NORTH CAROLINA COMMUNITY COLLEGE SYSTEM

Report on North Carolina Community College System Distance Learning and Online Capabilities (Session Law 2007-323, Section 8.4.)

Report to
Joint Legislative Education Oversight Committee

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March 5, 2008

REPORT ON NCCCS DISTANCE LEARNING AND ONLINE CAPABILITIES (Session Law 2007-323, Section 8.4.)

This report is submitted to satisfy the following special provision language accompanying new allocations from the North Carolina General Assembly summer 2007:

SECTION 8.4. The Community Colleges System Office shall report by March 1, 2008, to the Joint Legislative Education Oversight Committee, the Fiscal Research Division, and the Office of State Budget and Management on its efforts regarding distance learning opportunities. This report shall complement the report authorized by the General Assembly in Part 6 of S.L. 2004-179 and shall address the following:

(1) The expenditure of funds appropriated in this act for bandwidth at community colleges, including a description of each community college's current bandwidth capacity;
(2) A five-year history of the number of courses offered and number of FTE students served through distance learning;
(3) Results from student and instructor evaluations of distance learning courses;
(4) Current and anticipated future joint efforts between the North Carolina Community College System and The University of North Carolina and North Carolina private colleges, regarding distance learning; and
(5) Analysis of necessary changes or enhancements to improve the sharing of distance learning and online opportunities with The University of North Carolina and the Department of Public Instruction.

Community College Bandwidth

ITS Proposal

The North Carolina State Information Technology Service (ITS) has offered the NCCCS a "price quote for ITS Services for NCCCS WAN Upgrades." The quote is a proposal for 100Mbps broadband service to 54 community colleges and the System Office. This proposal further provides 1Gbps broadband service to the four largest community colleges in the System. This proposal is within the total budgeted funds for NCCCS broadband connectivity. Further, this proposal includes installation of equipment and reasonable and customary construction of fiber optic connectivity to community colleges currently without such. This proposal and an accompanying cover letter are found in Appendix A.

In effect, this ITS proposal provides an agreeable "best value" short-term solution to NCCCS broadband connectivity issues.

A long-term solution is found in collaboration with the State Information Technology Services which includes the following:

- NCCCS institutions will be integrated into the K-20 North Carolina Education Network.
- The NCCCS will participate in planning and implementation of the NC Education Network.
- ITS and MCNC will partner of selections of hardware and protocol for NCCCS short term upgrades appropriate for NC Education Network specifications – avoiding or minimizing need for equipment upgrades in the future.

Current Connectivity

Appendix B entitled *Current Connections* describes available data bandwidth as of November 5, 2007 and is based on ITS data. This list contains ITS bandwidth and bandwidth supplied to NCCCS Institutions by MCNC. As of November 2007, NCCCS institutions received bandwidth from ITS or MCNC via the following distribution:

- 1.5 Mbps – 18 community colleges
- 3 Mbps – 24 community colleges
- 6 Mpbs – 1 community college
- 10 Mpbs – 13 community colleges
- 20 Mbps – 2 community colleges
- 100 Mbps – 1 community college

This total did not include 4 community colleges that were in the process of upgrading to 10Mbps service. Of these, three were upgrading from 1.5Mbps service and one was upgrading from 3Mbps.

This total does include five MCNC client community colleges purchasing broadband connectivity ranging from 10 to 100Mbps.

Five Year History of NCCCS Distance Learning/E-Learning

Distance learning (e-learning) course registrations have increased in double digits each year since the NCCCS began to coordinate development of online courses in 1998-99. The number of online courses developed through the efforts of the Virtual Learning Community (VLC) now is listed at 209 curriculum courses and over 30 Continuing Education courses. These courses collectively support over 20 associate degrees and a variety of certification programs. VLC courses are edited every two years to provide timely updates and modifications as new knowledge and resources are applied to each course of study. VLC courses have been

replicated across the System. Instructors are free to modify VLC courses to meet individual and departmental requirements. Typically, community colleges hold enrollments per course to the same limits and standards as traditional courses.

Additional information regarding online course development is found in the Joint Report NCCCS - UNC 2+2 e-Learning Initiative (Appendix C).

Distance learning registration history for the past nine years for both curriculum and Continuing Education is found in Appendix D.

Results from Student and Instructor Evaluations of Distance Learning Courses

All 58 NCCCS institutions have established student evaluations of traditional, online, hybrid, telecourses, teleweb, and web-supported courses. Typically, 85% of evaluation criteria are similar for all types of instructional delivery. The only criteria substantially different are related to actual use of the technology and access of support services. Wide scale implementation of Online Help Desk services for all NCCCS online and hybrid students has greatly assisted students with technical assistance.

Over 30 NCCCS institutions submitted student and instructor surveys of online courses for this report. While course evaluations differ from institution to institutions, commonalities are abundant. Typically, students are asked to provide graded responses from highly agree to highly disagree related to statements concerning a service or condition pertaining to their course.

Appendix E contains metadata analysis of over 30 sets of community college student evaluations of online courses. The 6,134 individual student responses were tabulated with a total number of 94,081 separate item responses. Responses were ranked positive, neutral, or negative. Results:
Positive responses – 87.86%
Neutral responses – 6.78%
Negative responses – 6.36%

Two instructor evaluations of online courses reports were received. One indicated online courses were meeting standards (57%), exceeding standards (37%), or were below standards (6%). A second report indicated student participation in online courses was considered fair to good. Poor participation averaged less than 1.5%. In other categories; technical support, resources, course operation, online communication, and technology – all responses were fair or good with excellent responses averaging over 25%.

Current and Anticipated Future Joint Higher Education Efforts in North Carolina

North Carolina Learning Object Repository

The 2+2 e-learning initiative has funded several joint NCCCS and UNC efforts. The most notable is the North Carolina Learning Object Repository (NCLOR). Creation of the NCLOR is a recommendation of the NC e-Learning Commission and has been established as the first K-20 digital asset in the state. The NCLOR Steering Committee responsible for establishing the NCLOR is composed of representatives of NCCCS, UNC, DPI, NC Virtual Public School, and NC Association of Independent Colleges and Universities. These representatives are all experienced e-learning leaders across North Carolina and fulfill roles of faculty, support staff, and administrators in their respective institutions. They represent 16 community colleges, 9 public and private universities, and all three public educational Systems.

Moodle Online Learning Platform

The Open Source Collaborative: Moodle Pilot is a joint NCCCS/UNC-GA project to investigate and expand the capabilities of Moodle, an open source alternative to proprietary online learning systems. Moodle has been successfully used by several community colleges and universities. Currently, Isothermal and Blue Ridge Community Colleges use Moodle exclusively and Guilford Technical Community College has announced that 95% of their online courses will be converted to Moodle Fall 2008. Appalachian State University has also announced migration to Moodle Fall 2008. Currently, 13 additional community colleges and two additional UNC institutions have indicated a possible move to Moodle.

The Open Source Collaborative: Moodle Pilot will provide coordination and consolidate resources to maximize the total effort to improve Moodle as a higher education online learning platform. All of these efforts will be transferable to all community colleges, universities, and LEA across the state.

The NCCCS is committed to partnering with K-12 and the universities in accordance with the NC e-Learning Commission Recommendations. Moreover, the NCCCS will support the 58 community colleges in providing a functional network providing access to cost-effective learning technology assets such that all community college students will have the same robust learning tools. To that end, the NCCCS offers the following set of objectives, structure, and alignment of funded services that, collectively, describe a strategy for integrating learning technology infrastructure across the System. The following information was presented to the State Board of Community Colleges Finance Committee in November 2007 to show the learning technology infrastructure for NCCCS.

Virtual Computing Environment

NC State and the NCCCS have entered into a partnership to expand and adapt NC State's successful Virtual Computing Laboratory service to computer lab needs of community colleges. Wake Technical Community College is conducting a pilot implementation of this technology with entry level computing classes this semester, spring 2008. The Virtual Computing Environment utilizes the latest "blade technology" (compact array of computers) to provide secure access to software by entire classes or individual students in a cost-effective manner. Assessment/evaluation of this pilot project is conducted by the Friday Institute.

Learning Technology Infrastructure: Objectives and Structure

Current Objectives for NCCCS Learning Technology Systems

1. Establish robust/uniform learning/teaching tools and resources state-wide
2. Connect & integrate NCCCS with K-12 & UNC
3. Realize economies-of-scale in all investment of new public allocations
4. Reduce duplication of development costs, networking, & effort
5. Establish a culture of collaboration
6. Adopt an "alignment strategy" – process of migration to instructional technology solutions that are:
    a. Standards-based
    b. Scalable
    c. Open source or licensed via aggregate FTE/enrollment basis
7. Provide a menu of learning/teaching/sharing resources via an "integrated functionality" concept

Balanced and Integrated Services on a System Level

Broadband connectivity

- Expanding NCCCS data network
- Improved connectivity in local service areas
- Accommodating existing & emerging regional fiber networks
- Access to state backbone

Learning & teaching content

- Capacity to develop and deliver digital learning content (VLC courses & Learning objects)
- Use of commercial learning content (SAS Curriculum Pathways)
- Use of STEM supplements (LateNiteLabs)

Delivery vehicles

- Course management system (Blackboard, Moodle, WebCT, Educator) to conduct online teaching & learning
- Learning object repository for cataloging, accessing, acquiring and sharing content
- Collaboration tools – webinar & communication resources (Elluminate)

Support services

- Online help desk (students)
- Professional development (VLC & NC-NET)

Collaboration

- Establish best possible planning, support & infrastructure
- Realize economies of scale
- Insure proper spending of public allocations

Funded Infrastructure Components 2008

Bandwidth	Content	Delivery	Support	Collaboration
[3]***Data capacity***	[2]**Learning objects**	[4]**Blackboard**	[4]**Online Help Desk**	[2]**VLC expansion**
Centralized services	[2]**Learning modules**	[1]**Moodle**	[2]**Online orientation**	[6]**SIRSI/CCLINC**
**LEA, CC & UNC partners*	[2]**Online courses**	[1]**Elluminate**	[2]**VLC staff development**	**2+2**
Satellite campuses	[1]**Curriculum Pathways**	[6]**ITV Video services**	[5]**NC-NET**	[5]**NC-NET**
**Regional networks*	[1]**LateNiteLabs**	[1]**NCLOR**	[1]**LEARN NC**	[1]**NCLOR**
Uniform services		Video streaming	*TLT (UNC) Collaborative*	[1]**Open Source Collaborative**
Future expansion at local level			[4]**LTS Staff Positions**	[4]**Virtual Computing Lab**
				[1]**LEARN NC**

[1]2+2 Funding - $1,000,000
[2]Virtual Learning Community Funding – $ 850,000
[3]Broadband Connectivity Funding - $3,827,600
[4]Expansion Budget Funding - $2,362,193
[5]NC-NET (2+2) Funding
[6]Previously Funded
***Non-NCCCS funded**

Total recurring appropriations = $8,039,793

Additional information regarding shared e-learning infrastructure and resources are found in the Joint Report NCCCS - UNC 2+2 e-Learning Initiative (Appendix C).

Analysis of necessary changes or enhancements to improve the sharing of distance learning and online opportunities with The University of North Carolina and the Department of Public Instruction.

The following components collectively form an "alignment strategy" intended to replace institutional-centric (silo effect) instructional technology with System-centric instructional technology solutions. The objective is to evolve procurement strategies that place institutions (and Systems) on converging technical paths utilizing the "best of breed" and/or best value technologies based on common standards and volume purchases/discounts. Emphasis is placed on technology that promotes collaboration and sharing of resources while reducing duplication of time, effort, and cost.

Alignment Strategy

- Target expanded and uniform learning technology services to all community colleges
- Collaborate with PreK-20 North Carolina partners to establish technology platforms that support consistent, seamless instructional technology
- Establish partnerships with regional and national leaders in sharable instructional technology and systems
- Explore alternative solutions to mission critical technologies
- Transition from proprietary to open source instructional technology and/or scalable, proprietary technology that accommodates aggregate FTE/enrollment licensing
- Develop an economic model for learning technology
- Evolve learning technology from campus-based to Systems-based solutions
- Establish a state-wide Learning Object Repository for digital learning and teaching content
- Develop tracking of digital content use for ROI calculations
- Develop consistent policy and funding models that facilitate learning technology
- Expand and integrate MCNC and ITS services for networking and data center operations so that all public education entities have a seamless state infrastructure foundation for instructional applications and content
- Evolve the Education Insight PreK-20 Longitudinal Data System to become the data management platform for statewide education system student migration management and assessment

Note: The Alignment Strategy was written by Dr. Bill Randall, Associate Vice President, Learning Technology Systems, North Carolina Community College System, and Robyn Render, Vice President and Chief Information Officer, University of North Carolina General Administration.

Appendix A

Price Quote for ITS Services for
North Carolina Community College System WAN Upgrades

State of North Carolina
Office of Information Technology Services
Telecommunication Services

Michael F. Easley, Governor **George Bakolia, State Chief Information Officer**

To: North Carolina Community College System

From: Mark Cooke, ITS Network Services

Subject: Price Quote for ITS Services for NCCCS WAN Upgrades

Date: February 15, 2008

ITS Network Services is pleased to extend the following service offering(s) to: NC Community College System

Wide Area NCIIN Connectivity
ITS/Telecommunications Services designs, develops and maintains the North Carolina Integrated Information Network (NCIIN), the State's official data communications network. The NCIIN is a multi-protocol, router-based Wide Area Network that provides statewide data communications and Internet connectivity to all Executive Branch agencies and participating non-Executive public sector entities.

Additional service details, options and service level agreements can be found on the ITS Web site at:
http://www.its.state.nc.us/ServiceCatalog/Index.htm
http://www.its.state.nc.us/Support/CustSupport.asp

Cost for Wide Area NCIIN Connectivity

See the attached spread sheet.
The price quote includes the following:

- 100Mb or 1,000Mb access circuit for each of the locations listed on the spread sheet. Access circuit speed for each location is indicated on the spread sheet.
- $500.00 per site WAN installation charge. (one-time)
- $7,000.00 per site construction costs to handle any one-time charges outside the normal WAN installation to include conduit, DMARC extension, or telco build out). The construction costs are estimates to be used for budget purposes only. ITS will provide pricing per site when required. NCCCS will need to submit a T-04 form for each site that requires construction.
- Price quote includes a one-time cost for Customer Premise Equipment (CPE) for each of the sites listed.
    - Cisco 3825 router.

Service Level Commitment
The Customer agrees to pay the established rate for the term of this agreement. This agreement will be in effect for one (1) year from the date service is declared operational. This agreement will be automatically renewed on a month-to-month basis thereafter.

The price quote is valid for 90 days. If you have additional questions concerning this quote, please contact ITS Network Services @ 1-800-933-4STS.

P.O. Box 17209 • Raleigh, North Carolina 27619-7209
Tel: 919.981.5555 •State Courier 51-01-11
An Equal Opportunity/Affirmative Action Employer

Site ID	Project	MAX Speed	CIR	Monthly Cost (w/o CPE HDW)	Access	HE	Core (QoS)	One-time Installation	Estimated Construction Cost	Cisco 3825 & year Maintenance
430	NC Community College System	100	45	$ 5,442.30	$ 895.78	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
2464	Blue Ridge Community College	100	45	$ 5,442.30	$ 895.78	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
383	Haywood	100	45	$ 5,442.30	$ 895.78	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
386	Isothermal Comm. College-Spindale	100	45	$ 5,442.30	$ 895.78	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
404	Mayland Community College	100	45	$ 5,442.30	$ 895.78	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
417	Mitchell Community College	100	45	$ 5,442.30	$ 895.78	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
4579	Robeson Community College	100	45	$ 5,442.30	$ 895.78	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
4580	Rockingham Community College	100	45	$ 5,442.30	$ 895.78	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
11047	Alamance Community College	100	45	$ 5,442.30	$ 895.78	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
	Asheville-Buncombe	100	45	$ 5,442.30	$ 895.78	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
2797	Cape Fear Community College	100	45	$ 5,442.30	$ 895.78	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
2867	Cleveland Community College	100	45	$ 5,442.30	$ 895.78	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
	Forsyth Tech. Community College	100	45	$ 5,442.30	$ 895.78	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
378	Gaston College	100	45	$ 5,442.30	$ 895.78	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
4577	Richmond Community College	100	45	$ 5,442.30	$ 895.78	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
4581	Rowan Cabarrus Community College	100	45	$ 5,442.30	$ 895.78	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
2824	Central Piedmont Community College	1000	250	$ 10,760.16	$ 1,300.32	$ 1,300.32	$ 8,350.00	$ 500.00	$ 7,000.00	$ 10,219.11
381	Wake Tech Community College	1000	250	$ 10,760.16	$ 1,300.32	$ 1,300.32	$ 8,350.00	$ 500.00	$ 7,000.00	$ 10,219.11
374	Fayetteville Tech Community College	1000	1000	$ 10,760.16	$ 1,300.32	$ 1,300.32	$ 8,350.00	$ 500.00	$ 7,000.00	$ 10,219.11
381	Guilford Tech Community College	1000	250	$ 11,979.98	$ 2,520.14	$ 1,300.32	$ 8,350.00	$ 500.00	$ 7,000.00	$ 10,219.11
4636	Wayne Community College	100	45	$ 5,442.30	$ 895.78	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
4637	Western Piedmont Comm. College	100	45	$ 5,442.30	$ 895.78	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
419	Nash Community College	100	100	$ 5,546.12	$ 999.60	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
383	Wilson Technical Community College	100	100	$ 5,546.12	$ 999.60	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
2903	Craven Community College	100	100	$ 5,546.12	$ 999.60	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
2824	Pitt CC	100	100	$ 5,546.12	$ 999.60	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
2288	Bladen Community College	100	100	$ 5,546.12	$ 999.60	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
387	James Sprunt Comm. College	100	100	$ 5,546.12	$ 999.60	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
4577	Sampson CC	100	100	$ 5,546.12	$ 999.60	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
389	Lenoir Community College	100	100	$ 5,546.12	$ 999.60	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
391	Martin Community College	100	100	$ 5,638.94	$ 1,092.42	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
380	Roanoke-Chowan Community College	100	100	$ 5,638.94	$ 1,092.42	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
11285	Beaufort County Community College	100	100	$ 5,638.94	$ 1,092.42	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
288	College of The Albemarle	100	100	$ 5,638.94	$ 1,092.42	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
367	Edgecombe Community College	100	100	$ 5,638.94	$ 1,092.42	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
382	Halifax Community College	100	100	$ 5,638.94	$ 1,092.42	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
4631	Southeastern Community College	100	100	$ 5,638.94	$ 1,092.42	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
287	Coastal Carolina Community College	100	100	$ 5,638.94	$ 1,092.42	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
390	Randolph Community College	100	100	$ 5,638.94	$ 1,092.42	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
4634	Vance-Granville Comm. College	100	100	$ 5,638.94	$ 1,092.42	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
418	Montgomery Community College	100	100	$ 5,744.00	$ 1,197.48	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
447	Pamlico Community College	100	100	$ 5,744.00	$ 1,197.48	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
	Carteret CC	100	100	$ 5,744.00	$ 1,197.48	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
2802	Catawba Valley Community College	100	100	$ 5,744.00	$ 1,197.48	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
388	Johnston Community College	100	100	$ 5,744.00	$ 1,197.48	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
454	Piedmont Community College	100	100	$ 5,744.00	$ 1,197.48	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
4610	Sandhills Community College	100	100	$ 5,744.00	$ 1,197.48	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
4630	Surry Community College	100	100	$ 5,744.00	$ 1,197.48	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11

Site ID	Project	MAX Speed	CIR	Monthly Cost (w/o CPE HDW)	Access	HE	Core (QoS)	One-time Installation	Estimated Construction Cost	Cisco 3825 & year Maintenance
422	Wilkes CC	100	100	$ 5,744.00	$ 1,197.48	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
430	Stanly Comm. College	100	100	$ 5,829.72	$ 1,224.00	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
2793	Caldwell Community College	100	100	$ 5,770.52	$ 1,224.00	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
2979	Davidson Community College	100	100	$ 5,770.52	$ 1,224.00	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
335	Durham Technical Community College	100	100	$ 5,770.92	$ 1,224.40	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
4637	Tri-County Community College (Murphy)	100	100	$ 9,566.29	***$ 5,019.77***	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
408	McDowell Tech Community College	100	100	$ 9,566.29	***$ 5,019.77***	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
2784	Brunswick Community College	100	100	$ 8,948.64	***$ 4,402.12***	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
4623	South Piedmont Community College	100	100	$ 9,566.29	***$ 5,019.77***	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
4628	Southwestern Community College	100	100	$ 9,834.80	***$ 5,288.28***	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
2807	Central Carolina CC	100	100	$ 9,106.29	***$ 4,559.77***	$ 427.00	$ 4,310.00	$ 500.00	$ 7,000.00	$ 10,219.11
				$ 374,406.50	$ 86,449.34	$ 28,686.28	$ 270,450.00	$ 29,500.00	$ 413,000.00	$ 602,927.49
				$ 4,492,878.00	$ 1,037,392.08	$ 344,235.36	$ 3,245,400.00			

Summary		
Annual	Reoccur	$ 4,492,878.00
Installation	One-time	$ 29,500.00
Estimated Construction	One-time	$ 413,000.00
3825 & year maintenance	One-time	$ 602,927.49
Total	One-time cost	$ 1,045,427.49

Appendix B

Current Connections

Current connections

Site ID	Project	Street_Address	Circuit Type	Speed	ClientId	Main campus
11183	Brunswick Community College	2050 Enterprise Drive	ATM	T1		x
11285	Surry Community College - Yadkin Center	4649 US601	ATM	T1		x
2464	Southwestern Community College	447 College Drive	ATM	T1		x
248	Vance-Granville Comm College	SR1126 (Poplar Creek Road & I-85)	IMA	3MB		x
2784	Guilford Tech Community College	601 High Point Road	ME	20MB	Data	x
2784	Guilford Tech Community College	601 High Point Road	IMA	6MB	Video	
2793	Cape Fear Community College	411 N. Front Street	ATM	T1		x
2797	Guilford Tech Comm College - High Point	901 South Main Street	ME	10MB		
2802	Fayetteville Tech Community College	2201 Hull Road	ME	20MB		x
2807	Guilford Tech Comm Coll-Greensboro Camp.	3505 East Wendover Avenue	ME	10MB		
2808	Guilford Technical Comm Coll-Aviation	260 North Regional Road	ATM	T1		
2824	Pitt Community College	1986 Pitt Tech Rd	IMA	6MB	Video	
2824	Pitt Community College	1986 Pitt Tech Rd	ME	10MB	Data	x
2867	College of The Albemarle	1208 North Road Street	IMA	3MB		x
287	Central Carolina CC	1105 Kelly Drive	F/R	T1		x
288	Johnston Community College	245 College Rd	ME	10MB		x
2903	Beaufort County Community College	5337 US264 E	ME	10MB		x
2979	NC Community College System	200 W Jones St	MAN_MM	6MB		x
335	Davidson Community College	297 DCCC Rd, Learning Resource Bldg	ATM	3MB		x
367	Mayland Community College	200 Mayland Drive	IMA	3MB		x
374	Cleveland Community College	137 South Post Street	IMA	3MB		x
378	Nash Community College	522 N. Old Carriage Road	IMA	3MB		x
379	Richmond Community College	1042 W Hamlet Avenue	IMA	3MB		x
380	Roanoke-Chowan Community College	109 Community College Rd	F/R	T1		x
381	Wake Tech Community College	9101 Fayetteville Rd	IMA	3MB		x
382	Wayne Community College	3000 Wayne Memorial Dr	ME	10MB	Data	x
382	Wayne Community College	3000 Wayne Memorial Dr	IMA	3MB	Video	
383	Wilson Technical Community College	902 Herring Avenue	ME	10MB		x
386	Bladen Community College	7418 NC Highway 41 West	IMA	3MB		x
387	James Sprunt Comm College	133 James Sprunt Circle Drive	IMA	3MB		x
388	Pamlico Community College	5049 NC Highway 306 South	IMA	3MB		x
389	Piedmont Community College	1715 College Dr	IMA	3MB		x
390	Randolph Community College	629 Industrial Park Ave	ME	10MB		x

391	Sandhills Community College	3395 Airport Road	IMA	3MB		x
404	Blue Ridge Community College	180 West campus Drive	IMA	6MB	Video	
404	Blue Ridge Community College	180 West campus Drive	ME	10MB	Data	x
408	Rockingham Community College	HWY 61 / County Home Rd	IMA	3MB		x
417	South Piedmont Community College	680 US Highway 74 W	F/R	64		
418	Craven Community College	800 College Court	F/R	T1		x
4184	Mayland Community College	785 Cranberry St	ATM	T1		
419	Isothermal Comm College-Spindale	286 ICC Loop Rd	IMA	3MB		x
422	Wilkes Community College	1328 Collegiate Drive	ME	10MB	Data	x
422	Wilkes Community College	1328 Collegiate Drive	IMA	3MB	Video	
430	Stanly Comm. College	141 College Drive	IMA	3MB		x
445	NC Center for Applied Textile Tech.	7220 Wilkenson Blvd	F/R	T1		
447	Western Piedmont Comm College	1001 Burkemont Ave	IMA	3MB		x
454	Caldwell Community College	2855 Hickory Blvd	IMA	3MB		x
4571	Davidson Comm College - Davie Campus	1205 Salisbury Road	DSL	3MB		
4571	Davidson Comm College - Davie Campus	1205 Salisbury Road	IMA	3MB		
4574	Catawba Valley Community College	2550 Highway 70 SE	IMA	3MB		x
4575	Edgecombe Community College	2009 West Wilson Street	IMA	3MB		x
4576	Gaston College	201 Highway 321 South	IMA	6MB	Video	
4576	Gaston College	201 Highway 321 South	ME	10MB	Data	x
4577	Sampson Community College	1801 Sunset Avenue	IMA	3MB		x
4578	Martin Community College	1161 Kehukee Park Road	IMA	3MB	Video	
4578	Martin Community College	1161 Kehukee Park Road	ME	10MB	Data	x
4579	Lenoir Community College	231 Highway 58 South	IMA	3MB		x
4580	Mitchell Community College	500 West Broad Street	IMA	3MB		x
4581	Durham Technical Community College	1637 Lawson Street	ATM	T1		x
4583	McDowell Tech Community College	54 College Drive	ATM	T1	Video	
4583	McDowell Tech Community College	54 College Drive	F/R	T1	Data	x
459	Surry Community College	630 South Main Street	IMA	3MB		x
4610	Central Piedmont Community College	1201 Elizabeth Avenue	ATM	T1		x
4622	Alamance Community College	1247 Jimmy Kerr Road	ATM	T1		x
4623	Brunswick Community College	50 College Rd N. E.	ATM	T1		
4626	College of the Albemarle - Dare Campus	132 Russell Twiford Road	ATM	T1		
4627	Halifax Community College	200 College Drive	ATM	T1		x
4628	Montgomery Community College	1011 Page Street	ATM	T1		x

4629	Rowan Cabarrus Community College - North	1333 Jake Alexander Blvd	ATM	T1		x
4630	Rowan Cabarrus Community College - South	1531 Trinity Church Road	ATM	T1		
4631	Southeastern Community College	4564 Chadbourn Highway	ATM	T1		x
4632	Tri-County Comm Coll (Robbinsville)	145 Moose Branch Road	ATM	T1		
4633	Beaufort County Community College	5337 Hwy 264 East	ATM	T1		
4634	Haywood Regional High Tech. Center	112 Industrial Park Drive	ATM	T1		
4635	Robeson Community College	5160 Fayetteville Road	ME	10MB	Data	x
4635	Robeson Community College	5160 Fayetteville Road	ATM	T1	Video	
4636	South Piedmont Community College	4209 Old Charlotte Rd	ATM	T1		x
4637	Tri-County Community College (Murphy)	4600 Hwy 64 East	ATM	T1		x
4638	Coastal Carolina Community College	444 Western Blvd	ATM	T1		x
4665	Mayland Community College	107 Wheeler Hills Rd	ATM	T1		
4677	Pitt Community College BioTech	1800 North Greene Street	F/R	T1		
4719	Hickory Metro Higher Education Center	2760 Highway 70 Southeast	ATM	T1		

Proposed changes

287	Central Carolina CC	1105 Kelly Drive	F/R	T1	upgrading to 10MB MetroE
447	Western Piedmont Comm College	1001 Burkemont Ave	IMA	3MB	upgrading to 10MB MetroE
4628	Montgomery Community College	1011 Page Street	ATM	T1	upgrading to 10MB MetroE
4631	Southeastern Community College	4564 Chadbourn Highway	ATM	T1	upgrading to 10MB MetroE

MCNC Clients

Carteret Community College	10Mbps	x
Central Piedmont Comm College	10Mbps	
Cape Fear Community College	10Mbps	
Durham Tech Community College	45Mbps	
Forsyth Tech Community College	100Mps (WinstonNet)	x
Wake Tech Community College	45Mbps	

ITS "POP"

Asheville-Bumcombe Comm College	10Mpbs	x

Appendix C

The North Carolina Community College System
and
The University of North Carolina
Joint Report on
The NCCS – UNC 2 + 2 E-Learning Initiative
(Session Law 2006-66, Section 9.1)

The North Carolina Community College System
and
The University of North Carolina
Joint Report on
The NCCCS – UNC 2 + 2 E-Learning Initiative
(Session Law 2006-66, Section 9.1)

Submitted At the Request of
The North Carolina General Assembly

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February 2008

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Part I
North Carolina Community College System

NCCCS/UNC 2 + 2 E-Learning Initiative
2006-2007

Pursuant to Session Law 2006-66, An Act to modify the Current Operations and Capital Appropriation Act of 2005, section 9.1, the North Carolina Community College System Office and the University of North Carolina General Administration submits this report on the implementation of the North Carolina Community College System (NCCCS) – University of North Carolina (UNC) 2 + 2 E-Learning initiative (the Initiative).

The System Office (SO) and the UNC General Administration (UNC-GA) have collaboratively identified four (4) areas to implement the 2 + 2 E-Learning Initiative. Those areas are:

A. Teacher Education online course development
B. Professional development
C. Student Tracking, and
D. Infrastructure

A. TEACHER EDUCATION ONLINE COURSE DEVELOPMENT

This initiative focuses on the critical teacher shortage facing the state and nation, both now and in the future. To address this need, the North Carolina Community College System (NCCCS), through the Virtual Learning Community (VLC), is focusing on the development of online courses needed to complete pre-major degrees in the following areas of greatest need:

Associate in Arts/Elementary Education (*totally online*)
Associate in Arts/Middle Grades Education and Special Education (*totally online*)
Associate in Science/Chemistry and Chemistry Education
Associate in Science/Biology and Biology Education
Associate in Science/Mathematics Education

The two systems have identified college transfer pre-education programs/courses within the Virtual Learning Community of the NCCCS that are currently available to students pursuing a teaching major at the university under the North Carolina Comprehensive Articulation Agreement (CAA). The VLC is a collection of online courses developed and shared by all North Carolina community colleges. As a result of the development of courses in 2006-2007, an Associate of Arts/Elementary Education and the Associate of Arts/Middle Grades Education and Special Education are now available totally online.

With the use of state appropriations to the NCCCS designated for distance learning, Virtual Learning Community course development centers developed five math and five science courses and edited 64 existing courses in 2006-2007. These courses help to build a strong foundation for the degree programs listed above. It is not enough to develop new online math and science programs. All courses in the Virtual Learning Community must be regularly edited and updated so that online degrees are maintained at the same high standards as traditional courses. Continuous editing of all courses strengthens each degree and enhances the reach of the 2 + 2 E-Learning Initiative funding which is focused on the development of math and science courses.

2006-2007 Math and Science Course Development Center

Courses developed in 2006-2007 by Virtual Learning Community Centers and currently available online:

New Online Math and Science Courses Developed in 2006-2007	
BIO 120	Introductory Botany
BIO 130	Introductory Zoology
CHM 131A	Introduction to Chemistry Lab
CHM 135	Survey of Chemistry I
MAT 175	Precalculus
MAT 175A	Precalculus Lab
MAT 271	Calculus I
MAT 272	Calculus II
MAT 273	Calculus III
PHY 110	Conceptual Physics

2007-2008 Math and Science Course Development Center

In November 2007, the NCCCS State Board awarded Southeastern Community College $150,000 in 2 + 2 E-Learning state appropriations to develop the following additional math and science courses for the VLC:

Course Number	Course Name
BIO 145	Ecology
CHM 151	General Chemistry I *
CHM 152	General Chemistry II *
MAT 285	Differential Equations
PHY 151	College Physics I
PHY 251	General Physics I

Note: Chemistry labs will be developed using Late Nite Labs software. This software was selected based on recommendations generated from software evaluations conducted during the 2005-2006 fiscal year.

These courses will be completed by May 26, 2008 and available for posting in the System Office course management system for use by colleges in Fall 2008.

B. PROFESSIONAL DEVELOPMENT

Description: The North Carolina Achieving Community College Excellence in Services to Students (NC-ACCESS) is an on-line resource dedicated to developing and providing professional development resources to student development personnel throughout the community college system. Realizing the success of the 2+2 E-Learning Initiative is dependent on students receiving strong support and guidance, the NC-ACCESS advisory board selected student retention and orientation for the year's focus, concentrating on aspects of advising, mentoring, at-risk services, and effective communications.

Audience: Student development personnel

Cost: $150,000

Status: Recommendations of the needs assessment conducted in Year One were implemented. Information on topics such as *Academic Advising, Evaluation/Assessment, Admissions, Registration,* and *Transition from High School to College* were added to the website. Over 13,000 visits to the website were recorded in the first three months of the launch of the revised website. Extensive marketing of the website and its contents took place throughout the year via presentations to student development personnel. Of impact were the suggestions made by student focus groups convened during the annual Student Leadership Institute. The importance of gathering and using the input of "customers" or "end users" cannot be over estimated. NCCCS staff responsible for the North Carolina Achieving Community College Excellence in Services to Students web site continued to work closely with system staff responsible for the North Carolina Network for Excellence in Teaching (NC-NET) to insure consistency between the two websites.

C. STUDENT TRACKING

In order to institute student tracking for education there must be the development of a statewide longitudinal data system. The North Carolina Department of Public Instruction (DPI), the North Carolina Community College System (NCCCS) and the University of North Carolina General Administration (UNCGA) are currently collaborating to plan the development of such a system. The purpose of the overall project will be to create one integrated longitudinal information system to provide input into the executive educational decision making processes for the state. Because of the complexity of the current data systems for each entity and the limited financial and human resources, the initial outcome of the project will provide insight into areas where North Carolina is experiencing a critical shortage of qualified personnel: teaching and nursing.

The estimated cost of this type of project is beyond the scope of the UNC – NCCCS 2 + 2 E-Learning Initiative and will be a separate project from this initiative.

D. INFRASTRUCTURE

Utilization of 2+2 funding for System-wide distance learning solutions represents a cost-effective means to address our current and future teacher shortage. Solutions identified in this report establish the initial infrastructure required to update online courses, improve student resources, improve accessibility, and enhance learning opportunities for our education majors - or any target student population.

Collaboration with University of North Carolina General Administration
Collaboration between the University of North Carolina (UNC) and the North Carolina Community College System (NCCCS) personnel regarding distance learning infrastructure has been ongoing since April 2005. Since that time representatives from the two Systems have been meeting each month to discuss ways to promote collaboration and resource sharing.

For the past two years, the NCCCS staff has presented sessions at the Teaching Learning Technology Collaborative Conference and UNC staff has presented at the Distance Learning Alliance Conference. Both Conferences have included panel discussions featuring representatives from UNC, NCCCS, and Department of Public Instruction (DPI). These sessions have focused on collaboration and seeking common solutions to current and future challenges to education in NC. For example, in recent weeks, staff members of NCCCS and UNC have participated in multiple webinars related to Learning Object Repository (LOR) technology. Both Systems have established Learning Object Repository Steering Committees composed of faculty, library resources, support services, and administration. The first joint meeting of these Steering Committees occurred on July 11, 2006.

Student, Teaching and Learning Resources Implemented by the NCCCS

Educational Resource: North Carolina Learning Object Repository Resources for NCCCS - The Learning Edge (vendor), Hosted by ITS, NCCCS LOR Hardware

Description: Learning Object Repository technology provides a "library" of digitized learning content termed learning objects in which these objects can be catalogued, searched, shared, and modified. Learning Object Repository technology promotes sharing of high quality resources and drastically reduces costs of duplication. The 2+2 funds will be used to establish the North Carolina Learning Object Repository. Therefore, university and community college faculty, administrators, and support staff will collaborate in all phases of planning, Request for Proposal development, evaluation of vendor proposals, implementation, and expansion of the North Carolina Learning Object Repository. The project includes 2+2 funds to be directed for appropriate project management services required to satisfy Senate Bill 991 documentation and protocol; and contract services to assure that all testing components of the vendor Request for Proposal and contract development are properly completed and documented.

Audience: Faculty and students of NCCCS and UNC

Cost: Not to exceed $500,000 first year

Status: The North Carolina Learning Object Repository (NCLOR) is in the final testing and confirmation phase as defined by the Senate Bill 991 process. The NCLOR is being evaluated by a team composed of skilled e-learning specialists and administrators representing NCCCS, UNC, and DPI. This evaluation team collaborated in the development of a national Request for Proposal, evaluation of vendor proposals, and selected the "best value" vendor. The product selected is Equella (product name) provided by The Learning Edge. The evaluation team is finalizing confirmation of the vendor proposal responses as articulated in the Request for Proposal. Vendor confirmation is expected by the end of 2007. The vendor confirmation will be completed in conjunction with Statewide Information Technology Procurement. Migration of the NCLOR to production services is expected by the end of February 2008, upon which time NCLOR services will be rolled out to NCCCS institutions.

[*At the writing of this report, the contract for the Learning Object Repository has been awarded.]*

Educational Resource: Southern Regional Education Board **(**SREB) Sharable Content Object Repositories for Education (SCORE) Initiative Charter Membership

Description: The Southern Regional Education Board Sharable Content Object Repositories for Education Initiative is the best organized and longest running regional effort to address adaptation of a Learning Object Repository to meet educational needs in the U.S. in a cost-wise fashion that enables all Southern Regional Education Board affiliates to reduce overall costs and duplication of effort. To this end, the Sharable Content Object Repositories for Education Initiative addresses the following:

- Quality assurance of e-learning resources based on standards and learning methodology
- Instructor qualifications, roles, responsibilities, and accountability
- Intelligent development of sharable learning resources based on areas of greatest need and utilization
- Federated standards-based Learning Object Repository protocol
    - Standard regional metadata development and deployment
    - Standard regional workflows development and deployment

- Sharable Content Object Reference Model (SCORM) compliant Sharable Learning Object (SLO) development and deployment

Membership on the Sharable Content Object Repositories for Education Initiative Board will enable the NCCCS to have a voice in the future work undertaken by this Board.

Audience: NCCCS faculty and students

Cost: $20,000

Status: Active member

Educational Resource*:* Information Technology Services (ITS) Elluminate Collaboration Service

Description: Elluminate is a web-based collaboration tool that is effective for real time desktop sharing applications. It can be used in tandem with conference calls or for voice and video capabilities to provide effective communications with reduced long distance costs. Collaboration is important to meet the needs of students and faculty from diverse communities and programs. Elluminate is used for professional development by faculty of NCCCS.

Audience: Used for professional development for faculty and staff of NCCCS and to support Virtual Learning Community development centers

Cost: $25,000

Status: The NCCCS currently contracts with Information Technology Services for 50 Elluminate "seats." An additional 50 seats have been included in the three Virtual Learning Community Centers funded by new allocations in the 2007 Expansion Budget.

Educational Resource*:* Content-specific Pedagogy Project – Collaboration between NCCCS and LEARN NC

Description: LEARN NC led the development process for creating resources for content-specific pedagogy in the online environment. The project focus was math pedagogy, but laid the ground work for the development of future content-specific resource development. Resources were designed for current and future online math instructors at the post –secondary level.

Audience: Faculty of NCCCS and UNC

Cost: $40,000

Status: Project completed

Educational Resource: UNC Chapel Hill Course Management System Software Support (LEARN NC)

Description: LEARN NC, a program of the UNC-Chapel Hill School of Education will continue hosting Blackboard course management system software for the NCCCS Virtual Learning Community. Service includes hardware, backups, upgrades, and maintenance. The Blackboard license will be paid for by NCCCS.

Audience: Faculty and students of NCCCS

Cost: $25,700 annual renewal

Status: LEARN NC continues to host Blackboard, the course management system for the community colleges.

Educational Resource: SAS inSchool Curriculum Pathways - Higher Education Learning Objects

Description: Curriculum Pathways are high-end commercially prepared and copyrighted learning objects available to a wide array of community college students in areas of science, math, history, English/literature, and Spanish. These resources are available with a minimum of faculty training. These learning objects allow faculty to enhance either online learning or face to face courses.

Audience: Students and faculty of NCCCS

Cost: $63,500 renewal of contract

Status: NCCCS is now in the second year of a three-year contract. Use of Curriculum Pathways is steadily increasing in the majority of community colleges and in heavy use in a few community colleges.

Educational Resource: Late Nite Labs - Online Chemistry Lab Simulations

Description: Late Nite Labs are online chemistry simulations that provide instructors with the capability to develop and customize high quality online chemistry laboratory simulations. This software provides students with the capability of completing these labs anytime, anywhere.

Audience: Students and faculty of NCCCS

Cost: $6700 renewal

Status: Five hundred ninety-four (594) of the licensed 600 student seats were used by community colleges in 2007. Demand for Late Nite Labs resources has led to doubling the seats from 600 to 1200.

[At the writing of this report, an additional $52,200 for an additional 600 student "seats" has been approved by the State Board of Community Colleges at the November 2007 meeting.]

Educational Resource: Remote Learner

Description: Remote-Learner provides the North Carolina Community College System with system administration services, training for administrators and faculty, and hosting of Moodle online courses. Moodle is an open source alternative to expensive proprietary online course management systems such as Blackboard and WebCT currently in use by the vast majority of community colleges and universities in North Carolina. Open source solutions require no license fee for operation of online learning software. Remote-Learner provides cost-effective high level administration and expertise in open source course management system technology. These resources collectively are termed the North Carolina Moodle Users Group (NCMUG): effectively coordinating research efforts of both community colleges and universities into a cohesive, collaborative group.

Audience: Community college distance learning faculty and administrators

Cost: $41,000

Status: Twelve community colleges participating in the North Carolina Moodle Users Group project now run over 200 Moodle courses supported by Remote Learner. This service includes all hosting costs and faculty training required to launch Moodle courses. Two former North Carolina Moodle Users Group community colleges have established their own contracts with Remote Learner to expand online courses and services beyond the scope of the users group.

Educational Resource: Open Source Collaborative: Moodle Pilot

Description: Moodle open source course management system has been adopted by two NCCCS institutions. An open source system allows for the use of the most effective course designs without the limits of a proprietary system. Success of the North Carolina Moodle Users Group and the interest of several UNC institutions prompted creation of the joint NCCCS/UNC Open Source Collaborative: Moodle Pilot. This pilot project will consolidate the efforts of NCCCS and UNC institutions as they explore options of less expensive and troublesome proprietary course management system solutions. The NCCCS staff has contracted with UNC General Administration to establish a central facility at which collaboration and experimentation can take place to enhance Moodle as an online learning platform, establish high quality faculty training and migration tools, and explore centralized, turn key solutions for the higher education community in North Carolina.

Audience: Faculty and students of NCCCS and UNC

Cost: $170,000

Status: The State Board of Community Colleges has approved the Open Source Collaborative. Members of the UNC staff are finalizing contractual work with a vendor to provide training, migration tools, and system administration. Hosting will take place at MCNC on the UNC network.

Educational Resource: North Carolina Information Highway (NCIH) Equipment

Description: The NCIH videoconferencing facility was equipped with a dedicated laptop computer programmed to mirror an image onto the video screen which integrates multi-media into videoconferencing sessions.

Audience: Faculty and students of NCCCS

Cost: $3700

Status: Equipment has been installed and is in use.

CONCLUSION

This report represents tremendous progress towards the goals of the 2+2 E-Learning Initiative, as well as the vision of distance learning for the North Carolina Community College System and UNC as a whole in achieving the goal of enhancing 2+2 programs through the use of e-learning. Currently, the work that is continuing through these and other funds is establishing resources that will enable faculty and staff statewide to develop high quality online courses and programs using broadband connectivity and that will enhance student learning and success, especially through 2+2 programs. The resources developed in support of this and other initiatives will create a North Carolina distance learning system that is:

Accessible by students, instructors, and developers;
Aligned across lifestyles, careers, and institutions;
Adaptable in meeting diverse and changing needs for learning;
Supportive of both faculty and student development needs;
Practical for effective delivery of courses and application of learning; and
Standards-based for quality and relevance.

Part II
UNIVERSITY OF NORTH CAROLINA
REPORT ON USE OF 2006-07
UNC-NCCCS 2+2 E-LEARNING INITIATIVE FUNDS

January 2008

In 2005, the General Assembly approved legislation to provide the North Carolina Community College System $1 million (R) and the University of North Carolina $1 million (NR) to support the UNC-NCCCS 2+2 E-Learning Initiative. The legislation (SL2005-0276, §9.5) states:

> Funds appropriated in this act to The University of North Carolina and the North Carolina Community College System for the UNC-NCCCS 2+2 E-Learning Initiative shall be used to fund further development of online courses for 2+2 programs. Based on a mutually agreed upon decision by the State Board of Education Chairman, the President of the North Carolina Community College System, and the President of The University of North Carolina as to the areas of greatest need, funds are available to support joint technology development, systems to track student progress and articulation between a North Carolina community college and a University of North Carolina campus, and to develop technology to support online courses and 2+2 programs.

While in the first year of this legislation (2005) the North Carolina Community College System (NCCCS) received recurring funds and University of North Carolina received non-recurring funds, the General Assembly provided the University of North Carolina $1 million (NR) in 2006 to continue work with the NCCCS to place more articulated degree programs online so students anywhere in the State could access them by taking the first two years online through a community college, followed by the upper-division major courses being completed through a constituent institution of the University of North Carolina.

In 2006-07, funds provided to the University of North Carolina (UNC) were directed toward the development of online secondary mathematics education courses, additional support for middle grades mathematics concentration courses, middle grades education pedagogy course development, middle grades and secondary science education course development, and 2+2 integration efforts with the University of North Carolina Online.

IDENTIFIED HIGH NEED PROGRAM AREAS

The NCCCS and UNC have previously collaborated to articulate online degree programs in the areas of communication, criminal justice, liberal arts, and business, with continuing discussion of other potential areas for online articulation. Based on these previous program articulations the two systems agreed to focus the "UNC-NCCCS 2+2 E-Learning Initiative" on building online degree programs primarily in teacher education and targeting high-need licensure areas. This focus will result in full four-year articulated online degree programs accessible from anywhere in the State and can assist in increasing the number of teachers being produced for NC public

school classrooms. The teacher education program areas identified for online development are as follows:

- Secondary Mathematics Education
- Secondary Science Education (specific fields and comprehensive)
- Middle Grades Education (concentrations in mathematics and in science)
- Special Education
- Elementary Education
- Birth through Kindergarten
- Biology Education

The overarching goal of this collaborative plan is to have a pre-major agreement between the Community Colleges and the University serving each identified area so that students at community colleges will know the sequence of courses that will prepare them to enter the upper-division education major.

UNC STRATEGY FOR ADDRESSING PRIORITY AREAS

UNC identified two primary strategies to address the priority high-need program areas; 1) support for individual campus 2+2 development efforts in the identified areas, and 2) collaborative development effort that will enable all campuses to utilize courses developed in the areas of mathematics and science.

- UNC Strategy 1 - In some of the identified program areas, such as, Birth to Kindergarten, Special Education, and Elementary Education, there had been a significant number of courses developed online at UNC campuses. For these areas and campuses that had a program close to being available online, funds were provided to make those programs available fully online. These programs can enroll students sooner since a smaller development effort was needed.

- UNC Strategy 2 – In high-need areas where few or almost no courses were available online at the UNC campuses, such as in mathematics and some sciences, the strategy adopted was to jointly develop of a full set of courses for these degree areas which would be available for use by any campus. As part of this arrangement one or more campuses would commit to offer the degree fully online and in articulation with the community colleges. While these courses will be developed as part of unitary degree programs, many of the courses will serve lateral entry teachers and others who hold a bachelor's degree in a subject area but who need additional course work in order to be certified.

UNC INITIAL DEVELOPMENT EFFORTS AND SUPPORTING INITIATIVES

In 2005-06, East Carolina University (ECU) was funded to develop Elementary Education and Special Education; ECU was also funded to develop Birth through Kindergarten; North Carolina Agricultural & Technical State University was funded to develop Elementary Education; UNC Pembroke was funded to develop Birth through Kindergarten.

Also a focus of initial collaborative development efforts in 2005-06 was the Mathematics concentration in Middle Grades. First, faculty from Mathematics and Mathematics Education

met to determine what constituted a good sequence of courses for a Middle Grades major who wanted to concentrate in Mathematics. From comprehensive list developed by the faculty, courses were selected for online development. Following this initial step faculty from across the system were identified to develop the courses. An education pedagogy review team, consisting of faculty from across the system, was established to ensure quality review and instructional design for each course prior to being made available for all campuses to utilize. Additionally, UNC contracted development support from LEARN NC to provide instructional design and project management for this work.

The courses selected for the Middle Grades concentration in Mathematics and currently under development are:

- Calculus I (4sch)
- Calculus II (4sch)
- Numbers (3sch)
- Algebra (3sch)
- Numbers/Algebra (3sch)
- Geometry (3sch)
- Measurement (3sch)
- Geometry/Measurement (3sch)
- Data/Statistics (3sch)
- Discrete Math (3sch)

To ease the transition of community college students to upper-division online programs, an electronic portal devoted specifically to the needs of 2+2 track students was developed in 2005-06 to provide the necessary information to make the transfer process much easier. UNC in collaboration with NCCCS is committed to expanding the development of this portal for these students.

A potential source of new teachers is retired military, but there have been difficulties connecting military and their spouses to teacher education opportunities around the State. In 2005-06, an online module was developed to acquaint military personnel and their spouses with the rich educational opportunities available across the State, and to make them aware of online programs that will allow them to start working on teacher certification before they retire.

UNC 2006-07 ACCOMPLISHMENTS AND CONTINUING DEVELOPMENT EFFORTS

Through the collaborative development strategy, 10 Middle Grades Mathematics concentration courses and 16 Secondary Mathematics Education courses are currently either under development or have been completely developed in an online format by mathematics and mathematics education faculty across the system. Of these courses, 2 (geometry and algebra) were offered online in fall 2007; 3 (number theory, mathematics methods I, and history of mathematics) are being offered online spring 2008; and 8 of the courses are currently being reviewed by the 2+2 pedagogy team and will be offered online in the summer and fall terms 2008. The remaining courses are still under development and will begin pedagogical review in the spring and summer terms 2008.

Secondary Mathematics Education Course Sequence
Courses selected for the Secondary Mathematics Education degree are:

- Calculus I (4sch)
- Calculus II (4sch)
- Calculus III (4sch)
- Linear Algebra (3sch)
- Modern Algebra (3sch)
- Geometry – primarily Euclidian, axiomatic, and proof oriented (3sch)
- History of Math (3sch)
- Differential Equations (3sch)
- Proof and Number Theory (3sch)
- Statistics II – calculus/probability based (3sch)
- Computer Science (3sch)
- Mathematical Modeling (3sch)
- Discrete Math I (3sch)
- Discrete Math II (3sch)
- Teaching Methods I (3sch)
- Teaching Methods II (3sch)

In addition to addressing Secondary Mathematics Education in 2006-07, the course sequences for a Middle Grades Science concentration and Secondary Science Education were identified with initial coordination and development efforts beginning for this content area.

Middle Grades Science Concentration Course Sequence
Courses selected for the Middle Grades concentration Science are:

- Chemistry I (3sch) & Lab (1sch)
- Conceptual Physics (3sch) & Lab (1sch)
- Basic Physical Geology (3sch) & Lab (1sch)
- Earth Systems - (3sch) & Lab (1sch)
- Astronomy (3sch) & Lab (1sch)
- Environmental/Ecology (3sch) & Lab (1sch)
- Human Biology
- General Biology I (3sch) & Lab (1sch)
- Genetics (3sch) & Lab (1sch)
- Science Methods for Middle Grades I - integrated lab course
- Science Methods for Middle Grades II - integrated lab course

Secondary Science Education Course Sequence
Courses selected for the Secondary Science Education degree are:

- Chemistry I (3sch) & Lab (1sch)
- Chemistry II (3sch) & Lab (1sch)
- Organic Chemistry I (3sch) & Lab (1sch)
- Organic Chemistry II (3sch) & Lab (1sch)
- Quantitative Analysis (3sch) & Lab (1sch)
- Physical Chemistry I (3sch) & Lab (1sch)
- Inorganic Chemistry (3sch) & Lab (1sch)

- Biochemistry (3sch) & Lab (1sch)
- Physics I – (3sch) & Lab (1sch)
- Physics II – (3sch) & Lab (1sch)
- Basic Physical Geology (3sch) & Lab (1sch)
- Historical Geology (3sch)
- Meteorology & Climatology Combination (3sch) & Lab (1sch)
- Earth Systems - (3sch) & Lab (1sch)
- Oceanography (3sch) & Lab (1sch)
- Astronomy (3sch) & Lab (1sch)
- General Biology I (3sch) & Lab (1sch)
- General Biology II (3sch) & Lab (1sch)
- Genetics (3sch) & Lab (1sch)
- Ecology (3sch) & Lab (1sch)
- Environmental Studies (3sch)
- Cellular and Molecular (3sch) & Lab (1sch)
- Secondary Science Methods I – integrated lab course
- Secondary Science Methods II – integrated lab course

Funding was also provided in 2006-07 to Western Carolina University and East Carolina University to develop the Middle Grades Education pedagogy courses that will complement the Middle Grades Mathematics and Science concentration courses for this degree program area. As part of this arrangement, these campuses have agreed to utilize the collaboratively developed concentration courses in Mathematics and Science to offer the degree fully online and in articulation with the community colleges.

UNC also directed a small portion of funding in 2006-07 toward the integration of online 2+2 degree program development with the University of North Carolina Online and the ongoing enhancement of the transfer articulation module developed 2005-06.

UNC 2006-07 BUDGET FOR DEVELOPMENT AND SUPPORTING EFFORTS

LINE	ITEM	AMOUNT
1	UNC CH LEARN NC ▪ Middle Grades Education and Secondary Science Education Course Development ▪ Expanded Support for Middle Grades Education and Secondary Math Education Course Development	$604,197
2	Western Carolina University ▪ Middle Grades Education Pedagogy Course Development	$212,450
3	East Carolina University ▪ Middle Grades Education Pedagogy Course Development	$120,450
4	2+2 Integration Efforts with University of North Carolina Online	$62,903
5	Total	$1,000,000

Note: With the exception of the 2+2 integration efforts with the University of North Carolina Online, all of the funds provided to the University of North Carolina were directed toward course and program development to support online 2+2 programs in teacher education.

UNC Future Steps for Continued Development and Implementation

Future steps for continued development and implementation of the "UNC-NCCCS 2+2 E-Learning Initiative" will involve collaborative inter-institutional accessibility of the courses through the University of North Carolina Online, including establishing a timeline and process for continued rotation of pedagogical and content review directed at ensuring the online courses maintain standards of high quality.

Additionally, UNC will take steps to develop systems to track student progress and articulation between a North Carolina Community College and a UNC institution. In doing so, UNC will seek to forge partnerships with the Duke Data Center, NC Department of Public Instruction, and others such as the Frank Porter Graham Child Development Institute at UNC Chapel Hill to conduct research and data analysis regarding teacher quantity and quality and its impact on K16 education in North Carolina, particularly as it relates to student progress and articulation between North Carolina community college campuses and University of North Carolina Institutions.

UNC will continue development effort with the primary list of courses in Middle Grades Science and Mathematics concentrations, Secondary Mathematics, and Secondary Science. In addition to these, UNC will expand the list of Secondary Science courses to include upper-level concentration sequence courses.

Expanded Secondary Science Education Courses:
The expanded course list for Secondary Science Education is:

- Mechanics
- Electricity and Magnetism
- Thermodynamics
- Quantum Mechanics
- Optics
- Hydrology
- Rocks and Minerals
- Structural Geology
- Geomorphology
- Plant Biology
- Animal Biology
- Plant Physiology
- Animal Physiology
- Evolutionary Biology
- Organismal Biology
- Micro Biology

List of alternative courses to add laboratories:

- Historical Geology
- Environmental Studies

Conclusion

This work in online course development for high need teacher education areas is going well and we are nearing the end of the development of the full curriculum for mathematics secondary and middle grades mathematics concentration. As part of our quality control process we do not consider the course fully developed for online use until it has been reviewed by a pedagogy team and has been taught once by the developer and modified if needed based on the teaching experience. The level of faculty cooperation across institutions is to be applauded in this important initiative.

We are in the start up phase of developing the sciences courses which are complicated by the presence of labs that typically are taught on site. We are carefully exploring how to develop labs that provide the kinds of experiences the science faculty at our institutions expect from science students. The success with developing mathematics courses for mathematics teacher education has generated a strong confidence that success can be realized with the challenges presented by offering online science courses and labs.

The availability of these programs online will not only address the quantity and quality of the preparation of prelicensure teachers, but the courses or parts of the course will be available for professional development of mathematics and sciences teachers across the State.

Appendix D

Distance Learning Registration History

Registration History in Curriculum Courses

Delivery Format	Academic Years								
	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Digital media							57	233	427
Hybrid, on-line and face to face							12,321	24,294	38,535
Internet Course	6,949	15,463	26,668	47,692	72,065	95,150	113,155	135,690	164,074
Telecourse	13,317	14,749	14,528	15,738	13,808	12,013	11,285	7,504	5,226
TeleWebcourse		230	778	795	742	959	1,552	1,878	1,693
Two-way Video Course	3,363	5,145	6,272	7,475	8,642	8,388	8,255	7,058	8,105
Web Supported or Web-Assisted							48,570	85,071	109,896
Other			1,891	2,597	3,289	9,421	3,346	321	665
Totals	23,629	35,587	50,137	74,297	98,546	125,931	198,541	262,049	328,621

Calculated FTE History in Curriculum Courses

Delivery Format	Academic Years								
	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Digital media							4	23	37
Hybrid, on-line and face to face							1,424	2,943	4,800
Internet Course	794	1,707	2,890	5,123	7,613	9,886	11,616	13,731	16,665
Telecourse	1,285	1,434	1,385	1,514	1,333	1,152	1,076	713	507
TeleWebcourse		25	90	88	78	111	187	216	201
Two-way Video Course	305	484	589	712	835	805	789	679	826
Web Supported or Web-Assisted							5,625	10,037	12,995
Other			111	186	257	840	351	34	62
Totals	2,383	3,650	5,066	7,623	10,117	12,794	21,072	28,376	36,093

Registration History in Continuing Education Courses

Delivery Format	Academic Years								
	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Digital media								72	28
Hybrid, on-line and face to face							38	1,422	6,551
Internet Course			1,125	9,283	14,093	17,002	22,549	28,343	33,102
Telecourse			3	364	672	486	247	369	455
TeleWebcourse				463	507	193	101	24	1
Two-way Video Course			109	161	86	39	114	176	965
Web Supported or Web-Assisted							657	1,836	2,081
Other			116	426	730	1,180	2,842	1,513	2,015
Totals	0	0	1,353	10,697	16,088	18,900	26,548	33,755	45,198

Calculated FTE History in Continuing Ed Courses

Delivery Format	Academic Years								
	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Digital media							3	120	360
Hybrid, on-line and face to face			44	352	599	771	878	1,031	1,071
Internet Course			0	17	43	22	12	25	26
Telecourse				16	18	12	5	1	0
TeleWebcourse			2	6	3	4	6	9	4
Two-way Video Course							85	208	212
Web Supported or Web-Assisted			2	12	12	41	81	49	61
Other									
Totals	0	0	48	403	677	849	1,070	1,443	1,735

Appendix E

Student Evaluations of Online Courses

Student Evaluations

Question	Positive	Neutral	Negative	Total # Responses	Positive	Neutral	Negative	Total Percentage
Student Evaluation of Instructor								
Inst is knowledgeable of subject matter	2591	90	119	2800	92.54%	3.21%	4.25%	100.00%
Inst is prepared for class	865	68	25	958	90.29%	7.10%	2.61%	100.00%
Inst gives clear assignments	1255	91	96	1442	87.03%	6.31%	6.66%	100.00%
Inst encourages student responsibility/high expec	702	53	19	774	90.70%	6.85%	2.45%	100.00%
Inst accessible outside of class	4632	420	345	5397	85.83%	7.78%	6.39%	100.00%
Inst provides information on progress	962	107	149	1218	78.98%	8.78%	12.23%	100.00%
Inst uses appropriate teaching methods that stimu	788	97	77	962	81.91%	10.08%	8.00%	100.00%
Inst assesses learning based on knowledge and s	1068	76	45	1189	89.82%	6.39%	3.78%	100.00%
Inst relates activities to real world	574	84	47	705	81.42%	11.91%	6.67%	100.00%
Inst welcomes/encourages my ideas and questior	3970	246	291	4507	88.09%	5.46%	6.46%	100.00%
Inst presents material in organized and clear man	3120	212	228	3560	87.64%	5.96%	6.40%	100.00%
Inst provides timely feedback	4061	361	356	4778	84.99%	7.56%	7.45%	100.00%
Inst is enthusiastic about subject	3283	195	191	3669	89.48%	5.31%	5.21%	100.00%
Inst admitted mistakes, errors, weaknesses	165	75	12	252	65.48%	29.76%	4.76%	100.00%
Inst clearly explained grading system	2985	108	119	3212	92.93%	3.36%	3.70%	100.00%
Inst is focused on student success	520	48	44	612	84.97%	7.84%	7.19%	100.00%
Inst is considerate/professional	2773	163	188	3124	88.76%	5.22%	6.02%	100.00%
Student Evaluation of Course/Environment								
Course meets my learning expectations	2253	142	199	2594	86.85%	5.47%	7.67%	100.00%
Syllabus explains expectations	2959	146	140	3245	91.19%	4.50%	4.31%	100.00%
Grading is consistently applied	1210	70	55	1335	90.64%	5.24%	4.12%	100.00%
Course uses helpful instructional materials	441	38	31	510	86.47%	7.45%	6.08%	100.00%
Activities prepare me to meet course objectives	2588	136	87	2811	92.07%	4.84%	3.09%	100.00%
Instructions are clear concerning how to navigate	141	5	11	157	89.81%	3.18%	7.01%	100.00%
Course is manageable from time perspective	2780	123	133	3036	91.57%	4.05%	4.38%	100.00%
Course assessments match course objectives	1418	115	89	1622	87.42%	7.09%	5.49%	100.00%
Level of difficulty is appropriate	1476	114	110	1700	86.82%	6.71%	6.47%	100.00%
Course is well organized	2707	186	185	3078	87.95%	6.04%	6.01%	100.00%
Textbook used is appropriate	1682	72	778	2532	66.43%	2.84%	30.73%	100.00%
External web links are helpful	335	34	25	394	85.03%	8.63%	6.35%	100.00%
Course is related to educational goals	1169	42	93	1304	89.65%	3.22%	7.13%	100.00%
Course objectives match course content	2718	96	111	2925	92.92%	3.28%	3.79%	100.00%
Course objectives are clear	1035	48	71	1154	89.69%	4.16%	6.15%	100.00%
Student Evaluation of Delivery/Technology								
I have the computer/equipment to take course	216	18	4	238	90.76%	7.56%	1.68%	100.00%
Course is manageable with the tech. available	145	7	5	157	92.36%	4.46%	3.18%	100.00%
Orientation prepared me for this course/was helpf	2766	129	137	3032	91.23%	4.25%	4.52%	100.00%

Technical problems resolved within 24 hours	95	46	15	156	60.90%	29.49%	9.62%	100.00%
I can access course when needed	706	22	32	760	92.89%	2.89%	4.21%	100.00%
Technology enhances student learning	1149	62	67	1278	89.91%	4.85%	5.24%	100.00%
Course website was easy to use	113	1	6	120	94.17%	0.83%	5.00%	100.00%
Technical support was adequate	1290	756	59	2105	61.28%	35.91%	2.80%	100.00%
Sufficient access to online library resources	1952	508	111	2571	75.92%	19.76%	4.32%	100.00%
Student Self-evaluation								
I can express what I've learned	300	18	18	336	89.29%	5.36%	5.36%	100.00%
I know where to go for more information	132	17	8	157	84.08%	10.83%	5.10%	100.00%
My technology experience was adequate	84	24	49	157	53.50%	15.29%	31.21%	100.00%
I understood course material	201	38	13	252	79.76%	15.08%	5.16%	100.00%
I participated in class discussions/questions	253	56	9	318	79.56%	17.61%	2.83%	100.00%
I put forth required effort/completed assignments	271	32	15	318	85.22%	10.06%	4.72%	100.00%
I logged in to the course on a routine basis	62	3	1	66	93.94%	4.55%	1.52%	100.00%
Student Direct Comparisons								
Would take another DL course	3865	260	186	4311	89.65%	6.03%	4.31%	100.00%
No alternative to this DL course (only offered onli	1908	138	169	2215	86.14%	6.23%	7.63%	100.00%
Was this your first online course?	52	1	127	180	28.89%	0.56%	70.56%	100.00%
More convenient than face-to-face course	2125	83	105	2313	91.87%	3.59%	4.54%	100.00%
Must work as hard as in face-to-face course	2043	131	157	2331	87.64%	5.62%	6.74%	100.00%
Learned as much as in face-to-face	1869	95	158	2122	88.08%	4.48%	7.45%	100.00%
Material covered was comparable to traditional cc	895	70	67	1032	86.72%	6.78%	6.49%	100.00%
Totals	**81718**	**6376**	**5987**	**94081**	**86.86%**	**6.78%**	**6.36%**	100.00%
Responses	Positive	Neutral	Negative	Total # Responses	Positive	Neutral	Negative	Total Percentage