technology, but they also want to see models of how to effectively incorporate technology into their routine pedagogy.

Technology Attitudes and Skills

- In general, teachers felt confident in using a wide range of technologies in their classroom, and their confidence has increased since last year.
- In general, students felt confident in using a wide range of technologies. Due to high levels of confidence in the prior evaluation, we did not see significant improvement in this area.
- Teachers felt that technology significantly improves learning opportunities for students, but also acknowledge that it significantly complicates classroom management and adds substantial work for teachers. Future evaluations will examine whether this changes as teachers become more familiar with using technology and have and share technology-enhanced lesson plans.

Changing Instructional Practice

- Teachers in 1:1 environments are using laptops more frequently than last year for activities such as producing homework, assessing student work, managing information, communication with families, and collecting performance data.
- Teachers are most frequently using laptops most for presenting content and other instructional activities, but are also being innovative such as involving students in virtual field trips, accessing online resources, and interacting with online guest speakers.
- Teachers across the major core content areas are using laptops and technology frequently. Math teachers appear to be least likely to use laptops on a daily basis, and often use calculators instead. This may be appropriate, however, depending on the class and content. TFs may want to identify more ways for Math teachers to incorporate technology into the daily life of the class.
- Teachers are taking advantage of connectivity in interesting and important ways, such as asynchronous collaboration through resources such as Google Docs.
- Teachers express a need for sophisticated course management options such as Moodle or Blackboard.

Student Outcomes

- End of grade/course test scores will be analyzed in subsequent reports.
- There are initial indications in some of the 1:1 high schools that early withdrawal (student dropout) may be reduced during the early implementation phase of a 1:1 learning project. This is a preliminary finding that should not be broadly disseminated until confirmed as a continuing trend.
- Both classroom observations and teacher reports indicate that students may be more engaged in learning and classroom activities in 1:1 environments. However, this could be a novelty effect and will need to be confirmed in future evaluations to determine whether it is a continuing trend. Additionally, laptops can be a significant distraction if not managed properly.
- Students in 1:1 schools indicated they felt they were benefitting in development of 21st century skills, compared to students in comparison schools. Further, teachers report that students are using laptops more this year than last year in ways that support 21st century skill acquisition.

The pilot schools continue to build on the critical components of an effective 1:1 computing environment. Adjustments were made to school infrastructures, policies, and staff resources to meet new teaching and learning needs; technology facilitators continued to play a critical role in helping teachers effectively integrate these new technologies into the classroom; teachers received professional development in important areas and are beginning to make significant changes in their instructional practices; and, students are adapting to and benefiting from the use of laptops in their schools.

With this progress, many lessons have been learned that can inform future work at the 1:1 pilot schools and other schools that may implement 1:1 environments in the future. The largest overall lesson is that *it takes administrators, teachers, and students time to adjust to the significant, systemic changes enabled by the introduction of a 1:1 learning environment.*

The key lessons identified from the year one evaluation still apply during the first semester of year two:

- *Ongoing professional development is imperative.* Professional development needs to be continuous, designed to directly meet the needs of teachers, and customized to the participants' level of

expertise/experience as they become more proficient at using the technology to enhance teaching and learning. Additionally, teachers need opportunities to collaborate and share successful lessons for a 1:1 classroom environment.

- *Defining the appropriate balance between student safety, acceptable use, and access to web-based resources is difficult but important.* While very complex, it is also important to find ways to meet student safety needs, set acceptable use requirements, and avoid viruses, spyware, and hacking, without overly limiting what teachers and students can access and do with the computers. To the extent students are prevented from accessing important resources, 1:1 environments will not achieve full potential. Schools need more support in addressing the requirements of the Children's Internet Protection Act (CIPA) while providing access to valuable education resources. Models of how to create the right balance need to be explored.
- *Classroom management strategies and tools require further investigation.* Teachers continue to look for guidance on issues related to management of 1:1 classes such as student monitoring systems, and collecting and returning student work. Further attention needs to be directed to classroom management strategies and how they can be best supported with technological tools, such as effective monitoring software; centrally-located server resources to provide a protected space for students to save work; and, centrally-supported course management software such as Moodle or BlackBoard.
- *Skilled Technology Facilitators play a significant role in the success of technology integration into classroom practices.* The important role of onsite technology facilitators to help teachers and students use the technology to improve learning, established in prior research, was once again confirmed.
- *Careful short- and long-term budget planning is important to the success and sustainability of the 1:1 initiative.* Many resources are needed to support the use of the computers, ranging from displays to printers to specialized equipment for science experiments to content-specific software. Budgets need to be planned to include these resources and their immediate upkeep and support, as well as long-term costs of replacing hardware and supplies (e.g., expensive projector bulbs, ongoing software licenses, replacement of obsolete, damaged laptops).
- *Attending to the details makes all the difference.* Having ways to store and carry laptops safely, plug-in computers and charge batteries, make printer supplies available, establish email class lists for teachers, backup teacher and student machines, respond promptly to technical problems, and address the many other day-to-day needs of making the use of 1:1 laptops go smoothly in classrooms is essential for successful use of the technology to improve student learning.
- *Broad-based engagement of key stakeholders will facilitate sustainability of the 1:1 initiative.* It is important for schools to engage representatives from the school, district, college partners, business partners, and the community to help inform planning; guide decision-making; provide support to the students, teachers, staff and administrators; and support the sustainability of the 1:1 initiative.

In addition to the continued focus on the lessons identified during year one, the year two evaluation report also highlighted the importance of effective leadership for the successful implementation of a 1:1 learning environment.

- *Consistent, supportive, distributed leadership promotes adoption and buy-in from teachers and students for the 1:1 learning innovation.* Key characteristics emerged from the conversations with teachers at the 1:1 pilot schools for school leaders to successfully support a new 1:1 laptop project including supporting teacher professional growth, setting reasonable expectations for effective

technology integration, modeling technology use, readily addressing instructional and technical needs, and communicating commitment to the purpose of 1:1 learning initiative.

Mid-Year Evaluation Report on the Progress of the North Carolina 1:1 Learning Technology Initiative (Fall Semester, Year 2)

In the spring of 2008, the North Carolina State Board of Education awarded a contract to the Friday Institute for Educational Innovation, part of the College of Education at North Carolina State University, to evaluate the one-to-one (1:1) learning pilot initiative in eight North Carolina high schools with a total of approximately 2300 students and 200 school staff. In these 1:1 pilot schools, every teacher and student received a laptop computer and wireless Internet access was provided throughout the school. The goal of this initiative is the utilization of technology to improve teaching practices, increase student achievement, and better prepare students for work, citizenship, and life in the 21st century.

This report presents the mid-year report on progress toward Year 2 objectives for the participating 1:1 learning initiative pilot schools. This report highlights important milestones and progress, including a summary of changes in classroom instruction to date; and, challenges and recommendations.

Seven of the schools participating in the 1:1 pilot are Early College High Schools (ECHS), which differ from traditional high schools in many ways. These schools, located on the campuses of two- and four-year colleges and universities, are intended to attract students from groups that are often under-represented in college: racial minorities, students from low-income families, and those whose parents never attended college. Students in Early College High Schools graduate with both a high school diploma and two years of transferable college credit or an associate's degree. In most cases, early college students stay in high school five years to complete those college courses. Early College High Schools have started operations in the past few years, supported by the *Learn and Earn* initiative signed by Governor Easley in 2004, and receive guidance and support from the NC New Schools Project. These schools are typically very small, with an average of 150 students and eight teachers at the seven 1:1 pilot schools.

The 1:1 pilot also included one large traditional, long-established urban high school with a diverse student population of 1300, as well as 86 teachers. The schools participating in the 1:1 pilot were selected prior to the involvement of the Friday Institute and without consideration of any research design. While there was interest in comparing the impact of 1:1 programs in ECHS versus traditional schools, having only one traditional high school implementing the 1:1 learning environment was a major limitation of the research. In addition, the implementation in the traditional school began prior to the evaluation and prior to the implementation of the ECHS schools. Therefore, we could not make direct comparisons between the two types of schools.

It is important to note that at the time of this report the End-of-Course (EOC) test data, as well as student outcome data such as behavioral referrals, expulsion, and other data collected by the NC Department of Public Instruction (NCDPI) for the 2007-2008 School Year (SY) is not yet available for analysis. Publically available data from NCDPI, such as monthly attendance and early withdrawal numbers, is included in this report. Furthermore, since students in most of the participating schools received their laptops at the end of last academic school year, it was premature to expect a substantial effect of the intervention on major student outcomes (such as EOC/EOG test scores) in these schools.

To enhance the scientific rigor of this evaluation we gathered comparative data for the ECHS 1:1 pilot schools from seven matched comparison ECHS schools that were not implementing 1:1 environments. Similarly, we selected one matched traditional high school for comparison with the 1:1 pilot traditional high school. The selection process produced a group of comparison schools that were as similar to the 1:1 pilot schools as possible regarding variables such as teachers' gender, race and ethnicity, and level of experience with instructional technology; and data about students' scores on prior-year English I and Algebra I EOC Tests, and about students' home Internet connectivity. In addition, data from the 2008

North Carolina Teacher Working Conditions Survey confirmed similarities among teachers' perceptions at the 1:1 and comparison schools for items related to instructional technology and leadership.

It is important to note that the NCDPI Annual Media and Technology Report (AMTR) data from 2007 indicated that the comparison schools did have a significant amount of technology available for instructional purposes, ranging from student-computer ratios of 1.23 to 5.62.

The traditional pilot high school received laptops in the fall of 2007 and the seven ECHS pilot high schools received their laptops in spring 2008. The data summarized in this report were gathered from surveys distributed to the ECHS and their comparison schools in late September 2008, while the traditional high school and the comparison school completed the surveys in October 2008. Surveys were designed for three distinct groups: administrators (principal, assistant principal, technology facilitator, guidance counselor, etc.), classroom teachers, and students. Items on the comparison school surveys, questions focused on the use of "computers" in school versus the use of "laptops" in the 1:1 pilot school surveys. Observational site visits at the eight pilots were completed in October 2008, and included classroom observations, interviews with school technology facilitators, and separate focus groups with school leadership and teacher teams. For reference, data collection tools, including surveys and focus group protocols, are provided in Appendix A.

Through these classroom observations, focus groups, surveys, and analyses of existing data, we have examined the progress toward implementation of a 1:1 environment. These efforts have enabled us to identify important milestones and progress and major challenges and recommendations based on the data from the first few months of the second year of implementation.

Important Milestones and Progress

Evaluation Question 1: How have school infrastructures and support systems evolved to meet staff and students' 21st century needs?

Infrastructure/Tools

For the most part, staff at the 1:1 schools were pleased with progress of the infrastructure at their schools. Table 1 provides a summary of the current technical infrastructure (hardware, wireless access, and peripherals) at each of the pilot schools. The 1:1 pilot schools have wireless Internet access in 91% of their classrooms, printer access for more than 80% of their classrooms, interactive whiteboards in 50% of their classrooms, and projectors in 85% of their classrooms. Students at the traditional high school reported that a lack of Internet access in classes held in the trailers/mobile units was a significant access issue. Another limiting factor is connection bandwidth, which did not appear to be sufficient when a substantial number of students were connected to the network. Thus, it appears that schools need to ensure connectivity in all areas of the school and that bandwidth is adequate given the substantial demands of student usage.

Table 1. *Current Inventory of Technical Infrastructure*

School	Number Teacher Laptops	Number of Student Laptops	Number of High School Classrooms	Classrooms with Wireless Internet Access	Classrooms with Printers	Classrooms with Interactive Whiteboards	Classroom with Projectors
ECHS1	4	106	9	9	0	0	7

School	Number Teacher Laptops	Number of Student Laptops	Number of High School Classrooms	Classrooms with Wireless Internet Access	Classrooms with Printers	Classrooms with Interactive Whiteboards	Classroom with Projectors
ECHS2	13	227	13	13	12	4	13
ECHS3	12	152	9	9	9	8	7
ECHS4	5	115	5	5	4	5	5
ECHS5	10	173	10	10	9	10	0
ECHS6	8	124	8-10	8-10	0	0	3
ECHS7	6	145	5	5	6	5	5
Trad High School	89	1357	64	All but the trailers	64	30	64
Totals	187	2399	124	114	104	62	105

Table 2 provides a summary of the number of teacher and student laptops that were lost, stolen, or broken, as well as the number of laptops that had to have the hard drives reimaged during the school year. Theft and loss of laptops appears not to be a substantial issue at this point. The single biggest problem reported by the schools with laptops was the durability of the screens. The schools with tablets identified broken styluses and screen latches as the biggest problem areas. Some teachers reported that the use of a single bag for both laptop and books caused laptop screen breakages, and recommended having a separate, small carrying case for the laptop. In the next round of data collection, we will further explore and document the causes and solutions to the repair issues. However, from this initial data, it may be prudent to review the types of machines schools are purchasing and the ways schools encourage students to transport their units to reduce this issue.

Table 2. *Record of Laptop Loss and Repairs since the 1:1 Learning Initiatives Began - Fall of 2007 for the Traditional High School and Spring of 2008 for the ECHS*

		TEACHER Laptops				STUDENT Laptops				Most Common Issues					
School	Type of Laptop	Lost	Stolen	Required Repair	Reimaged	Lost	Stolen	Required Repair	Reimaged	Broken Screens	LCD Latch	Motherboard	Freezing on boot up	Stylus	Spill
ECHS1	Lenovo T61	0	0	0	0	0	0	9 (8%)	0	X					
ECHS2	Lenovo Tablet X61	0	1 (8%)	0	0	0	0	206 (91%)	5 (2%)		X			X	
ECHS3	Lenovo T61	0	0	0	0	0	0	3 (2%)	3 (2%)	X					
ECHS4	MacBooks	0	0	1 (20%)	0	0	0	1 (1%)	1 (1%)			X			X
ECHS5	Lenovo T61	0	0	0	0	0	0	10 (6%)	25 (15%)	X					
ECHS6	Lenovo T61	0	0	0	2 (29%)	0	0	6 (5%)	20 (16%)	X			X		
ECHS7	Lenovo Tablet X61	0	0	0	0	1 (1%)	1 (1%)	15 (10%)	145 (100%)	X				X	

School	Type of Laptop	TEACHER Laptops				STUDENT Laptops				Most Common Issues					
		Lost	Stolen	Required Repair	Reimaged	Lost	Stolen	Required Repair	Reimaged	Broken Screens	LCD Latch	Motherboard	Freezing on boot up	Stylus	Spill
Trad High School	HP	0	0	2 (2%)	2 (2%)	0	5 (1%)	622 (57%)	1280 (94%)	X					

One open-ended item on the 1:1 online survey asked respondents to list the three or four software tools most frequently used in classes. The most commonly used software tool (see Table 3) among teachers, administrators, and students is productivity software (e.g. Microsoft Office). Both teachers and students reported using internet browsers to access a variety of online resources for academic/school-related purposes and publishing software (e.g. Microsoft PowerPoint, Publisher). Teachers, administrators, and students reported using personal information software, such as iCal, Outlook, GroupWise, Novel. Teachers and administrators indicated they frequently used classroom management software (e.g. DyKnow, EduPlatform). See Appendix B for a complete list of the software tools most frequently used in 1:1 pilot school classes.

Software Tools

Table 3. *Number of times a type of software was named when survey respondents listed the three or four software tools most frequently used in classes.*

	Administrators (*n* = 29)	Teachers (*n* = 101)	Students (*n* = 791)
General Software			
Productivity	31	78	865
Internet browsing	8	27	403
Personal information management	11	13	22
Publishing	10	42	548
Illustration	0	3	0
Image editing	1	3	64
Audio recording and editing	0	3	23
Video recording and editing	1	6	14
Web authoring	1	3	0
Media players	1	4	41
Online resources	10	40	96
Instructional Software			
School management	5	0	0
Lesson planning	1	8	0
Instructional delivery	0	15	28
Classroom management/monitoring	2	35	97
Course management	1	4	0
Course specific	4	38	17

	Administrators (n = 29)	Teachers (n = 101)	Students (n = 791)
Assessment/test preparation	2	11	27
Reference	0	0	4

Some teachers suggested that access to more technical and instructional support was needed from both the school and district. According to those teachers, their schools did not have enough personnel (e.g., computer/network technicians, media coordinators, instructional technology coordinators). Some students also pointed out that when their laptops broke, they would sometimes have to go without them for up to two weeks until they were repaired. These delays most commonly occurred when machines had to be sent back to the manufacturer for repair. Both points are significant concerns since laptops and instructional technology play central roles in the instructional process. Thus, from a policy perspective, LEAs and schools considering moving to 1:1 environments need to pay close attention to technical and instructional support resources to ensure the technology can fulfill its role in the pedagogy of the school. Furthermore, schools should have plans to ensure smooth replacement of student and/or teacher laptops when they need repair (e.g., extra laptops that can be used as temporary loaned units, network backup of student and teacher work).

Technical Support Personnel

District Technology Staff

In the 1:1 pilot districts, the number of full-time staff working in the district technology office ranges from 5 to 14. Some districts have contracts with as many as 14 network engineers. The typical district technology staff is comprised of a wide area network engineer, technicians, and instructional technology and technology facilitators.

Technicians

Four of the 1:1 pilot schools have a full-time technician on staff and three schools have part-time technicians funded through a combination of grant and local funds. Two of the pilot schools do not have any on-site technicians assigned to their schools and must rely on the district technology staff for all their technical support needs. Major responsibilities of the technician include responding to teacher/student requests related to software, hardware, and network problems; installing new technology resources; acting as liaison with district technical staff; coordinating warranty and other technical information with hardware and software companies; and providing input on school technology purchases.

Student Tech Teams

Student tech teams are being coordinated by the technology facilitator (TF) at some of the 1:1 schools. Often these student volunteers are being trained by the TF and technician to support the 1:1 initiative. Student tech teams' tasks include helping determine consequences for breaking rules related to inappropriate technology use, creating weekly news and sports broadcasts, and providing initial trouble-shooting technical support to their teachers and peers. Some students receive service hour credit for their time spent on the student tech team.

Instructional Support Personnel

Technology Facilitators

Teachers felt that technology facilitators were a vital component to a successful 1:1 project. Six of the 1:1 pilot schools hired a full-time TF. One school took a unique approach and identified four lead teachers across the content areas to collectively act as TFs.

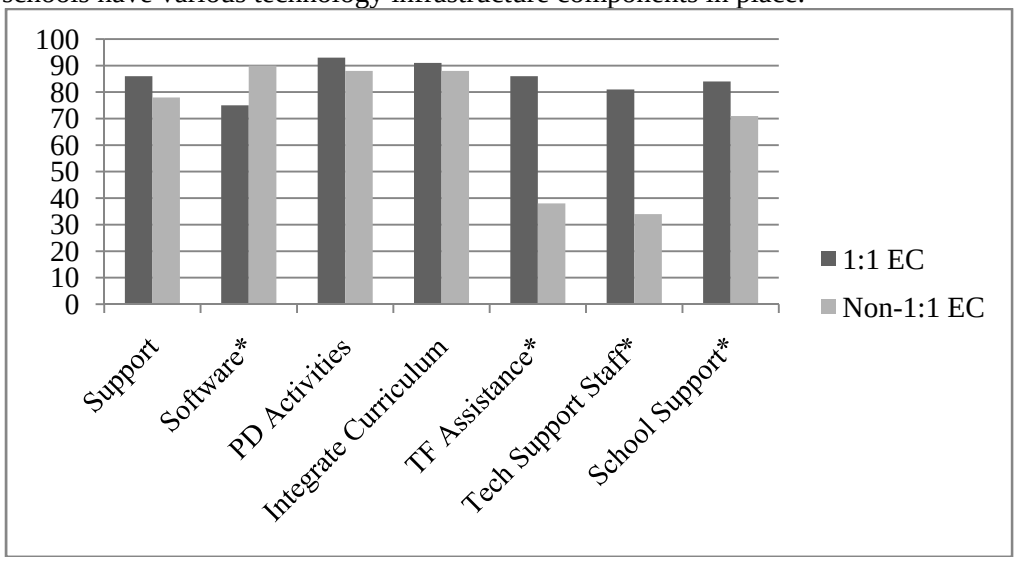
The TFs reported that their daily activities included conducting professional development, troubleshooting equipment and software issues, modeling technology use, and co-teaching. They also

reported maintaining open communication with district technology staff as part of their regular routine. Some examples of their daily activities included facilitating collaborative planning sessions with teachers, providing teacher training after school if schedules prevented common planning time, using OneNote software for lesson-sharing, setting up a Google Blog to support collaboration among teachers, and coordinating parent nights to exhibit student work and provide parent technology training.

> *My role [as the TF] is supporting the teachers. . . . You have the teachers who you give them anything they're going to run with it. We have at least one or two teachers who are terrified of this stuff, so to get them doing it, my role is being there when they're using it in the classroom, so they don't have the terrible experience and never want to use it again.*

Specific items on the student, teacher, and administrator surveys asked about adequacy of the school infrastructure to support the laptop project. There were no significant differences between EC teachers at the 1:1 and non-1:1 schools in regards to agreement that the technology infrastructure was adequate to support their technology use except related to technical support personnel (see Figure 1). This was a major accomplishment for the 1:1 schools since the amount of technology was so much greater. It is interesting to note that the 1:1 teachers were slightly lower in agreement about the adequacy of available software. The 1:1 EC teachers may not have realized they needed or wanted additional software resources until they got unlimited access to hardware in their classrooms.

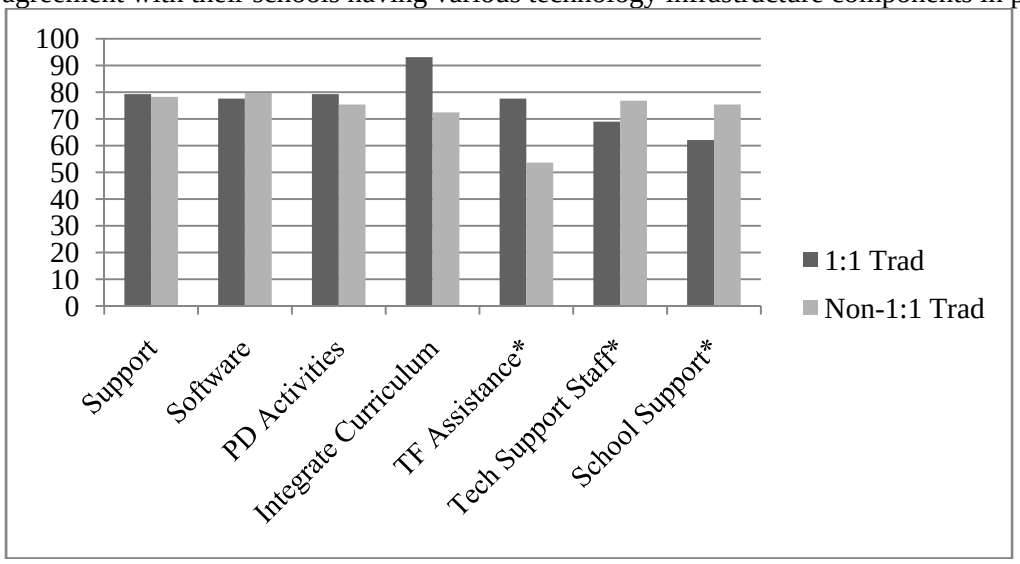
Figure 1. Percent of 1:1 (n = 57) and Non-1:1 (n = 42) ECHS teachers indicating agreement that their schools have various technology infrastructure components in place.



*Note. *This indicates that there was a statistically significant difference between groups ($p < .05$).*

Teachers at the traditional 1:1 high school were more likely to agree that their principal encouraged them and their TF supported their efforts to integrate technology into the curriculum than the comparison school (see Figure 2). However, the teachers at the traditional 1:1 high school also reported significantly less satisfaction with technical support response time, or that their school provided the necessary support to enable them to feel prepared to use their laptops for planning and instruction. The traditional 1:1high school teachers seemed to have a increased need of support and expectation of support with unlimited access to technology in their classrooms.

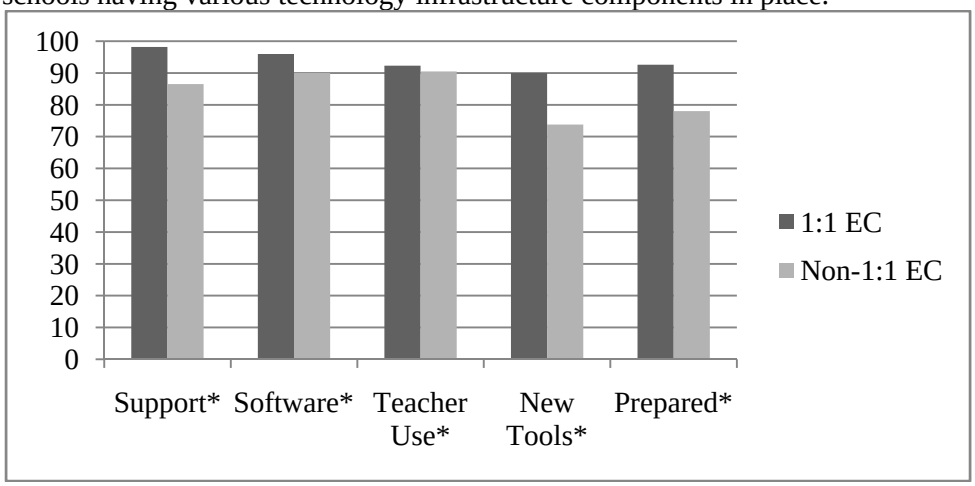
Figure 2. Percent of 1:1 (*n* = 58) and Non-1:1 (*n* = 69) traditional high school teachers indicating agreement with their schools having various technology infrastructure components in place.



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

More than 90% of 1:1 EC students agreed (see Figure 3) that the infrastructure at their school was adequate to support their laptop use and that available software met their learning needs. Students reported that they were pleased with the teachers' use of laptops in the classroom, that they frequently used new technology tools, and that their school helped them feel prepared to use their laptops.

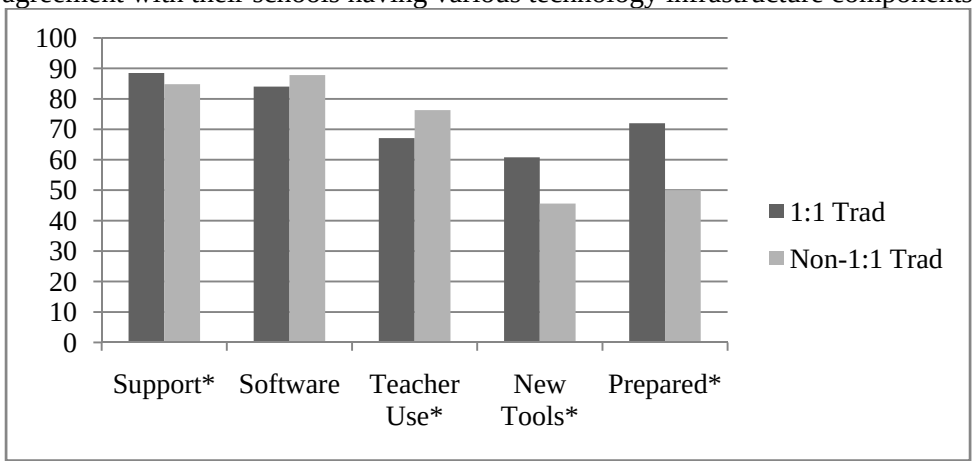
Figure 3 Percent of 1:1 (*n* = 844) and Non-1:1 (*n* = 610) ECHS students indicating agreement with their schools having various technology infrastructure components in place.



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

Students in the traditional 1:1 high school were more likely to agree (see Figure 4) that the infrastructure at their school was adequate to support their laptop use, that they frequently used new technology tools, and that their school helped them feel prepared to use their laptops than students at the comparison school. Students at the traditional 1:1 high school were less impressed with the available software and with their teachers' use of the laptops than students at the comparison school or the 1:1 EC.

Figure 4. Percent of 1:1 (*n* = 775) and Non-1:1 (*n* = 780) traditional high school students indicating agreement with their schools having various technology infrastructure components in place.



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

Policy/Procedures

All schools in the 1:1 pilot enacted effective policies and procedures governing how the laptops were to be used. In the last report, the following summary of laptop policies and procedures was provided:

- All eight schools had acceptable use guidelines;
- All eight schools had guidelines for caring for the laptops;
- Six schools explicitly prohibited violent games and social networking sites;
- Six required original software to remain on the laptop and four prohibited students from installing anything on the laptop. Three of these schools had random inspections to insure compliance;
- Seven schools collected insurance fees, ranging from $10-$50, from students;
- Seven allowed students to take their laptops home every day;
- Seven schools indicated they would collect the laptops during the summer; and
- Every school hosted one or more parent nights to provide information to parents about the 1:1 initiative, and get parental approval and commitment to support their child's use of the laptop;
- All eight schools required parental permission forms for students to receive a computer.

It is of interest to note what changes were made to these policies by the schools as they began a new school year. At least one participating school made each of the following adjustments to their laptop policies:

- Taking the Laptops Home
    - Students were allowed to take laptops home this year. Last year, students were able to take them home for only two weeks.
    - Parents were offered the choice of not allowing the child to bring the laptop home. Some parents chose this option.
    - The software installation policy was changed to grant parents administrative rights under certain conditions. The TF created a temporary administrative account that lasted one or two days for parents who needed to install a printer or configure the laptop to access a wireless network at home. Parents were required to attend extra training before an administrative account was created for them.
- Emphasis on Copyright
    - Teachers facilitated regular discussions with their students about how to properly use and cite online sources.
- Virus Protection

    - Laptops were checked for viruses by Deep Freeze every time they logged back into the school/district system.
    - Teachers were more careful with the use of flash drives because the school had a serious problem with viruses being passed from laptop to laptop last year. Viruses would be shared when students and teachers transported files using flash drives last year.
- Storing Student Work
    - Students were not allowed to use their own file storage devices. The school planned a school-wide launch of Web Lockers, an online storage solution for saving student work.
    - Every week students backed up the work saved on their laptops' hard drives to an external hard drive kept in the TF's office.
- Discipline
    - A laptop could be taken away from a student for 24 hours if it was left unattended or severely damaged. Teachers could set their own policies within their classrooms. Students who had their laptops taken away were still able to use a desktop in the classroom.
    - A laptop was taken away if it was used to bypass the filter and access unauthorized sites (e.g., MySpace).
    - Students who put books in with their laptops had to see the TF.
    - Staff began to recognize the need for common consequences across all classrooms for inappropriate use of the laptop. One school revised their discipline policy over the summer to include a two-tier infraction policy (see Appendix C).
- Classroom Monitoring/Management Software
    - Classroom management software was changed from DyKnow to EduPlatform with great success.
    - The district technology office was in charge of filtering content through SonicWall, but the school planned on utilizing their new classroom monitoring/management software (i.e. SchoolView) to have more control of this process.

Focus group data and open-ended survey responses indicated that teachers, administrators, and students agreed that filtering/blocking of websites has been one of their major day-to-day challenges. Filters were blocking not only websites that provided general information (e.g., historical information) but also websites that serve a legitimate educational purpose (e.g., SAS resources). While both teachers and leadership acknowledged that this was an important issue that needed a prompt resolution, students expressed very strong opinions about it. A large number of students noted that the filters/blocks, such as Smart Filter, hindered their learning by blocking most websites, especially when work needed to be done in class. They felt that they were unfairly penalized when they were unable to complete work that required the use of websites being blocked by the school. To circumvent this problem, they either used their own desktops at home, if they had one, or used proxies to access blocked websites.

> *Blogs and wikis are blocked; pretty much all Web 2.0 tools are blocked.*

> *The filter often makes using laptops impossible. It gives us, as instructors, no flexibility in planning, as we have to have our sites approved weeks ahead of time. Furthermore, it makes student research difficult when anything concerning politics is blocked. Also, I cannot have my students look at any other work produced by other teachers because all personal pages are blocked. Finally, when I attempt to get videos for my students, all streaming media is blocked.*

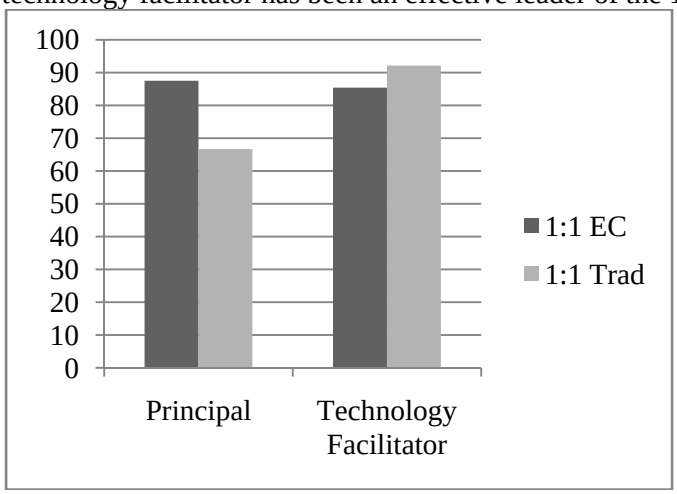
> *Our Internet filter blocks everything that is beyond "school websites." Things that could be useful such as video sites, historical investigation sites, and all political sites are blocked. We have no way of getting to these sites for research purposes unless we use ways that are against the rules.*

This issue seems to be of critical concern, as it is hindering the pedagogical use of the technology. Schools and LEAs need to find a filtering solution that is flexible enough to allow teachers and students to access important Internet resources.

Leadership

Teachers agreed that the principal and TF had been effective leaders of the 1:1 initiative at their school. Incidentally, results from the surveys indicated that the TF played as important a leadership role for the 1:1 Learning Initiative as the school principal (see Figure 5). Focus group discussions with teachers reiterated this finding at the insistence that this project would not have been possible without the hard work and dedication of the TF.

Figure 5. Percent of ECHS (*n* = 48) and traditional (*n* = 51) 1:1 teachers that agree the principal and/or technology facilitator has been an effective leader of the 1:1 initiative.



Teachers at participating schools were asked to identify the three individuals who were the driving forces behind their school's 1:1 Learning Initiative (see Table 4). Both the principal and technology facilitator played key leadership roles for this innovative program at the schools. The district staff and some teachers also provided leadership for the 1:1 projects.

Table 4. *Tally of teachers' open-ended responses to "Who are the individuals who are the driving forces behind your school's 1:1 Initiative?"*

	District Admin	Principal	Assistant Principal	TF	Technician	Teacher	Totals
1:1 Traditional	3	29	6	35	0	7	80
1:1 ECHS	8	35	4	47	3	9	106
totals	11	64	10	82	3	16	186

The focus group discussions furthered our understanding of the role of the leader for a 1:1 initiative. One of the focus group questions asked "What do you think are the most important things a school leader can do to support a new 1:1 laptop project in a high school?" Quotes illustrate some of the key findings around leadership for a 1:1 project:

> *Show the benefits. If people see the benefits, they'll buy in. If they don't see the benefits, they'll see work. Every teacher is overworked and underpaid, just ask them, but if they buy in to it, you'll get them.*

I think a leader needs to understand that this is a very slow process as far as integrating, and not push. We've been real fortunate that we haven't felt really pushed to integrate the laptops, but to take baby steps to make sure that you're slowly integrating and changing things up, but not just say, "Okay, you have to have this, this, this and this done by this time" or "You have to use it every single day, every time I walk in there I better see," and there's been none of that.

I think [the principal] needs to have an understanding of where their school's going, what the plan is, and what part of that plan makes their school an individual, what makes it different from others, and then lobby for that individuality. A blanket policy is not going to work for a program like this, we just can't do it, and some of it doesn't make sense.

A good leader is one who realizes that a computer is just a tool – it doesn't take the place of an educator in the classroom.

Modeling, because you can't expect us to grow into this technology thing and do all of this if you're not at least doing an example of using it yourself, and I am not tech friendly, but since I've been here, I don't have a desktop anymore, I have a laptop, so I'm growing.

I think it's important for the leader to know if [the teachers] need something to support their classroom, whether it's software or hardware or whatever, that [the principal] is going to find the means to provide what they need.

Infrastructures/Support Systems Summary: Teacher and administrator responses to survey items about attitudes and beliefs about technology were compared. The comparisons revealed some differences in their attitudes and beliefs about the use of the laptops for teaching and learning for both the ECHS and traditional high school staff. The teachers and administrators share similar beliefs about the general teaching benefits; increased access to up-to-date information and diverse teaching materials and resources; reduction in use of paper-based supplies; and an increased ability to explore topics in greater depth as a result of the 1:1 initiative. However, the administrators seemed to be underestimating the difficulty of classroom management with the laptops and the increase in the teachers' workload, and overestimating the likelihood that a teacher can cover more material in a 1:1 environment.

Professional Development

During the summer preceding the 2008-2009 school year, teachers reported receiving professional development from several sources to support the laptop initiative. This professional development ranged from very general and not necessarily targeted toward 1:1 computing efforts to very specific and completely targeted toward 1:1 computing efforts.

National Conferences: On the "general" end of the spectrum, four schools sent selected teachers and technology facilitators to the National Educational Computing Conference (NECC) held in San Antonio during July. Attendees benefited from presentations by vendors of products in place at the 1:1 schools (e.g., Promethean boards, E-Chalk), from sessions on 1:1 computing, and from other more general sessions:

Two teachers and myself [technology facilitator] went to the [National Educational Computing Conference] in San Antonio, Texas.... E-Chalk was actually represented there, so we went through some of the experiences with the various vendors that were set up there. We actually also went to a 1:1 computing seminar, most of us signed up for those.... We got some valuable information, some hiccups that individuals had along the way, and how we can learn from those, and we were actually able to get a lot of literature too, to support 1:1 initiatives.

I went and hung out with the Promethean people, because that's what we're using, and then the Texas Instruments people, because I teach Math. But then we also went to several of the sessions and came back with lots of ideas about visual learning, and how it's really neat to have something for the kids to connect with and walk away with. And then there was podcasting.

State Conference: All seven of the 1:1 computing ECHS pilots sent teams to the New Schools Project Summer Institute held in Winston-Salem. Although not entirely focused on 1:1 computing, attendees discussed how several technology-related sessions at this institute benefited their 1:1 computing programs, in addition to the benefits of convening with other schools implementing 1:1 computing:

They had all the 1:1 schools with Frances Bradburn together, so that was good. I think they did a lot of protocol-like things, and then the geo-scavenger hunt, so they did some things together. So it was good to have all early colleges that were 1:1 initiatives together.

What we worked on there was our portfolio that we've rolled out with the freshmen. Their portfolio is all online, that was one thing that we decided.... Our idea is by the time our freshmen become upperclassmen, seniors, they'll be able to use their online stuff that they've gotten compiled from their portfolio to help them develop the graduation project. There's eight pieces to it, and they basically pick each piece. It could come from any class.... We're actually using an online resource called Epsilen... called a personal learning environment.

We did one day of using the laptops to log on to CSNC, and kind of take a tour of a lot of their career exploration services that they have for students.

Friday Institute Face-to-Face Professional Development: Six schools also sent teachers and technology facilitators to the Leadership Institute sponsored by the Friday Institute's 1:1 Learning Collaborative. This training was customized for 1:1 pilot schools and other schools implementing 1:1 in the state, and included both whole-group presentations and five breakout sessions geared to specific content areas and personnel (i.e. English/Language Arts, Math, Science, Social Studies, and Technology Facilitators). Table 5 presents the overall rating for each session offered at the Leadership Institute.

Table 5. *Overall Rating of Friday Institute Sumer 2008 1:1 Leadership Institute Professional Development Event (n=91)*

Session	5 Outstanding	4	3 Average	2	1 Poor
Teaching and Learning in 1:1 Classrooms	17%	68%	13%	2%	
New Literacies and Student Generated Content: Engaging the YouTube Generation	92%	8%			
Harness the Power of the Internet…WISEly	71%	29%			
Using Online Applets in Math Instruction	78%	22%			
Social Studies and Google Earth	36%	27%	18%	9%	9%
Lessons Learned about Virtual Worlds for Learning: The River City Case Study	52%	33%	14%		
Project-Based Learning	79%	14%	7%	9%	
What Works and What Doesn't: Words of Wisdom from the Trenches	35%	48%	13%	4%	
Panel B	50%	39%	11%	4%	
Cool Tools for Instruction	45%	40%	15%	2%	
Toward successful and sustainable Technology Integration: Building a Culture of Shared	5%	50%	30%	10%	8%

Session	5 Outstanding	4	3 Average	2	1 Poor
Leadership					
1:1 Computing Initiatives Across the Nation	30%	60%	10%		
Lessons from the Maine 1:1 Computing Experience	44%	44%	12%	4%	
Empowering Teachers to Be Leaders	14%	43%		36%	7%
Designing Professional Development	40%	40%	20%		
Using Online Tools for Professional Development	50%	25%		25%	
The Computers are Coming! Managing Change in the Classroom	92%	8%			
Technology Infrastructure	60%	40%			
Fostering and Sustaining Change	33%	67%			
Going Deeper with Math	67%		33%		
Universal Design for Learning	33%	67%			

We had a content-area-alike breakouts, and then just some general 1:1 individuals that came to speak on the behalf of the initiative.

At the Friday Institute, we had the Google Earth thing.... I really love the Google Earth concept in social studies.... I learned a lot from that and got a lot from that. That was good.

Additionally, the Friday Institute offered two-day workshops offered by faculty at the Friday Institute focusing on content-specific resources and tools. Participants indicated these sessions were beneficial. Table 6 presents the percent of participants agreeing with indications of professional development quality for each session offered at the face-to-face sessions.

Table 6. *Percent of Friday Institute Content-Specific Workshop Participants Agreeing with Indicators of Professional Development Quality*

Item	Technology Facilitators (n = 14)	Science (n = 26)	Social Studies (n = 20)	Math (n = 34)	English (n = 26)
The workshop was of high quality.	92.9%	92.3%	100%	87.9%	100%
The workshop enhanced my understanding of teaching and learning in a 1:1 environment.	92.9%	84.7%	90%	75.8%	96.1%
The workshop helped me gain new information and skills.	92.9%	96.2%	100%	84.9%	100%
The workshop provided me with important resources.	85.7%	96.2%	100%	83.8%	100%
The workshop provided me with useful opportunities to network with colleagues from other schools.	85.7%	84.6%	95%	81.8%	96.1%
The workshop met my expectations.	92.9%	80.8%	100%	69.7%	92.3%

Item	Technology Facilitators (*n* = 14)	Science (*n* = 26)	Social Studies (*n* = 20)	Math (*n* = 34)	English (*n* = 26)
Overall, I feel the workshop was beneficial to me.	87.4%	80.8%	100%	75.8%	100%

Participants provided positive feedback about their experiences in the content-specific workshop sessions. They indicated that learning how to create wiki, networking with other teachers, and learning new technology tools and resources were the most beneficial parts of the workshop. They reported some difficulty with the amount of information presented in a short time, and participants' varying levels of technical skills and knowledge. For future face-to-face sessions, participants suggested more opportunities to talk about *how* to implement 1:1 in their classrooms, opportunities to experiment with new classroom technologies and resources, and dividing sessions by technology skill level.

Although a lot of technology tools and resources were shared, comments by some participants might indicate they had some difficulty translating this new information into a "lesson" format and comprehending how a tool or resource might work in practice; or at least they desired leaving the workshops with a lesson in hand to implement:

> *[I would like] Discussion of how to implement these things in our classrooms.*
>
> *[I would like] More lesson plan development.*
>
> *[I would like] More ways to create lesson plans.*

Friday Institute Online Workshops: In addition to the Leadership Institute offered at the Friday Institute, the 1:1 Learning Collaborative also offered three online workshops teachers could take over six weeks during the fall, including sessions on differentiated instruction, best educational resources, and Web 2.0 tools; and, five content-specific, face-to-face workshops (i.e. Technology Facilitators, Science, Social Studies, Math, and English) during the fall 2008 semester. Participants were complimentary of the lessons:

> *Very beneficial course. I learned a lot and feel motivated to start using some of the Web 2.0 tools I was introduced to in my classroom.*
>
> *Came away with tons of resources and am excited to implement my new-found discoveries.*

Online workshops offered through the 1:1 Collaborative were also well received as shown in Table 7, particularly the workshop on Web 2.0 technologies.

Table 7. *Percent of Friday Institute Online Workshop Participants Agreeing with Indicators of Professional Development Quality*

Item	Differentiated Instruction (*n* = 4)	Best Educational Resources (*n* = 5)	Web 2.0 (*n* = 5)
The workshop was of high quality.	75%	80%	100%
The workshop enhanced my understanding of teaching and learning in a 1:1 environment.	75%	80%	100%
The workshop helped me gain new information and skills.	75%	100%	100%

Item	Differentiated Instruction (*n* = 4)	Best Educational Resources (*n* = 5)	Web 2.0 (*n* = 5)
The workshop provided me with important resources.	50%	100%	100%
The workshop provided me with useful opportunities to network with colleagues from other schools.	75%	100%	100%
The workshop met my expectations.	75%	80%	100%
Overall, I feel the workshop was beneficial to me.	75%	100%	100%

Online workshop participants commented that the most beneficial aspect to participation was learning about new tools, new resources, and discussing technology topics with peers.

> *I enjoyed the feedback from the facilitator as well as fellow participants. A great way to meet other educators!*

In fact, several participants desired even more discussion and communication with both online workshop facilitators and peers that fell behind in places:

> *Often times, feedback is what motivates me to stay on track in an online professional development course. I think that the lack of this kind of teacher/student interaction resulted in a lot of students not participating.*
>
> *Please provide more constructive/critical feedback to participant performance.*
>
> *I didn't think many people contributed so it was sometimes difficult to comment on things in discussion.*
>
> *Many people were late in participating each week.*
>
> *We need a collaborative wiki to share our resources.*

Participants were complimentary of specific facilitator qualities such as summarizing material for the learners, pacing students, prompting students with questions, modeling technology use, and providing feedback on assignments:

> *Our facilitator was very positive and kind when responding to our forum posts or to completed assignments.*
>
> *She made VoiceThread video clips to recap or highlight the previous week.*
>
> *The instructor kept us on track and modeled the technology we were supposed to be exploring.*
>
> *I liked the fact that our facilitator was testing out the web-based tools along with us.*

Some online workshop participants hinted that too much information was presented in a course at one time, making content difficult to process:

My concern would be number of different topics addressed each week. Certainly for the different levels of technology expertise in the course, this may have made it more difficult for those of us who might be considered intermediates in terms of knowledge.

One teacher recommended splitting online workshops into short courses of two weeks in duration, focusing more heavily on just one or two tools or resources at a time:

I think that one approach would be to really have a series of short two-week courses focusing on individual aspects of what we did over six weeks. If I have two weeks to work on RSS feeds then maybe I would have a better understanding of it. The same could be said for Blogs and Wikis. Maybe another course could be all of the Google applications.

Local Professional Development: All of the 1:1 computing pilot schools provided professional development on their own campuses or in their districts over the summer and during the school year (for a complete list see Appendix D). Teachers at the seven 1:1 ECHS were offered a total of 239 hours of professional development by their school or district. Some of the most common topics included classroom monitoring software such as E-Chalk and DyKnow; course management including Moodle and Eduplatform; the implementation of techniques learned at outside workshops and conferences; gaming technology such as Second Life and Study Island; tools such as VoiceThread, podcasting, and United Streaming; and Web 2.0 tools including wikis, blogs, and social bookmarking. Teachers at the 1:1 traditional high school were offered a total of 195 hours of professional development by their school or district on topics such as Microsoft Office; SmartBoards; website design; assessment tools such as clickers or ClassScapes; and photo editing. Like the 1:1 ECHS, the traditional high school held professional development regarding classroom management and monitoring software.

We did some training there, exclusively with DyKnow, logging in, a management piece, how you can use DyKnow for instruction as well, so we had that.

My student technology team came in for three sessions over the summer in terms of training for them.

Outside of formal professional development planned and implemented by external groups, it should be noted that teachers also engaged in self-planning for use of their laptops over the summer months. This planning was formalized at one school where specific teachers were paid over a period of three weeks to develop lessons incorporating laptops. It was suggested these lessons could be shared to provide a starting point for other teachers when school reconvened:

We spent two and a half to three weeks working over the summer [paid for 96 hours of planning], and one of our tasks was to create some technology lesson plans for every content area, so that when the whole staff came back we would have several technology-based lessons to give each content area. And I think that really helped us as the tech team kind of get a better feel for the technology, kind of get some goals for our school for the year. But then hopefully it kind of gave some of the teachers a place to start.... It was a reflection time and also a planning time for us to start the year back.

Two schools suggested self-planning was also less formal, with teachers spending time in the summer practicing with hardware and software, and identifying teaching resources:

Several of us took these things home and worked on them for additional hours for free. That time was invaluable. We practiced with a flipcam, we practiced with Audacity software, we spent hours researching resources and just practicing the kinds of things that we want the kids to do.

Professional Development Summary: In sum, while a majority of respondents felt that the professional development opportunities they participated in were generally useful, future professional development should acknowledge that teachers are at different stages of adapting to 1:1 environments, and have differing experience with instructional technology. Further, professional development should be targeted toward not just how to use particular tools, but how to incorporate them effectively for pedagogical use. Finally, professional development should be targeted at different content areas. For example, mathematics teachers were less enthusiastic about some professional development than others. It may be the case that professional development that is focused on specific content areas might be more useful in the long run. And as mentioned before, teachers felt the need for more "just in time" professional development through on-site technology facilitators as an on-going process.

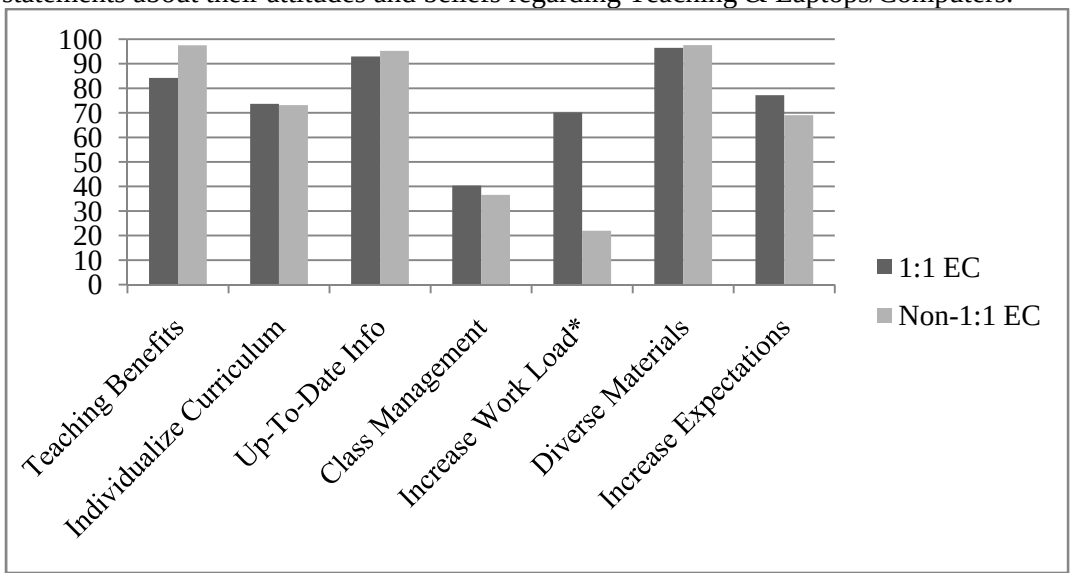
Evaluation Question 2: What are teacher and student technology attitudes and skills?

Technology Attitudes and Beliefs

Teacher Attitudes and Beliefs about Technology

There were no significant differences between ECHS teachers at the 1:1 and non-1:1 schools in regards to agreement related to attitudes and beliefs about technology except for a belief that using laptops "increased my work load" (see Figure 6). Many studies have shown a drop in positive attitudes toward new technologies after an initial rise because the novelty has worn off; teachers then deal with the reality of having to redesign most of their lessons and classroom management approaches (Fullan, 2001). However, we do not see this pattern in our data. Overall, attitudes remained generally positive about the impact of laptops in the classroom.

Figure 6. Percent of 1:1 (*n* = 57) and Non-1:1 (*n* = 42) ECHS teachers indicating agreement with various statements about their attitudes and beliefs regarding Teaching & Laptops/Computers.

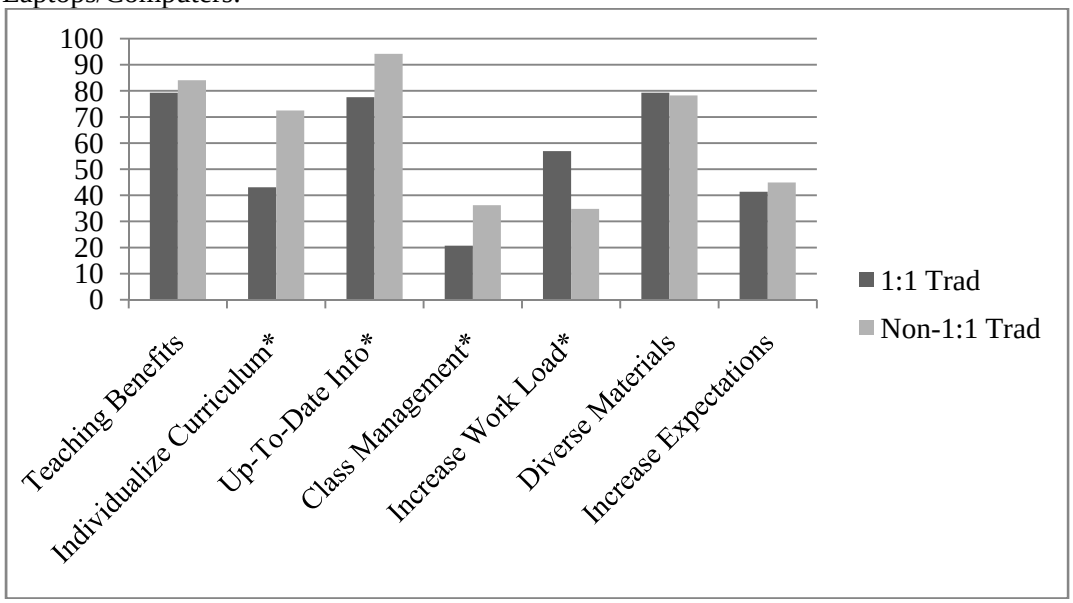


*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

Significant differences were found for the traditional teachers at the 1:1 and non-1:1 schools in regards to agreement related to attitudes and beliefs about technology related to teaching and laptops – including ability to individualize curriculum, provide up-to-date information to students, effectively manage the classroom, and an increase in teachers' workload (see Figure 7). These results indicate that the teachers might have benefited from professional development on using the laptops as a tool to individualize

curriculum to meet student needs, classroom management strategies, and strategies for minimizing workload.

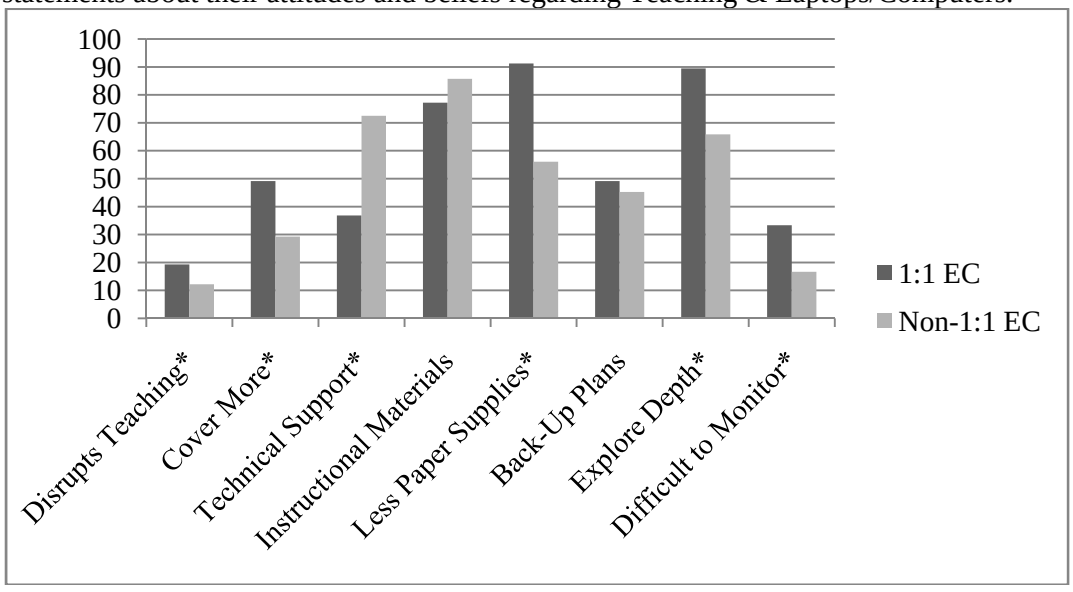
Figure 7. Percent of 1:1 (*n* = 58) and Non-1:1 (*n* = 69) traditional high school teachers indicating agreement with various statements about their attitudes and beliefs regarding Teaching & Laptops/Computers.



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

Teachers at the 1:1 ECHS reported more agreement than teachers at the non-1:1 ECHS that using the laptops in the classrooms allowed them to cover more information, require less paper supplies, and explore subject in greater depth (see Figure 8). The 1:1 teachers also indicated that they do not need more direct technical support – their TFs and technicians are providing the technical and instructional support the teachers need.

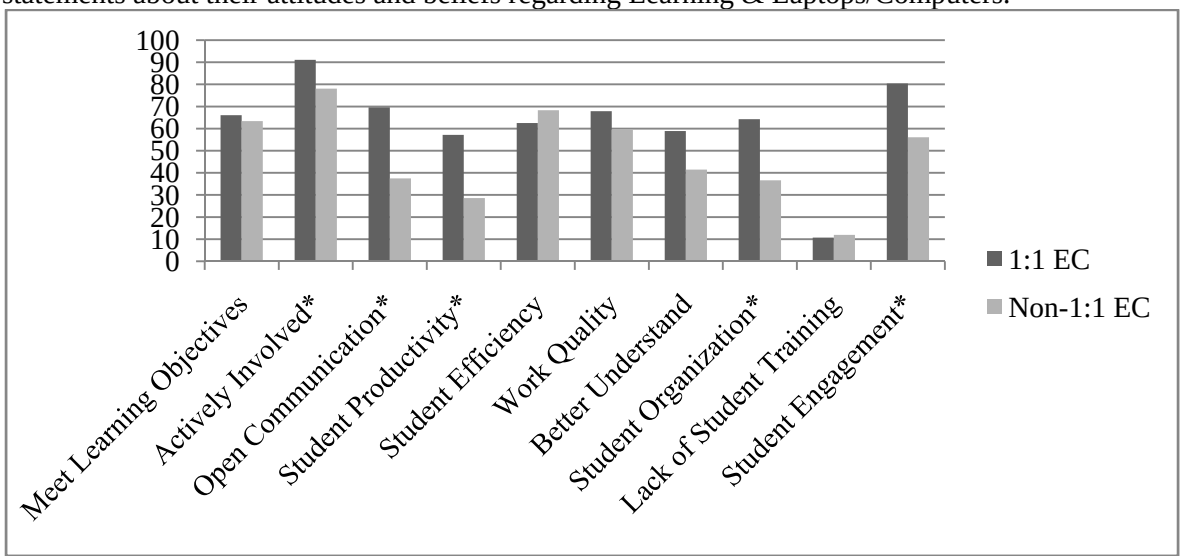
Figure 8. Percent of 1:1 (*n* = 57) and Non-1:1 (*n* = 42) ECHS teachers indicating agreement with various statements about their attitudes and beliefs regarding Teaching & Laptops/Computers.



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

Overall, significant differences were found for the ECHS teachers' perceptions of the learning benefits of laptops (see Figure 8). The 1:1 teachers agreed that their students were more actively involved in their learning, more productive, more organized, and more engaged.

Figure 9. Percent of 1:1 (*n* = 56) and Non-1:1 (*n* = 42) ECHS teachers indicating agreement with various statements about their attitudes and beliefs regarding Learning & Laptops/Computers.

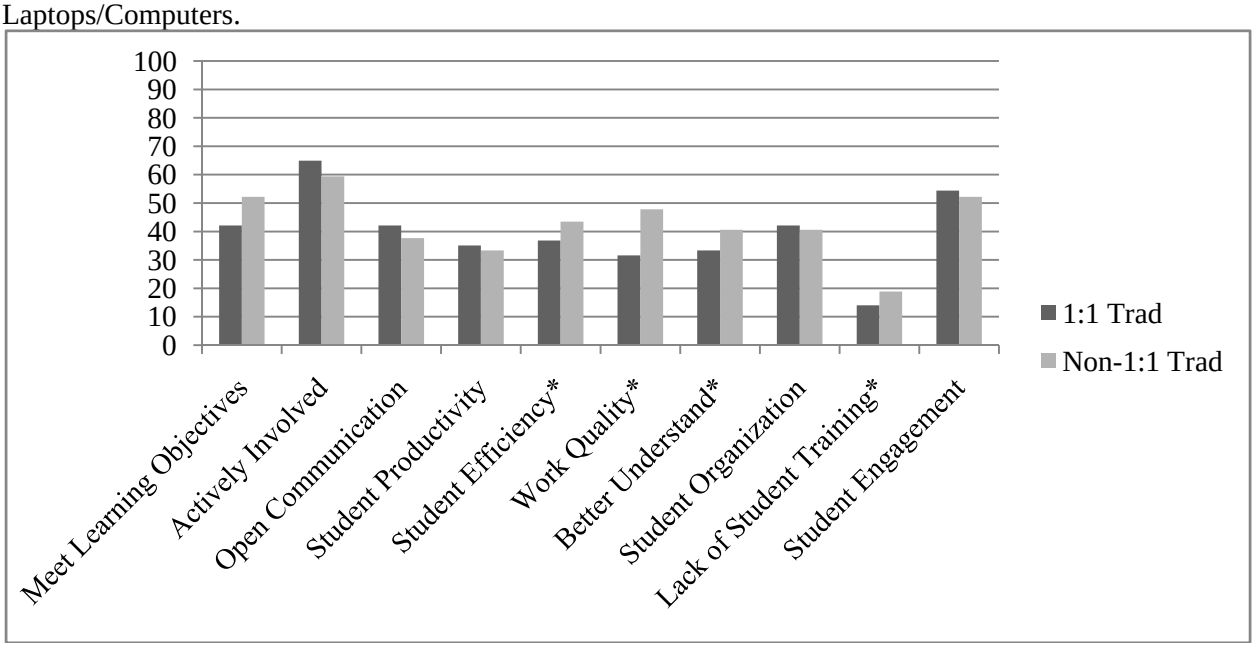


*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

The teachers at the 1:1 traditional school were slightly less positive about the learning benefits of laptops, although the 1:1 teachers agreed their students were more actively involved in their learning and more engaged (see Figure 10).

Figure 10. Percent of 1:1 (*n* = 58) and Non-1:1 (*n* = 69) traditional high school teachers indicating agreement with various statements about their attitudes and beliefs regarding Learning &

Laptops/Computers.



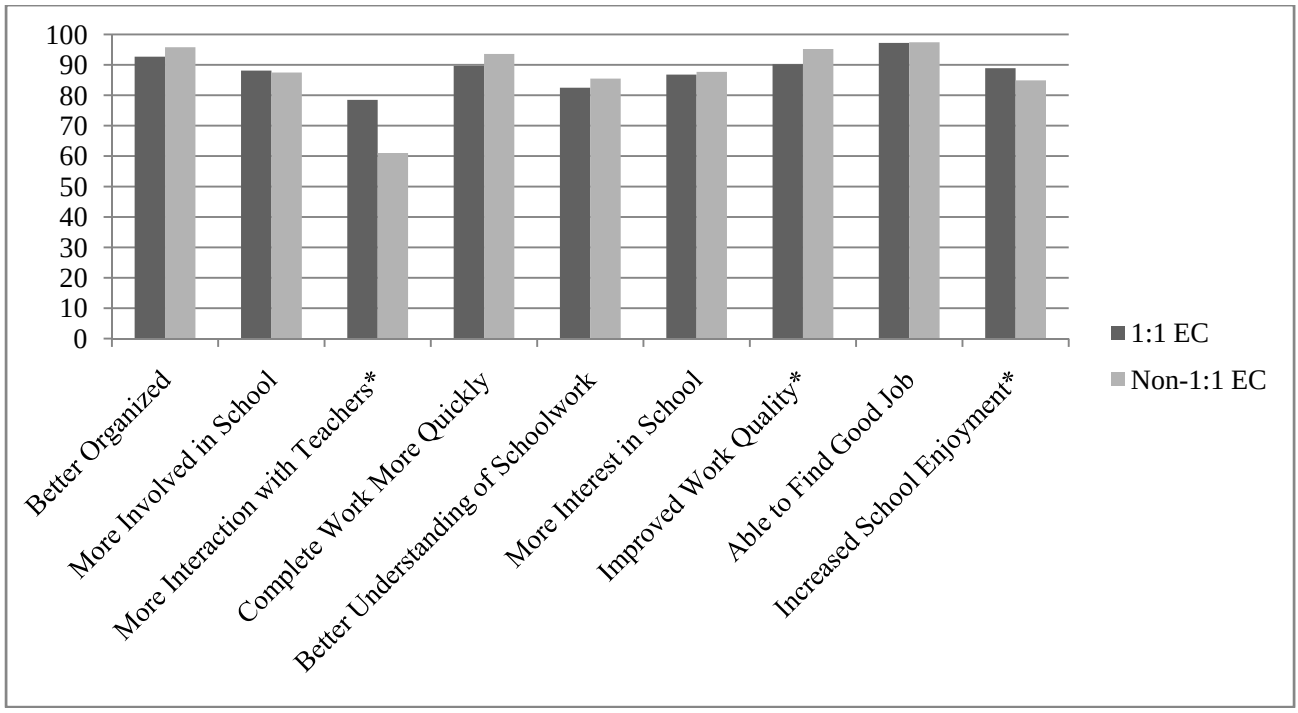
*Note. *This indicates that there was a statistically significant difference between groups ($p < .05$).*

In sum, attitudes toward instructional technology were positive, although it was perceived to increase teacher workload and classroom management issues. Teachers did see the technology as increasing student engagement and encouraging more active learning.

Student Attitudes/Beliefs about Technology

There were no significant differences between ECHS students at the 1:1 and non-1:1 schools (see Figure 11) in regards to agreement related to attitudes and beliefs about technology except for beliefs that "Now that I have my laptop I interact with my teachers more" and "The more frequently teachers use technology, the more I enjoy school." Many studies have shown a drop in positive attitudes toward new technologies after an initial rise because the novelty has worn off. Students then deal with the reality of having to be responsible for their laptop and with higher expectations for their work (Rogers, 2003). Overall, student attitudes remained generally positive about the impact of laptops in the classroom.

Figure 11. Percent of 1:1 (n = 825) and Non-1:1 (n = 577) ECHS students reporting agreement with various statements about their attitudes and beliefs regarding technology.



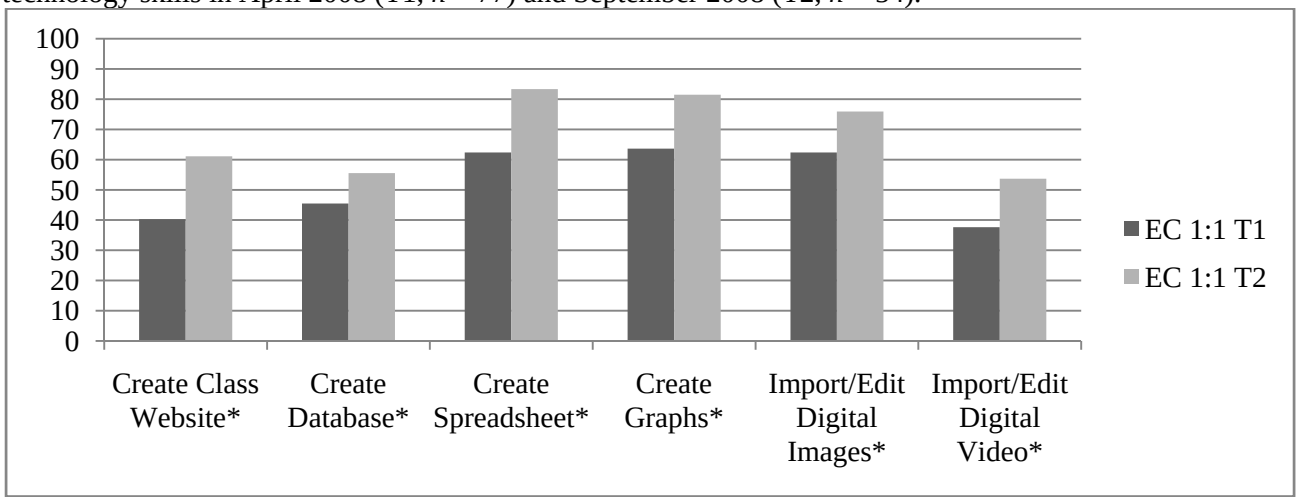
*Note. *This indicates that there was a statistically significant difference between groups ($p < .05$).*

Technology Knowledge/Skills

Teacher Technology Knowledge/Skills

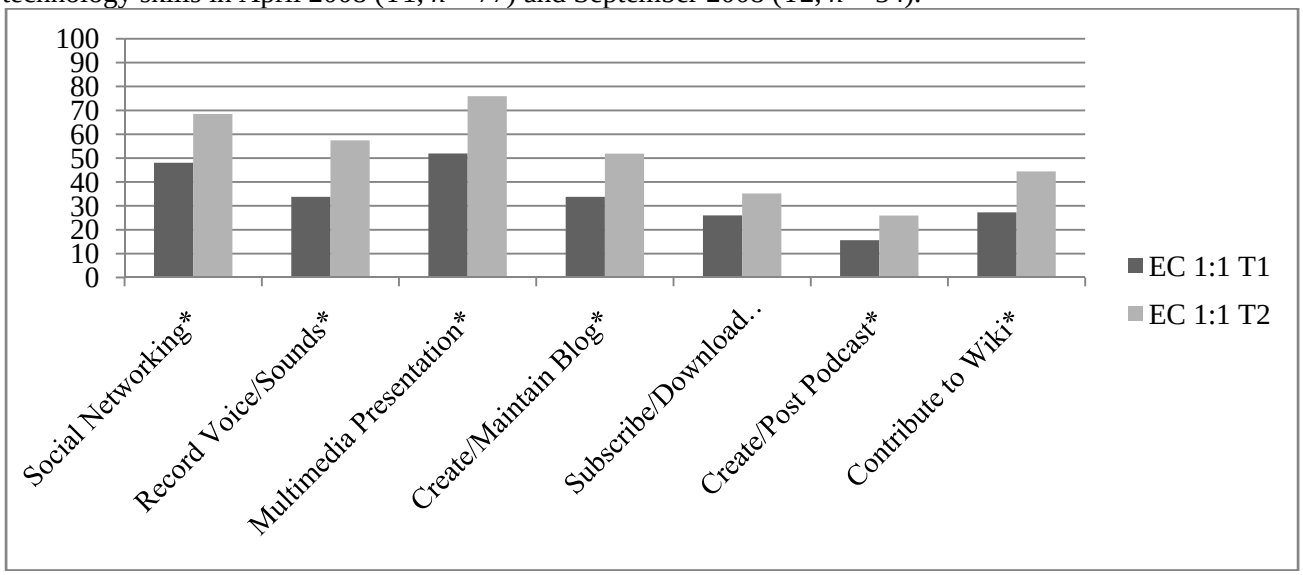
Generally, a higher percentage of the ECHS 1:1 teachers reported greater technology skills this academic year compared to last year for skills such as creating websites, working with databases and spreadsheets, using digital images and video, social networking, blogging, and podcasting (see Figure 12-13). These results are interesting because sometimes teachers have a decrease in perception of level of technology skills once they have unlimited access to a lot of technology in the classroom, but we do not observe this pattern in our data.

Figure 12. Percent of 1:1 ECHS teachers reporting the ability to independently do or teach others various technology skills in April 2008 (T1, $n = 77$) and September 2008 (T2, $n = 54$).



*Note. *This indicates that there was a statistically significant difference between groups ($p < .05$).*

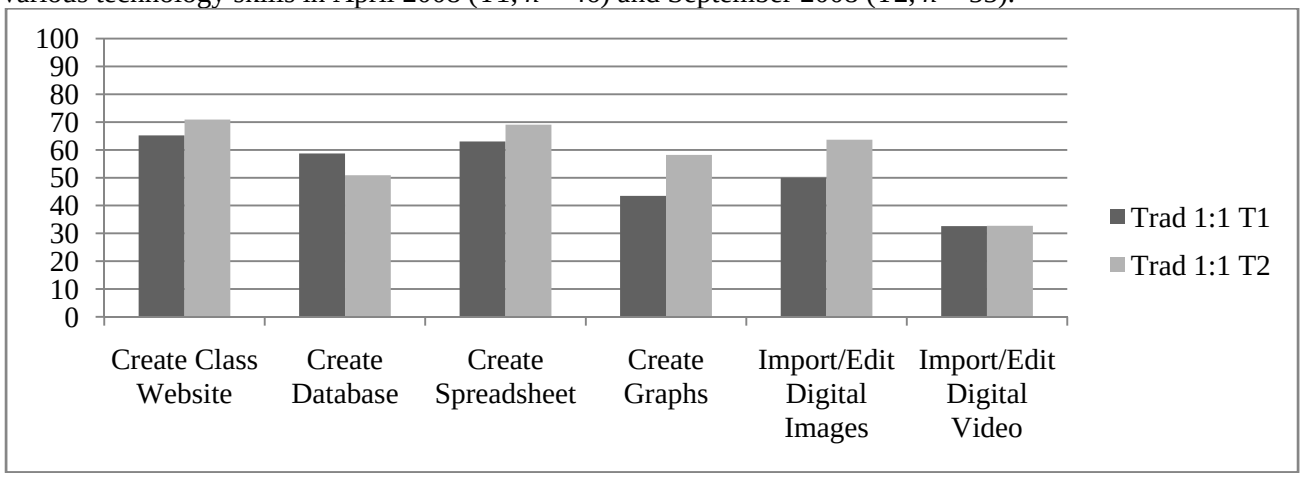
Figure 13. Percent of 1:1 ECHS teachers reporting the ability to independently do or teach others various technology skills in April 2008 (T1, *n* = 77) and September 2008 (T2, *n* = 54).



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

Survey results showed an increase in the percentage of traditional 1:1 teachers reporting greater technology skills when comparing this academic year to last year, except for creating databases (see Figure 14).

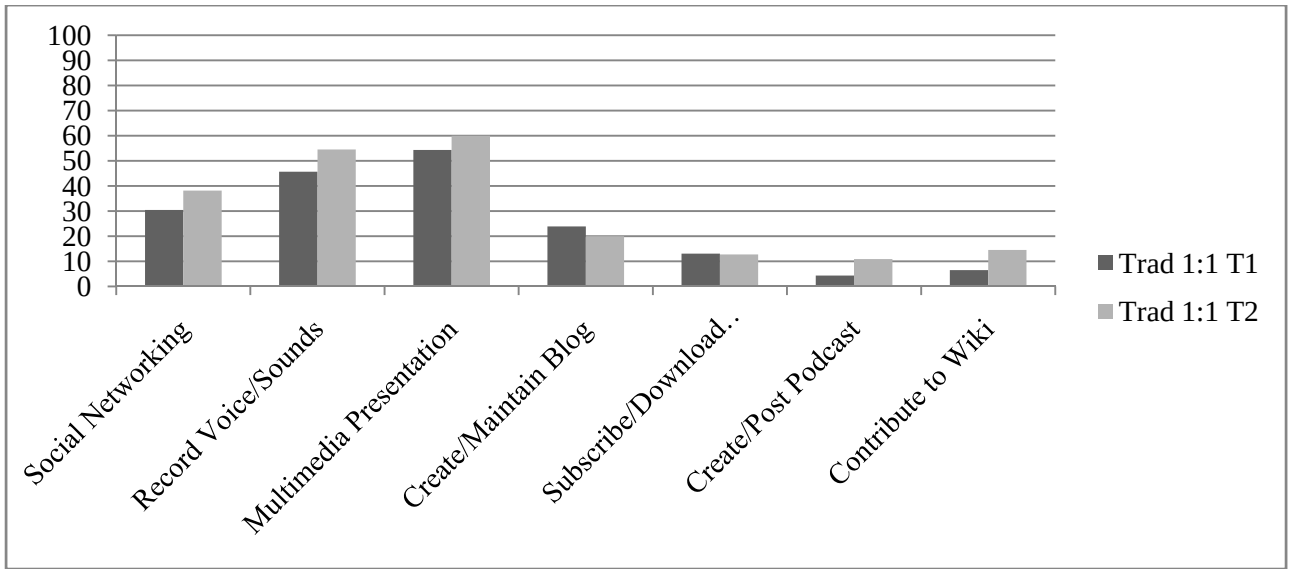
Figure 14. Percent of 1:1 traditional teachers reporting the ability to independently do or teach others various technology skills in April 2008 (T1, *n* = 46) and September 2008 (T2, *n* = 55).



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

Survey results showed an increase in the percentage of traditional 1:1 teachers reporting greater technology skills when comparing this academic year to last year, except for creating blogs (see Figure 15).

Figure 15 Percent of 1:1 traditional teachers reporting the ability to independently do or teach others various technology skills in April 2008 (T1, *n* = 46) and September 2008 (T2, *n* = 55).

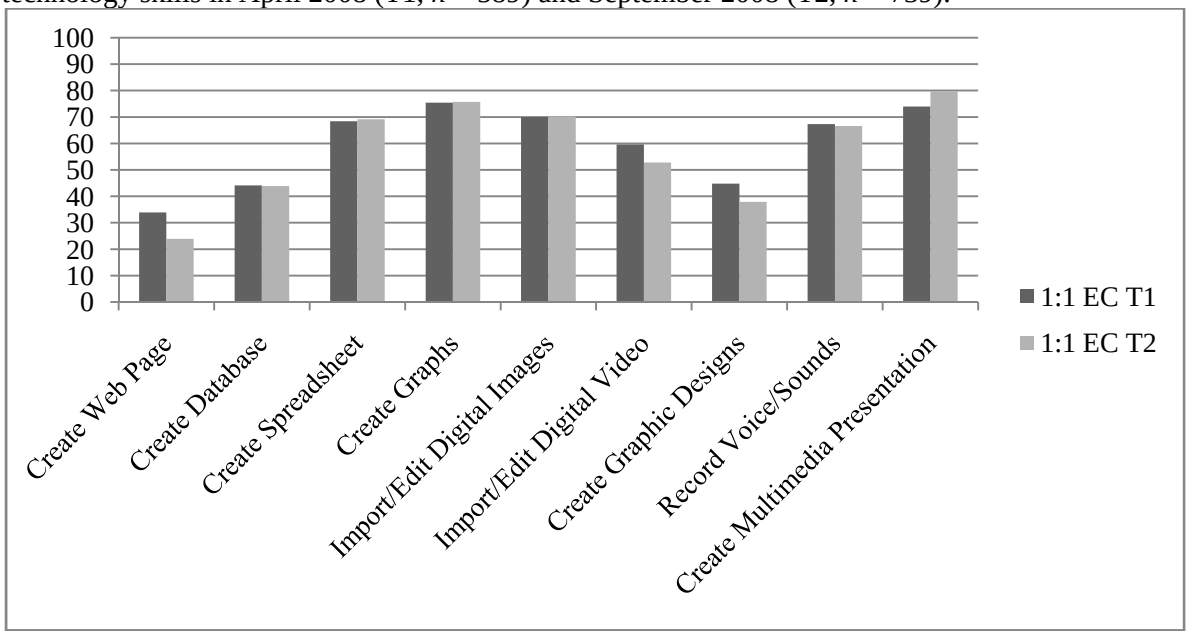


*Note. *This indicates that there was a statistically significant difference between groups ($p < .05$).*

Student Technology Knowledge/Skills

The 1:1 ECHS students' perceptions of their technology skills had not changed in the past few months. Generally, students were most confident in their ability to create graphs, work with digital images, and create multimedia presentations. Students might be interested to learn more about creating web pages and graphic designs (see Figure 16).

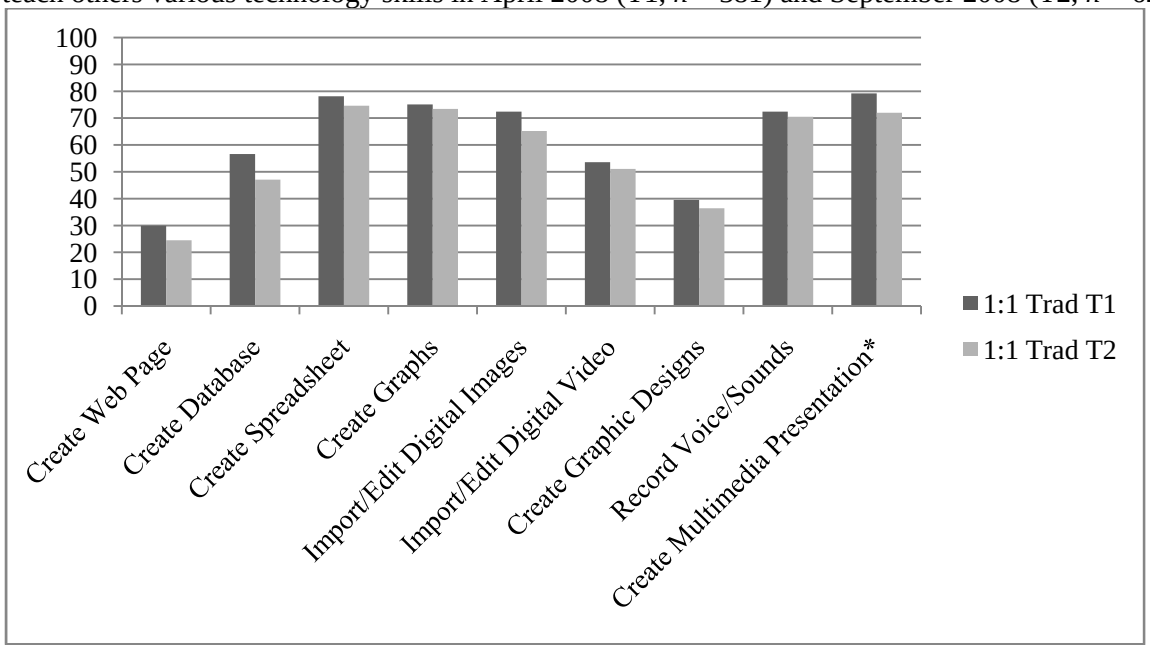
Figure 16. Percent of 1:1 ECHS students reporting the ability to independently do or teach others various technology skills in April 2008 (T1, $n = 589$) and September 2008 (T2, $n = 739$).



*Note. *This indicates that there was a statistically significant difference between groups ($p < .05$).*

The 1:1 traditional high school students' perceptions of their technology skills had not changed in the past few months (see Figure 17). Generally, students were most confident in their ability to create spreadsheets, record sounds, and create multimedia presentations. Students might be interested to learn more about creating web pages and graphic designs.

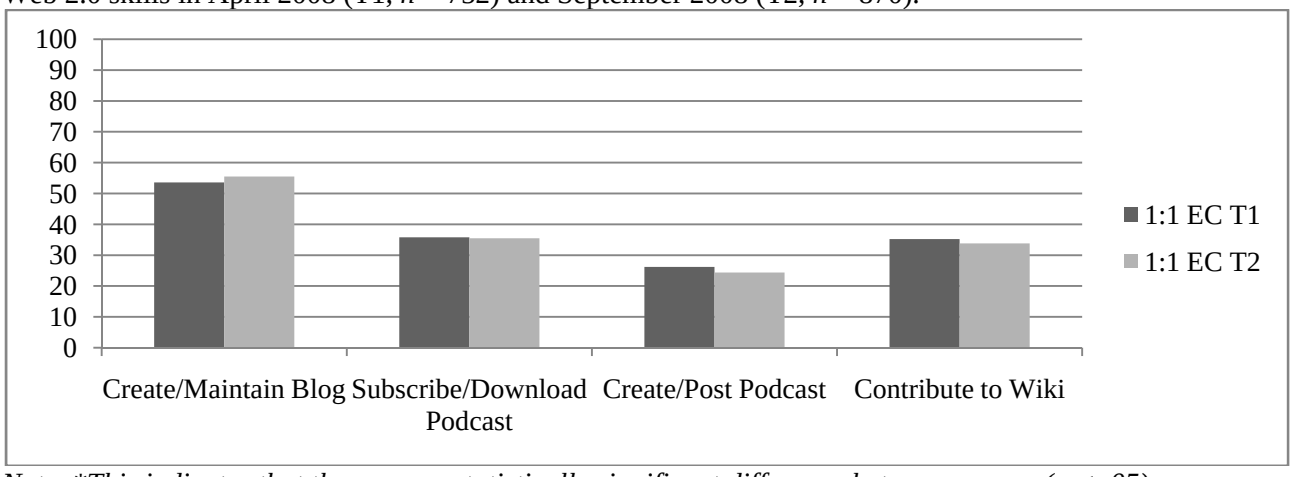
Figure 17. Percent of 1:1 traditional high school students reporting the ability to independently do or teach others various technology skills in April 2008 (T1, *n* = 381) and September 2008 (T2, *n* = 628).



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

The 1:1 ECHS students' perceptions of their technology skills related to Web 2.0 activities had not changed in the past few months (see Figure 18). Generally, students were most confident in their ability to create graphs and create and maintain a blog. Students might be interested to learn more about creating podcasts.

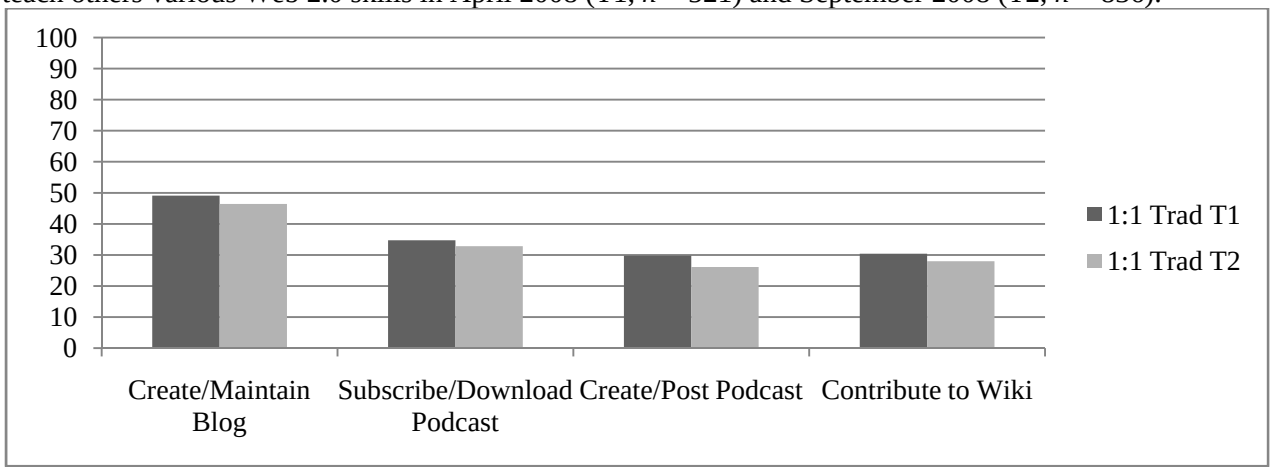
Figure 18. Percent of 1:1 ECHS students reporting the ability to independently do or teach others various Web 2.0 skills in April 2008 (T1, *n* = 752) and September 2008 (T2, *n* = 870).



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

The 1:1 traditional high school students' perceptions of their technology skills related to Web 2.0 activities had not changed in the past few months (see Figure 19). Generally, students were most confident in their ability to create graphs and create and maintain a blog. Students might be interested to learn more about creating podcasts.

Figure 19. Percent of 1:1 traditional high school students reporting the ability to independently do or teach others various Web 2.0 skills in April 2008 (T1, *n* = 521) and September 2008 (T2, *n* = 836).



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

In the open-ended survey responses, some teachers and students acknowledged that teachers' as well as students' technology skills were not as strong as they should have been. Some teachers identified their lack of technical knowledge and experience with computers as the barrier; others considered their lack of ideas on how to integrate computers as the constraint. Students concurred with this assessment of the teachers' skills by pointing out that some of their teachers were not comfortable using the laptops, did not know how to use certain software (e.g., DyKnow), or were unable to integrate the laptop into their teaching.

> *In many cases, I still do not feel adequate in my preparation or skill level. (Teacher, interview)*
>
> *Teachers do not know how to use the technology and integrate it in the classrooms. (Student, survey)*

While most students expressed that the laptops were helping them to do better, and some even wanted more opportunities for learning using the laptops, some students felt that they did not possess the necessary technical skills to use them, nor were they receiving enough training on their use. Among this group were those who felt that they did not possess the typing skills to keep up with class activities.

Summary of Technology Knowledge/Skills: In sum, teachers generally had positive attitudes about the impact of technology in the classroom. These results were not generally different from teachers in non-1:1 schools. Most interestingly, teachers indicated that they felt technology improved student engagement and active learning possibilities, while at the same time dramatically increasing teacher workload and increasing issues relating to monitoring and managing classroom behavior.

Teachers also showed significant growth in confidence over time concerning their technology skills. They tended to feel least confident in using new technologies such as wikis and blogs.

Students also showed strong confidence in their technology abilities, but failed to show change over time. Students seemed most confident with their abilities in basic skills such as using a spreadsheet, creating a database, manipulating digital images, and creating multimedia presentations. Interestingly, students seemed least confident in their abilities to create a web page or work with blogs or wikis.

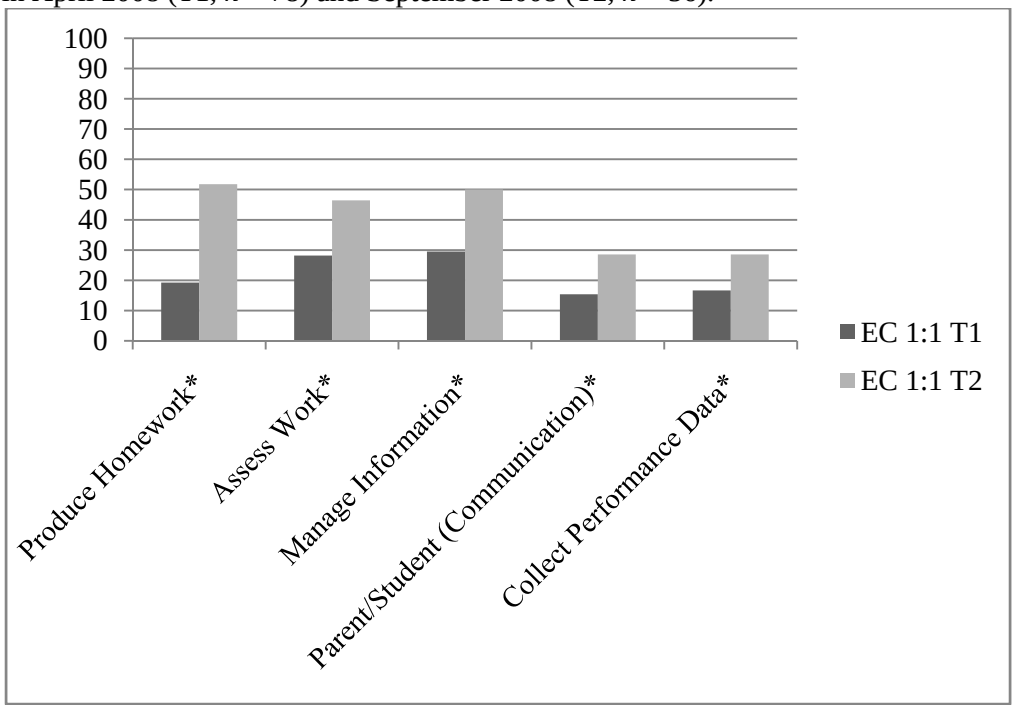
Evaluation Question 3: How have teachers' instructional practices changed over time?

Technology Use

Teacher Technology Use

Participating 1:1 teachers reported using the laptops more frequently this year compared to last year. ECHS teachers reported a significant increase in daily use of the laptops for planning activities such as producing homework, assessing student work, managing information, communication with families, and collecting performance data (see Figure 20).

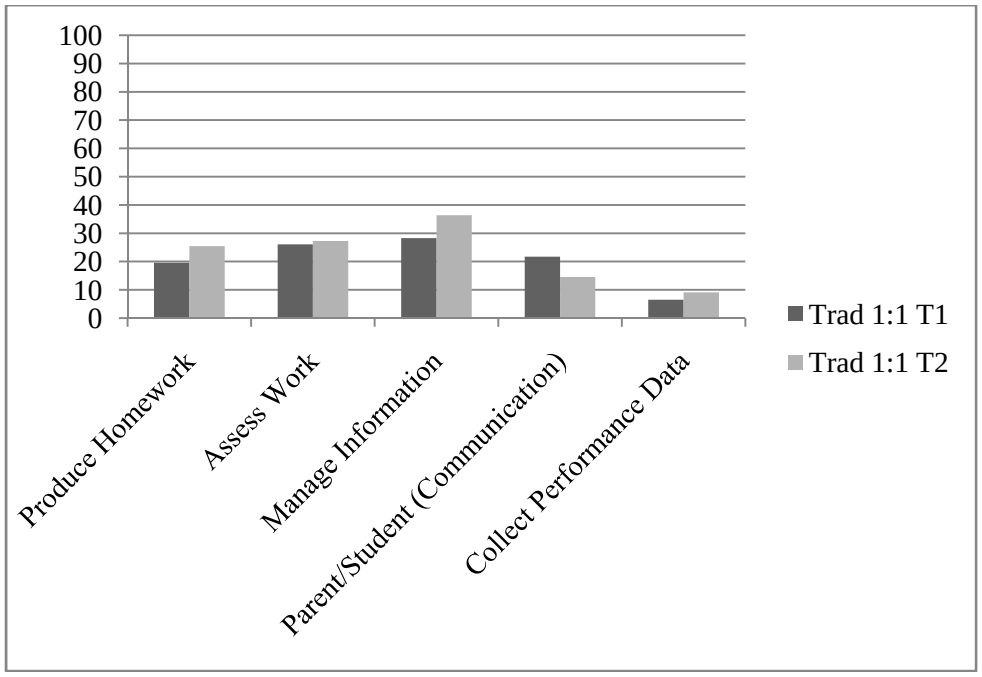
Figure 20. Percent of 1:1 ECHS teachers indicating daily use of technology for various planning activities in April 2008 (T1, *n* = 78) and September 2008 (T2, *n* = 56).



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

Survey results showed a slight increase in the percentage of traditional 1:1 teachers reporting daily use of the laptops for planning when comparing this academic year to last year, except for communication with parents (see Figure 21). Teachers might have communicated with parents more often at the beginning of the laptop project in order to get information about the project out to families.

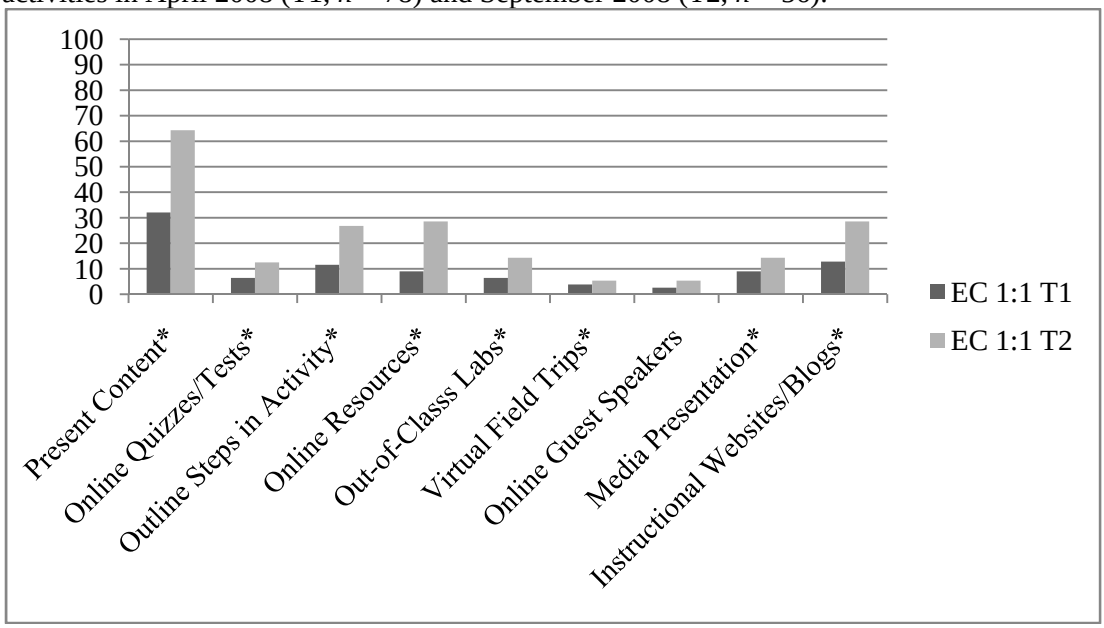
Figure 21. Percent of 1:1 traditional high school teachers indicating daily use of technology for various planning activities in April 2008 (T1, *n* = 46) and September 2008 (T2, *n* = 55).



*Note. *This indicates that there was a statistically significant difference between groups ($p < .05$).*

Participating 1:1 teachers reported using the laptops for instructional activities more frequently this year compared to last year (see Figure 22). ECHS teachers reported a significant increase in the daily use of laptops to present content, give online quizzes, present steps in an activity, take virtual field trips, and use instructional websites or blogs. Teachers still reported using the laptops most often to present content to students. These results suggest that teachers need information about instructional digital resources such as labs and guest speakers.

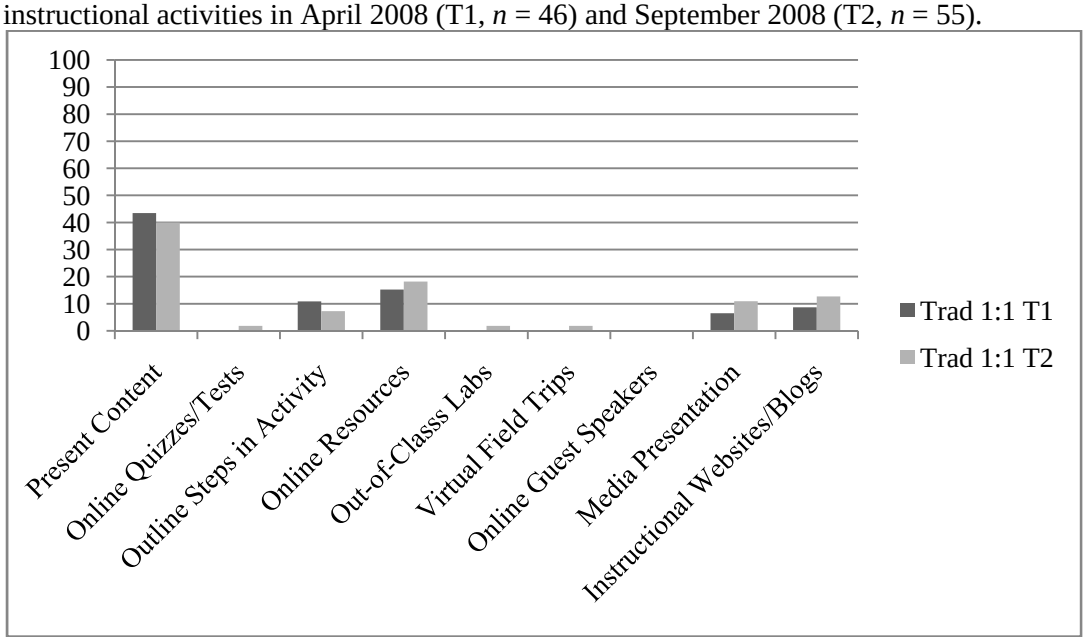
Figure 22. Percent of 1:1 ECHS teachers indicating daily use of technology for various instructional activities in April 2008 (T1, $n = 78$) and September 2008 (T2, $n = 56$).



*Note. *This indicates that there was a statistically significant difference between groups ($p < .05$).*

Survey results showed a slight increase in the percentage of traditional 1:1 teachers reporting daily use of the laptops for planning when comparing this academic year to last year for online resources, media presentations, and instructional websites/blogs (see Figure 23). Teachers still reported using the laptops most often to present content to students. These results suggest that teachers need information about instructional digital resources such as online quizzes, labs, virtual field trips, and online guest speakers via videoconferencing.

Figure 23. Percent of 1:1 traditional high school teachers indicating daily use of technology for various instructional activities in April 2008 (T1, *n* = 46) and September 2008 (T2, *n* = 55).

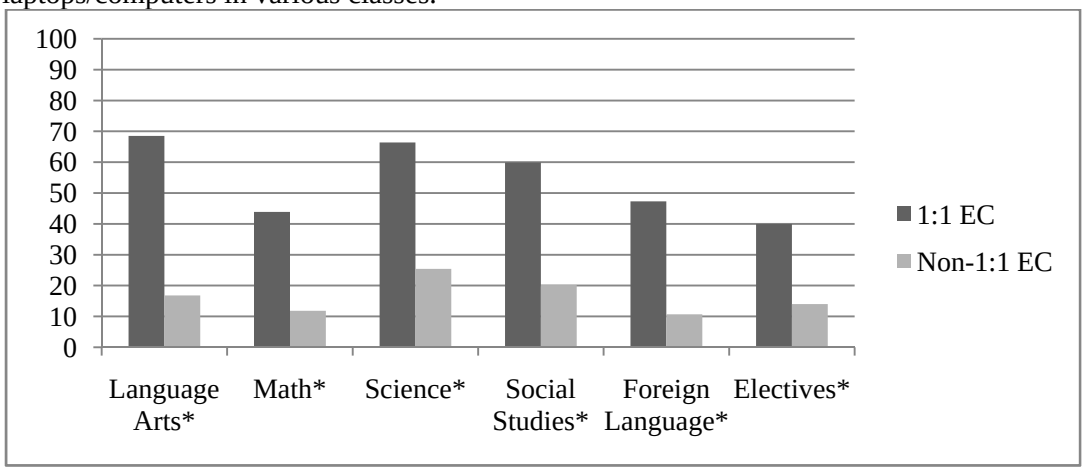


*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

Student Technology Use

The 1:1 ECHS students reported significantly more daily technology use than the comparison schools (see Figure 24). Students reported the most use in their Language Arts and Science classes.

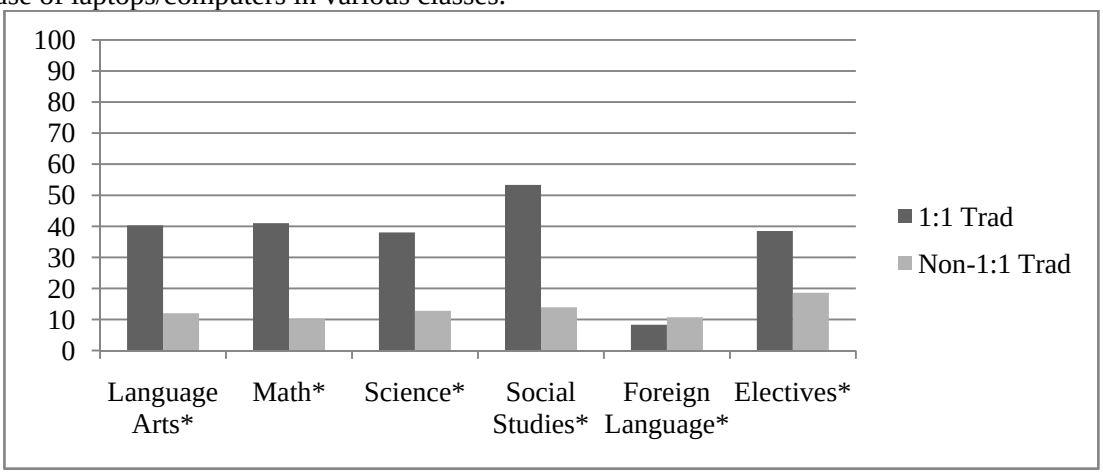
Figure 24. Percent of 1:1 (*n* = 611) and Non-1:1 ECHS (*n* = 448) students reporting daily use of laptops/computers in various classes.



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

The 1:1 traditional high school students reported significantly more daily technology use than the comparison school (see Figure 25). Students reported the most use in their Social Studies classes. Elective courses seemed to require use of their laptops as often as their core content area courses. Foreign language teachers were interested and engaged in using laptops for teaching and learning but their classrooms are located in mobile units/trailers which do not have interact access per district policy against wireless access points in temporary classrooms.

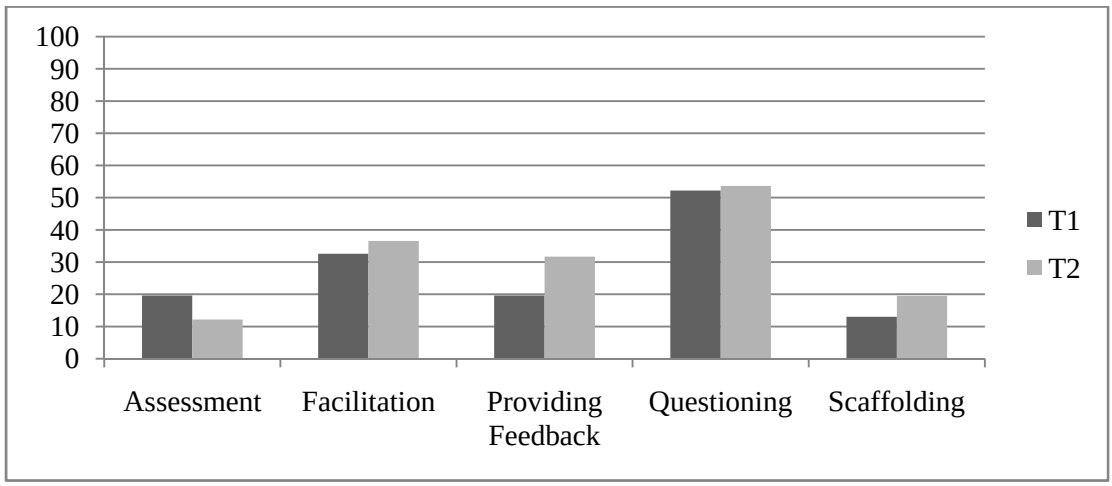
Figure 25. Percent of 1:1 (*n* = 550) and Non-1:1 (*n* = 695) traditional high school students reporting daily use of laptops/computers in various classes.



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

Survey results indicated a change in the use of technology to support common instructional practices from last year to this year (see Figure 26). Data from the classroom visits supported the aforementioned results. Instances of observed use of technology for various instructional activities increased when comparing last year's visit to this year's visit.

Figure 26. Percent of 1:1 high school courses that teachers were observed doing various activities using technology in April 2008 (T1, *n* = 46) and September 2008 (T2, *n* = 41).



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

In the open-ended survey responses, students reported a broad range in the amount of use of the laptops in their classes. More specifically, they noted wide variation in the frequency with which teachers used the laptops for class. Some teachers used them every day, whereas other teachers barely used the laptops for instructional purposes. Various students noted that while some of the teachers appreciated the technical know-how of their students and relied upon them for assistance, other teachers seemed uncomfortable with and unnerved by the role reversal.

Planning and Managing Instruction

Teachers reported keeping an open mind and enjoying an increase in confidence with using online resources and other new technologies. Teachers indicated they are pushed and challenged in a positive way to create excellent lessons, because they are "on the cutting edge" of teaching (see Appendix E for an description of example lessons). They tried to make lessons that encompass different learning styles such as auditory, visual, and kinesthetic.

- Collaboration and Shared Teacher Workspace - Teachers do a great deal of lesson planning individually since their day does not allow for much collaborative planning time. Google Talk and Google Docs help to keep teachers connected for planning purposes as well as for contact on campus. Teachers would like to have a common storage space for all of their 1:1 lessons that incorporates a quick and easy way to upload their lessons. Teachers are finding that creating generic rubrics to be shared across disciplines is beneficial. A brochure, for example, may be created using the same software and basic formatting for different classes. Students enjoy creating digital narratives, and they prefer the built-in video camera over the traditional digital camera. Teachers have found that virtual tours are excellent classroom resources.
- Filtering – Teachers, administrators, and students agreed that the filtering/blocking of websites has been the major challenge. Filters have been blocking not only websites that provide general information (e.g., historical information) but also websites that serve a legitimate educational purpose (e.g., SAS software). Teachers visited workshops such as those at the Friday Institute that involved excellent sites, which then turned out to be filtered within their districts. Students also expressed very strong opinions about filtering. A large number of them noted that the filters/blocks such as Smart Filter hindered their learning by blocking most websites, especially when work needed to be done in class. They felt that they were unfairly penalized when they were unable to complete work that required the use of websites being blocked by the school.

  > *Blogs and wikis are blocked; pretty much all Web 2.0 tools are blocked.*
  >
  > *The filter often makes using laptops impossible. It gives us, as instructors, no flexibility in planning, as we have to have our sites approved weeks ahead of time. Furthermore, it makes student research difficult when anything concerning politics is blocked. When I attempt to get videos for my students all streaming media is blocked. Combined, about 3/4 or more of the Internet is filtered for content, this has destroyed morale for laptops among staff and students.*
  >
  > *Our Internet filter blocks everything that is beyond "school websites." Things that could be useful such as video sites, historical investigation sites, and all political sites are blocked. We have no way of getting to these sites for research purposes unless we use ways that are against the rules.*

- Reflection - Although implementing lessons for 1:1 classroom environments can be a difficult adjustment, teachers reported feeling much less stress in comparison to last year, their first year implementing the 1:1 initiative. One TF emphasized the importance of reflection for teachers:

I think that in some ways [reflecting] made it a little easier for the teachers, simply because they are more aware that they are doing a lot of these things, and it's just taking it a step further, I think it made it a little easier for them, just increased their comfort level.

- Course Management System – Teachers expressed the need for a course management system such as Moodle or Blackboard. Students often allowed their electronic assignments to pile up until the end of the term. On a positive note, one teacher mentioned the joy of not being accused of losing papers anymore due to the time and date stamp on assignments delivered through drop boxes and emails. Lastly, some teachers believed they would include more electronic assessment if they had a quality course management system such as Moodle or Blackboard.

Use of Technology for Assessment
Most teachers utilized some form of online or electronic assessment either through email, Curriculum Pathways, AVID, Activevote (similar to clickers), ClassScapes, online quizzes, Glinko.com, OneNote, games, Promethean boards, live chat, Study Island, blogs, electronic rubrics, and online textbook resources. Teachers especially liked being able to project anonymous, immediate assessments through polling during class to discover if students comprehended the material. For group projects, one teacher had success using electronic peer evaluation as a part of assessment. Using the laptops for assessment saves time when compared to traditional grading; one teacher, however, mentioned the time-consuming nature of having to open each file to grade writing. Using laptops for assessment helps teachers create projects that synthesize material across disciplines:

One of the things that this technology allows us to do is give them assessments like this, this is something that's interdisciplinary; they have had to produce a brochure meeting certain science criteria and pulling in language arts and 21st century skills; these that I'm grading are assessments of The Minister's Black Veil, in which I pulled in the National Gallery of Art; they had to choose four scenes from the book, do certain things with them, and illustrate them with a great American artist; so it let us really give assessments that not only ask that they demonstrate that they have read science textbooks or literature textbooks, but makes them synthesize.

However, some teachers were concerned with the use of laptops for assessment because EOCs are not electronic, and they wanted to be sure to provide adequate practice for students using paper-based assessments. Teachers also mentioned the need to lock the Internet or OneNote during online or electronic assessment. Students are easily able to Google answers if they have access to the Internet while taking an online quiz or test. A few teachers questioned whether or not students' ways of learning differ when they are assessed and taught online as opposed to via paper-based activities and assessment:

I'm interested to find out is information processed differently through this medium than it is in paper, and I'm wondering, and I guess I'll get feedback this year when I get EOC results, because I switched to doing all of this stuff online a year or so ago, and my EOC scores have fallen.

Evaluation Question 4: How have student learning and achievement in core academic subjects changed over time?

Student Learning Outcomes
Attendance - Analysis of attendance data showed overall high rates of attendance at each of the 1:1 pilot high schools and comparison schools for the past three years (see Table 8).

Table 8. Average Daily Attendance of 1:1 and comparison high school students for September 2006, 2007, and 2008.

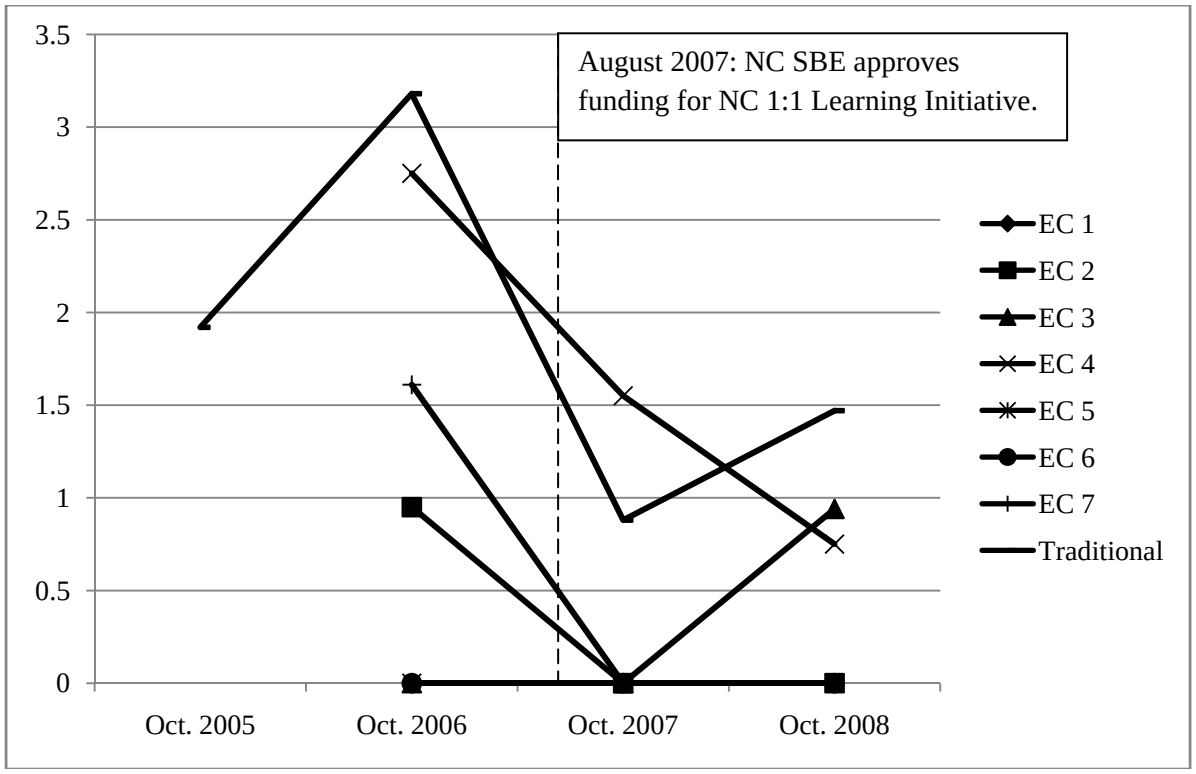
1:1 Pilot High Schools				Comparison High Schools			
School	Sept 2006	Sept 2007	Sept 2008	School	Sept 2006	Sept 2007	Sept 2008
ECHS1	99%	99%	98%	ECHS8	94%	99%	97%
ECHS2	99%	97%	98%	ECHS9	99%	98%	96%
ECHS3	96%	96%	95%	ECHS10	98%	97%	97%
ECHS4	98%	98%	97%	ECHS11	97%	98%	96%
ECHS5	99%	98%	99%	ECHS12	NA	96%	98%
ECHS6	98%	97%	98%	ECHS13	97%	99%	99%
ECHS7	95%	98%	98%	ECHS14	96%	98%	96%
Trad HS1	94%	95%	94%	Trad HS2	96%	96%	96%

Early Withdrawal

As shown in Figure 27, three 1:1 ECHS (1, 5, and 6) reported no withdrawals in October 2006, 2007, or 2008. Three 1:1 ECHS (2, 4, and 7) showed a small decrease in the percentage of withdrawals. One 1:1 ECHS (3) showed a slight increase in the number of withdrawals in October 2008. ECHS have a very low percentage of students who withdrawal from school, and any significant reduction due to the1:1 learning initiative is highly improbable.

The1:1 traditional high school experienced greater fluctuation in the percentage of student withdrawals in the month of October over the past four years. Analysis of early withdrawal data for the 1:1 pilot high schools revealed a reduction from 3.18% to 0.88% the first year the laptops were introduced. However, this trend began to rebound in the second year of implementation up to 1.47.

Figure 27. Percent of 1:1 ECHS and 1:1 traditional high school student population who withdrew from school without plans to return during October of 2005, 2006, 2007, and 2008.

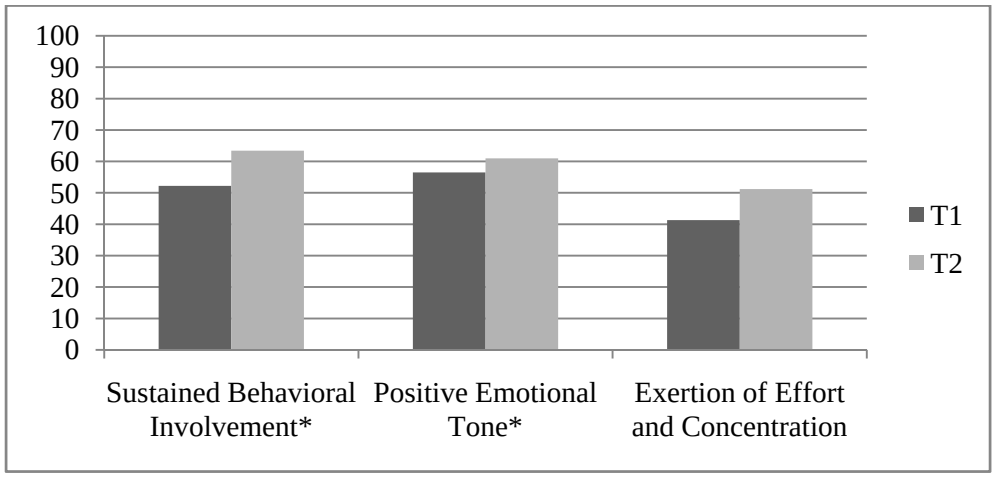


Note. Withdrawal data was not included for participating 1:1 ECHS prior to October 2006 because participating schools did not start the full Early College program until the 2006-2007 academic year.

Student Engagement

Survey results indicated that staff at the 1:1 schools believed the use of the laptops for teaching and learning increased student engagement. Data from the classroom visits supported those results (see Figure 28). There was an increase in the frequency of observations in which all the students in the classroom showed a positive indicator of engagement such as sustained behavioral involvement, positive emotional tone, and exertion of effort and concentration.

Figure 28. Percent of 1:1 high school courses observed in which 100% of students showed positive student engagement in April 2008 (T1, *n* = 46) and September 2008 (T2, *n* = 41).



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

In the open-ended survey responses, some students, teachers, and administrators, indicated that staying on task could be a significant challenge for some students in a 1:1 program. Teachers felt that the computer sometimes provides a distraction for some students and therefore constant monitoring of students is necessary, and several students agreed. They recognized that the computer offers so many options such as Internet browsing, chatting tools, and online gaming, which can easily provide distraction during class.

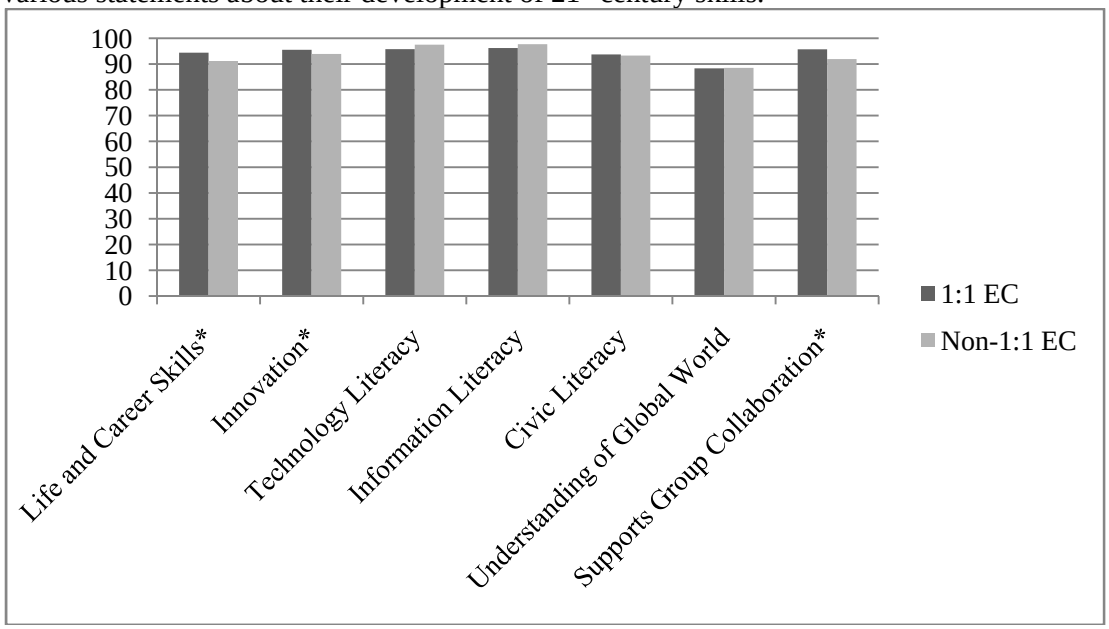
> *The laptop provides minor distraction if the teacher does not have the class actively engaged in an activity involving or specifically prohibiting laptop use. (Student, survey)*

Student 21st Century Skills

Generally, most ECHS students agreed that laptops supported their development of 21st century skills. A significant number of 1:1 ECHS students, compared to non-1:1 students, agreed with the following statements results (see Figure 29):

- Use of a laptop/computer at school is teaches me life and career skills (e.g., self-direction, social skills, responsibility).
- Use of a laptop/computer at school is teaches me learning and innovation skills (e.g., creativity, critical thinking, problem solving).
- Use of a laptop/computer at school supports group collaboration (e.g., peer groups, group projects, discussion boards, wikis, web conferencing).

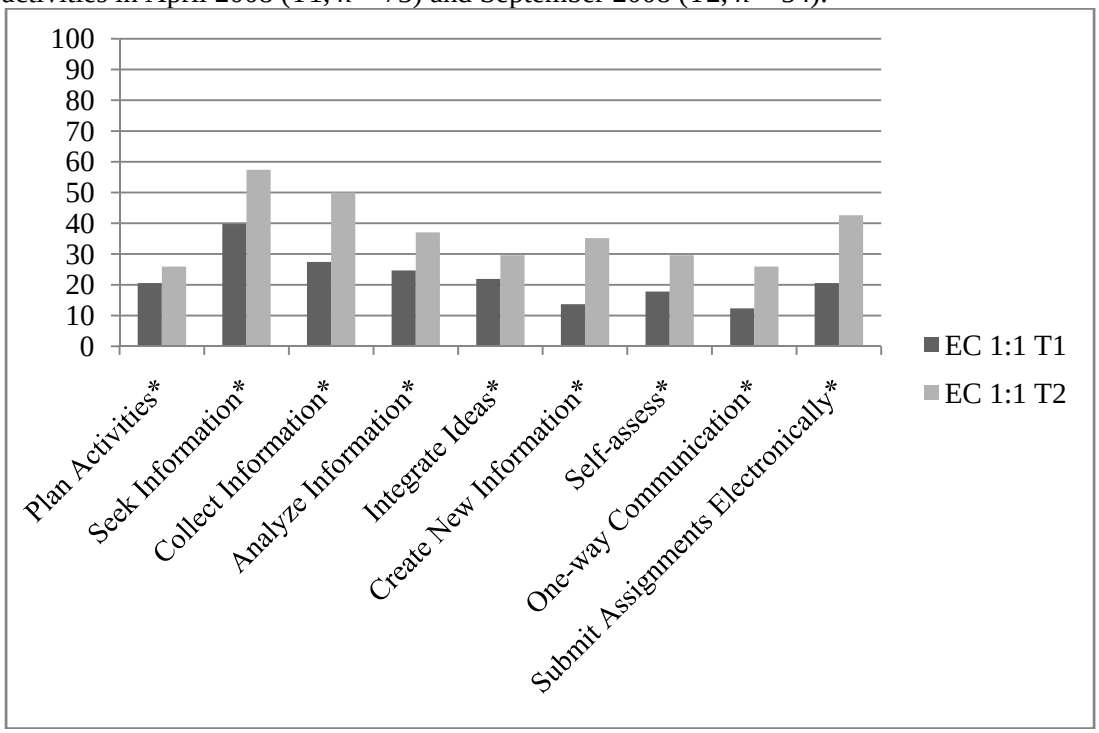
Figure 29. Percent of 1:1 (*n* = 760) and Non-1:1 (*n* = 576) ECHS students reporting agreement with various statements about their development of 21st century skills.



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

A higher number of 1:1 teachers reported that their students are using technology more frequently for 21st century learning this year compared to last school year (see Figure 30). Some of the most interesting findings were that students were using their laptops every day to analyze information, create new information, assess their learning, and submit assignments electronically. Students were still using laptops most often to seek information.

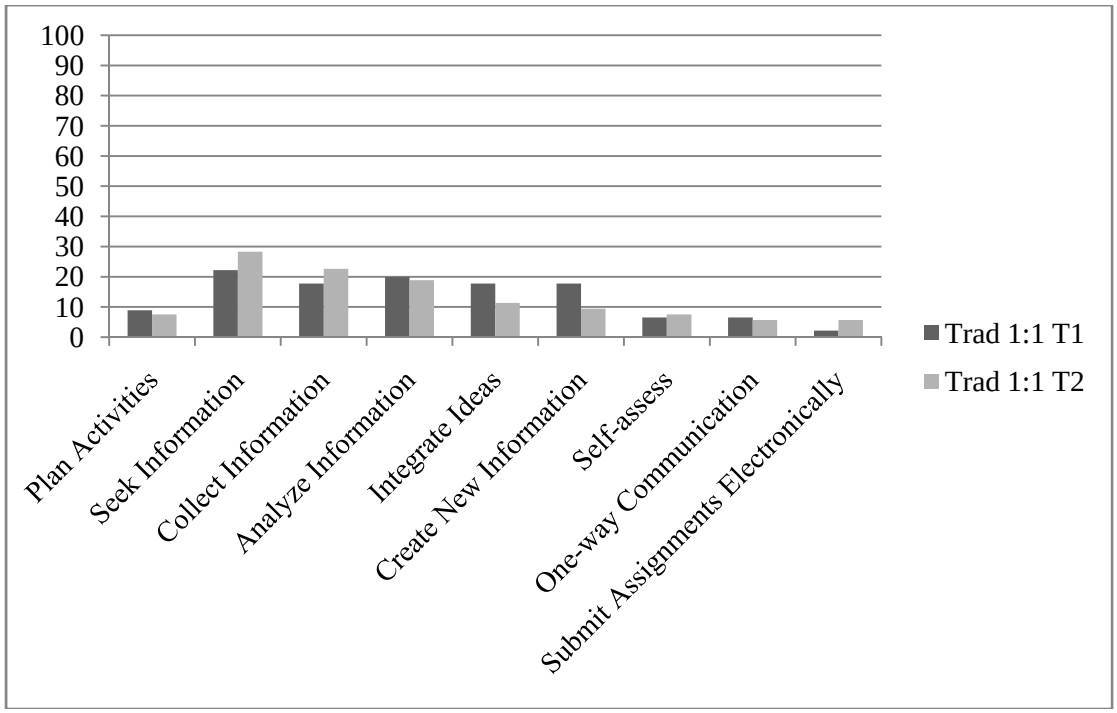
Figure 30. Percent of 1:1 ECHS teachers indicating students' daily use of technology for various activities in April 2008 (T1, *n* = 73) and September 2008 (T2, *n* = 54).



*Note. *This indicates that there was a statistically significant difference between groups ($p < .05$).*

Survey results for the traditional high school are mixed (see Figure 31). This academic year, compared to last year, the percentage of traditional 1:1 teachers who reported students' daily use of laptops increased for seeking and collecting information, assessing student learning, and submitting assignments electronically. However, compared to last year, the percentage of traditional 1:1 teachers who reported students' daily use of laptops decreased for analyzing, integrating, and creating new information. Students used the laptops most often to seek information.

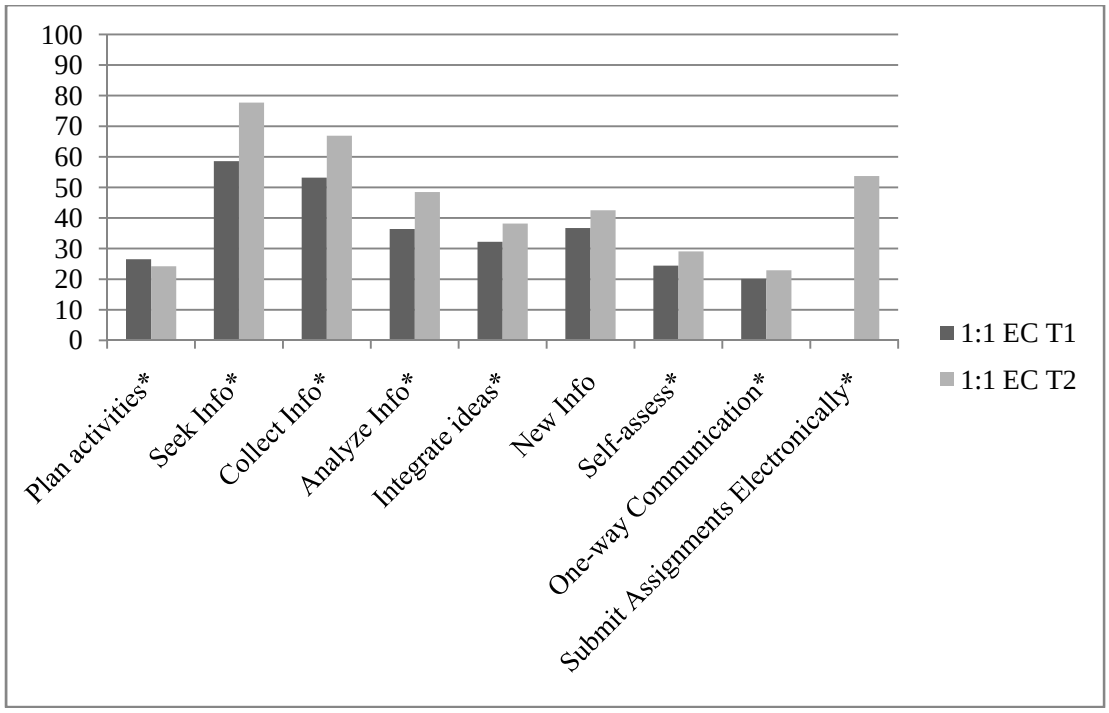
Figure 31. Percent of 1:1 traditional high school teachers indicating students' daily use of technology for various activities in April 2008 (T1, *n* = 46) and September 2008 (T2, *n* = 53).



*Note. *This indicates that there was a statistically significant difference between groups ($p < .05$).*

This year, significantly more 1:1 ECHS students reported using technology daily for various learning activities compared to last academic year (see Figure 32). Some of the most interesting findings were the increases in daily use of the laptops to analyze information, integrate new ideas with existing information, assess their learning, and submit assignments electronically. Students still used the laptops most often to seek information.

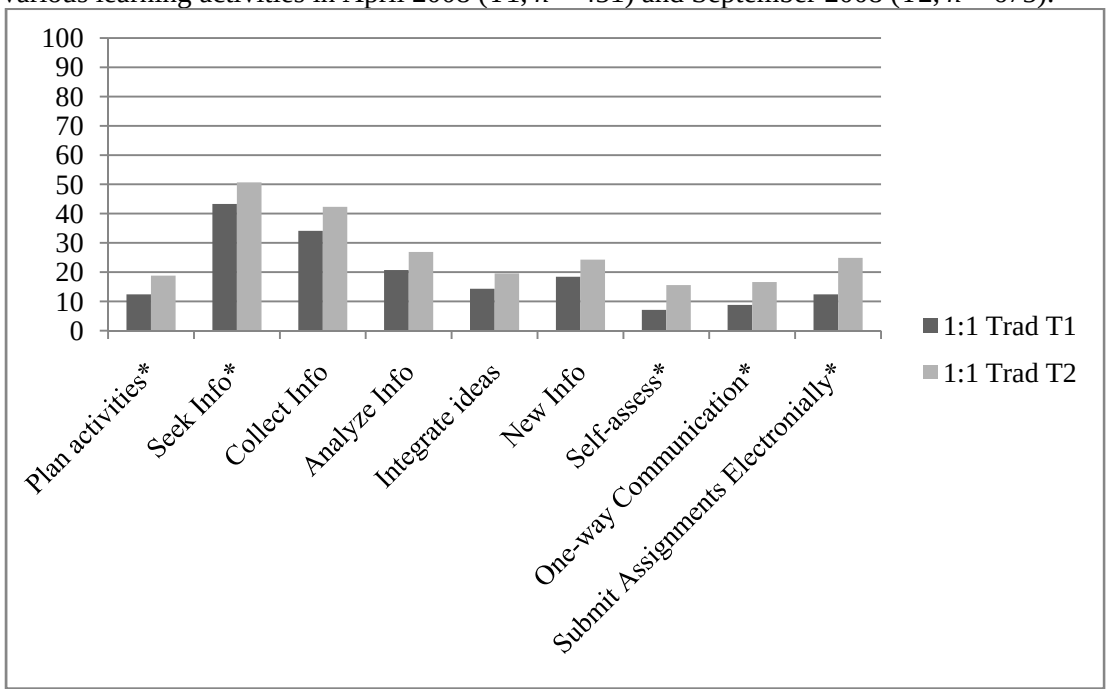
Figure 32. Percent of 1:1 ECHS students reporting daily use of laptops/computers in various learning activities in April 2008 (T1, $n = 544$) and September 2008 (T2, $n = 703$).



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

This year, significantly more 1:1 traditional high school students reported using technology daily for various learning activities compared to last academic year (see Figure 33). Some of the most interesting findings are the increases in daily use of the laptops to plan class activities, assess their learning, and submit assignments electronically. Students still used the laptops most often to seek information.

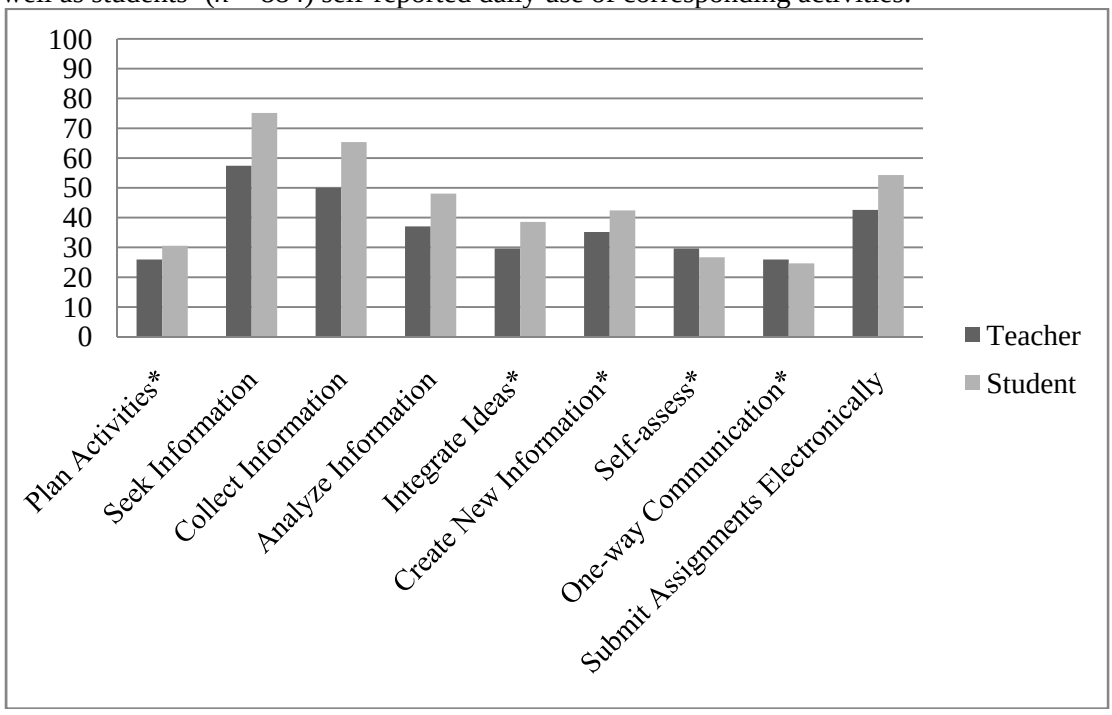
Figure 33. Percent of 1:1 traditional high school students reporting daily use of laptops/computers in various learning activities in April 2008 (T1, *n* = 451) and September 2008 (T2, *n* = 675).



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

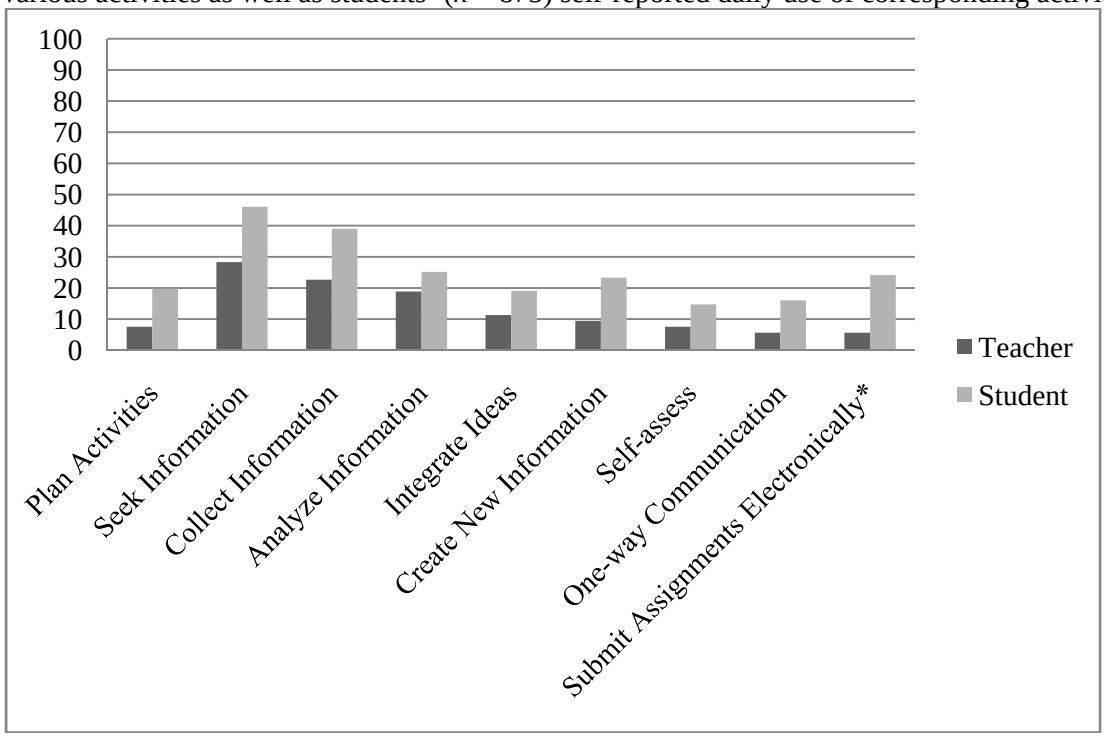
When student and teacher survey results were compared, students self-reported much higher frequencies of daily use than their teachers (see Figure 34-35).

Figure 34. Percent of 1:1 ECHS teachers (*n* = 54) indicating students' daily use of various activities as well as students' (*n* = 884) self-reported daily use of corresponding activities.



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

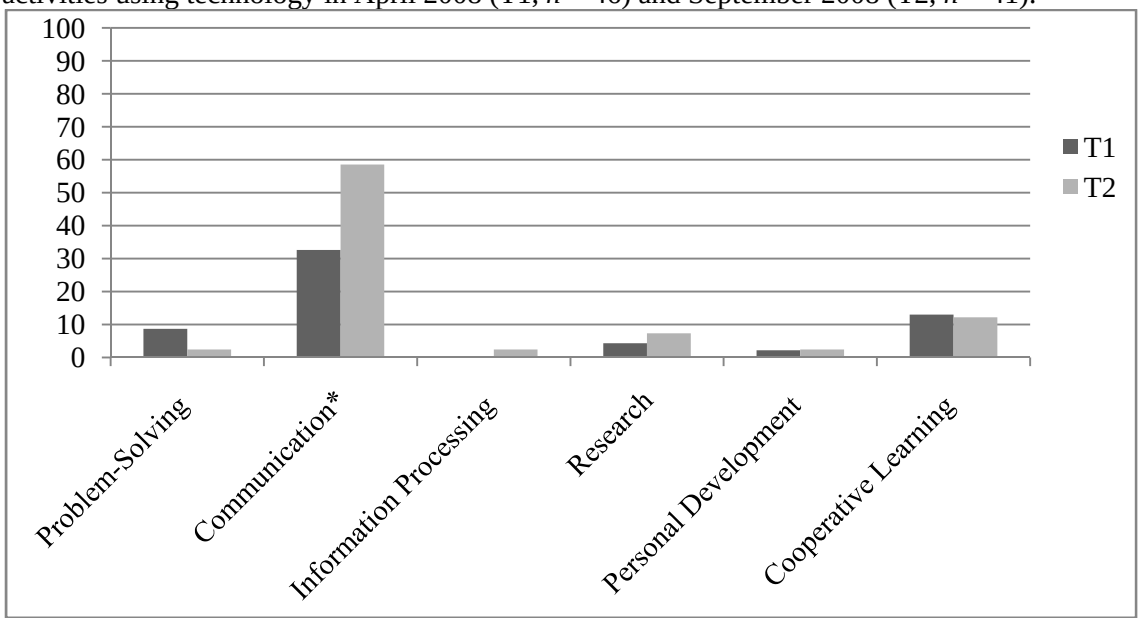
Figure 35. Percent of 1:1 traditional high school teachers (*n* = 53) indicating students' daily use of various activities as well as students' (*n* = 875) self-reported daily use of corresponding activities.



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

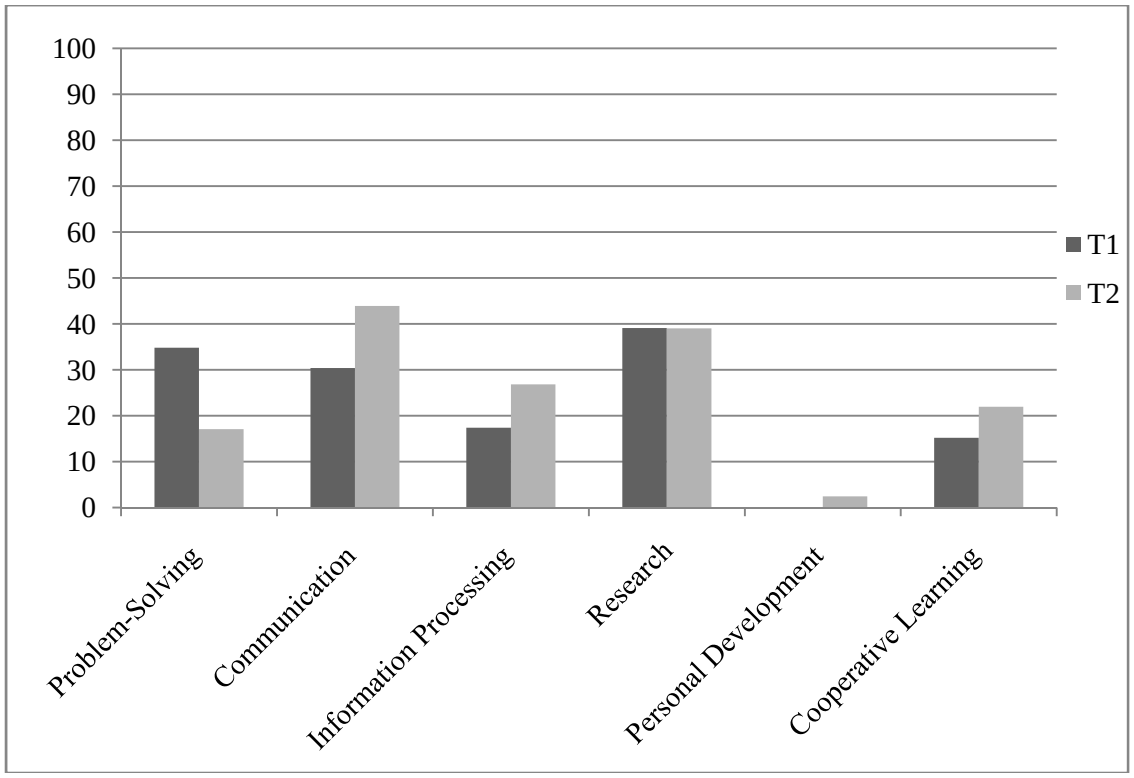
Survey results indicated that staff and students at the 1:1 schools believed the use of laptops for teaching and learning supported student development of 21st century learning skills. Data from the classroom visits supported those results (see Figure 36-37). There was an increase in the frequency of observations in which teachers and students were using the laptops for 21st century learning skills such as communication (e.g., document preparation, email, presentation, web development), information processing (e.g., data manipulation, writing, data tables), research (e.g., collecting information or data), and group productivity/cooperative learning (e.g., collaboration, planning, document sharing).

Figure 36. Percent of 1:1 high school courses observed in which teachers were performing various activities using technology in April 2008 (T1, *n* = 46) and September 2008 (T2, *n* = 41).



*Note. *This indicates that there was a statistically significant difference between groups (p < .05).*

Figure 37. Percent of 1:1 high school courses observed in which students were performing various activities using technology in April 2008 (T1, *n* = 46) and September 2008 (T2, *n* = 41).



*Note. *This indicates that there was a statistically significant difference between groups ($p < .05$).*

Challenges and Recommendations

The Friday Institute evaluation team conducted site visits that included focus groups with 74 teachers and administrators at the eight participating pilot 1:1 schools. The focus group questions addressed the requirements necessary for a successful 1:1 program in the areas of leadership, technical support, professional development experiences, lesson planning, and the use of technology for assessment, as well as challenges and lessons learned. Open-ended survey items asked 1:1 administrators, teachers, and students about the biggest challenges to using their laptop for teaching and learning. The major findings related to challenges and recommendations are summarized in the following section.

Professional Development

Participants provided positive feedback about their experiences in the 1:1-focused professional development sessions. For future sessions, participants suggested more opportunities to talk about *how* to implement 1:1 in their classrooms, opportunities to experiment with new classroom technologies and resources, and dividing sessions by technology skill level.

Additional recommendations related to specific topics that could be addressed through future professional development sessions are organized by type of participant:

- Classroom teachers: best practices on content-specific, classroom applications of digital resources most commonly used at the 1:1 pilot schools (see Appendix B); sharing lesson plans; managing student work (collecting, grading, returning, etc.); interactive white boards and laptops; laptops and classroom assessment; copyright; CIPA compliance; and graduation project
- School administrators (administrators, TFs): discipline issues; student tech team models; role of the TF; storing computers, computer bags, etc.; North Carolina Virtual Public School and Learn and Earn

Online opportunities for students; sustainability; the change process; leading an innovation; and building staff buy-in

- District staff (district technology directors, curriculum specialists, superintendents): description and purpose of a 1:1 project; determining school readiness for a 1:1 project; role of the principal and TF at a 1:1 school; district-level policies (blocked sites, deep freeze, teacher requests to unblock sites, saving student work, student email addresses); reimaging and storage over the summer; and FERPA and HIPPA compliance

Policy/procedures

One of the biggest lessons learned is that policies are actually set at the district level but have a big effect on the day-to-day activities of the teachers and students at 1:1 high schools.

- *Virus Protection* - The first lesson is the importance of routing everything through the district server, which prevents easy access to inappropriate materials on the Internet, and protects student and teacher machines from infection by most viruses.
- *Filtering* - Additionally, some filtering policies prevent the effective classroom use of Web 2.0 tools such as blogs and wikis. There should be a process in place for teachers to be able to request immediate access to websites and resources, so class time is not lost awaiting approval.
- *Saving Student Work* - Finally, districts need to consider putting new policies and server resources in place to provide a protected space for students to save work. Students saving work on pin drives or regularly backing up work to external hard drives have been the short-term solutions put in place by these smaller high schools. In one school, there was a reoccurring problem with laptops being infected with viruses because of student use of pin drives to store their work. Such efforts are not realistic long-term solutions for large-scale implementation of a 1:1 project.

Infrastructure/Tools

According to survey results and focus group data, viruses, laptop performance, battery power, laptop bags, and laptop storage pose some challenges in the 1:1 pilot programs.

- *Battery-Life* - Students identified battery power as a major challenge, noting that laptop batteries ran out of power very quickly. Classrooms need to be equipped with accessible electrical outlets so students can charge their laptops during class, and schools should consider purchasing additional batteries or longer-lasting batteries.
- *Storage* – One issue often brought up by students was the fact that in addition to their backpack (and purse, gym bag, lunch, etc.) they had to carry a separate bag for the laptop. Teachers and administrators expressed concern that a single bag for both laptop and books results in broken laptop screens because of the pressure on the screens from the weight of the books. One school has had some success with a very slim carrying case for the laptops because nothing else fits in the bag with the computer. Other schools have looked into the new hard-shells for laptops, but found them to be cost-prohibitive at the time. Another challenge identified was the lack of an area to safely store the laptops in the schools while they were not being used. One solution to this issue has been the placement of special shelves in common areas in some of the schools to provide a safe place for the laptops during lunch.
- *Student Access* - According to teachers and students, another challenge was that not all students actually had a laptop with them every day. Some students may not have a laptop because a) their family declined to receive a laptop by not paying the laptop fee, b) they forgot to bring their laptop to class when it was required, or c) their laptop was being repaired. This is particularly inconvenient for teachers since they then had to prepare two lesson plans, one for the group with laptops and one for the group without. Some teachers mentioned that while their school loaned some laptops to students, the number of "loaners" was not sufficient to cover all students who did not bring a computer to class. In fact, the traditional high school indicated that at one point, 150

students did not have access to their laptops due to technical issues. One district recommended having at least 10% additional laptops on hand to serve as "loaners" to teachers and students.

- *Tablets vs. Laptops* - 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. Two of the pilot schools selected tablets for their 1:1 learning initiative. Further information from these schools is needed related to the use of tablets versus laptops in schools.
- *Classroom Management and Monitoring Software* - To monitor students' activities on the laptops, many schools elected to use a monitoring software called DyKnow, but most users have found the software too cumbersome and plagued with deficiencies. This classroom management software package was simply not capable of meeting the needs of teachers in classrooms. Much was promised (but not delivered) related to the capacity of the software to handle the volume of laptops required for a school-wide 1:1 implementation. The software simply was not developed to monitor 30 different laptops at a time and up to 200 different laptops over the course of a single school day. Only one of the ECHS has found some success with this software, all of the other pilot schools either continue their struggle with it or have decided to move to a different software package such as Eduplatform or SchoolView. The lesson learned here is to make sure the technical support, professional development, server capacity, and overall package for classroom monitoring software can meet the capacity needs of the school. Additional information is needed related to whether schools/districts should even invest in monitoring software and best practices for use.

<u>Instructional Support Staff</u>

- *Role of the Technology Facilitator* - The major concern expressed by technology facilitators is their lack of time - spending too much time providing tech support and not enough time implementing technology into the curriculum. According to the IMPACT Model Guidelines, TFs should spend approximately 50% of their time on information access and delivery activities, 42% on supporting teaching and learning activities, and just 8% of their time on program administration (Public Schools of North Carolina, 2005). Training should be provided to school administrators, teachers, and TFs to explore these IMPACT guidelines and other best practices for the role of a TF in a successful school-level 1:1 initiative.
- *A New Model for the TF* - One school took a unique approach to finding a TF for their school. Classroom teachers in each of the four content areas volunteered to act as the collective TF for a small stipend. They are responsible for planning new lessons that incorporate the laptops, identifying and sharing content-specific digital tools and resources, minor troubleshooting, and facilitating a monthly technology meeting with the teachers. At present, this unique approach seems to be working for this particular school. The teachers report they appreciate having support available from a fellow classroom teacher in their content area. They also like having more than one person they can go to with questions and for help. Some experts are concerned this model is not sustainable. One of the major responsibilities of a TF is to model and co-teach with peers, but the four teachers acting as TF have their own classroom responsibilities, which can sometimes prevent them from focusing on assisting their peers.

<u>Technical Support Personnel</u>

- *District Technology Staff* -The perceived commitment from "central office" for a school's 1:1 project can have a great effect on the morale and level of buy-in by school staff for the project. A school feels supported by their district technology staff when there is a timely response to their requests for assistance and when they are part of the decision-making process. One current

challenge to supporting innovative work in schools is the continued reliance on legacy processes to request and obtain technical and instructional support, and to unblock websites or digital content. For example, in many pilot schools requests to unblock content went directly to technology directors instead of filtering through a tier support structure. One solution implemented by one of the pilot districts is a web-based, work-order system where a designee from each of the high schools fills out an online form that goes directly to the appropriate technician via their district-issued Blackberry. The technician can sometimes address the issue from the field or can forward the issue on to the district technology director if they are in need of assistance. Additionally, teachers expressed concern that there may be only one person, the district technology coordinator, making the majority of the decisions without any input from school staff. We suggest that a representative group of stakeholders including administrators, teachers, students, and central office staff chooses the policies and processes related to technology use in the classroom.

- *Technicians* - At every site visit to the 1:1 schools, staff were adamant about the importance of having a technician on campus to support a successful 1:1 project. Recommendations included one full-time technician for a smaller high school (less than 1000 students) and two full-time technicians for larger high schools (more than 1000 students) implementing a 1:1 project. School staff also recommended that technicians who are hired to work in schools need to be able to work well with the teachers and students. The technicians need to have some understanding and respect for the work of schools – focused on helping students learn.

<u>Sustainability</u>

- *School Personnel* - The biggest and most common concern expressed by the staff at the 1:1 pilot schools is continued support of the TF and technician once the 1:1 grant funds are exhausted. Repeatedly the staff indicated that this project could not be done without a full-time, on-site TF and technician at their school. Districts across the state have committed to funding school-level technology personnel. A major recommendation includes working with these districts to find ways to use local funds to continue to support school-based instructional and technical support staff.
- *Unexpected Costs* - Extra batteries, software site licenses, print toner cartridges, print paper, online textbook resources, replacement chargers, and replacing worn laptop carrying bags were not figured into Total Cost of Ownership (TCO) for the school-level laptop projects. These costs are soon going to be a major issue for sustaining the 1:1 project.
- *Engaging Stakeholders* - Schools and school systems cannot and should not do a 1:1 learning initiative in isolation. It is important for schools to engage representatives from the school, district, college partners, business partners, and the community to help inform planning; guide decision-making; provide support to the students, teachers, staff and administrators; and support the sustainability of the 1:1 initiative. Private partnerships and local support can help obtain funds for hardware and software needs, as well as commitment from community leaders. State support state is needed for personnel and infrastructure resources that are necessary for the success of a 1:1 learning project, such as NC Connectivity Project, NC Virtual Public School, Learn and Earn Online, NC WiseOwl, and NC Learning Objects Repository. These state-funded resources are an investment in equity and quality information for all students and teachers in the state.

<u>Leadership</u>

- *Principal Turnover* - Since the beginning of the 1:1 initiative, two principals have left the pilot EC high schools and one assistant principal left the traditional high school. Administrator turnover is always a concern for sustaining innovative practices in schools (Hargreaves and Fink, 2006), and a 1:1 project is no exception. In fact, it may be even more disconcerting for school staff when a principal leaves in the middle of their efforts to implement a 1:1 project because it

requires a major change to every aspect of how the school does business – teaching changes, learning changes, planning for teaching changes, and processes for managing the students and teachers change. Teachers need consistency in their leaders as they make changes to every other aspect of their work.

- *Teacher Buy-In* – Some of the 1:1 pilot schools paid a great deal of attention to teacher buy-in. Research has shown that the successful adoption of any complex innovative educational initiative requires careful consideration and commitment to developing and exploring the purpose and process of the initiative with school stakeholders (Fullan, 2003). Teachers, parents, students, administrators, and the community need to work together to come to consensus on the plan for implementation of the new initiative and the purpose for making changes to the school.
- *1:1 Leadership Framework* - Key characteristics emerged from the conversations with teachers at the 1:1 pilot schools for school leaders to successfully support a new 1:1 laptop project. These findings support existing research on leadership for innovations in schools, but speak specifically to the experiences of these NC teachers in our NC 1:1 pilot schools. Principals at each of the pilot schools should consider their role in their 1:1 project as it relates to each of the following recommendations:

  Support Professional Development
  - Encourage faculty to attend professional development.
  - Provide training opportunities specific to teacher needs.
  - Respond to requests for assistance.
  - Monitor teacher integration during classroom visits.

  Have Reasonable Expectations for Integration
  - Understand that incorporating technology may take more time for some people while others can act as technology leaders.
  - Encourage faculty to focus on a few things at a time.
  - Allow time to experiment, frame problems as learning opportunities.
  - Do not mandate daily technology use.

  Model Technology Use
  - Use a laptop rather than desktop.
  - Ask for lesson plans to be emailed or sent to a drop box rather than on paper.
  - Use technology for presentations.
  - Use technology to facilitate communication with school staff and the community.

  Provide Resources and Support
  - Secure or purchase needed resources (hardware, software, tech support, access to websites).
  - Provide encouragement and support by visiting classrooms, helping with curriculum integration.
  - Arrange schedules to allow for common planning time and group reflection.

  Communicate
  - Articulate a vision, exhibit excitement and buy-in.
  - Provide a time for feedback and team problem solving.
  - Include others in decision making (e.g., regarding which software to purchase).
  - Provide opportunities to showcase student work with stakeholders.

Summary

The pilot schools continue to build on the critical components of an effective 1:1 computing environment. Adjustments were made to school infrastructures, policies, and staff resources to meet new teaching and learning needs; technology facilitators continued to play a critical role in helping teachers effectively

integrate these new technologies into the classroom; teachers received professional development in important areas and are beginning to make significant changes in their instructional practices; and, students are adapting to and benefiting from the use of laptops in their schools.

With this progress, many lessons have been learned that can inform future work at the 1:1 pilot schools and other schools that may implement 1:1 environments in the future. The largest overall lesson is that *it takes administrators, teachers, and students time to adjust to the significant, systemic changes enabled by the introduction of a 1:1 learning environment.*

The key lessons identified from the year one evaluation still apply during the first semester of year two:

- *Ongoing professional development is imperative.* Professional development needs to be continuous, designed to directly meet the needs of teachers, and customized to the participants' level of expertise/experience as they become more proficient at using the technology to enhance teaching and learning. Additionally, teachers need opportunities to collaborate and share successful lessons for a 1:1 classroom environment.
- *Defining the appropriate balance between student safety, acceptable use, and access to web-based resources is difficult but important.* While very complex, it is also important to find ways to meet student safety needs, set acceptable use requirements, and avoid viruses, spyware, and hacking, without overly limiting what teachers and students can access and do with the computers. To the extent students are prevented from accessing important resources, 1:1 environments will not achieve full potential. Schools need more support in addressing the requirements of the Children's Internet Protection Act (CIPA) while providing access to valuable education resources. Models of how to create the right balance need to be explored.
- *Classroom management strategies and tools require further investigation.* Teachers continue to look for guidance on issues related to management of 1:1 classes such as student monitoring systems, and collecting and returning student work. Further attention needs to be directed to classroom management strategies and how they can be best supported with technological tools, such as effective monitoring software; centrally-located server resources to provide a protected space for students to save work; and, centrally-supported course management software such as Moodle or BlackBoard.
- *Skilled Technology Facilitators play a significant role in the success of technology integration into classroom practices.* The important role of onsite technology facilitators to help teachers and students use the technology to improve learning, established in prior research, was once again confirmed.
- *Careful short- and long-term budget planning is important to the success and sustainability of the 1:1 initiative.* Many resources are needed to support the use of the computers, ranging from displays to printers to specialized equipment for science experiments to content-specific software. Budgets need to be planned to include these resources and their immediate upkeep and support, as well as long-term costs of replacing hardware and supplies (e.g., expensive projector bulbs, ongoing software licenses, replacement of obsolete, damaged laptops).
- *Attending to the details makes all the difference.* Having ways to store and carry laptops safely, plug-in computers and charge batteries, make printer supplies available, establish email class lists for teachers, backup teacher and student machines, respond promptly to technical problems, and address the many other day-to-day needs of making the use of 1:1 laptops go smoothly in classrooms is essential for successful use of the technology to improve student learning.
- *Broad-based engagement of key stakeholders will facilitate sustainability of the 1:1 initiative.* It is important for schools to engage representatives from the school, district, college partners, business partners, and the community to help inform planning; guide decision-making; provide support to the students, teachers, staff and administrators; and support the sustainability of the 1:1 initiative.

In addition to the continued focus on the lessons identified during year one, the year two evaluation report also highlighted the importance of effective leadership for the successful implementation of a 1:1 learning environment.

- *Consistent, supportive, distributed leadership promotes adoption and buy-in from teachers and students for the 1:1 learning innovation.* Key characteristics emerged from the conversations with teachers at the 1:1 pilot schools for school leaders to successfully support a new 1:1 laptop project including supporting teacher professional growth, setting reasonable expectations for effective technology integration, modeling technology use, readily addressing instructional and technical needs, and communicating commitment to the purpose of 1:1 learning initiative.

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Appendix A
Surveys and Focus Groups

1. INFORMED CONSENT FORM for RESEARCH

INFORMED CONSENT FORM for RESEARCH

Title of Study: Study of Teaching and Learning in 1:1 Environment in Early College High Schools

Principal Investigators: Jenifer O. Corn (jocorn@ncsu.edu) and Jason Osborne (jason_osborne@ncsu.edu)

We are conducting a research study to examine the impact educational technology has on student learning.

INFORMATION. In this study, you will be asked to: complete an online survey and allow an observer to view your classrooms. You will need approximately 20 minutes to complete the online surveys.

RISKS. No foreseeable risks or discomforts are expected from your participation in this study. Survey and observation data will be summarized and no data will be identifiable by your name.

BENEFITS. Findings from this will be to identify the potential benefits and advantages of technology in the classroom. Also by identifying best practices, supportive materials, professional development activities, and tools can be developed to further support teaching and learning via the use of technology.

CONFIDENTIALITY. The information in the study records will be kept strictly confidential. Survey and observation data will be stored securely in password-protected Web forms. No reference will be made in oral or written reports which could link you to the study.

CONTACT. If you have questions at any time about the study or the procedures, you may contact the researchers, Lori Holcomb at 602 Poe Hall, North Carolina State University, Raleigh, 27695, or (919-515-1772). If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Dr. Matthew Zingraff, Chair of the NCSU IRB for the Use of Human Subjects in Research Committee, Box 7514, NCSU Campus (919/513-1834) or Mr. Matthew Ronning, Assistant Vice Chancellor, Research Administration, Box 7514, NCSU Campus (919/513-2148).

PARTICIPATION. Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed your data will be returned to you or destroyed at your request.

1. CONSENT: "I have read and understand the above information. My decision to participate is as follows:"

- ◯ Yes, I agree to participate with the understanding that I may withdraw at any time.
- ◯ No, I decline to participate.

2. Demographics

2. My role is:

3. School:

3. Demographics 2

4. What resources do you have in your office (check all that apply):

- [ ] Desktop
- [ ] Laptop
- [ ] Neither

4. More Demo

5. I have been a principal / tech facilitator / guidance counselor / college liason for ____ years. (Please enter the closest whole number, e.g. 8 or 23.)

6. Highest Level of Education Completed Relevant to Education: (Please check one)

- ◯ Bachelor's Degree
- ◯ Bachelor's Degree plus credits
- ◯ Certificate of Advanced Study
- ◯ Master's Degree
- ◯ Master's Degree plus credits
- ◯ Doctorate
- ◯ I am a lateral entry teacher

5. Laptop use

7. How would you rate your overall skill level in the use of a computer? (Please check one)

- ◯ Novice: I can turn the computer on, but I don't really know how to use many programs
- ◯ Beginner: I am able to use some basic functions such as word processing and the Internet
- ◯ Intermediate: I am able to use many of the programs, but I don't have a lot of experience with them
- ◯ Advanced: I am able to use many of the programs and have had a great deal of experience with them
- ◯ Expert: I am able to teach others how to use some programs and I am able to fix minor problems with my computer when they happen.

8. Do you have a computer at home?

- ◯ Yes
- ◯ No

6. internet use at home

9. How do you use a computer for work-related purposes when you take it home? (Please check all that apply)

- [ ] Locating Resources on the Internet
- [ ] Instant Messaging (Students, Parents, Colleagues, Experts)
- [ ] Emailing (Students, Parents, Colleagues, Experts)
- [ ] Participating in Online Professional Development/Courses
- [ ] Facilitating Online Instruction
- [ ] Other (please explain)

10. Are you able to connect to the Internet from home?

- ◯ Yes
- ◯ No

7. internet provider type

11. My internet service provider is:

- ◯ Dial-up
- ◯ Cable/DSL
- ◯ Mobile Wireless

8. Technology Infrastructure at School

Technology Infrastructure at School

12. Please indicate your degree of agreement with the following statements:

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Diagree
The technology infrastructure at my school is adequate to support my computer use.	◯	◯	◯	◯	◯
Software available on my computer is adequate to meet my educational needs.	◯	◯	◯	◯	◯
The administrator(s) in my school actively encourages teachers to pursue professional development activities geared towards implementing laptops into the curriculum.	◯	◯	◯	◯	◯
The 1:1 Collaborative (NCDPI/Friday Institute/NCSU) has assisted me in locating information and answering my questions regarding the laptop program.	◯	◯	◯	◯	◯
New Schools Project has assisted me in locating information and answering my questions regarding the laptop program.	◯	◯	◯	◯	◯
The response time of technical support staff at my school to my technology questions or problems is timely.	◯	◯	◯	◯	◯
My school provided the necessary support to enable me to feel prepared to use a computer for my professional development needs.	◯	◯	◯	◯	◯

13. Have your students been instructed on what will happen if they misuse their laptops?

- ◯ Yes
- ◯ No

14. Have you had to take away a student's laptop taken away for more than a class period because of misuse?

- ◯ Yes
- ◯ No

9. Laptop misuse

15. Why was the laptop taken away?

16. For how many days was it taken away?

10. Technology Attitude/Beliefs; Teaching and Laptops

TEACHING AND TECHNOLOGY

17. Please indicate your degree of agreement with the following statements:

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
I feel teaching benefits from laptop use.	◯	◯	◯	◯	◯
Teachers should limit the use of the Internet to protect students from inappropriate materials.	◯	◯	◯	◯	◯
Teachers are better able to individualize curriculum to fit student needs as a result of having the laptops.	◯	◯	◯	◯	◯
Having a laptop has helped teachers to access more up-to-date information for students.	◯	◯	◯	◯	◯
When teachers are using the laptops in class there is less classroom management that needs to take place.	◯	◯	◯	◯	◯
Teachers feel enthusiastic about the laptop program.	◯	◯	◯	◯	◯
Using the laptops has increased teachers' work load.	◯	◯	◯	◯	◯
Teachers are better able to access diverse teaching materials and resources for students when using the laptop.	◯	◯	◯	◯	◯
The number of projectors in my school makes it difficult for teachers to teach lessons to the entire class.	◯	◯	◯	◯	◯
Having laptops in the classroom has increased teachers' expectations for students' work.	◯	◯	◯	◯	◯
The presence of the laptops in classrooms is disruptive to teaching.	◯	◯	◯	◯	◯
Teachers are able to cover more material in class when we use the laptops.	◯	◯	◯	◯	◯
Teachers would like to have access to more direct technical support for laptops in my classroom during the day.	◯	◯	◯	◯	◯
Use of the laptops helps teachers to create instructional materials which better meet the NC Standard Course of Study.	◯	◯	◯	◯	◯
Having a laptop has reduced the amount of paper based supplies that is needed in the classroom (ex. newspapers, textbooks, etc.).	◯	◯	◯	◯	◯
Given laptop problems such as freezing or an inability to access the Internet, teachers have to create backup lesson plans for everything.	◯	◯	◯	◯	◯
Teachers are able to explore topics in greater depth with students when they use the laptops.	◯	◯	◯	◯	◯
It is difficult for teachers to monitor appropriate Internet use in the classroom.	◯	◯	◯	◯	◯

11. Technology Attitude/Beliefs; Learning and Laptops

LEARNING AND LAPTOPS

18. Please indicate your degree of agreement with the following statements:

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
Students are better able to meet learning objectives using the laptops.	◯	◯	◯	◯	◯
Students are more actively involved in their own learning when teachers the laptops.	◯	◯	◯	◯	◯
Use of the laptops has resulted in more open communication between students and teachers in the classroom.	◯	◯	◯	◯	◯
Students do more work when they are using their laptops.	◯	◯	◯	◯	◯
Students are more apt to revise/edit their work when it is done on the laptops.	◯	◯	◯	◯	◯
Students are careful with their laptops.	◯	◯	◯	◯	◯
Laptops allow students to get their work done more quickly.	◯	◯	◯	◯	◯
The quality of students' work increases when they use the laptops.	◯	◯	◯	◯	◯
Students are better able to understand when they use the laptops.	◯	◯	◯	◯	◯
Students' inability to keyboard (type) has interfered with use of the laptop.	◯	◯	◯	◯	◯
Students are more organized when they use their laptops.	◯	◯	◯	◯	◯
A lack of formal training for students in computer use has prevented teachers from implementing the laptops fully.	◯	◯	◯	◯	◯
Students are more engaged when teachers are using the laptops.	◯	◯	◯	◯	◯

12. Technology Knowledge/Skills

19. On average, how often did you do the following using a computer:

	Daily	Weekly	Monthly	Once Per Semester	Never	Don't know
Manage student information	◯	◯	◯	◯	◯	◯
Communicate with other educators inside and outside the school	◯	◯	◯	◯	◯	◯
Communicate with parents and students/ use email and/or other forms of electronic communication to facilitate communication with parents and guardians	◯	◯	◯	◯	◯	◯
Use technology tools to collect student performance data	◯	◯	◯	◯	◯	◯
Refer to the ISTE National Educational Technology Standards for Students when planning lessons that integrate software and Web-based resources	◯	◯	◯	◯	◯	◯

20. Please indicate your knowledge with the following technologies using a computer:

	I do not know if I have done this	I have never done this	I can do this with some help	I can do this by myself	I can show someone how to do this
Use e-mail	◯	◯	◯	◯	◯
Search the Internet to find information	◯	◯	◯	◯	◯
Create a Web page	◯	◯	◯	◯	◯
Create and maintain a database	◯	◯	◯	◯	◯
Create a spreadsheet	◯	◯	◯	◯	◯
Create graphs and charts	◯	◯	◯	◯	◯
Use a digital still camera	◯	◯	◯	◯	◯
Import and edit still digital images	◯	◯	◯	◯	◯
Use a digital video camera	◯	◯	◯	◯	◯
Import and edit digital video on a computer	◯	◯	◯	◯	◯
Create graphic designs	◯	◯	◯	◯	◯
Record your voice and other sounds	◯	◯	◯	◯	◯
Create a multimedia presentation	◯	◯	◯	◯	◯
Use a scanner	◯	◯	◯	◯	◯
Create and maintain a blog	◯	◯	◯	◯	◯
Subscribe to and download a podcast and/or RSS feed	◯	◯	◯	◯	◯
Create and post a podcast	◯	◯	◯	◯	◯
Contribute to a collaborative Wiki	◯	◯	◯	◯	◯
Utilize a GPS receiver for learning activities	◯	◯	◯	◯	◯

13. Teaching Philosophies

21. Different teachers have described very different teaching philosophies to researchers. Please indicate your level of agreement with each statement.

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
"I mainly see my role as a facilitator. I try to provide opportunities and resources for my students to discover or construct concepts for themselves." [As opposed to: "That's all nice, but students really won't learn the subject unless you go over the material in a structured way. It's my job to explain, to show students how to do the work, and to assign specific practice."]	◯	◯	◯	◯	◯
"The most important part of instruction is that it encourage sense-making or thinking among students. Content is secondary." [As opposed to: "The most important part of instruction is the content of the curriculum. That content is the community's judgment about what children need to be able to know and do."	◯	◯	◯	◯	◯
"It is better for students to master a few complex ideas and skills well, and to learn what deep understanding is all about, even if the breadth of their knowledge is limited until they are older." [As opposed to: It is useful for students to become familiar with many different ideas and skills even if their understanding, for now, is limited. Later, in college, perhaps, they will learn these things in more detail."]	◯	◯	◯	◯	◯
"It is critical for students to become interested in doing academic work - interest and effort are more important than the particular subject-matter they are working on." [As opposed to: "While student motivation is certainly useful, it should not drive what students study. It is more important that students learn the history, science, math and language skills in their textbooks."]	◯	◯	◯	◯	◯
"It is a good idea to have all sorts of activities going on in the classroom. Some students might produce a scene from a play they read. Others might create a miniature version of the set. It's hard to get the logistics right, but the successes are so much more important than the failures." [As opposed to: "It's more practical to give the whole class the same assignment, one that has clear directions, and one that can be done in short intervals that match students' attention spans and the daily class schedule."	◯	◯	◯	◯	◯

14. Openended

22. Please list the 3-4 software tools you use most frequently with your computer for your professional needs:

1 _____

2 _____

3 _____

4 _____

23. What new technologies do you think are inadequate and/or needed at your school (hardware or software)?

_____

24. Please describe 2-3 of the biggest barriers/challenges teachers face in using their laptop for planning and instruction.

25. What additional support could your school provide to facilitate teachers' use of laptops for planning and instruction?

26. Please use the space below to provide any further comments you wish to share.

15. Final Demo

27. What is your gender?

- ◯ Male
- ◯ Female

28. Identify myself as: (Please check one)

- ◯ American Indian/Alaska Native
- ◯ Asian
- ◯ Black/African American
- ◯ Native Hawaiian/Other Pacific Islander
- ◯ White/Caucasian
- ◯ Hispanic/Latino
- ◯ Multiracial
- ◯ Other:

16. Thank you page

Thank you for your participation in this study!

Please click the "Done" button to ensure your responses are submitted.

1. INFORMED CONSENT FORM for RESEARCH

INFORMED CONSENT FORM for RESEARCH

Title of Study: Study of Teaching and Learning in 1:1 Environment in Early College High Schools

Principal Investigators: Jenifer O. Corn (jocorn@ncsu.edu) and Jason Osborne (jason_osborne@ncsu.edu)

We are conducting a research study to examine the impact educational technology has on student learning. INFORMATION. In this study, you will be asked to: complete an online survey and allow an observer to view your classrooms. You will need approximately 20 minutes to complete the online surveys.

RISKS. No foreseeable risks or discomforts are expected from your participation in this study. Survey and observation data will be summarized and no data will be identifiable by your name.

BENEFITS. Findings from this will be to identify the potential benefits and advantages of technology in the classroom. Also by identifying best practices, supportive materials, professional development activities, and tools can be developed to further support teaching and learning via the use of technology.

CONFIDENTIALITY. The information in the study records will be kept strictly confidential. Survey and observation data will be stored securely in password-protected Web forms. No reference will be made in oral or written reports which could link you to the study.

CONTACT. If you have questions at any time about the study or the procedures, you may contact the researchers, Lori Holcomb at 602 Poe Hall, North Carolina State University, Raleigh, 27695, or (919-515-1772). If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Dr. Matthew Zingraff, Chair of the NCSU IRB for the Use of Human Subjects in Research Committee, Box 7514, NCSU Campus (919/513-1834) or Mr. Matthew Ronning, Assistant Vice Chancellor, Research Administration, Box 7514, NCSU Campus (919/513-2148).

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1. CONSENT: "I have read and understand the above information. My decision to participate is as follows:"

- ◯ Yes, I agree to participate with the understanding that I may withdraw at any time.
- ◯ No, I decline to participate.

2. Demographics

2. School:

3. Did you have a computer in your classroom for your use in planning or instruction?

- ◯ Yes
- ◯ No

3. Demographics 2

4. What resources did you have in your classroom for planning/instruction (check all that apply):

- [ ] Desktop
- [ ] Laptop

4. Demo 3

5. What is the primary content area you teach? (Please select one)

- ◯ Language Arts
- ◯ Math/Algebra
- ◯ Science
- ◯ Social Studies
- ◯ Foreign Language
- ◯ Elective (Arts, Music, etc.)
- ◯ Other (please specify):

6. Are you certified/licensed in the area you are teaching?

- ◯ Yes
- ◯ No

5. Demo 4

7. What area are you certified/licenced to teach in?

6. More Demo

8. Do you hold National Board Certification?

- ◯ Yes
- ◯ No

9. What grade level do you teach? (Select all that apply)

- [ ] 9
- [ ] 10
- [ ] 11
- [ ] 12
- [ ] 13

10. I have been a teacher for ____ years. (Please enter the closest whole number, e.g. 8 or 23.)

11. Highest Level of Education Completed Relevant to Education: (Please check one)

- ◯ Bachelor's Degree
- ◯ Bachelor's Degree plus credits
- ◯ Certificate of Advanced Study
- ◯ Master's Degree
- ◯ Master's Degree plus credits
- ◯ Doctorate
- ◯ I am a lateral entry teacher

7. Laptop use

12. How would you rate your overall skill level in the use of the laptop? (Please check one)

- ◯ Novice: I can turn the computer on, but I don't really know how to use many programs
- ◯ Beginner: I am able to use some basic functions such as word processing and the Internet
- ◯ Intermediate: I am able to use many of the programs, but I don't have a lot of experience with them
- ◯ Advanced: I am able to use many of the programs and have had a great deal of experience with them
- ◯ Expert: I am able to teach others how to use some programs and I am able to fix minor problems with my computer when they happen.

13. Other than your work laptop, do you have a computer at home?

- ◯ Yes
- ◯ No

14. Are you able to connect to the Internet from home?

- ◯ Yes
- ◯ No

8. internet provider type

15. Are you able to connect to the school server from home?

- ◯ Yes
- ◯ No

16. My internet service provider is:

- ◯ Dial-up
- ◯ Cable/DSL
- ◯ Mobile Wireless

9. Laptop use 2

17. How do you use your laptop for work-related purposes when you take it home? (Please check all that apply)

- ☐ Grading Student Work
- ☐ Planning Instruction
- ☐ Locating Resources on the Internet
- ☐ Instant Messaging (Students, Parents, Colleagues, Experts)
- ☐ Emailing (Students, Parents, Colleagues, Experts)
- ☐ Participating in Online Professional Development/Courses
- ☐ Facilitating Online Instruction (creating an online presence on the web)
- ☐ Other (please specify)

18. This is my first year at this school (Fall 2008).

- ◯ Yes
- ◯ No

10. Leadership Evaluation

For all questions on this page, please think about your experience over the past year.

19. Who are the individuals (with title) who are the driving forces behind your school's 1:1 Initiative? Please provide up to 3 individuals. [For example: 1. Linda Smith (Assistant Principal)]

1.
2.
3.

20.

Title

1.
2.
3.

21. My principal has been an effective leader of the 1:1 initiative.

- ◯ Strongly Agree
- ◯ Agree
- ◯ Neither Agree nor Disagree
- ◯ Disagree
- ◯ Strongly Disagree

22. Please provide an example that demonstrates why you chose the response above.

23. My technology facilitator has been an effective leader of the 1:1 initiative.

- ◯ Strongly Agree
- ◯ Agree
- ◯ Neither Agree nor Disagree
- ◯ Disagree
- ◯ Strongly Disagree

24. Please provide an example that demonstrates why you chose the response above.

11. Technology Infrastructure at School

Technology Infrastructure at School

25. Please indicate your degree of agreement with the following statements:

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Diagree
The technology infrastructure at my school is adequate to support my laptop use.	◯	◯	◯	◯	◯
Software available on my laptop is adequate to meet my educational needs.	◯	◯	◯	◯	◯
The administrator(s) in my school actively encourages teachers to pursue professional development activities geared towards implementing laptops into the curriculum.	◯	◯	◯	◯	◯
The administrator(s) in my school actively encourages me to integrate the laptops into my curriculum.	◯	◯	◯	◯	◯
The 1:1 Collaborative (NCDPI/Friday Institute/NCSU) has assisted me in locating information and answering my questions regarding the laptop program.	◯	◯	◯	◯	◯
New Schools Project has assisted me in locating information and answering my questions regarding the laptop program.	◯	◯	◯	◯	◯
The Technology Facilitator in my school has assisted me in finding ways to integrate the laptops within my curriculum.	◯	◯	◯	◯	◯
The response time of technical support staff at my school to my technology questions or problems is timely.	◯	◯	◯	◯	◯
My school provided the necessary support to enable me to feel prepared to use my laptop for planning and instruction.	◯	◯	◯	◯	◯

26. Have your students been instructed on what will happen if they violate the acceptable use policy for their laptops?

◯ Yes

◯ No

27. Have you had to take away a student's laptop for more than a class period because of misuse?

◯ Yes

◯ No

12. student misuse

28. Why was the student's laptop taken away?

29. For how many days was the laptop taken away?

13. Technology Attitude/Beliefs; Teaching and Laptops

30. Please indicate your degree of agreement with the following statements:

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
I feel my teaching benefits from laptop use.	◯	◯	◯	◯	◯
I limit the use of the Internet to protect students from inappropriate materials.	◯	◯	◯	◯	◯
I am better able to individualize my curriculum to fit student needs as a result of having the laptops.	◯	◯	◯	◯	◯
Having a laptop has helped me to access more up-to-date information for my students.	◯	◯	◯	◯	◯
When we are using the laptops in class there is less classroom management that needs to take place.	◯	◯	◯	◯	◯
I feel enthusiastic about the laptop program.	◯	◯	◯	◯	◯
Using the laptops has increased my work load.	◯	◯	◯	◯	◯
I am better able to access diverse teaching materials and resources for my students when using the laptop.	◯	◯	◯	◯	◯
The number of projectors in my school makes it difficult for me to teach lessons to the entire class.	◯	◯	◯	◯	◯
Having laptops in the classroom has increased my expectations for students' work.	◯	◯	◯	◯	◯
The presence of the laptops in my classroom is disruptive to my teaching.	◯	◯	◯	◯	◯
I am able to cover more material in class when we use the laptops.	◯	◯	◯	◯	◯
I would like to have access to more direct technical support for laptops in my classroom during the day.	◯	◯	◯	◯	◯
Use of the laptops helps me to create instructional materials which better meet the NC Standard Course of Study.	◯	◯	◯	◯	◯
Having a laptop has reduced the amount of paper based supplies that I need in my classroom (ex. newspapers, textbooks, etc.).	◯	◯	◯	◯	◯
Given laptop problems such as freezing or an inability to access the Internet, I have to create backup lesson plans for everything I do.	◯	◯	◯	◯	◯
I am able to explore topics in greater depth with my students when we use the laptops.	◯	◯	◯	◯	◯
It is difficult for me to monitor appropriate Internet use in my classroom through the use of DyKnow/monitoring software.	◯	◯	◯	◯	◯

14. Technology Attitude/Beliefs; Learning and Laptops

31. Please indicate your degree of agreement with the following statements:

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
My students are better able to meet learning objectives using the laptops.	◯	◯	◯	◯	◯
Students in my classroom are more actively involved in their own learning when we use the laptops.	◯	◯	◯	◯	◯
Use of the laptops has resulted in more open communication.	◯	◯	◯	◯	◯
Students in my classroom do more work when they are using their laptops.	◯	◯	◯	◯	◯
My students are more apt to revise/edit their work when it is done on the laptops.	◯	◯	◯	◯	◯
Students in my classroom are careful with their laptops.	◯	◯	◯	◯	◯
Laptops allow my students to get their work done more quickly.	◯	◯	◯	◯	◯
The quality of my students' work increases when we use the laptops.	◯	◯	◯	◯	◯
My students are better able to understand when they use the laptops.	◯	◯	◯	◯	◯
My students' inability to keyboard (type) has interfered with our use of the laptop.	◯	◯	◯	◯	◯
My students are more organized when they use their laptops.	◯	◯	◯	◯	◯
A lack of formal training for my students in computer use has prevented me from implementing the laptops fully.	◯	◯	◯	◯	◯
My students are more engaged when we are using the laptops.	◯	◯	◯	◯	◯

15. Technology Use

32. Since receiving your LAPTOP provided through the 1-1 project, on average how often did you do the following for planning:

	Daily	Weekly	Monthly	Once Per Semester	Never	Don't know
Conduct research that contributes to lesson plans and curriculum design	◯	◯	◯	◯	◯	◯
Develop instructional materials (handouts, tests,etc.)	◯	◯	◯	◯	◯	◯
Produce homework assignments	◯	◯	◯	◯	◯	◯
Assess and grade student work	◯	◯	◯	◯	◯	◯
Manage student information	◯	◯	◯	◯	◯	◯
Communicate with other educators inside and outside the school	◯	◯	◯	◯	◯	◯
Communicate with parents and students/ use email and/or other forms of electronic communication to facilitate communication with parents and guardians	◯	◯	◯	◯	◯	◯
Use technology tools to collect student performance data for your instructional planning	◯	◯	◯	◯	◯	◯
Refer to the ISTE National Educational Technology Standards for Students when planning lessons that integrate software and Web-based resources	◯	◯	◯	◯	◯	◯

33. Since receiving your LAPTOP provided through the 1-1 project, on average how often did you do the following for instruction:

	Daily	Weekly	Monthly	Once Per Semester	Never	Don't know
Present content	◯	◯	◯	◯	◯	◯
Administer online quizzes or tests	◯	◯	◯	◯	◯	◯
Outline steps in an activity or investigation (e.g., lab procedures)	◯	◯	◯	◯	◯	◯
Utilize online textbook resources	◯	◯	◯	◯	◯	◯
Utilize out-of-classroom labs/fieldwork with technology (e.g., scientific probes, GIS)	◯	◯	◯	◯	◯	◯
Engage students in virtual field trips (e.g., museums)	◯	◯	◯	◯	◯	◯
Invite online guest speaker (e.g. video conference)	◯	◯	◯	◯	◯	◯
Utilize media for presentation purposes (video, film strip, etc.)	◯	◯	◯	◯	◯	◯
Creating and/or maintaining website(s) and/or blogs for instructional purposes	◯	◯	◯	◯	◯	◯

16. Technology Knowledge/Skills

34. Please indicate your knowledge with the following technologies using your LAPTOP provided through the 1-1 project:

	I do not know if I have done this	I have never done this	I can do this with some help	I can do this by myself	I can show someone how to do this
Use e-mail	◯	◯	◯	◯	◯
Search the Internet to find information	◯	◯	◯	◯	◯
Create a classroom website	◯	◯	◯	◯	◯
Create and maintain a database	◯	◯	◯	◯	◯
Create a spreadsheet	◯	◯	◯	◯	◯
Create graphs and charts	◯	◯	◯	◯	◯
Use a digital still camera	◯	◯	◯	◯	◯
Import and edit still digital images	◯	◯	◯	◯	◯
Use a digital video camera	◯	◯	◯	◯	◯
Import and edit digital video on a computer	◯	◯	◯	◯	◯
Participate in social networking	◯	◯	◯	◯	◯
Record your voice and other sounds	◯	◯	◯	◯	◯
Create a multimedia presentation	◯	◯	◯	◯	◯
Use a scanner	◯	◯	◯	◯	◯
Create and maintain a blog	◯	◯	◯	◯	◯
Subscribe to and download a podcast and/or RSS feed	◯	◯	◯	◯	◯
Create and post a podcast	◯	◯	◯	◯	◯
Contribute to a collaborative Wiki	◯	◯	◯	◯	◯
Utilize a GPS receiver for learning activities	◯	◯	◯	◯	◯

17. Student 21st Century Skills

35. During the current school year, how often did your STUDENTS do each of the following using their LAPTOPS provided through the 1-1 project:

	Daily	Weekly	Monthly	Once Per Semester	Never	Don't know
Plan class activities or tasks/ projects, setting goals	◯	◯	◯	◯	◯	◯
Seek information	◯	◯	◯	◯	◯	◯
Collect/capture information	◯	◯	◯	◯	◯	◯
Analyze or manipulate information	◯	◯	◯	◯	◯	◯
Integrate one's ideas with existing information, build on existing information	◯	◯	◯	◯	◯	◯
Create new information	◯	◯	◯	◯	◯	◯
Self-assess, monitor progress on student learning	◯	◯	◯	◯	◯	◯
One-way communication, presenting	◯	◯	◯	◯	◯	◯
Two-way communication	◯	◯	◯	◯	◯	◯
Access school and community resources that provide technological and/or discipline specific expertise	◯	◯	◯	◯	◯	◯
Share technology interests and expertise with their peers	◯	◯	◯	◯	◯	◯
Share technology interests and expertise with teachers and other adults in the learning community	◯	◯	◯	◯	◯	◯
Submit assignments electronically	◯	◯	◯	◯	◯	◯

18. Teaching Philosophies

Different teachers have described very different teaching philosophies to researchers.

For each of the following pairs of statements, check the button that best shows how closely your own beliefs are to each of the statements in a given pair. The closer your beliefs to a particular statement, the closer the button you check.

36. .

	I mainly see my role as a facilitator. I try to provide opportunities and resources for my students to discover or construct concepts for themselves.				That's all nice, but students really won't learn the subject unless you go over the material in a structured way. It's my job to explain, to show students how to do the work, and to assign specific practice.
A.	◯	◯	◯	◯	◯

37. .

	The most important part of instruction is that it encourage sense-making or thinking among students. Content is secondary.				The most important part of instruction is the content of the curriculum. That content is the community's judgment about what children need to be able to know and do.
B.	◯	◯	◯	◯	◯

38. .

	It is better for students to master a few complex ideas and skills well, and to learn what deep understanding is all about, even if the breadth of their knowledge is limited until they are older.				It is useful for students to become familiar with many different ideas and skills even if their understanding, for now, is limited. Later, in college, perhaps, they will learn these things in more detail.
C.	◯	◯	◯	◯	◯

39. .

	It is critical for students to become interested in doing academic work - interest and effort are more important than the particular subject-matter they are working on.				While student motivation is certainly useful, it should not drive what students study. It is more important that students learn the history, science, math and language skills in their textbooks.
D.	◯	◯	◯	◯	◯

40. .

	It is a good idea to have all sorts of activities going on in the classroom. Some students might produce a scene from a play they read. Others might create a miniature version of the set. It's hard to get the logistics right, but the successes are so much more important than the failures.				It's more practical to give the whole class the same assignment, one that has clear directions, and one that can be done in short intervals that match students' attention spans and the daily class schedule.
E.	◯	◯	◯	◯	◯

19. Open Ended

41. Please list the 3-4 software tools you use most frequently with your laptops in your classes

1. _____
2. _____
3. _____
4. _____

42. Do you utilize DyKnow / monitoring software in your teaching?

◯ Yes

◯ No

43. What new technologies do you think are inadequate and/or needed at your school (hardware or software)?

44. Please describe 2-3 of biggest barriers/challenges in using your laptop for planning and instruction.

45. What additional support could your school provide to facilitate your use of your laptop for planning and instruction?

46. Please describe the laptop activity or project you taught in your classes this year that helped your students learn the most, and how you used technology in that activity.

47. Please use the space below to provide any further comments you wish to share.

20. Final Demo

48. What is your gender?

- ◯ Male
- ◯ Female

49. Identify myself as: (Please check one)

- ◯ American Indian/Alaska Native
- ◯ Asian
- ◯ Black/African American
- ◯ Native Hawaiian/Other Pacific Islander
- ◯ White/Caucasian
- ◯ Hispanic/Latino
- ◯ Multiracial
- ◯ Other:

21. Thank you page

Thank you for your participation in this study!

Please click the "Done" button to ensure your responses are submitted.

Default Section

North Carolina State University

INFORMED CONSENT FORM for RESEARCH

Title of Study: Study of Teaching and Learning in 1:1 Environment in Early College High Schools
Principal Investigators: Jenifer O. Corn (jocorn@ncsu.edu) and Jason Osborne (jason_osborne@ncsu.edu)

We are conducting a research study to examine the impact educational technology has on student learning.

INFORMATION. In this study, you will be asked to: complete an online survey and allow an observer to view your classrooms. You will need approximately 20 minutes to complete the online surveys.

RISKS. No foreseeable risks or discomforts are expected from your participation in this study. Survey and observation data will be summarized and no data will be identifiable by your name.

BENEFITS. Findings from this will be to identify the potential benefits and advantages of technology in the classroom. Also by identifying best practices, supportive materials, professional development activities, and tools can be developed to further support teaching and learning via the use of technology.

CONFIDENTIALITY. The information in the study records will be kept strictly confidential. Survey and observation data will be stored securely in password-protected Web forms. No reference will be made in oral or written reports which could link you to the study.

CONTACT. If you have questions at any time about the study or the procedures, you may contact the researchers, Lori Holcomb at 602 Poe Hall, North Carolina State University, Raleigh, 27695, or (919-515-1772). If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Dr. Matthew Zingraff, Chair of the NCSU IRB for the Use of Human Subjects in Research Committee, Box 7514, NCSU Campus (919/513-1834) or Mr. Matthew Ronning, Assistant Vice Chancellor, Research Administration, Box 7514, NCSU Campus (919/513-2148).

PARTICIPATION. Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed your data will be returned to you or destroyed at your request.

1. CONSENT: "I have read and understand the above information. My decision to participate is as follows:"

- ◯ Yes, I agree to participate with the understanding that I may withdraw at any time.
- ◯ No, I decline to participate.

Laptop Q's

2. Which school do you attend?

3. My overall skill level in the use of a laptop is: (Please check one)

- ◯ Novice: I can turn the computer on, but I don't really know how to use many software programs
- ◯ Beginner: I am able to use some software programs such as word processing and web browser
- ◯ Intermediate: I am able to use many of the software programs, but I don't have a lot of experience with them
- ◯ Advanced: I am able to use many of the software programs and have had a great deal of experience with them
- ◯ Expert: I am able to teach others how to use some software programs and I am able to fix minor problems with my computer when they happen.

4. OTHER THAN YOUR LAPTOP provided by the 1-1 project, does your family have a computer at home?

- ◯ Yes
- ◯ No

5. Are you able to connect to the Internet from home?

- ◯ Yes
- ◯ No

ISP at home

6. What kind of Internet Service Provider do you use at home to connect to the internet?

- ◯ Dial-up
- ◯ Cable/DSL
- ◯ Mobile Wireless

Laptop Use and Other

7. How do you use your laptop for school-related purposes when you take it home? (Please check all that apply)

- ☐ Homework
- ☐ Email (Classmates, Teachers, Experts)
- ☐ Instant Messaging (Classmates, Teachers, Experts)
- ☐ Organize information
- ☐ Do drills to increase my skills
- ☐ Locating resources on the Internet
- ☐ Other (please specify)

Technology Infrastructure & Misuse

8. Please indicate your degree of agreement with the following statements:

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
The technology system at my school is adequate to support my laptop use (e.g. wireless access, Internet speed, network capacity).	◯	◯	◯	◯	◯
Software available on my laptop meets my educational needs.	◯	◯	◯	◯	◯
I am pleased with the way my teachers use laptops in the classroom.	◯	◯	◯	◯	◯
I frequently learn to use new technology tools at my school.	◯	◯	◯	◯	◯
My school helped me to feel prepared to use my laptop.	◯	◯	◯	◯	◯

9. Have you been instructed on what will happen if you misuse your laptop?

- ◯ Yes
- ◯ No

10. Have you had your laptop taken away for MORE THAN A CLASS PERIOD because you MISUSED your laptop?

- ◯ Yes
- ◯ No

Laptop Misuse

11. Please describe why your laptop was taken away.

12. For how many days was your laptop taken away?

Technology Attitude/Beliefs

13. Please indicate your degree of agreement with the following statements:

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
Having a laptop helps me to be better organized.	◯	◯	◯	◯	◯
I am more involved in school when I use my laptop.	◯	◯	◯	◯	◯
I would rather not use my laptop.	◯	◯	◯	◯	◯
I am more likely to revise/edit my work when it is done on the laptop.	◯	◯	◯	◯	◯
I am able to identify appropriate information on the Internet.	◯	◯	◯	◯	◯
Now that I have my laptop I interact with my teachers more.	◯	◯	◯	◯	◯
I get my work done more quickly now that I have my laptop.	◯	◯	◯	◯	◯
I do more work when I use my laptop.	◯	◯	◯	◯	◯
I am better able to understand my schoolwork when we use the laptops.	◯	◯	◯	◯	◯
I am more interested in school when we use the laptops.	◯	◯	◯	◯	◯
I prefer to handwrite my assignments rather than use my laptop.	◯	◯	◯	◯	◯
The quality of my work has improved with the use of my laptop.	◯	◯	◯	◯	◯
I will be able to get a good job if I learn how to use a computer.	◯	◯	◯	◯	◯
The more frequently teachers use technology, the more I enjoy school.	◯	◯	◯	◯	◯

Technology Use

14. Since receiving your LAPTOP provided through the 1-1 project, on average how often did you do the following:

	Daily	Weekly	Monthly	Once Per Semester	Never	I don't know
Plan class activities or tasks/projects, set goals	◯	◯	◯	◯	◯	◯
Seek information	◯	◯	◯	◯	◯	◯
Collect/capture information	◯	◯	◯	◯	◯	◯
Analyze or manipulate information	◯	◯	◯	◯	◯	◯
Integrate one's ideas with existing information, build on existing information	◯	◯	◯	◯	◯	◯
Create new information	◯	◯	◯	◯	◯	◯
Assess, monitor progress on student learning	◯	◯	◯	◯	◯	◯
One-way communication, presenting	◯	◯	◯	◯	◯	◯
Two-way communication	◯	◯	◯	◯	◯	◯
Access school and community resources that provide technological and/or discipline specific expertise	◯	◯	◯	◯	◯	◯
Share technology interests and expertise with peers	◯	◯	◯	◯	◯	◯
Share technology interests and expertise with teachers and other adults in the learning community	◯	◯	◯	◯	◯	◯
Submit assignments electronically	◯	◯	◯	◯	◯	◯

Laptop Use in Classes

15. Please tell us how frequently you use your LAPTOP provided through the 1-1 project in your different high school courses over the past school year.

	Daily	Weekly	Monthly	Once Per Semester	Never
Language Arts	◯	◯	◯	◯	◯
Math/Algebra	◯	◯	◯	◯	◯
Science	◯	◯	◯	◯	◯
Social Studies	◯	◯	◯	◯	◯
Foreign Language	◯	◯	◯	◯	◯
Electives	◯	◯	◯	◯	◯
College Courses	◯	◯	◯	◯	◯
Other	◯	◯	◯	◯	◯

If "Other," please specify:

16. Do you use your laptop for homework for the following classes?

	Yes	No
Language Arts	◯	◯
Math/Algebra	◯	◯
Science	◯	◯
Social Studies	◯	◯
Foreign Language	◯	◯
Electives	◯	◯
College Courses	◯	◯
Other	◯	◯

If "Other," please specify:

Technology Knowledge/Skills

17. Please indicate your knowledge with the following technologies using your LAPTOP provided through the 1-1 project:

	I do not know if I have done this	I have never done this	I can do this with some help	I can do this by myself	I can show someone how to do this
Use e-mail	◯	◯	◯	◯	◯
Search the Internet to find information	◯	◯	◯	◯	◯
Create a Web page	◯	◯	◯	◯	◯
Create and maintain a database	◯	◯	◯	◯	◯
Create a spreadsheet	◯	◯	◯	◯	◯
Create graphs and charts	◯	◯	◯	◯	◯
Use a digital still camera	◯	◯	◯	◯	◯
Import and edit still digital images	◯	◯	◯	◯	◯
Use a digital video camera	◯	◯	◯	◯	◯
Import and edit digital video on a computer	◯	◯	◯	◯	◯
Create graphic designs	◯	◯	◯	◯	◯
Record your voice and other sounds	◯	◯	◯	◯	◯
Create a multimedia presentation	◯	◯	◯	◯	◯
Use a scanner	◯	◯	◯	◯	◯
Create and maintain a blog	◯	◯	◯	◯	◯
Subscribe to and download a podcast and/or RSS feed	◯	◯	◯	◯	◯
Create and post a podcast	◯	◯	◯	◯	◯
Contribute to a collaborative Wiki	◯	◯	◯	◯	◯
Utilize a GPS receiver for learning activities	◯	◯	◯	◯	◯

18. Please indicate your level of agreement with the following statements.

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
Use of my laptop at school is teaching me life and career skills (e.g., self-direction, social skills, responsibility).	◯	◯	◯	◯	◯
Use of my laptop at school is teaching me learning and innovation skills (e.g., creativity, critical thinking, problem solving).	◯	◯	◯	◯	◯
Use of my laptop at school has developed my technology literacy, using such tools as Word, Excel, Powerpoint, Web development software, audio/video editors, photo editors, etc.	◯	◯	◯	◯	◯
Use of my laptop at school has developed my information literacy, helping me research and gather appropriate source data to inform my studies through such means as webquests, online labs and exercises, social bookmarks, etc.	◯	◯	◯	◯	◯
Use of my laptop at school has developed my civic literacy by informing me of current events, ethical practices, and the roles of governments.	◯	◯	◯	◯	◯
Use of my laptop at school has developed my understanding of the global world through such activities as interacting with students and experts around the globe, using and/or creating maps, studying global current events, etc.	◯	◯	◯	◯	◯
Use of my laptop at school supports group collaboration in some of the following ways: peer groups, group projects, discussion boards, wikis, web conferencing, etc.	◯	◯	◯	◯	◯

Open Ended Qs

19. Please list the 3-4 software tools you use most frequently with your laptops in your classes:

1.
2.
3.
4.

20. What new technologies do you think are needed at your school (hardware or software)?

21. Please describe 2-3 of biggest barriers/challenges in using your laptop for learning.

22. What additional things could your school do to help you use your laptop for learning?

23. Please describe the laptop activity or project you did in class this year that helped you learn the most, and how you used technology in that activity.

24. Please use the space below to provide any further comments you wish to share.

Demographic Q's

25. What is your grade level?

- ◯ 9
- ◯ 10
- ◯ 11
- ◯ 12
- ◯ 13

26. What grades do you normally receive in school?

- ◯ Mostly As
- ◯ Mostly Bs
- ◯ Mostly Cs
- ◯ Mostly below C

27. Please select your gender:

- ◯ Male
- ◯ Female

28. I identify myself as:

- ◯ American Indian/Alaska Native
- ◯ Asian
- ◯ Black/African American
- ◯ Native Hawaiian/Other Pacific Islander
- ◯ White/Caucasian
- ◯ Hispanic/Latino
- ◯ Multiracial
- ◯ Other:

29. Highest level of education completed by either parent/guardian:

- ◯ GED High School Equivalency
- ◯ High School Diploma
- ◯ Associates Degree
- ◯ 4-Year College Degree
- ◯ Advanced Graduate Degree (M.D., Ph.D., Master's degree, etc.)
- ◯ Do Not Know

Thank You page

Thank you for taking the time to complete our survey!

Please be sure to click on the "Done" button to ensure your responses are submitted.

1. LoFTI

Purpose: LoFTI is a tool to aid in the observation of technology integration into teaching and learning. The data gathered through the use of this instrument should be helpful in building-level staff members as they plan and/or provide professional development in instructional technology.

For all items, check any and all which apply to the activities being observed.

* 1. Please enter the date and time.

	Month	Date	Year	Hour	Minute	AM/PM
Time In						

* 2. Observer Name

* 3. Which school is being observed?

* 4. Teacher Name:

FIRST name

LAST name

* 5. Grade level:

- [ ] 7
- [ ] 8
- [ ] 9
- [ ] 10
- [ ] 11
- [ ] 12
- [ ] 13

* 6. What track is this class?

- ◯ Special Education
- ◯ Remedial
- ◯ General Education
- ◯ Honors
- ◯ Advanced Placement
- ◯ Other (please specify)

* 7. Is technology in use?

- ◯ Yes
- ◯ No

* 8. How many students are...

in class?

using technology?

* 9. Student Arrangement

- [ ] Tables, Centers, Pods
- [ ] Circle or U
- [ ] Cubicles
- [ ] Rows
- [ ] Other (please specify)

* 10. Learning Environment

- [ ] Auditorium
- [ ] Cafeteria
- [ ] Classroom
- [ ] Gymnasium
- [ ] Lab
- [ ] Media center
- [ ] Multi-purpose room
- [ ] Outside
- [ ] Virtual environment
- [ ] Other (please specify)

* 11. Student Grouping

- [ ] Independent work
- [ ] Learning centers
- [ ] Small groups
- [ ] Whole group
- [ ] Workshops
- [ ] Other (please specify)

* 12. Instructional Collaborators

- [ ] Administrator
- [ ] Assistant
- [ ] Curriculum specialist
- [ ] Media coordinator
- [ ] Other teacher
- [ ] Outside consultant
- [ ] Special ed teacher
- [ ] Student
- [ ] Technology facilitator
- [ ] Volunteer
- [ ] None
- [ ] Other (please specify)

* 13. Content Area Activities

- [ ] Arts
- [ ] Career technical
- [ ] Computer/technology skills
- [ ] English/Language arts
- [ ] English as a second language
- [ ] Guidance
- [ ] Health
- [ ] Physical education
- [ ] Library/media skills
- [ ] Mathematics
- [ ] Foreign languages
- [ ] Science
- [ ] Social studies
- [ ] Other (please specify)

14. Teacher Activities
(Check only if technology is being used for…)

- [ ] Activating prior knowledge
- [ ] Assessment
- [ ] Cues, questions, and advance organizers
- [ ] Demonstration
- [ ] Differentiated instruction
- [ ] Facilitation (guiding)
- [ ] Lecture
- [ ] Other (please specify)
- [ ] Providing feedback
- [ ] Questioning
- [ ] Reinforcing/recognition
- [ ] Scaffolding
- [ ] Setting objectives
- [ ] Summarizing

15. Assessment Methods
(Check only if technology is being used)

- [ ] Oral response
- [ ] Product (e.g., project with rubric)
- [ ] Performance (e.g., presentation, demonstration)
- [ ] Other (please specify)
- [ ] Selected response
- [ ] Written response

16. Technology is being used as a tool for...
(Check either Teacher or Student, or both)

	Teacher	Student
Problem-Solving (e.g., graphing, decision support, design)	☐	☐
Communication (e.g., document preparation, email, presentation, web development)	☐	☐
Information Processing (e.g., data manipulation, writing, data tables)	☐	☐
Research (e.g., collecting information or data)	☐	☐
Personal Development (e.g., e-learning, time management, calendar)	☐	☐
Group Productivity/Cooperative Learning (e.g., collaboration, planning, document sharing)	☐	☐
Assessment	☐	☐
Brainstorming	☐	☐
Computer-assisted instruction	☐	☐
Classroom discussion	☐	☐
Drill and practice	☐	☐
Generating and testing hypotheses	☐	☐
Identifying similarities and differences	☐	☐
Project-based activities	☐	☐
Recitation	☐	☐
Summarizing and note-taking	☐	☐

17. Technology hardware is in use by...
(Check either Teacher or Student, or both)

	Teacher	Student
Assistive Technology	☐	☐
Audio (e.g., speakers, microphone)	☐	☐
Art/Music (e.g., drawing tablet, musical keyboard)	☐	☐
Imaging (e.g., camcorder, film or digital camera, document camera, scanner)	☐	☐
Display (e.g., digital projector, digital white board, television, TV-link, printer)	☐	☐
Media Storage / Retrieval (e.g., print material, DVD, VCR, external storage devices)	☐	☐
Math / Science / Technical (e.g., GPS, probeware, calculator, video microscope)	☐	☐
Desktop computer	☐	☐
Laptop computer (including tablets)	☐	☐

Other (please specify)

18. Technology software in use by...
(Check either Teacher or Student, or both)

	Teacher	Student
Administrative (e.g., grading, record-keeping)	☐	☐
Assessment / Testing	☐	☐
Assistive (e.g., screen reader)	☐	☐
Classroom management system (DyKnow, etc.)	☐	☐
Computer-Assisted Instruction / Integrated Learning System	☐	☐
Thinking tools (e.g. visual organizer, simulation, modeling, problem-solving)	☐	☐
Hardware-Embedded (e.g. digital white board, GPS/GIS, digital interactive response system)	☐	☐
Multimedia (e.g., digital video editing)	☐	☐
Productivity Software (e.g., database, presentation, spreadsheet, word processing)	☐	☐
Programming or web scripting (e.g., Javascript, PHP, Visual Basic)	☐	☐
Graphics / Publishing (e.g., page layout, drawing/painting, CAD, photo editing, web publishing)	☐	☐
Subject-specific software	☐	☐
Web Browser (e.g., MS Internet Explorer, Netscape, Firefox)	☐	☐
Web Applications: Course management software	☐	☐
Web Applications: Database systems	☐	☐
Web Applications: Discussion boards	☐	☐
Web Applications: Libraries, E-publications	☐	☐
Web Applications: Search engine	☐	☐
Web Applications: Video, voice, or real-time text conference	☐	☐
Web Applications: Web logs, blogs	☐	☐
Web Applications: Web mail	☐	☐
Web Applications: Wiki	☐	☐
NC-Specific Web Resources: Learn NC	☐	☐
NC-Specific Web Resources: NC Wise Owl	☐	☐
NC-Specific Web Resources: SAS in School	☐	☐

Other (please specify)

For each of the following pairs of statements, choose the button that best shows how closely your observations are to each of the statements in a given pair. The closer your observations to a particular statement, the closer the button you choose.

For questions 19 to 23, student engagement is shown by...

* 19. .

	Sustained behavioral involvement					Tendency to give up easily in the face of challenges
19.	◯	◯	◯	◯	◯	◯

* 20. .

	Positive emotional tone – cheerful, calm, communicative					Negative emotional tone – boredom, depression, anxiety, anger, withdrawal, or rebellion
20.	◯	◯	◯	◯	◯	◯

* 21. .

	Selection of tasks at the border of their competencies					Selection of tasks well within their comfort zone
21.	◯	◯	◯	◯	◯	◯

* 22. .

	Initiation of action when given the opportunity					Passivity, lack of initiative
22.	◯	◯	◯	◯	◯	◯

* 23. .

	Exertion of effort and concentration					Laziness, distraction
23.	◯	◯	◯	◯	◯	◯

* 24. Classroom Agenda

25. Other Comments Regarding Teacher (e.g. demeanor, comfort with technology, interactions with students)

26. Other Comments Regarding Students (e.g. comfort with technology, peer interactions)

27. Other Comments Regarding Learning Environment

* 28. Please enter the date and time.

	Hour	Minute	AM/PM
Time Out			

Fall 2008 Focus Group Protocol

Teachers

We are very interested to hear about your ideas and experiences with the laptop project, focusing in on some of the issues we did not address last year such as leadership, technical support, professional development experiences, lesson planning, use of technology for assessment, and changes in the laptop project to address identified challenges.

Please take a few minutes to think about the questions below and then we will have a facilitated discussion around them. If you agree, we'd like to tape this session, so that we don't miss any important information. The summary of the discussion will not identify individuals but share the group's sentiments.

1. (summer activities) Did you participate in any activities over the summer to help you prepare to use the laptops for teaching and learning this school year? (e.g. professional development, lesson planning) If so, can you describe them and did you find them useful?

2. (starting new school year/rollout/parents) Describe the processes used to prepare and distribute laptops to students this fall. Did you do anything different this year than last year? Were there any surprises? How have your parents responded to the 1:1 initiative?

3. (curriculum planning) During our visits last year teachers expressed a need for time to make adjustments to existing lessons or create new ones to incorporate the laptops into instruction. What strategies did you use for curriculum planning for this school year? (e.g. working with the TF or other teachers, lesson planning training)

4. (technology for assessment) Have you had an opportunity to use the laptops for formative assessment/to assess student work? If so, please describe what you did. If not, what prevented you from doing so?

5. (leadership) What do you think are the most important things a school leader can do to support a new 1:1 laptop project in a high school? Who at your school is addressing those leadership needs?

6. (district tech staff) Please describe the schools' relationship with the district technology staff. Do you feel the district technology staff is supportive of your laptop project?

7. (adjusting project strategies) What has been done to address the challenges from last year? Issues related to the School Network, School Policy and Procedures, Process for Rollout, Laptop Care, Hardware and Software Resources Needed, Monitoring Student Work, Professional Development, Technical Support Personnel, etc.

8. (student outcomes) How have your students reacted to using the laptop for learning?

Appendix B
Most Common Software Tools Used by Administrators, Teachers, and Students

Administrators

General Software

Productivity: iWork, Microsoft Office, OneNote
Internet browsing: Internet Explorer, Firefox
Personal Information management/communication: iCal, Outlook, GroupWise, Novell
Publishing: Microsoft PowerPoint, Microsoft Publisher
Image editing: Photoshop
Video recording and editing: MovieMaker
Web authoring: Yahoo SiteBuilder
Media players: iTunes
Online resources: Blogs, Discovery Streaming, discussion boards, GoogleDocs, GoogleTalk, Ning, search engines, United Streaming

Instructional Software

School management: D-Trak, local student database, NCWise/SIMS
Lesson planning: Promethean Planet
Classroom management/monitoring: DyKnow
Course management: Blackboard
Course specific: Curriculum Pathways, textbook companion software
Assessment/test preparation: MAP, ExamView

Teachers

General Software

Productivity: Acrobat Reader, Microsoft Office, OneNote
Internet browsing: Internet Explorer, Firefox
Personal information management/communication: iCal, GroupWise, Lotus
Publishing: ForumulatePro, Microsoft PowerPoint, Photostory
Illustration: AceCad, Adobe Illustrator
Image editing: MS Paint, Photoshop
Audio recording and editing: Audacity
Video recording and editing: Flip, MovieMaker
Web authoring: Macromedia Suite, Microsoft FrontPage
Media players: iTunes, WinDVD, Windows Media Player
Online resources: Blogs, classroom website, ClassZone, echalk, GoogleDocs, GoogleEarth, NC WiseOwl, netTrekker, online textbooks, textbook publisher websites, TeacherTube, United Streaming, Wikispaces

Instructional Software

Lesson planning: EduPlatform, Promethean Planet, TeacherWorks
Instructional delivery: ActivStudio, CPS, instructional games, SMART tools
Classroom management/monitoring: Classroom Manager, DyKnow, Easy Grade, Integrade
Course management: Moodle
Course specific: Academy of Reading/Math, CPMP Tools, Curriculum Pathways, Digital Science Warm-ups, Equation Editor, Geometer's Sketchpad, GradeSaver, Graph Links, Infinite

Algebra, MathType, PhET, Rosetta Stone, Shining Star, Stars Suite, textbook support/software materials
Assessment/test preparation: ClassScape, ExamView, Test Generator

Students

General Software

Productivity: Microsoft Office, Microsoft Works
Internet browsing: Internet Explorer
Personal information management/communication: Email, webmail
Publishing: iPrint, Microsoft PowerPoint, Microsoft Publisher, PageMaker, PhotoStory
Image editing: GIMP, MS Paint, PhotoFiltre, Photoshop
Audio recording and editing: Audacity
Video recording and editing: MovieMaker
Media players: Quicktime, WinDVD, Windows Media Player
Online resources: Educational websites, Evernote, GoogleEarth, MySpace, search engines, Wikispaces

Instructional Software

Instructional delivery: Integrated Tutoring, SMART Tools
Classroom management/monitoring: DyKnow, SmartFilter
Course specific: Automated Accounting, BluJ, Curriculum Pathways, online textbooks, Reading Renaissance, study guides, Yearbook software
Assessment/test preparation: ExamView
Reference: Dictionary, online books

Appendix C

TRADITIONAL SCHOOL LAPTOP PROJECT: ONE-TO-ONE COMPUTING
Student/Parent Laptop Handbook
August 2008

Overview/Introduction

Traditional County Schools (TCS) is committed to preparing students to be successful citizens in a global economy. The Traditional School Laptop Project for One-to-One Computing will immerse our students into a technology-rich instructional environment to ensure that our graduates are prepared for the workplace and life. Understanding of and adhering to the following policies and procedures is necessary for the success of the program.

I. Deployment

Parent/guardian(s) will be informed by letter and/or a ConnectEd call of location, date and time of mandatory orientation/meeting. The program and Student/Parent Laptop Agreement will be explained. The parent and student must sign the agreement in order for the student to be issued a laptop.

A. Prior to students being issued a laptop:
   1. Parent/guardian must attend an orientation/meeting (mandatory)
   2. Student must attend an orientation/training (mandatory)
   3. Parent/guardian and student must sign Student/Parent Laptop Agreement

B. The district will send a report of all model, asset and serial numbers of student laptops to local pawn shops and law enforcement agencies to assist in the event of loss or theft.

II. Terms of Laptop Loan

A. Terms of Loan

1. The Traditional County School District will loan a laptop to Traditional High School students upon compliance with the following:
   a) Student Orientation/Training session
   b) Parent/Guardian Orientation/Meeting session
   c) Payment of $25 insurance fee **(yearly)**
   d) A signed Student Acceptable Use Agreement (Internet Use)
   e) A signed Student/Parent Laptop Agreement

2. Legal title to the property (laptop) is with Traditional County Schools. A student's right of possession and use is limited to and conditioned upon full and complete compliance with the Board Policy - Acceptable Use Policy for Technology #5451, Copyright Compliance Policy #3245, Internet Use

Guidelines, and other Guidelines as outlined in the Student/Parent Laptop Handbook.

3. Students may be subject to loss of privilege, disciplinary action and/or legal action in the event of intentional damage and/or violation of policies and guidelines as outlined in the Student/Parent Laptop Handbook as well as the WCS Internet Use Guidelines.
4. A student's possession of the laptop terminates no later than the last day of the school year unless there is a reason for earlier termination by the District (e.g., drop-out, expulsion and transfer to another school).
5. The laptops will be covered by an Accidental Damage Policy as explained in Section II-C (Loss or Damage), Item 1.

B. Loss or Theft

1. An insurance plan will be made available by WCS to reduce the cost/liability in the event of loss or theft.
2. Payment of the annual cost of loss or theft insurance purchased through the district will be $25.00 (non-refundable).
3. In the event of loss or theft, there will be a deductible of $150.
4. The student or parent/guardian is required to immediately file a police report in all cases of stolen or lost laptops. After filing the police report, the student or parent/guardian shall notify the school and submit a copy of the police report.
5. WCS will coordinate with the police department to alert pawn shops and area law enforcement agencies of lost or stolen laptops.

C. Damage

1. WCS will provide an *Accidental Damage Policy* for new student laptops which will cover the laptop for 36 months following the date of purchase. The policy will cover no more than 3 incidents for an individual laptop during the 36 month period.
2. The student and/or the student's parent/guardian shall be responsible for compensating the school district for any losses, costs or damages which are not covered by the *Accidental Damage Policy*. The student and/or parent/guardian is liable for replacement(s) costs resulting from intentional damage and/or neglect as outlined in this document. Replacement and repair cost(s) will be based on fair market value as described in the table below.

Age of Laptop	Value
1 year or less	100%
2 years	75%
3 years	50%
4 years	25%

*Purchase price of laptops in 2007 -- $1033

3. No annual maintenance fee will be charged for the use of the laptop, however, if unapproved changes or software installs are made to the laptop, the laptop will be re-imaged, and the student will be charged a $25 re-imaging fee.

D. Repossession

WCS reserves the right to repossess the laptop at any time if the student does not fully comply with all terms of this agreement.

E. Appropriation

Failure to return the property in a timely manner and the continued use of it for non-related school purposes may be considered unlawful appropriation of Traditional County School's property.

F. Modification to Program

As the program is new to Traditional County Schools, the district reserves the right to revoke or modify the project or its terms at any time

III. General Care of the Laptop

A. Students are responsible for the laptops they have been issued. Laptops in need of repair or damaged must be reported to the teacher. It will be the responsibility of the teacher or his/her designee to contact onsite technical support.

B. Technical support will determine whether the laptop can be repaired onsite or if a loaner should be issued. A limited number of classroom computers are also available for student use. Classroom computers and Loaner laptops are also covered by all rules and regulations as outlined in this document.

C. Guidelines to follow:

1. Always close the lid before moving your laptop.
2. For prolonged periods of inactivity, you should shut down completely before closing the lid. This will help to conserve the battery.
3. Please be aware that overloading the backpack will damage the laptop. Take precaution when placing the backpack on a flat surface. Textbooks, notebooks, binders, etc. are not allowed in the laptop bags. Never sit on the laptop backpack.
4. When using the laptop, keep it on a flat, solid surface so that air can circulate. For example, using a laptop while it is directly on a bed or carpet can cause damage due to overheating.
5. Liquids, food and other debris can damage the laptop. You should avoid eating or drinking while using the laptop. DO NOT keep food or food wrappers in the laptop bag.

6. Take extreme caution with the screen. The screens are very susceptible to damage from excessive pressure or weight. In particular, avoid picking up the laptop by the screen or placing your finger directly on the screen with any force.
7. Monthly allow your battery to completely drain. Dimming the LCD brightness of your screen will extend the battery run time. For help, consult your teacher, technician or technology specialist.
8. Never attempt repair or reconfiguration of the laptop. Under no circumstances are you to attempt to open or tamper with the internal components of the laptop. Nor should you remove any screws -doing so will render the warranty void.
9. Take care when inserting cords, cables and other removable storage devices to avoid damage to the laptop ports.
10. Do not expose your laptop to extreme temperatures, direct sunlight, or ultraviolet light for extended periods of time. Extreme heat or cold may cause damage to the laptop.
11. Do not write, draw, paint or place stickers/labels on your laptop or bag. Remember the laptops are the property of Traditional County Schools.
12. Keep your laptop away from magnetic fields, which can erase or corrupt your data. This includes but is not limited to large speakers, amplifiers, transformers, and old style television sets.

IV. Cleaning Your Laptop

A. Routine maintenance on laptops will be done by the district technology support team. However, students are encouraged to perform simple cleaning procedures as outlined below:
    1. Always disconnect the laptop from the power outlet before cleaning.
    2. Never use liquids on the laptop screen or keyboard.
    3. Clean the screen with soft, lightly dampened, lint free cloth or use anti-static screen cleaners or wipes.
    4. Wash hands frequently when using the laptop to avoid buildup on the touch pad. Grease and dirt can cause the cursor to jump around on the screen
    5. Clean the touch pad with lightly dampened cloth.

V. General Security

A. Never leave your laptop unattended or unsecured. Laptops should be secured in a designated storage facility or a secured locker.
B. During after-school activities, you are still expected to maintain the security of your laptop. Unsupervised laptops will be confiscated by staff, and disciplinary actions may be taken.

C. Each laptop has several identifying labels (i.e., WCS asset number, serial number and student name). Under no circumstances are you to modify or destroy these labels.

VI. General Use of the Laptop

A. Students are REQUIRED to bring his/her laptop to school each day with a fully charged battery. Students will not be given the use of a loaner laptop if he/ she leaves his/her laptop at home. Students leaving laptops at home will be required to complete assignments using alternate means (as determined by the teacher).

B. Students will receive disciplinary referral from their teacher for repeatedly refusing to bring the laptop to class.

C. Be mindful not to cause a tripping hazard when it is necessary to plug in your laptop.

D. Avoid using your laptop in areas which may lead to damage or theft. Do not use your laptop around sporting activities or events.

E. Laptops are not allowed on overnight trips or field trips without the expressed written approval of the lead chaperone and the parent/guardian.

F.*LAPTOP USE IS NOT PERMITTED IN THE DINING AREA (LUNCH ROOM) DURING LUNCH PERIODS. The laptop may be used in designated commons areas (away from food or drink) during this time.

G. Laptop sound will be muted at all times unless permission is obtained from the teacher for instructional purposes.

H. Do not delete any folders or files that you did not create or that you do not recognize. Deletion of files could result in a computer failure and will interfere with your ability to complete class work.

I. Student laptops will be subject to routine monitoring by teachers, administrators, and technology staff.

J. Students will provide access to any laptop computer and /or accessories that they have been assigned upon the district's or school's request. An individual search of the laptop and other stored student files may be conducted if there is suspicion that policies or guidelines have been violated.

K. Students will be assigned a space on the server for storing educational files (home directory). This directory should be used for backing up and storing files as directed by the teacher. Additional common storage space may be provided by your teacher.

L. No laptops will be used in ISS

M. After 8 unexcused absences in a semester, the student becomes a day user. (plan to be developed)

VII. Email

A. Email transmissions and transmitted data stored on servers shall not be considered confidential and may be monitored at any time by designated staff to ensure appropriate use.

B. B. Students will abide by all email guidelines as outlined in the WCS Board Policy #5451 – Acceptable Use Policy for Technology.

VIII. Virus Protection

All laptops have Trend Micro virus protection software installed. The virus software will be updated automatically through login to the district network. Do not remove or add any virus protection software.

IX. Internet Access/Filtering

A. As required by the Children's Internet Protection Act, a current filtering solution (SmartFilter) is maintained by the district for school and home use on this laptop, the district can not guarantee that access to all inappropriate sites will be blocked. It is the responsibility of the user to follow guidelines for appropriate use of the network and the Internet. WCS will not be responsible for any problems suffered while on the network or the Internet. Use of any information obtained through the Internet is at the user's own risk.

B. WCS will not serve as the Internet service provider for home use. However, WCS will provide filtering of the laptops while connecting to the Internet from home. In order for a student to access the Internet, the parent/guardian must contract with an Internet service provider (e.g., Time Warner-Road Runner, Embarq-DSL, BBnP).

X. Login Procedures

A. **School Use**: Always remove check from workstation only box. ***This is very important and allows the computer to receive updates.*** Students will be given a unique username. Students will choose a password. Always change your password when prompted.

B. **Home Use**: Always place the check IN workstation only box. The same user name and password will be used.

C. DO NOT share passwords. Students are responsible for anything done using their login.

XII. Copyright

Compliance with federal copyright law is expected of all. "Copyright" is legal protection for creative intellectual works, which is broadly interpreted to cover just about any

expression of an idea. Text (including email and Web information), graphics, art, photographs, music, and software are examples of types of works protected by copyright. Copying, distributing, downloading, and uploading information on the Internet may infringe the copyright for that information. Even an innocent, unintentional infringement violates the law.

XIII. Inappropriate/Unacceptable Use

Tier 1: Inappropriate Use:

Includes but not limited to:

- Using proxy sites
- Using any browser other than Internet Explorer
- Using computers not assigned to you (Teachers may allow students to look on with another student for instructional purposes only)
- Videoing or taping on school property is not permitted when not related to an assignment
- Emailing or chatting during class (when not related to an assignment)
- Profanity
- Gaming

Tier 2: Unacceptable Use:

Includes but not limited to:

- Pornography (real life or cartoon) Pornography can be a felony offense and if so will be turned over to authorities.
  - Possession
  - Manufacturing – using a camera o create pictures/movies
  - Distributing – sending/sharing with others
- Images of Weapons
- Gang Related Files
- Bootleg movies or music
- Logging into a computer/application using someone else's login
- Cheating
- Using a computer to plan a fight, cause harm or commit a crime
- Profanity directed to the faculty or staff
- Threats and/or cyber bullying.

XIV Care and Responsibility

Tier 1: Care and Responsibility: Neglect and Misuse

Includes but is not limited to:

- Carrying your laptop out of the assigned case
- Carrying books and binders in laptop bag
- Leaving laptop unattended

Allowing someone else to use your assigned laptop
Removing labels and identifying stickers on laptop/bag

Tier 2: Care and Responsibility: Intentional Misuse or Abuse

Includes but is not limited to:

Intentional actions which are harmful or potentially harmful to the computer, charger, and/or computer case

Discipline Consequences

Tier 1 Violations

1st offense	3 days lunch detention
2nd offense	5 days lunch detention
3rd offense	3 days ASD (after school detention)
4th offense	5 days ASD
5th offense	3 days OSS (out of school suspension)
6th offense	5 days OSS
7th offense	7 days OSS
8th offense	10 days OSS
9th offense	10 days OSS with long term recommendation

Tier 2 Violations

1st offense	5 days OSS
2ND offense	10 days OSS
3RD offense	10 days OSS with long term recommendation

Internet Use Guidelines

For Traditional County Schools

Internet access is provided to support the educational goals of the Traditional County Schools. The privilege of Internet access is provided for all staff and students upon receipt of a signed Acceptable Use Agreement as found in this document and on the district webpage. The following guidelines are to support and further define the Internet use references found in the Acceptable Use Policy 5451.

- All users must sign the appropriate Acceptable Use Agreement in order to access district network resources. The agreement must be on file with the school or appropriate department.
- The use of network resources must be in support of educational goals.
- Teachers, administrators and staff must supervise student use of electronic information resources in a manner that is appropriate to the student's age and circumstances of use.
- Students are not permitted to use email, play games, download files (MP3, jpegs, real audio, etc.) or install applications unless the activity is supervised and related to curricular studies.
- Users are prohibited from accessing:
    - instant messaging (ICQ, MSN Messenger, etc.)
    - chat rooms
    - peer-to-peer file sharing (e.g., Napster, LimeWire, Kazaa)
- Users are prohibited from using district Internet access for product and/or service advertisement or political lobbying.
- Users are responsible for their actions over the Internet and through electronic communications.
- Unless security and authentication technology is in use, any information you submit to a system is being transmitted over the Internet "in the clear," with no protection from "sniffers" or forgers.
- Attempts to bypass or disable any filtering and security devices are a violation of policy. This includes any attempt to "crack" passwords, operating systems or other network or Internet devices.
- Requests to unblock filtered sites must be approved by the principal and forwarded to the district technology department.
- Users experiencing trouble accessing network resources should contact the district Helpdesk. Provide as much information as possible in order to help debug the problem.

"District technology resources" are provided for students and staff to further the educational goals and objectives of the Traditional County Schools. These resources encompass all computer hardware, peripherals, servers, routers, switches, operating system software, application software, stored text and data files. This includes electronic mail, local databases, externally accessed databases (such as the Internet), CD-ROM, optical media, digital images, digitized information, communications technologies, and new technologies as they become available. The purpose of this policy is to ensure the acceptable use of district technology resources of the Traditional County Schools. It is the responsibility of all employees and students to follow these guidelines to ensure a safe and productive educational environment.

5451.01 Unacceptable Use - The following are unacceptable uses of district technology resources. The list below is by no means exhaustive, but attempts to provide a framework for activities, which fall into the category of unacceptable use.

- Uses that violate federal, state or local laws
- Uses that violate student or employee conduct codes
- Uses that promote commercial or political activities
- Transmission or display of obscene or pornographic images, messages or cartoons, or any transmission or use of communications that may be construed as harassment or disparagement of others
- Uses that intentionally or negligently disrupt normal network use and service
- Creation and/or deployment of a computer virus, Trojan or worm
- Uses that gain or attempt to gain unauthorized entry into a file to use, read or change the contents of the file
- Unauthorized transfer of a file
- Downloading or use of entertainment software, websites or other files not related to the mission and objectives of Traditional County Schools. This includes, but is not limited to, freeware, shareware, copyrighted commercial and non-commercial software, and non-instructional websites.
- Violations of District Technology Resource Use Guidelines as published by the Superintendent of the Traditional County Schools

5451.02 Copyright Infringement - Users shall abide by all copyright, trademark, and licensing agreements and laws, including seeking and documenting permission for use of materials when required.

5451.03 Network Access Protocol

1. While Traditional County Schools desires to provide a reasonable level of privacy, users should be aware that the data they create on the district's systems remains the property of Traditional County Schools. Because of the need to protect Traditional County School's network, district administration does not guarantee the confidentiality of information stored on any network device belonging to Traditional County Schools.
2. An individual in whose name a network account is issued will be responsible at all times for its proper use. The user must cooperate in the protection of the account by changing passwords as required and keeping passwords strictly confidential. Users are expressly prohibited from the sharing of accounts and passwords.

3. It is the users responsibility to remove all sensitive data from their computer(s) before the computer(s) is retired or sold.
4. Users are ultimately responsible for their data, its existence, integrity and security. Traditional County Schools is not liable for any losses of data resulting from one's own accidental or ill-informed use, failures of technology or intruders.
5. Use of the network resources must be in support of educational goals. The district reserves the right to prioritize use and access to the system.
6. Chat rooms and direct electronic communications (Instant Message services) are not permitted on district networks unless expressly authorized by the superintendent or his designee.
7. Teachers, administrators, and staff must supervise student use of electronic information resources in a manner that is appropriate to the students' age and the circumstances of use.
8. Employees and students are responsible for reporting any information security violations to appropriate personnel.
9. The conduct of computer users who access the Internet or send email containing the Traditional County School's domain address may be perceived as reflecting on the character and professionalism of the school system. When engaging in such conduct, whether for personal or official purposes, employees and students are expected to do so in a responsible and professional manner.
10. Effecting security breaches or disruptions of network communication is prohibited. Security breaches include, but are not limited to, accessing data of which the employee or student is not an intended recipient or logging into a server or account that the employee is not expressly authorized to access, unless these duties are within the scope of regular duties. "Disruption" includes, but is not limited to, network sniffing, pinged floods, introduction of viruses, denial of service, and forged routing information for malicious purposes.
11. For security and network maintenance purposes, authorized individuals within the Traditional County Schools may monitor equipment, systems and network traffic at any time.

5451.04 Electronic Mail (Email) Protocol

1. All district provided email accounts are owned by the Traditional County Schools and therefore are not private. Communications of this type are governed by the Freedom of Information Act (FOIA) and therefore available for public distribution. The district retains the right to review, audit, intercept, access and disclose all messages created, received, or sent over the electronic mail systems as necessary.
2. Email is for school business use. Do not forward messages that have no educational or professional value. Do not forward messages that follow a "chain letter" concept. Such messages should be deleted and the sender notified that messages of that nature are not appropriate to receive on a user's district email account. The superintendent or his designee also should be notified by the recipient of the inappropriate email so that a warning can be sent to the user.
3. Postings by employees from a Traditional County Schools email address to newsgroups should contain a disclaimer stating that the opinions expressed are strictly their own and not necessarily those of the Traditional County Schools, unless posting is in the course of approved business duties.

4. Users are prohibited from forwarding unsolicited advertisement (spam), propagate computer viruses, or large quantities of information that may overwhelm the system such as but not limited to chain letters, network games and broadcast messages.
5. Users will not create or forward messages, jokes, etc., which violate school, board harassment policies and/or create an intimidating or hostile environment.
6. Since email is provided as a normal operating tool for any employees who require it to perform their job, individual staff email addresses must be shared with interested parents and community members who request to communicate with staff in this fashion. Each school should post a list of district email addresses for their staff through their Internet website.
7. Attempting to read, delete, copy or modify electronic mail of other system users or deliberate interference with the ability of other users to send/receive electronic mail is prohibited.
8. Students will not be issued individual email accounts. For any projects that involve email communications, teachers may use their district email accounts as facilitators to the activity, or work with the district technology director to activate a special project account for a limited time.

5451.05 Quality of Information - The Traditional County Schools makes no warranties of any kind, whether expressed or implied, for the service it is providing. Traditional County Schools will not be responsible for any problems suffered while on the network or the Internet. These problems include but are not limited to loss of data as a result of delays or otherwise, non-deliveries, mis-deliveries, or service interruptions caused by the network, Internet or users, which include errors or omissions. Use of any information obtained through the Internet is at the user's own risk. Traditional County Schools will not accept any responsibility for the accuracy or quality of information obtained through the Internet.
Although a current filtering solution is maintained by the district, the district cannot guarantee that access to all inappropriate sites will be blocked. It is the responsibility of the user to follow guidelines for appropriate use of the network.

5451.06 Proper Citation - When using information obtained via the Internet, the user will provide proper citations for all quotes, references, images, and sources. Failure to do so is in violation of copyright and plagiarism policies.

5451.07 Vandalism and Neglect - Vandalism of district technology resources will result in immediate cancellation of user privileges and will require restitution. Vandalism is defined as any deliberate attempt to harm or destroy any of the district's technology resources including data.
If any technology equipment owned by the Traditional County Schools (such as a laptop) is lost, damaged or stolen while under the control of a user away from district property, this will be considered neglect. The user is expected to file a claim under his/her insurance coverage, where coverage is available and shall report the incident immediately to his or her supervisor. Traditional County Schools will not be responsible for the cost of repairs or replacement.

5451.08 Consequences - The use of network resources and the Internet is a privilege, not a right. Failure to adhere to policy may result in suspending or revoking the offender's privilege of access to the network and other disciplinary action up to and including termination of the employee or expulsion in the case of the student. Traditional County Schools will cooperate

fully with local, state or federal officials in any investigation concerning or relating to misuse of the district's computer systems and networks.

Legal Reference: G.S. 115C-36, -47, -391
Title 15 U.S. Code §§ 1051 et seq., -1091 et seq., -1111 et seq.
Title 17 U.S. Code
Adopted: August 19, 1996
Revised: March 21, 2005

3245 Copyright Compliance
4245

The Traditional County Board of Education recognizes and supports the limitations on unauthorized duplication and use of copyrighted materials. The Board does not condone any infringement on the property rights of copyright owners. Employees, students and visitors are prohibited from the use or duplication of any copyrighted materials not allowed by copyright law, Fair Use guidelines sanctioned by Congress, licenses or contractual agreements. Violations are also considered to be breaches of expected standards of behavior for employees and students and may result in disciplinary action in accordance with board policy.

3245.1/4245.1 Fair Use is a legal principle that provides certain limitations on the exclusive rights of copyright holders. Fair Use applies to reproduction for such purposes as criticism, comment, news reporting, teaching, scholarship or research. Under federal law, Fair Use requires that permission be acquired from the copyright owner prior to copying copyrighted material. Fair Use is based on the following standards, all of which must be met:

a. the purpose and character of the use
b. the nature of the copyrighted works
c. the amount of and the substantiality of the portion used
d. the effect of the use upon the potential market for, or value of, the copyrighted work

3245.2/4245.2 The superintendent or a designee is responsible for providing information and training to personnel and students, as appropriate, to provide further guidance on the Fair Use of copyrighted materials. Training will be provided.

Legal References: Copyright Law of the United States of America, Title 17 of the United States Code
Adopted: February 17, 2003

Traditional County Schools

Student Acceptable Use Agreement

Student:

I have read (or it has been read to me), understand, and will abide by the Traditional County Schools' guidelines regarding district technology resource use (policy 5451 Acceptable Use Policy). Should I commit any violation, my access privileges may be revoked, and school disciplinary action and/or appropriate legal action may be taken.

Student's Name (please print): _____

Signature: _____

Date: _____

Parent or Guardian:

As the parent or guardian of this student, I have read the above-referenced guidelines regarding district technology resource use. I understand that network/Internet access is intended for educational purposes. The Traditional County Schools have taken precautions to restrict my child's access to questionable materials. However, I recognize that it is impossible for the Traditional County Schools to restrict access to all questionable materials, and I will not hold the school system responsible if my child accesses or acquires such materials on the network. Further, I accept full responsibility for any costs that my child may incur when using the Internet outside of class time. I hereby give permission for my child to use network resources provided by the Traditional County Schools.

Parent or Guardian's Name (please print): _____

Signature: _____

Date: _____

Signed agreement must be returned to your child's school in order for your child to access network resources.

Traditional County Schools

Traditional High School Laptop Project: One-to-One Computing

Student/Parent Laptop Agreement

PLEASE PRINT ALL INFORMATION

Student Name:

_____

Last Name First Name Middle Name Grade

Parent/Guardian Name:

_____

Last Name First Name Drivers License #

Address:

_____

Street City ZIP

Telephone(s):

_____

Home Phone Work Phone Other

Acceptable Use Policy Agreement

☐ I HAVE read and understand all the terms of the Student/Parent Laptop Agreement.
I AGREE to allow my child to participate in the Traditional School Laptop Project: One-to-One Computing.

☐ I HAVE discussed the Student/Parent Laptop Handbook and Student Acceptable Use Policy with my child and assure they shall comply with all documented terms. I also acknowledge and understand that my child will have access to the Internet and may be subject to the risks associated with Internet Usage.

☐ I AGREE to allow my child to take the school-issued laptop home. I further agree that while at home the computing resources will be used as an educational tool.

☐ I GRANT PERMISSION for examples of my child's schoolwork to be published (via Internet and/or other public media) as an extension of classroom studies, provided that the home address, phone number, student's last name or photograph is not included.

Terms of Agreement

I hereby agree to the above statements. I also understand that my right to the use and possession of the property terminates the last calendar day of the current school year, unless terminated earlier by the school. I also understand if the property is not returned by the last day of classes, it will be considered stolen.

_____ _____ _____

Parent/Guardian Signature **Student Signature** **Date**

Property Asset/Serial No.

WCS Asset #_____

Serial #_____

Student Initials_____**Date** _____

Appendix D

School/District-Level Professional Development Matrix

School	ECHS1	ECHS2	ECHS3	ECHS4	ECHS5	ECHS6	ECHS7	Trad
Type of Professional Development								
1:1 Basic Introduction								X
Assessment-Classroom Performance Systems, Clickers, ClassScapes	X			X				X
Classroom Monitoring Software- DyKnow, e-chalk			X	X	X	X	X	X
Copyright Basics	X							
Course Management- Moodle, Eduplatform, Groupwise, NCWise, Apple Remote Desktop, Sharepoint	X		X	X	X		X	X
Digital Image Editing							X	X
E-Portfolios		X						
GoogleDocs		X						
Graphic Organizers, Inspiration	X		X					
Implementing Professional Development-FI, NECC		X	X		X			
Office-Excel, Digital Worksheets, PowerPoint			X					X
Policy Development			X					
Proficiency Requirements								X
SAS, EVAAS							X	
Second Life, Avatars, Study Island, Vokis			X				X	
Smart Boards, New Server, ActivBoard, Promethean, ActivSlate, Geometer's Sketchpad	X			X		X	X	X
Troubleshooting, Saving	X	X						
Voicethread, Podcasting, Discovery Streaming, United Streaming, MovieMaker	X	X			X		X	X
Web 2.0-Wikis, Blogs, Glogster, Delicious, Ning			X				X	
Website Design, iWeb	X		X				X	X

Appendix E
Sample Lessons

Math

This lesson was designed on Activstudio flipchart panels for the interactive presentation of the new material and transferred onto DyKnow panels for the student notes. Within the flipchart were tons of hidden tools for learning, such as links to web pages where the student can practice what they have learned; answers hidden behind planets with a solar eclipse reveal tool to unveil the solution; an embedded video presenting the lesson compliments of Discovery Streaming. All of these different modalities kept the lesson moving along at a very rapid pace while engaging the students as they were up moving and interacting with the flipchart then taking notes on their DyKnow panels.

History

Step 1: Students read about the Fugitive Slave Act in their textbook and answer questions.
Step 2: Students view Fugitive Slave Act posters online and analyze them and answer questions.
Step 3: Students read about Underground Railroad and Harriet Tubman in textbook and answer questions.
Step 4: Students take an online virtual tour of Underground Railroad, analyzing conditions encountered by blacks.
Step 5: Students read about Harriet Beecher Stowe and excerpts from "Uncle Tom's Cabin" online and analyze the text.
Step 6: Students answer the following question: What role did religion play in driving the abolitionist movement?

English

As a focus and review the class will review Epic Hero Short Story Components; Shabanu Reading—check eChalk for assignments.

1. Students will share stories and give feedback about the hero's cycle. Students will then respond to their peer's feedback.
2. Students will use the discussion board for a whole group discussion about the impact of the epic hero cycle.
3. As a closure, students will present an exit slip that would explain if their story could be a movie—why or why not.

Spanish

As a review and focus, students will use low-stakes writing to respond to questions about their culture and beliefs.

1. Students use notes to study about Holidays.
2. Students log onto the Intel website to use the Visual Ranking tool to create a personal definition of culture.
3. For homework, students log onto the website again and compare their ranking to another student's and reflect on why there are differences (or not). Students write own definition of culture.

Science

The lab portion of the lesson plan can be found on the NC State University website below:
http://www.ncsu.edu/sciencejunction/station/experiments/EGG/egg.html#Biochemistry

- The teacher used Voice Thread to assess student understanding of the lab. She gave them several pictures showing the egg at various stages in the experiment. Students worked in small groups, uploading the photos to Voice Thread and used a microphone to describe the causes behind the changes in the egg. Their completed Voice Threads are multimedia lab reports.
  http://www.waynecountyschools.org/1508208714132957/blank/browse.asp?A=383&BMDRN=2000&BCOB=0&C=60332