

**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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Part I
North Carolina Community College System
Session Law Summary

NCCCS/UNC 2 + 2 E-Learning Initiative
2007-2008

Pursuant to Session Law 2006-66, An Act to modify the Current Operations and Capital Appropriation Act of 2005, section 9.1, and Session Law 2008-107, Section 9.7(c), the North Carolina Community College System Office and the University of North Carolina General Administration submit 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).

Pursuant to Session Law 2008-107, Section 9.7(c), the University of North Carolina (UNC) and the North Carolina Community College System (NCCCS) shall report by ~~September 1, 2008~~, April 15, 2011, and annually thereafter, to the Joint Legislative Education Oversight ~~Commission~~, Committee, the State Board of Education, the Office of State Budget and Management, and the Fiscal Research Division of the General Assembly on the implementation of the UNC-NCCCS 2 + 2 E-Learning Initiative. This report includes:

- 1) The courses and programs within the 2+2 E-Learning Initiative;
- 2) The total number of prospective teachers that have taken or are taking part in this initiative to date broken down by the current academic period and each of the previous academic periods since the program's inception;
- 3) The total number of teachers currently in the State's classrooms, by local school administrative unit, who have taken part in this initiative;
- 4) The change in the number of teachers available to schools since the program's inception;
- 5) The qualitative data from students, teachers, local school administrative unit personnel, university personnel, and community college personnel as to the impact of this initiative on our State's teaching pool; and
- 6) An explanation of the expenditures and collaborative programs between the North Carolina Community College System and The University of North Carolina, including recommendations for improvement.

(The reporting dates were amended by the General Assembly of North Carolina in the 2009 Session.)

The North Carolina Community College System (NCCCS) is dedicated to providing high-quality, easily accessible educational opportunities that encourage and support student success. In keeping with these objectives, funds provided by the 2 + 2 E-Learning Initiative have provided additional resources to create and expand online courses and programs, professional development services, and acquisition and implementation of needed infrastructure.

In 2009, the North Carolina General Assembly moved the reporting date of this report from September 1, 2010, to April 15, 2011. In order to provide a comprehensive report of the work and funding allocations of the 2 + 2 E-Learning Initiative, this report will cover the 2009-2010 and 2010-2011 fiscal years. It should be noted that this report is due before the conclusion of the 2010-2011 fiscal year and will reflect the items budgeted and not the actual money spent in some cases.

Courses and Programs within the 2 + 2 E-Learning Initiative

Teacher Education

In 2005, the 2 + 2 E-Learning Initiative was created to address the critical shortage of teachers in North Carolina. Funds were designated for the North Carolina Community College System (NCCCS) and the University of North Carolina General Administration (UNC-GA) to work collaboratively to develop online course content as a means to educate additional teachers in North Carolina. NCCCS creates online course content through the Virtual Learning Community (VLC) which provides a collection of quality online courses to the 58 community colleges. Online courses for pre-major education degrees provide access to students who may not be able to attend college in a traditional face to face method. Access to college is becoming increasingly limited for many students throughout the state as campus enrollments continue to increase and the cost of gasoline rises. The two systems (NCCCS and UNC) initially identified five pre-education programs under the North Carolina Comprehensive Articulation Agreement (CAA), whereby students may begin their education at a community college with an associate degree then transfer to a university to complete a bachelor's degree.

The 2 + 2 E-Learning Initiative funded VLC course development centers during the first three years of this grant that resulted in the successful completion of courses for the five online pre-education degrees in the North Carolina Community College System.

Associate in Arts/Elementary Education (*online June 2008*)

Associate in Arts/Middle Grades Education and Special Education (*online June 2008*)

Associate in Science/Chemistry and Chemistry Education (*online June 2009*)

Associate in Science/Biology and Biology Education (*online June 2009*)

Associate in Science/Mathematics Education (*online June 2009*)

Currently, there are 31 completely online degrees and 247 curriculum courses, and 45 continuing education courses in the VLC. This content is available and accessible to all 58 community colleges in the system. (*See Appendices B and C*)

As the initial online education degrees were completed, the focus of course and program development expanded to the specific areas of science, technology, engineering and mathematics

(STEM) education. This list was further expanded to include nursing and allied health programs which are additional critical needs in North Carolina.

Since 2008-2009, the State Board of Community Colleges has approved the funds for a VLC course development center focused on STEM course development. Seven (7) courses and the corresponding labs were developed in 2008-2009. Nine (9) additional courses with accompanying labs were developed during the 2009-2010 fiscal year. (*See Figure 1*) Courses for the Associate in Science/Engineering degree were completed in June 2010, as a result of this course development cycle.

In 2010-2011, \$100,000 of state appropriated VLC funds and \$150,000 of 2 + 2 E-Learning Initiative funds were combined to fund one VLC course development center. The reduction in administrative costs that previously funded multiple centers provided funds for additional courses to be developed utilizing center staff and technology resources in a more efficient process. The 2 + 2 E-Learning Initiative funds were directed to STEM course development. The following online STEM courses will be completed and cleared for use by June 30, 2011: BIO 165 Anatomy & Physiology I, CSC 130 Computing Fundamentals II, CSC 220 Machine Implementation of Algorithms, MAT 167 Discrete Mathematics, MAT 167A Discrete Mathematics Lab, WEB 120 Introduction to Internet Multimedia, WEB 250 Database Driven Websites, CTS 285 Systems Analysis and Design, CSC 289 Programming Capstone Project, and NOS 130 Windows Single User. These courses will be available in Blackboard 9.1 and Moodle 1.9, the two learning management systems supported by NCCCS.

When these courses are completed, the following six (6) online degrees will be available in June 2011: AA/Computer Science, AA/ Health Education, AA/Physical Education, AAS/Business Administration/International Business, AAS/Business Administration/ E-Commerce, and AAS/Computer Programming.

The additional degrees expand the available programs of study for many students, but a large segment of college-bound students are not college-ready to begin taking college level courses. In 2011, 75 percent (75%) of students entering the community college system enrolled in some level of developmental education during their degree programs. Developmental English courses were developed in earlier VLC course development cycles and are available to instructors and students. But, as the system turned its focus to STEM, the need for developmental mathematics and chemistry courses were identified as missing links in this critical area. In 2009-2010, the VLC STEM Center developed additional developmental math courses and a developmental chemistry course: MAT 070 Introductory Algebra, MAT 080 Intermediate Algebra, MAT 090 Accelerated Algebra, and CHM 090 Chemistry Concepts. These courses now provide a bridge to many students from high school to higher education STEM courses.

Figure 1: STEM Course Development Center

2008-2009 Courses		
Curriculum		
Course Number	Course Name	Class-Lab-Credit
CHM 251* (<i>completed</i>)	Organic Chemistry I	3-3-4
CHM 252* (<i>completed</i>)	Organic Chemistry II	3-3-4
PHY 152* (<i>completed</i>)	College Physics II	3-2-4
PHY 252* (<i>completed</i>)	General Physics II	3-3-4
MAT 280* (<i>completed</i>)	Linear Algebra	3-0-3
BIO 175* (<i>completed</i>)	General Microbiology	2-2-3

BIO 275* <i>(completed)</i>	Microbiology	3-3-4
2009-2010 Courses		
CSC 120* <i>(completed)</i>	Computing Fundamentals I	3-2-4
DFT 170* <i>(completed)</i>	Engineering Graphics	2-2-3
EGR 220* <i>(completed)</i>	Engineering Statics	3-0-3
BIO 168* <i>(completed)</i>	Anatomy & Physiology I	3-3-4
BIO 169* <i>(completed)</i>	Anatomy & Physiology II	3-3-4
MAT 070* <i>(completed)</i>	Introductory Algebra	3-2-4
MAT 080* <i>(completed)</i>	Intermediate Algebra	3-2-4
MAT 090* <i>(completed)</i>	Accelerated Algebra	3-2-4
CHM 090* <i>(completed)</i>	Chemistry Concepts	4-0-4
2010-2011 Courses (To be completed and available 6/30/11)		
Course Number	Course Name	Course-Lab-Credit
CSC 130*	Computing Fundamentals II	3 – 2 – 4
CSC 220*	Machine Implementation of Algorithms	3 – 2 – 4
MAT 167*	Discrete Mathematics	3 – 0 – 3
MAT 167A*	Discrete Mathematics Lab	0 – 2 – 1
WEB 120*	Intro. to Internet Multimedia	2 – 2 – 3
WEB 250*	Database Driven Websites	2 – 2 – 3
CTS 285*	Systems Analysis and Design	3 – 0 – 3
CSC 289*	Programming Capstone Project	1 – 4 – 3
NOS 130*	Windows Single User	2 – 2 – 3
HEA 112	First Aid and CPR	1 – 2 – 2
HEA 120	Community Health	3 – 0 – 3
PED 110	Fit and Well for Life	1 – 2 – 2
ACC 270*	International Accounting	3 – 0 – 3
INT 210	International Trade	3 – 0 – 3
INT 220	International Economics	3 – 0 – 3
INT 230	International Law	3 – 0 – 3
ECM 230	E-Commerce Capstone Project	1 – 6 – 3
REL 212	Intro. to New Testament	3 – 0 – 3
BIO 165*	Anatomy & Physiology I	3 – 3 – 4
ITN 150	Internet Protocols	2 – 2 – 3
* STEM Courses		
Continuing Education		
Course Number	Course Name	Contact Hours
EMS-3044	Emergency Medical Technician – Basic	200
EPT-3600	Emergency Preparedness – NC Perspective	96
FIP-3402	Firefighter I (Select Topics)	150
ISC-3500	Tools for Technology	48
MLS-3230	Small Business Management	30
NUR-3216	In-Home Healthcare	90
COD-3199	Code Enforcement Officers - CE (Mechanical)	36
HOS-3070	Hospitality and Tourism	115
COD-3199	Code Enforcement Officers - CE (Green Technology)	36

In addition to online curriculum programs, online continuing education courses provide additional access for North Carolina's teachers and citizens in the workforce to meet the requirements of state job certifications as well as to remain current in their fields.

Education Tools and Resources

Engaging students in online courses is the objective of combining high quality course content with a wide variety of educational enhancements that stimulate learning and teach new concepts. VLC course developers produce interactive learning activities (ILA) that engage students by teaching difficult concepts as well as providing self-assessments on specific topics. Each ILA is a self-contained unit of information that is complete and transferable to be used in any course delivery method and cross-categorical in function. These interactive digital or video activities can be embedded in courses and accessible to instructors and students through the North Carolina Learning Object Repository (NCLOR). (*Appendix D*)

The NCLOR is a resource which is fully funded by 2 + 2 E-Learning Initiative funds. Currently, there are over 22,000 user accounts representing faculty and staff from the community college system, UNC System, private colleges and universities, and public school teachers throughout North Carolina's local education agencies (LEA). The NCLOR is scalable to serve the entire PreK-20 educational community; and has a contract provision to include all North Carolina public educational entities in an aggregate enrollment license formula.

Instructors have access to over 10,200 objects in the NCLOR for use in online and traditional courses. Over 500 of the interactive learning objects have been created by VLC course developers. Fifteen (15) full collections of objects are housed in the NCLOR. (*Appendix D*) Resources include STEM-based objects, professional development tutorials, free ebooks, and content specific collections for nursing and other sciences.

Funds from the 2 + 2 E-Learning Initiative provide for the annual subscription fee for the National Repository of Online Courses (NROC) collection of content. This content collection of over 3,000 items enhances instruction in numerous fields of national curricula instruction for higher education, high school, and Advanced Placement programs. NROC content can be embedded into online courses through both learning management systems supported by NCCCS. Fourteen (14) additional collections have been contributed to the NCLOR free of charge.

In addition to the NCLOR, resources from the 2+2 E-Learning Initiative fund a variety of educational tools which foster student engagement including Late Nite Labs Online Chemistry and Biology Lab Simulations, Virtual Microscope, and online medical library resources from the National Library Alliance.

Since 2005, online chemistry simulations from Late Nite Labs have accompanied chemistry courses in the VLC, as well as additional courses developed at NCCCS colleges. In 2009, responding to the need for expanded online laboratory experiences, Late Nite Labs developed online biology simulations and invited seven NCCCS colleges to participate in a biology simulation pilot program using BIO 111 and BIO 112 courses. The pilot was successful and the labs are now in use throughout NCCCS colleges. In 2012, NCCCS and Late Nite Labs will again collaborate on a pilot program using microbiology lab simulations which will provide an online lab component for courses in allied health programs of study.

Students may access simulations by going to the Late Nite Labs website and typing in a PIN (Personal Identification Number). Each instructor also has a unique PIN and the ability to customize labs, store all course content information in a non-expiring account, and access helpdesk support by telephone and/or email. Technical support is provided to faculty and students 24/7 by Late Nite Labs. Online lab manuals are included with the simulations.

In addition to Late Nite Labs, funds from the 2 + 2 E-Learning Initiative provide faculty and students with the Virtual Microscope, another online science resource that provides a cost effective way for students to experience state-of-the-art microscopy by viewing images created with research quality microscopes and camera systems. The Virtual Microscope imitates the physical functionality of a real microscope and requires students to follow traditional laboratory process and protocol. NCCCS licenses the Basic Biology collection. Fundamental biological principles come to life as high-resolution biological specimens imaged for the program.

In May 2011, V-Scope Explorer: Anatomy and Physiology will be added to the online science resources for NCCCS faculty and students. This series of images is a companion series to the Virtual Microscope: Basic Biology volumes. Both series provide interactive engagement for online science courses as well as science resources for all faculty and students. NCCCS has placed strategic emphasis on expanding resources in the areas of nursing, allied health, STEM, and developmental courses. Both programs may be accessed through the NCLOR and may also be downloaded to college computers in classrooms and PC labs.

To further expand online resources in STEM, nursing, and allied health fields, NCCCS licensed three database collections through the National Library Alliance for use by all colleges in the system. These library resources are Anatomy TV, STAT!Ref® and Dental Database. These resources are accessed through direct IP addresses on NCCCS college campuses and through password protected codes from remote locations.

Anatomy TV is an online resource of interactive 3D skeleton animations that include bones, ligaments, muscles, and vessels throughout the human body. The body parts may be moved and manipulated by a simple click of a computer mouse. These animations may also be exported from the software as short movie files. Anatomy TV is a valuable resource for multiple curriculum and continuing education courses. The animations are relevant for students in seated and online courses. It is a valuable enhancement for allied health programs, anatomy and physiology, and other science-related programs. In a six-month time period from August 2010 – February 2011, there were 6,263 user sessions and 100% participation by all 58 colleges in the system.

Medical textbooks and resources help the NCCCS maintain needed materials to train and graduate current and future registered and licensed practical nurses in our state. The community college system educated 54.5% of all of the graduating registered nurses in North Carolina in 2010-2011. By December 31, 2015, all 55 of the ADN-RN (Associate Degree in Nursing-Registered Nurse) programs and 39 LPN (Licensed Practical Nursing) programs in NCCCS colleges will need to be accredited by a national nursing accrediting body i.e. the National League for Nursing Accrediting Commission (NLNAC)*. Sufficient online library resources are part of this accreditation process. The addition of STAT!Ref® through the National Library Alliance has greatly expanded scientific library resources in the community college system.

STAT!Ref® is a database that includes 35+ electronic medical textbooks which are cross-searchable, full-text, top-tier titles in a full range of healthcare disciplines from a wide variety of reputable authors, publishers, and societies and appropriate for multiple curriculum and continuing education courses. These online resources are available to students in seated and online courses. In the first six months of the STAT!Ref® subscription from August 2010–February 2011, 50 out of 58 colleges used this resource for a total of 12,420 sessions.

The third resource from the National Library Alliance, Dental Database, includes nine (9) electronic medical titles, and additional resources including Stedman's Medical Dictionary; MedCalc 3000, a computerized medical reference and tool set; Pub Med, a service of the National Library of Medicine which includes over 15 million citations for biomedical articles; and the National Guideline Clearinghouse, a public resource for evidence-based clinical practice guidelines. All Dental Database references are cross-searchable, full-text titles from a wide variety of sources. Currently, the NCCCS offers degrees in Dental Assisting, Dental Hygiene, and Dental Laboratory Technology. A recent study by the North Carolina Health Professions Association found that the dental hygienist profession is the 12th ranked fast-growing health career in North Carolina. The demand for dental hygienists is expected to grow 37.1% from 2006-2016. Additional satellite dental clinics are planned for community colleges across the state to support program collaborations with the East Carolina University Dental School which opens in August 2011.

*** All nursing programs under the authority of the Board shall obtain national program accreditation by a nursing accreditation body as defined in 21 NCAC 36 .0120(29) by December 31, 2015. Thereafter, the program must maintain national accreditation to remain Board approved. In the NLN AC Standards and Criteria 5.3 "Learning resources and technology are selected by the faculty and are comprehensive, current, and accessible to faculty and students, including those engaged in alternative methods of delivery."**

Quantitative Data Concerning Teachers

More and more North Carolina students enroll at one or more of the state's 58 community colleges in order to receive degrees, diplomas or certificates as preparation for additional higher education or careers in the state's workforce. Funds from the 2 + 2 E-Learning Initiative have provided the courses, online degrees and resources for additional students to enter the pipeline to become teachers in North Carolina. However, it is difficult to substantiate this information with quantitative data. The Department of Public Instruction (DPI), NCCCS, UNC-GA, and the private colleges and universities do not share a uniform tracking platform that will follow a student throughout his/her educational career. For this reason, NCCCS can provide information limited to the number of students who graduate from the community college system with associate degrees in teaching, nursing and other critically needed careers in our state. A large majority of student career choices require four-year degrees from a college or university. Degrees for public school teachers require a bachelor's degree. Many students who come to the community college system to begin their higher education careers transfer before they attain an associate's degree. These students are not counted as completers even though they have completed necessary coursework to transfer to a four-year institution. A proposed P20 Tracking platform being developed through the Race to the Top Initiative will help connect the dots and provide this missing quantitative data collection.

Since 2005, 8,036 students have graduated from the community college system with associate degrees in education. (*Figure 2*) The number of students enrolled in education courses during this same time period is provided in Figure 3 below. The number of students enrolled in the teacher education articulation programs continues to increase.

Figure 2: Students Graduated with Education Associates Degrees

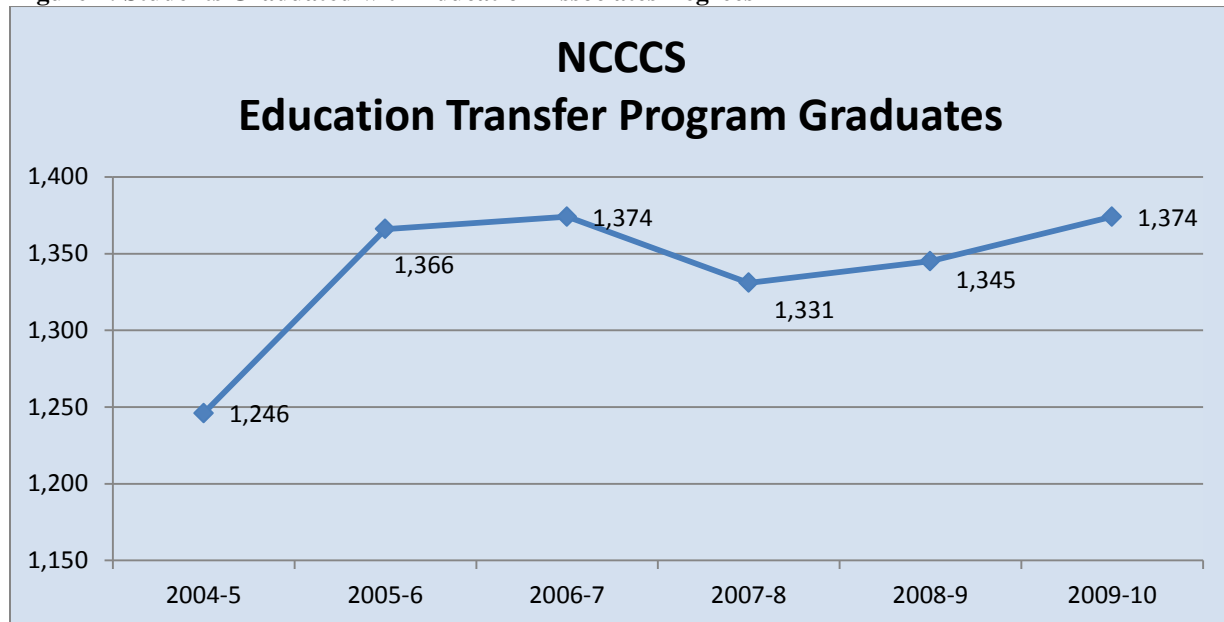
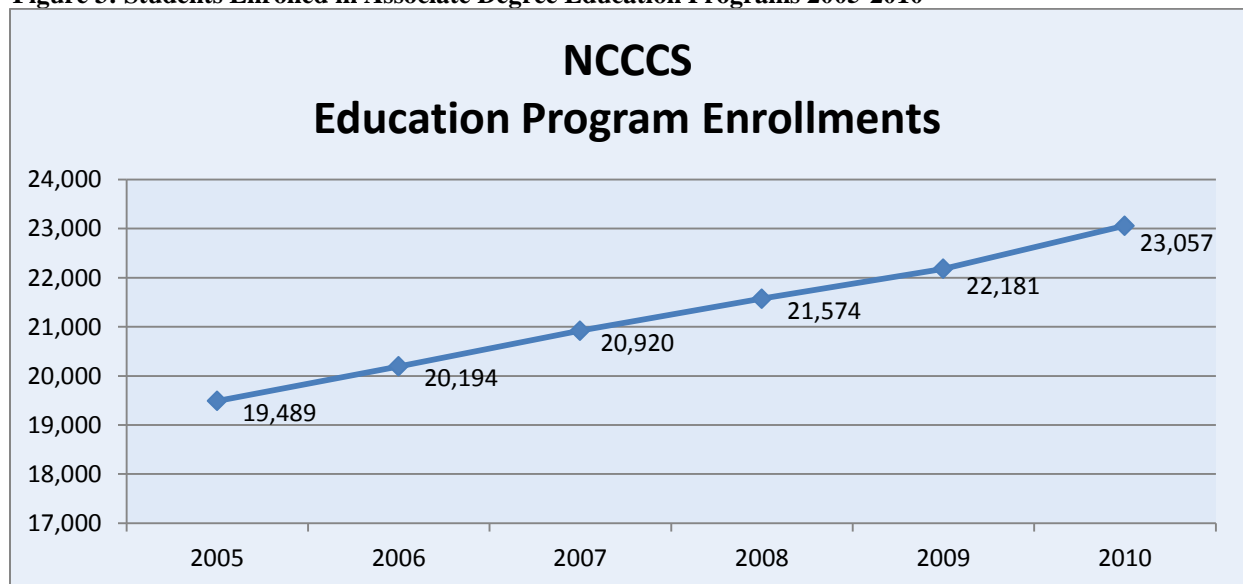


Figure 3: Students Enrolled in Associate Degree Education Programs 2005-2010



Qualitative Data

The community college system continues to be the backbone for job retraining and career building in our state. The economic downturn and financial strain on our educational institutions have again focused our colleges' resources towards the critically needed fields of education especially in the areas of math and science, nursing, allied health, and other STEM-related fields. A large majority of new students coming to the community college system are enrolling in distance learning courses that allow students access to education without the limitations of time and place. Factors contributing to growth in distance education are the rise in fuel prices, unemployment and underemployment, lack of childcare and other support factors, scheduling conflicts, and decreased financial means.

In 2008-2009, distance learning enrollments in the community college system increased by 37.9% representing 588,787 enrollments. In 2009-2010, enrollments increased again by another 27.6% representing 751,295 enrollments (*Figure 5*). Continued growth is expected to be reported when the 2010-2011 enrollment statistics are released by the NCCCS Data Warehouse.

Figure 4: DL Curriculum Duplicated Enrollment 1998-2010

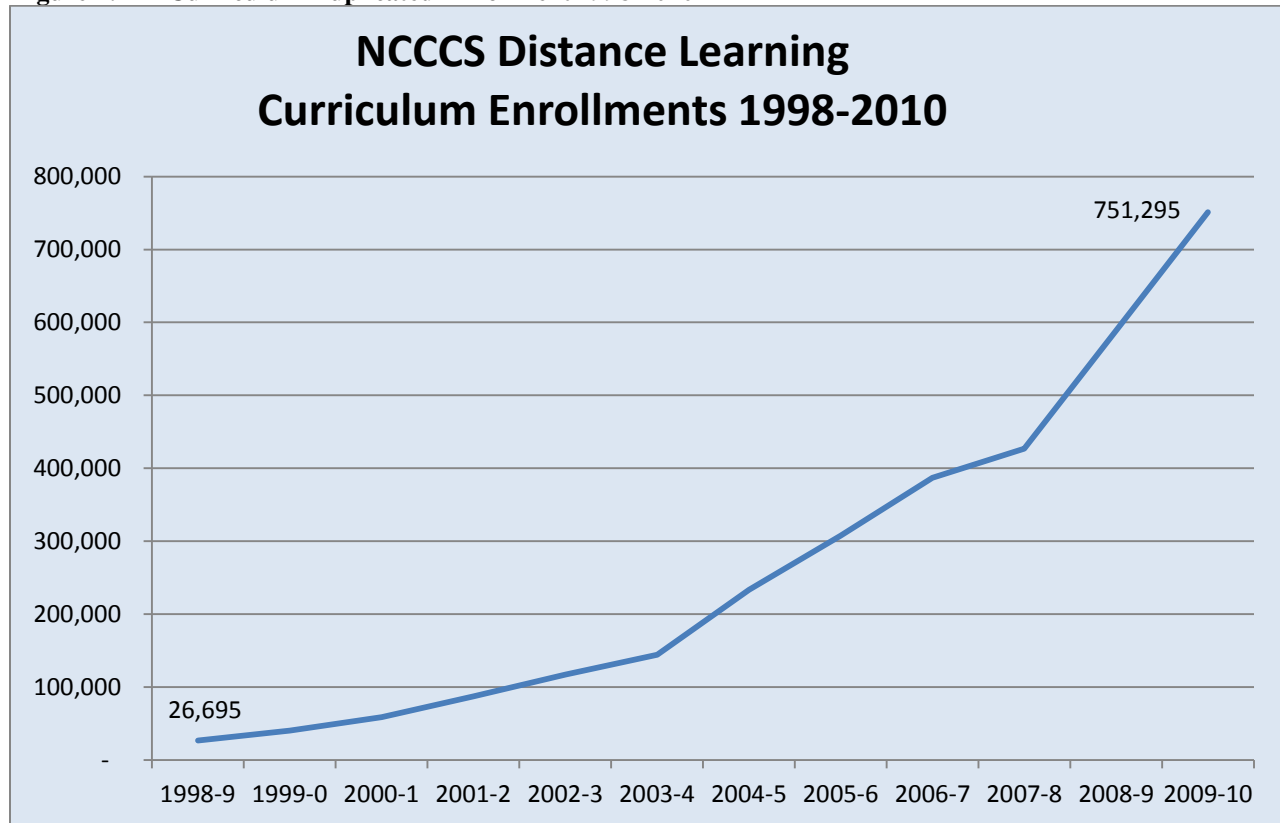
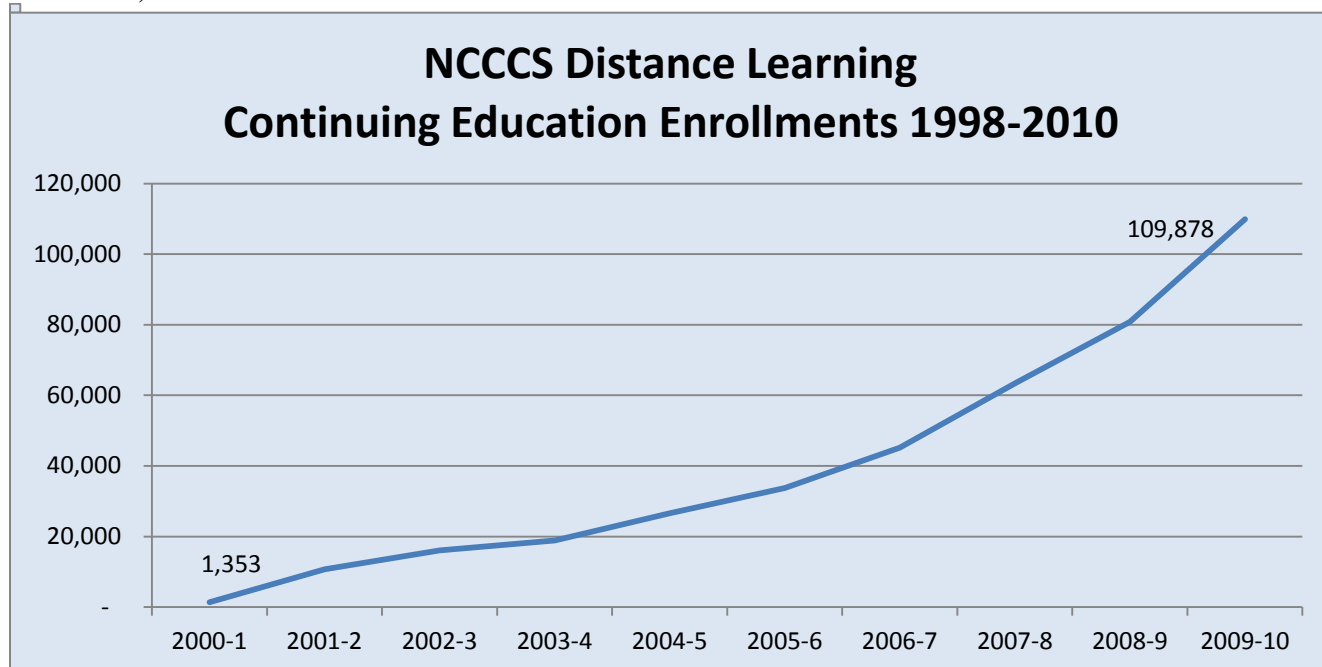


Figure 5: DL Continuing Education Duplicated Enrollment 2000-2010 (no distance enrollments recorded before 2000)



Even though enrollment data is available for all course delivery methods in distance learning, this data is not noted by degree program. Hence, it is difficult to document the impact of the 2 + 2 Initiative funds on specific program areas. A growing number of students are completing their degrees online and many other students are taking a combination of seated and online courses to complete their programs. However, student transcripts show only completed credit hours and grades. Course delivery methods are not noted.

The Initiative's funds have been focused on educational resources that target the critical needs of our state and students and have successfully met the demand placed on the system during this economic crisis. Student access anytime, anyplace to the courses and academic tools needed for success has allowed students to continue their educational programs and graduate during one of the most depressed economic periods in our state's history. It should be noted that graduation rates and enrollments continue to increase. NCCCS will continue to meet the needs of the burgeoning student population only if funding for instructors, courses, and learning resources continue to be available.

Expenditures and Collaborative Programs

2 + 2 E-Learning Initiative funds for 2009-2011 have continued to be focused on course content, learning activities to enhance courses and engage students, and educational resources for faculty. Expenditures from 2+2 E-Learning Initiative funds include the projects listed in Figure 6. The explanations of the various projects are provided in Appendix A.

Figure 6: 2+2 Expenditures for Fiscal Year 2009-2010 and 2010-2011

2 + 2 E-Learning Initiative	2009-2010 Actual 745,500.00	2010-2011 Budget \$747,000.00
	(3 %Reversion \$4,500.00)	(2% Reversion \$3,000.00)
TEACHER EDUCATION RESOURCES		
STEM Course Development Center	\$132,097.98	\$147,000.00
Late Nite Labs Chemistry	8,400.00	8,400.00
Late Nite Labs Biology	2,100.00	2,100.00
Virtual Microscope: Basic Biology	12,500.00	12,500.00
V-Scope Explorer: Anatomy & Physiology		50,000.00
Monterey Institute/NROC Learning Objects	12,500.00	12,500.00
Anatomy TV – National Library Alliance	7,258.33	653.00
Stat!Ref – National Library Alliance		19,101.00
Dental Database-National Library Alliance		3,505.00
Category Expenditures	\$174,856.31	\$255,759.00
PROFESSIONAL DEVELOPMENT		
VLC Orientation and Training on ADA Standards	\$135,500.00	
LOR Training	9,406.25	\$20,000.00
Category Expenditures	\$144,906.25	\$20,000.00
INFRASTRUCTURE		
NCLOR (ITS hosting, software licenses, travel, project management services, server upgrades)	\$231,272.67	\$300, 753.84
VLC Web Server and software	3,515.25	
Bb License	29,914.00	
Open Source Collaborative- Moodle	106,044.00	97,887.00
Category Expenditures	\$370,745.92	\$398,640.84
OTHER		
VisiCom (NCIH contract/software upgrade)	\$1,095.00	
Category Expenditures	\$1,095.00	
Total Expenditures	\$691,603.48	\$674,399.84

Professional Development

During fiscal year 2009-2010, and currently in 2010-2011, delivery of professional development has been provided through online delivery methods due to the decrease in funds for travel. To maximize the resources available to the system, efforts have been targeted on development of high quality professional development webinars and training modules that are housed in the NCLOR and accessible to faculty throughout North Carolina. Presently, there are 18 training modules in the NCLOR which include topics that cover pedagogical concepts applying to all instructors as well as program specific presentations aimed at target audiences. These modules

may be used by individuals or for group presentations in face to face workshops. These modules are available to be accessed 24/7.

Professional Development: Educational Courses and Resources

High on the list of professional development priorities is the goal of ensuring that online courses meet Federal Section 508 of the Americans with Disabilities Rehabilitation Act (ADA) which governs web and course development accessibility requirements for community colleges in North Carolina. This law requires that electronic and information technology products developed and/or maintained by an agency be fully accessible to people with disabilities.

In 2009-2010, funds from the 2 + 2 E-Learning Initiative were used to update and edit 46 online courses for ADA compliance. This project was conducted through the VLC Quality Assessment Center. The courses were completed by June 30, 2010, and made available to all NCCCS colleges in Blackboard and Moodle learning management systems.

Training modules dedicated to ADA compliance have been developed and contributed to the NCLOR where they are available to instructors and staff for future course development. In 2009-2010, face to face professional development training was provided to all VLC course developers, technical editors, and instructional designers on ADA compliance. Existing VLC courses were edited for content and ADA compliance.

Professional development for VLC (STEM) technical editors was designed to teach software applications used for creating interactive learning objects. Workshop participants learned how to create objects using Camtasia, Captivate, Softchalk, and Flash software applications. All VLC online courses developed in 2009-2011 contain these objects.

Additional professional development was provided to NCLOR administrators to provide training on Equella software upgrades as part of the learning management system integration of applications.

Professional development using the Virtual Microscope is available free of charge by Science Learning Resources, Inc. Onsite workshops have been conducted to teach instructors how to use the Basic Biology collection of digitized resources in courses and assignments. These workshops are scheduled by the colleges at their convenience.

Professional Development: Learning Management System (LMS)

In 2010, the decision was made by NCCCS to support two learning management systems; one proprietary, Blackboard, and one open source, Moodle. To provide access during growth and transition periods, time and resources have been focused on professional development of training materials to aid community college faculty and staff as they transition to new versions of their current LMS or transition to a different LMS.

Professional development modules for both Blackboard and Moodle continue to be developed and contributed to the NCLOR as the technology improves and evolves into revised versions. Subsequent webinars and additional professional development are then necessary on other applications that integrate with these LMSs. Training and professional development is an ongoing process for distance learning and 2 + 2 E-Learning Initiative funds.

A major portion of the professional development training for Moodle LMS is included in the annual contract with UNC for the Open Source Collaborative Moodle Project. Community colleges are encouraged to participate in this pilot project which provides Moodle hosting, training, and online course implementation. (*See Appendix E*) Currently, 19 community colleges are participating in the pilot project. Eight (8) other community colleges previously participated in this Moodle pilot before implementing Moodle as their college-wide LMS.

Note: Descriptions, audience to be served, costs, and status reports of all 2+2 E-Learning infrastructure components are found in Appendix A.

Recommendations

While the NCCCS has made progress in achieving the goals and objectives of the 2+2 E-Learning Initiative, the system has recommendations for future achievements necessary to meet critical needs for distance education.

It is recommended that:

- NCCCS develop an online instructor certification course to enable instructors to teach more effectively thereby promoting student success.
- NCCCS continually improve the Top 20 online curriculum courses.
- NCCCS redesign online developmental math modules.
- Other areas of critical needs be addressed such as nursing and allied health, engineering, and technology by continued funding of STEM resources and course development through the VLC.
- NCCCS participate in a pilot development project for microbiology labs using Late Nite Labs.
- NCCCS acquire additional learning resources for mathematics, nursing, allied health, engineering and technology.
- NCCCS continue to research online resources for system-wide use and pedagogically sound teaching principles for online courses.
- Continued emphasis is placed on ADA compliance in all VLC and community college distance learning courses.
- NCCCS evaluate and pilot the use of ebooks to accompany VLC courses.
- Additional collections/ebooks should be acquired for the NCLOR.

NCCCS has met the original goal of the 2+2 E-Learning Initiative; developing online education degrees to address the critical need for teachers in our state. NCCCS is committed to continuing to expand courses and resources to support student success with online education degree programs especially in the areas of mathematics and science; and to expand the scope to include allied health, nursing, engineering, and technology as current and future objectives for these funds.

Appendices

Appendix A

2009-2011 Expenditures for 2+2 E-Learning Initiative

Student, Teaching, and Learning Resources Implemented by the NCCCS

Educational Resource: STEM (Science, Technology, Engineering, Math) Course Development Center (2010-2011)

Description: The State Board of Community Colleges awarded Fayetteville Technical Community College as the Development Center for the Virtual Learning Community. Funds in the amount of \$150,000.00 were designated to develop the following online STEM courses and their respective labs: BIO 165 Anatomy & Physiology I, CSC 130 Computing Fundamentals II, CSC 220 Machine Implementation of Algorithms, MAT 167 Discrete Mathematics, MAT 167A Discrete Mathematics Lab, WEB 120 Introduction to Internet Multimedia, WEB 250 Database Drive Websites, CTS 285 Systems Analysis and Design, CSC 289 Programming Capstone Project, and NOS 130 Windows Single User.

Audience: NCCCS faculty and students

Allocation: ~~\$150,000.00~~ (7/1/10)
\$147,000.00 (2% reversion reduced this allocation in 2011)

Status: Courses will be completed and cleared for use by June 30, 2011.

Educational Resource: STEM (Science, Technology, Engineering, Math) Course Development Center (2009-2010)

Description: The State Board of Community Colleges awarded Wake Technical Community College as the Development Center for the Virtual Learning Community. Funds in the amount of \$150,000.00 were designated to develop the following online STEM courses and labs: CSC 120 Computing Fundamentals I, DRT 170 Engineering Graphics, EGR 220 Engineering Statics, BIO 168 Anatomy & Physiology I, BIO 169 Anatomy & Physiology II, and MAT 070 Introductory Algebra, MAT 080 Intermediate Algebra, MAT 090 Accelerated Algebra, and CHM 090 Chemistry Concepts.

Audience: NCCCS faculty and students

Allocation: ~~\$150,000.00~~
\$145,500.00 (3% reversion reduced this allocation in 2011)

Status: Courses completed and cleared for use by June 30, 2010.

Educational Resource: Late Nite Labs - Online Chemistry/Biology Lab Simulations (2009-2010, 2010-2011)

Description: Late Nite Labs offers chemistry and biology simulations that provide instructors with the capability to develop and customize high quality online chemistry and biology laboratory simulations. This software allows students to complete labs anytime, anywhere.

Audience: NCCCS faculty and students

Cost: \$10,500.00 (perpetual licenses for system-wide biology and chemistry labs)

Status: Online biology and chemistry courses are developed using Late Nite Labs. Chemistry PINS are available to be used in courses from developmental CHM 090 Chemistry Concepts through CHM 252 Organic Chemistry II. Late Nite Labs biology simulations are used in BIO 111 General Biology I and BIO 112 General Biology II. These simulations are used for fully online laboratory courses, as well as pre-lab and pre-test scenarios in hybrid and traditional courses.

Savings: Instructor PINS are free and do not expire for all NCCCS instructors. Labs may be customized. Student PINS are provided at the reduced cost to NCCCS students of \$15.00 per course.

Non-NCCCS institutions are charged a \$500.00 per college site fee each semester and a \$50.00 per student PIN fee. NCCCS is able to benefit from consortium pricing as well as inclusion for participation in pilot projects of newly developed science simulations. The savings in site fees per semester to the North Carolina Community College System is approximately \$8,500.00 (based on use by an average number of 15 colleges). The savings to students or colleges who purchase the student PINS is \$35.00 per PIN.

Educational Resource: Science Learning Resources, Inc. – Virtual Microscope (2009-2010, 2010-2011)

Description: The Virtual Microscope provides a cost effective way for students to experience state-of-the-art microscopy by viewing images created with research quality microscopes and camera systems. It imitates the physical functionality of a real microscope and requires students to follow traditional laboratory process and protocol. The high resolution prepared biological specimens imaged for the program illustrate fundamental biological principles. The program can be accessed through the NCLOR and can be downloaded to college computers in classrooms and PC labs.

Audience: NCCCS faculty and students

Cost: \$12,500.00 (maintenance fee and annual license renewal for system-wide use)

Status: This resource is being used in science courses and other related fields of study. In 2010, the Basic Biology collection was expanded to two volumes which also include videos.

Savings: Free professional development workshops for faculty are provided by Science Learning Resources on community college campuses.

Educational Resource: Science Learning Resources, Inc. – V-Scope Explorer: Anatomy and Physiology (2010-2011)

Description: The V-Scope Explorer: Anatomy and Physiology series provides a cost effective way for students to experience state-of-the-art microscopy focused on content to support courses in nursing, allied health, and higher level science programs. The program can be accessed through the NCLOR and can be downloaded to college computers in classrooms and PC labs.

Audience: NCCCS faculty and students

Cost: \$50,000 (first year set-up fee; \$12,500 year two and beyond for maintenance and annual license renewal for system-wide use)

Status: Administrative license procedures are in motion for anticipated approval by the State Board of Community Colleges May 2011 meeting.

Savings: Free professional development workshops for faculty are provided by Science Learning Resources on community college campuses.

Educational Resource: National Library Alliance / Anatomy TV (2009-2010, 2010-2011)

Description: Online resource of interactive 3D skeleton animations that include bones, ligaments, muscles and vessels throughout the human body. The body parts may be moved and manipulated by a computer mouse. These animations may also be exported from the software as short movie files. The animations are relevant for students in seated and online courses. It is a valuable enhancement for allied health programs, anatomy and physiology, and other science-related programs.

Audience: NCCCS faculty and students

Cost: \$7,258.00 (6/1/10-5/30/11)

\$653.00 (6/1/11-6/30/11)

(Bundled discount for all three NLA resources in 2011-2012 will be \$37,990.00; a savings of over \$10,000.00 per year.)

Status: In a six-month time period from August 2010 – February 2011, there were 6,263 user sessions; and 100% participation by all 58 colleges in the system.

Educational Resource: National Library Alliance / STAT!Ref® (2010-2011)

Description: STAT!Ref® is a database that includes 35+ electronic medical textbooks which are cross-searchable, full-text, top-tier titles in a full range of healthcare disciplines from a wide

variety of reputable authors, publishers, and societies and appropriate for multiple curriculum and continuing education courses. This is a system-wide resource.

The community college system educated 54.5% of all of the graduating registered nurses in North Carolina in 2010. By December 31, 2015, all 55 of the ADN-RN programs and 39 LPN programs in NCCCS colleges will need to be accredited by a national nursing accrediting body i.e. the National League for Nursing Accrediting Commission (NLNAC). Sufficient online library resources are part of this accreditation process.

Audience: NCCCS nursing, allied health, and related medical faculty and students

Cost: \$19, 101.00

Status: In the first six months of the STAT!Ref® subscription from August 2010–February 2011, 50 out of 58 colleges used this resource for a total of 12,420 user sessions.

Educational Resource: National Library Alliance / Dental Database (2010-2011)

Description: The Dental Database includes nine (9) electronic medical titles, and additional resources including Stedman's Medical Dictionary; MedCalc 3000, a computerized medical reference and tool set; Pub Med, a service of the National Library of Medicine which includes over 15 million citations for biomedical articles; and the National Guideline Clearinghouse, a public resource for evidence-based clinical practice guidelines.

Audience: Dental related programs of study and allied health faculty and students.

Cost: \$3,505.00

Status: The demand for dental hygienists is expected to grow 37.1% from 2006-2016. Additional satellite dental clinics are planned for community colleges across the state to support program collaborations with the East Carolina University Dental School which opens in August 2011. Within the first two weeks of licensing this resource in February 2011, 16 colleges were already using this resource.

Educational Resource: North Carolina Learning Object Repository (NCLOR) - The Learning Edge (vendor), Hosted by ITS, NCCCS LOR Hardware (2009-2010, 2010-2011)

Description: The North Carolina Learning Object Repository (NCLOR) is a system-wide resource which provides the capacity to catalogue and store, search, access, and utilizes digitized learning/teaching content. Learning object repository technology promotes sharing of high quality resources and drastically reduces costs of duplication. The 2+2 funds have been used to establish the North Carolina Learning Object Repository. University and community college faculty, administrators, and support staff collaborated in all phases of planning, Request for Proposal development, evaluation of vendor proposals, implementation, and expansion of the NCLOR. 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; private colleges and universities; and DPI

Cost: \$231, 272.67 (2009-2010)

\$300,753.84 (2010-2011)

(Includes software license, travel and training, ITS hosting, and additional gigabyte capacity for server, and ITS project management)

Status: Over 10,237 learning objects and assets are housed in the NCLOR. Fifteen collections and resource series are available to faculty, as well as 957 professional development tutorials. Objects and resources are used in courses and assignments throughout the NCCCS.

In May 2010 and 2011, the State Board of Community Colleges approved and will renew annual contract agreements with (1) The Learning Edge (vendor) to provide Equella software and professional services and (2) the State Information Technology Service (ITS) to provide hosting and project management services.

Educational Resource: UNC Moodle Open Source Collaborative

Description: An open source system allows for the use of the most effective course designs without the limits of a proprietary system. This pilot project consolidates the efforts of NCCCS and UNC institutions as they explore the options of less expensive and open source course management system solutions. The NCCCS staff contracts with UNC General Administration to establish a central facility at which collaboration and experimentation can take place to assess 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.

In 2011, it was determined that the NCCCS will fund two learning management systems; Blackboard and Moodle. Colleges are encouraged to participate in the Moodle Open Source Collaborative for pilot and production phases. In 2011-2012, NCCCS will renew this Open Source Collaborative for one more year in order to assist colleges who are transitioning from Blackboard to Moodle.

Audience: Faculty and students of NCCCS and UNC

Cost: \$106,044.00 (2009-2010)

\$97,887.00 (2010-2011)

Status: The State Board of Community Colleges approved the Open Source Collaborative. NCCCS has contracted with UNC to provide system administration, training, migration tools, hosting services, and Datatel/Moodle dynamic compatibility. Nineteen (19) colleges are currently participating in this project.

Educational Resource: Monterey Institute/NROC Learning Objects (2009-2010, 2010-2011)

Description: NCCCS licensed this collection of 3,682 multi-curriculum learning objects available to all faculty, staff, and students to enhance online, hybrid, and face to face course content.

Audience: NCCCS faculty and students

Cost: \$12,500.00

Status: In use throughout NCCCS system.

Educational Resource: ADA Editing Project (2009-2010)

Description: Surry Community College/ VLC Quality Assessment Center edited 46 VLC courses to be updated and edited for ADA compliance as required by the Americans with Disabilities Act, Section 508 e-learning standards from January 15, 2010, to June 1, 2010. This project provided each participant with the skills necessary to modify existing VLC courses to meet ADA standards and to update the contents of the courses. Courses are available to all NCCCS colleges in Blackboard and Moodle learning management systems.

Audience: VLC development center faculty and NCCCS faculty contracted through the VLC Quality Assessment Center

Cost: \$135,500.00

Status: All courses successfully updated and edited for ADA compliance.

Educational Resource: VLC Website Server (2009-2010)

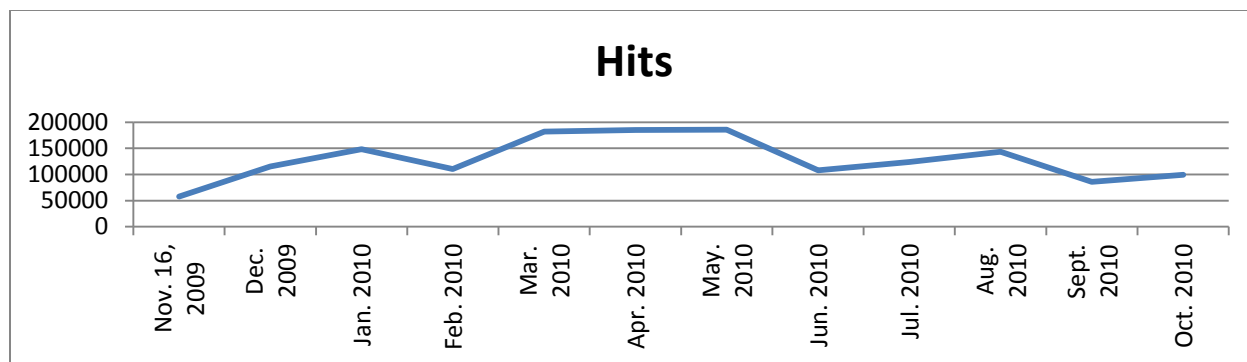
Description: Purchase of a server and necessary hardware/software for the sole purpose of hosting the VLC Website. College faculty and staff access the website for VLC information and to search for courses in the VLC library. Students in our system and potential students search the VLC website for course listings each semester, so that they may register with colleges that provide the courses they need to complete their programs of study. Citizens in North Carolina and around the world can inquire about distance learning programs in the NCCCS.

Audience: NCCCS faculty and students and the general population

Cost: \$3,515.25

Status: The website launch coincided with the launch of the E-Learning Portal (elearningnc.gov) on Nov. 16, 2009. The site continues to reach numerous patrons, with monthly hits ranging from 57,000 to more than 185,000.

Savings: Previously, NCCCS contracted with ITS to host the website and this server purchase allowed the site to be hosted at NCCCS by existing web staff.



Educational Resource: Blackboard, Inc. Enterprise Learning Management System License 2009-2010)

Description: A one-time expenditure to support the proprietary learning management system contract of the NCCCS.

Audience: NCCCS faculty and students

Cost: \$29,914.00

Status: One of two learning management systems supported by NCCCS

Educational Resource: VisiCom Software for NCIH Room (2009-2010)

Description: Maintenance contract and software upgrade for video conferencing in System Office NCIH room. Included in this contract is technical support, software upgrades, and updates.

Audience: NCCCS faculty and System Office Staff

Cost: \$1,095.00

Status: Installation completed

Appendix B



Learn. Virtually Anywhere.

Degrees Available from the NCCCS Virtual Learning Community® (VLC)

There are currently 247 courses in the VLC Library with which colleges in the NCCCS could build programs of study to offer 31 online degrees. Those degrees include:

1. AA/Associate in Arts (A1010A)
2. AA/Business Administration, Accounting, Economics, Finance, & Marketing (A1010B)
3. AA/Business Education and Marketing Education (A1010C)
4. AA/Criminal Justice (A1010D)
5. AA/English (A1010E)
6. AA/History (A1010H)
7. AA/Nursing (A1010I)
8. AA/Political Science (A1010K)
9. AA/Psychology (A1010L)
10. AA/Social Science Secondary Education (A1010M)
11. AA/Sociology (A1010N)
12. AA/Communication (A1010O)
13. AA/Social Work (A1010Q)
14. AA/Elementary Education (A1010R)
15. AA/Special Education (A1010S)
16. AA/Liberal Arts (A1010U)
17. AA/Information Systems (1010V)
18. AA/Middle Grades Education (A1011A)
19. AA/General Education (A1030O)
20. AS/Biology/Biology Education (A1040A)
21. AS/ Chemistry/Chemistry Education (A1040B)
22. AS/Mathematics (A1040E)
23. AS/Associate in Science (A1040O)
24. AS/Engineering (A1040D)
25. AAS/Accounting (A25100)
26. AAS/Business Administration (A25120)
27. AAS/ Business Administration/Human Resources Management (A2512C)
28. AAS/Business Administration/Marketing and Retailing (A2512F)
29. AAS/ Office Systems Technology (A25360)
30. AAS/Paralegal Technology (A25380)
31. AAS/Criminal Justice Technology (A55180)



Online Degrees to be Added in June 2011:

AA/Computer Science (A1010T)

AA/Health Education (A1010G)

AA/Physical Education (A1010J)

AAS/Business Administration/International Business (A2512D)

AAS/ Business Administration/E-Commerce (A2512I)

AAS/Computer Programming (A25130)

Appendix C



247 Curriculum Courses

45 Continuing Education Courses

<i>Course #</i>	<i>Course Name</i>
Curriculum Courses	<i>Curriculum Courses</i>
ACA 090	Study Skills
ACA 111	College Student Success
ACA 112	Intro. to Distance Learning
ACC 115	College Accounting
ACC 120	Principles of Financial Accounting
ACC 121	Principles of Managerial Accounting
ACC 129	Individual Income Taxes
ACC 130	Business Income Taxes
ACC 140	Payroll Accounting
ACC 150	Accounting Software Applications
ACC 220	Intermediate Accounting I
ACC 225	Cost Accounting
ANT 210	General Anthropology
ART 111	Art Appreciation
ART 114	Art History Survey I
ART 115	Art History Survey II
BIO 111	General Biology I
BIO 112	General Biology II
BIO 120	Introductory Botany
BIO 130	Introductory Zoology
BIO 140	Environmental Biology
BIO 145	Ecology
BIO 165	Anatomy & Physiology I
BIO 166	Anatomy & Physiology II
BIO 168	Anatomy & Physiology I
BIO 169	Anatomy & Physiology II
BIO 175	General Microbiology
BIO 275	Microbiology

BPM 110	Bioprocess Practices
BPR 111	Blueprint Reading
BUS 110	Introduction to Business
BUS 115	Business Law I
BUS 116	Business Law II
BUS 121	Business Math
BUS 135	Principles of Supervision
BUS 137	Principles of Management
BUS 153	Human Resource Management
BUS 217	Employment Law and Regulations
BUS 225	Business Finance
BUS 230	Small Business Management
BUS 234	Training and Development
BUS 238	Integrated Management
BUS 239	Business Applications Seminar
BUS 252	Labor Relations
BUS 256	Recruitment Selection & Personnel Planning
BUS 258	Compensation and Benefits
BUS 259	HRM Applications
BUS 260	Business Communications
CHM 090	Chemistry Concepts
CHM 131	Introduction to Chemistry
CHM 131A	Introduction to Chemistry Lab
CHM 132	Organic & Biochemistry
CHM 135	Survey of Chemistry I and Lab
CHM 151	General Chemistry I
CHM 152	General Chemistry II
CHM 251	Organic Chemistry I
CHM 252	Organic Chemistry II
CIS 070	Fundamentals of Computing
CIS 110	Introduction to Computers
CIS 111	Basic PC Literacy
CIS 113	Computer Basics
CIS 115	Introduction to Programming & Logic
CIS 165	Desktop Publishing I
CJC 111	Introduction to Criminal Justice
CJC 112	Criminology
CJC 113	Juvenile Justice
CJC 121	Law Enforcement Operations
CJC 131	Criminal Law
CJC 132	Court Procedure & Evidence
CJC 141	Corrections
CJC 212	Ethics & Community Relations
CJC 221	Investigative Principles
CJC 231	Constitutional Law
COE 111	Co-op Work Experience I
COM 110	Introduction to Communication
COM 120	Interpersonal Communication
COM 130	Nonverbal Communication
COM 231	Public Speaking
CSC 120	Computing Fundamentals I
CSC 134 & 134B	C++ Programming
CSC 139	Visual Basic Programming
CSC 151	JAVA Programming
CSC 234	Advanced C++ Programming
CSC 239	Advanced Visual Basic Programming

CTS 125	Presentation Graphics
CTS 130	Spreadsheet
CTS 220	Advanced Hardware/Software Support
CTS 230	Advanced Spreadsheet
DBA 110	Database Concepts
DBA 115	Database Applications
DFT 170	Engineering Graphics
ECM 168	Electronic Business
ECM 210	Introduction to Electronic Commerce
ECM 220	E-Commerce Planning & Implementation
ECO 151	Survey of Economics
ECO 251	Principles of Microeconomics
ECO 252	Principles of Macroeconomics
EDU 118	Teacher Assoc. Principles and Practice
EDU 119	Introduction Early Child Education
EDU 131	Child, Family, and Community
EDU 144	Child Development I
EDU 145	Child Development II
EDU 146	Child Guidance
EDU 151	Creative Activities
EDU 153	Health, Safety, & Nutrition
EDU 186	Reading & Writing Methods
EDU 216	Foundations of Education
EDU 221	Children with Exceptionalities
EDU 222	Learners with Behavior Disorders (formerly EDU 147)
EDU 223	Specific Learning Disabilities (formerly EDU 148)
EDU 235	School Age Development & Program
EDU 247	Sensory and Physical Disabilities
EDU 248	Developmental Delays
EDU 261	Early Childhood Administration I
EDU 262	Early Childhood Administration II
EDU 271	Education Technology
EDU 275	Effective Teacher Training
EDU 280	Language & Literacy Experiences
EDU 285	Internship Experience – School Age
EGR 110	Introduction to Engineering Technology
EGR 220	Engineering Statics
ELC 128	Introduction to PLC
ELN 133	Digital Electronics
EMS 235	EMS Management
ENG 070	Basic Language Skills
ENG 080	Writing Foundations
ENG 090	Composition Strategies
ENG 111	Expository Writing
ENG 112	Argument Based Research
ENG 113	Literature Based Research
ENG 114	Professional Research & Reporting
ENG 131	Introduction to Literature
ENG 231	American Literature I
ENG 232	American Literature II
ENG 233	Major American Writers
ENG 241	British Literature I
ENG 242	British Literature II
ENG 251	Western World Literature I
ENG 261	World Literature I
ENG 262	World Literature II

ENG 273	African-American Literature
FIP 120	Intro to Fire Protection
FIP 124	Fire Prevention & Public Education
FIP 128	Detection & Investigation
FIP 132	Building Construction
FIP 152	Fire Protection Law
FIP 220	Fire Fighting Strategies
GEO 111	World Regional Geography
HEA 110	Personal Health & Wellness
HIS 112	World Civilizations II
HIS 121	Western Civilization I
HIS 122	Western Civilization II
HIS 131	American History I
HIS 132	American History II
HIS 222	African-American History I
HIS 223	African-American History II
HIT 112	Health Law & Ethics
HOR 160	Plant Materials I
HSE 110	Introduction to Human Services
HSE 210	Human Services Issues
HUM 110	Technology & Society
HUM 115	Critical Thinking
HUM 122	Southern Culture
HUM 150	American Women's Studies
HUM 160	Introduction to Film
INT 110	International Business
ISC 110	Workplace Safety
ISC 112	Industrial Safety
ITN 150	Internet Protocols
ITN 250	Implementing Internet Services
LEX 110	Introduction to Paralegal Study
LEX 120	Legal Research/Writing I
LEX 130	Civil Injuries
LEX 140	Civil Litigation I
LEX 150	Commercial Law I
LEX 210	Real Property I
LEX 240	Family Law
LEX 250	Wills, Estates, & Trusts
LOG 110	Introduction to Logistics
MAT 050	Basic Math Skills
MAT 060	Essential Mathematics
MAT 070	Introductory Algebra
MAT 080	Intermediate Algebra
MAT 090	Accelerated Algebra
MAT 115	Mathematical Models
MAT 140	Survey of Mathematics
MAT 151	Statistics I
MAT 161	College Algebra
MAT 175	Precalculus
MAT 175A	Precalculus Lab
MAT 271	Calculus I
MAT 272	Calculus II
MAT 273	Calculus III
MAT 280	Linear Algebra
MAT 285	Differential Equations
MEC 180	Engineering Materials

MED 118	Medical Law & Ethics
MED 121	Medical Terminology I
MED 122	Medical Terminology II
MKT 120	Principles of Marketing
MKT 122	Visual Merchandising
MKT 123	Fundamentals of Selling
MKT 220	Advertising & Sales Promotion
MKT 221	Consumer Behavior
MKT 223	Customer Satisfaction (OMT154)
MKT 225	Marketing Research
MKT 226	Retail Applications
MKT 230	Public Relations
MNT 111	Maintenance Practices
MUS 110	Music Appreciation
NET 110	Networking Concepts
NOS 110	Operating System Concepts
NOS 230	Windows Administrator I
NUT 110	Nutrition
OMT 154	Customer Satisfaction
OST 122	Office Computations
OST 134	Text Entry & Formatting
OST 136	Word Processing
OST 137	Office Software Applications
OST 138	Advanced Software Applications
OST 148	Medical Coding, Billing and Insurance
OST 149	Medical Legal Issues
OST 164	Text Editing Applications
OST 184	Records Management
OST 236	Advanced Word/Information Processing
OST 289	Office Systems Management
PHI 210	History of Philosophy
PHI 240	Introduction to Ethics
PHY 110	Conceptual Physics
PHY 151	College Physics I
PHY 152	College Physics II
PHY 251	General Physics I
PHY 252	General Physics II
POL 120	American Government
PSY 150	General Psychology
PSY 241	Developmental Psychology
PSY 281	Abnormal Psychology
PTC 110	Industrial Environment
RED 070	Essential Reading Skills
RED 080	Introduction to College Reading
RED 090	Improved College Reading
REL 110	World Religions
SEC 110	Security Concepts
SEC 150	Secure Communications
SEC 160	Secure Administration I
SOC 210	Introduction to Sociology
SOC 213	Sociology of the Family
SOC 220	Social Problems
SOC 225	Social Diversity
SPA 111	Elementary Spanish I
WEB 110	Internet/Web Fundamentals
WEB 115	Web Markup and Scripting

WEB 140	Web Development Tools
WEB 210	Web Design
WEB 230	Implementing Web Service
Continuing Education Courses	
	<i>Continuing Education Courses</i>
ANS 3011	Veterinary Assisting
CAT 3100	Computed Tomography
CJC 3100	Law Enforcement: Explosives, Dirty Bombs, & Radiation Response
CJC 3100	Law Enforcement: Weapons of Mass Destruction
CJC 3100	Legal Aspects of Bioterrorism for Law Enforcement
COM 3729	Business Writing Skills
EDU 3000	Lateral Entry – Orientation
EDU 3002	Effective Teacher Training
EGY 2004	Green Purchasing
EGY 3000	Renewable Energy
EMS 3000	Anatomy & Physiology
EMS 3044	Emergency Medical Technician Basic Initial
EMS 3200	Biological Agents of Bioterrorism
EMS 3200	Bioterrorism Awareness for EMS
EMS 3200	Chemical Agents of Bioterrorism
EMS 3200	Decontamination & Transport of Exposed Patients
EMS 3200	Radiological Emergencies for EMS
FIP 3610	Introduction to Fire Pumps
FIP 4728	Introduction to Bioterrorism for Firefighters
FIP 5512	R.T. Hazmat Awareness & Terrorism
FLI 3717	Conversational Spanish for Healthcare Workers
HAZ 3061	Hazardous Materials: Awareness
HEA 3002	Anatomy and Physiology
HEA 3014	Fund. Skills for Substance Abuse Counselors–Core Functions
HEA 3014	Fund. Skills for Substance Abuse Counselors – Ethics
HOS 3060	Meetings and Convention Planning Introduction
HRD 3001	Employability Skills
HSE 3264	Activity Director – Basic
ISC 3036	Principles of Industrial Safety
ISC 3400	Composite Manufacturing
MED 3023	Medical Coding
MED 3025	Medical Billing
MED 3030	Healthcare Billing & Coding
MHT 3100	Mental Health/ Developmental Disabilities Worker
MKT 3438	Customer Service
MNT 3000	NC Manufacturing Certification Level I
MLA 3022	Phlebotomy Education and Clinical Experience
MLS 3808	Leadership
NUR 3235	Medical Terminology
NUR 3236	Medical Transcription
NUR 3240	Nurse Aide Level I
NUR 3241	Nurse Aide Level II
OSC 3609	Unit Secretary (for hospital or nursing home)
OSH 3300	Bloodborne Pathogens Training
PHM 3250	Pharmacy Technician Training

Professional Development Courses	
	<i>Professional Development Courses</i>
OCT	Online Course Template (for development of 'VLC Certified Courses')
OCT 2	Online Course Template (for the development of online courses by an individual instructor for their personal use-not 'VLC Certified Courses')
PTOI	Principles and Techniques of Online Instruction

VLC courses are available for download and use, free of charge. Visit our VLC website at <http://vlc.nccommunitycolleges.edu>. Contact Kathy Davis, Distance Learning Specialist, at davisk@nccommunitycolleges.edu, to obtain a login and password to download a VLC Course.

Appendix D

North Carolina Learning Object Repository (NCLOR)

Background Information

The North Carolina Learning Object Repository (NCLOR) was initially designed as a System-wide repository providing the capacity to catalogue and store, search, access, and utilizes digitized learning/teaching content. Learning objects or resources are generally defined as (1) digital content assets in the form of files or collections of files that typically have a wide-range of learning/teaching applications and (2) self-contained comprehensive learning modules that address selected learning competencies in a specific course or program. Learning resources are sharable, reusable, standards based and accessible by the vast majority of learning applications. Learning modules are generally larger, more complete learning objects. The definitions are becoming interchangeable. The NCLOR complies with SCORM standards; is scalable to serve the entire PreK-20 educational community; and has a contract provision to include all NC public educational entities in an aggregate enrollment license formula.

Creation of the state-wide NCLOR is recommendation #9 of the NC e-Learning Commission approved by the NC Education Cabinet and the State Board of Education in January 2005. The NCLOR currently in production is supported by NCCCS 2+2 funding.

Users Information

Total User Accounts: 22,000*

Contributing Users Accounts: 2,800

All 58 community colleges in the NCCCS have access to the NCLOR and 56 colleges have their learning management systems (i.e. Blackboard and/or Moodle) directly integrated to the NCLOR.

Faculty members from 21 Universities in the UNC system, 11 Private Universities & Colleges and many LEAs have access to use the NCLOR resources.

Learning Resource Information

Total Live Items 10,237

Total collections available to faculty: 15

NCLOR Collections and Resource Series

Special Collections



(open to all users
and guests)

Center of Excellence in Geriatric Nursing Education This collection is open to all who have interest in learning objects related to nursing practice, education, and research. It is intended to encourage the nursing community to share best practices, tools, resources and references. Items contributed to this collection will be reviewed by faculty or clinical affiliates of the Center of Excellence in Geriatric Nursing Education.






(Open to NCCCS
Faculty Only)

Purchased Collection: The **National Repository of Online Courses (NROC)** is a growing library of high-quality online course content for students and faculty in higher education, high school and Advanced Placement*. Content in the NROC library are contributed by developers from leading academic institutions across the United States. All courses are assessed to ensure they meet high standards of scholarship, instructional value, and presentational impact. NROC courses are designed to cover the breadth and depth of topics based on generally accepted national curricula and can also be customized within a course management system.



(Open to NCCCS
Faculty Only)

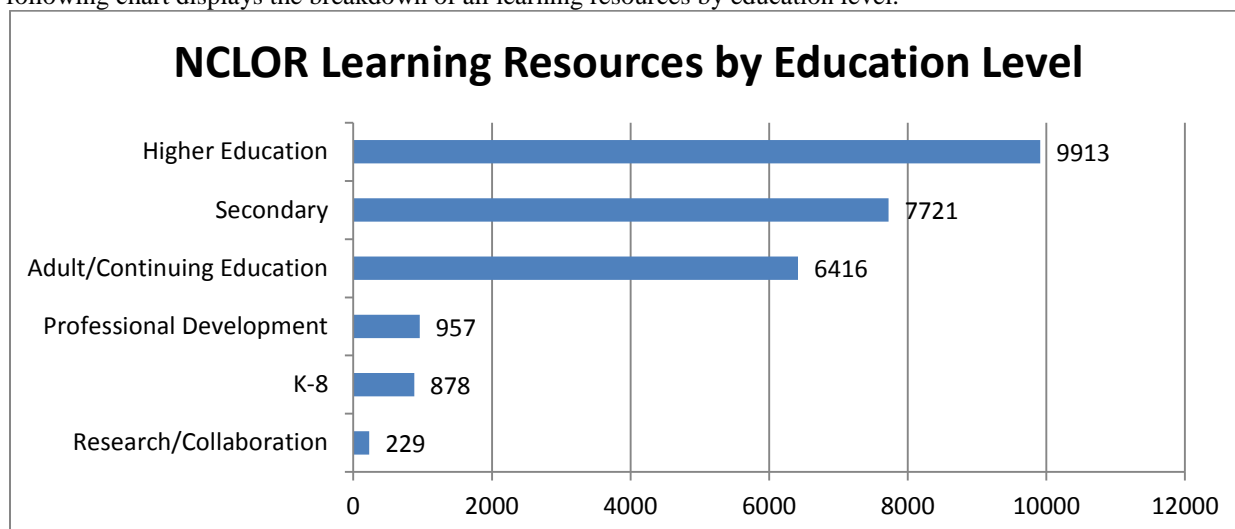
Explorer™ Virtual Microscope is a fully simulated experience of using a real microscope. Focus, slide placement, magnification choice & moving the stage controlled by mouse are all features available in Virtual Microscope. Virtual Microscope has a simple user interface with high quality micrographic images. There are five magnification settings with 3D rendering of microscope with mouse controlled perspective changes.

 (Open to NCCCS Faculty Only)	The North Carolina Community College System's Virtual Learning Community collection is the collection of the learning resources that was used in creating the latest round of online courses. By having the resources available through the NCLOR, faculty can use parts of the course without downloading the whole course. These resources are all peer reviewed to ensure high level of quality.
 (open to all user except guests)	The SAS –Curriculum Pathways is an online resource for students and teachers, SAS Curriculum Pathways provides standards-based content in all the core disciplines, grades 8-14. In the collection you will find items that relate to the Interactivity and Audio Inquiry objects from SAS.
 FTCC i3D (open to all user except guests)	The Fayetteville Tech Community College i3D collection allows for the visualization of information that is difficult to understand, describe textually, or demonstrate two-dimensionally. i3D also allows learners access to equipment or situations that would be prohibitively expensive or too dangerous in the real world.

Other Free Resource Series Available to All NCLOR Users Including Guests	
Academic Con. Presentations	This is a collection of the presentations given at participating educational conferences in North Carolina.
Annenberg Media Interactives	Free items for grades 6-12 learners in Math, Science, Art and History.
CK-12 Flexbooks	This resource series is a collection of free Flexbooks (eBooks) offered by the CK-12 Foundation.
Cool Tools for Teaching Online (SREB)	As part of the SREB State Virtual Schools Alliance in partnership with the AT&T Foundation, a list of New Media/Web 2.0 Tools has been prepared especially for SREB and online teachers by Chris O’Neal, Faculty Associate for the George Lucas Educational Foundation.
Correctional Edu. Association	This is a collection of online resources for all Correctional Education Association (CEA) members and educators.
Elon Polls	Elon University Polling Results for North Carolina
Harvard Open Learning Initiative	The Harvard Extension School’s Open Learning Initiative brings a selection of noncredit online courses featuring Harvard faculty to the public for free.
History Animated (Military History)	Collection of depictions of the key naval and land battles in WWII (Pacific Battles), US Civil War and the US Revolution using animation technology.
Learn NC	Educational resources for North Carolina K-12 educators.
Math Open Reference	Math Open Reference uses interactive tools and compelling animations to provide an engaging way to learn and explore geometry.
MIT Open Courseware	This series is a collection of the Massachusetts Institute of Technology OpenCourseWare course materials that reflect undergraduate and graduate subjects taught at MIT.
NASA at 50 Video Collection	NASA at 50 highlights key innovations and milestones in chemistry, physics, engineering, and space exploration from NASA's fifty-year history.
NC BioNetwork	Collection of the official learning objects used by NC BioNetwork.
Open Yale Courses	Open Yale Courses provides free and open access to a selection of introductory courses taught by distinguished teachers and scholars at Yale University.
Smithsonian Education	The Smithsonian Education resource series is a collection of the "Smithsonian in Your Classroom" and the Smithsonian "Art to Zoo" publications as well as the Smithsonian Lessons grade level packages.

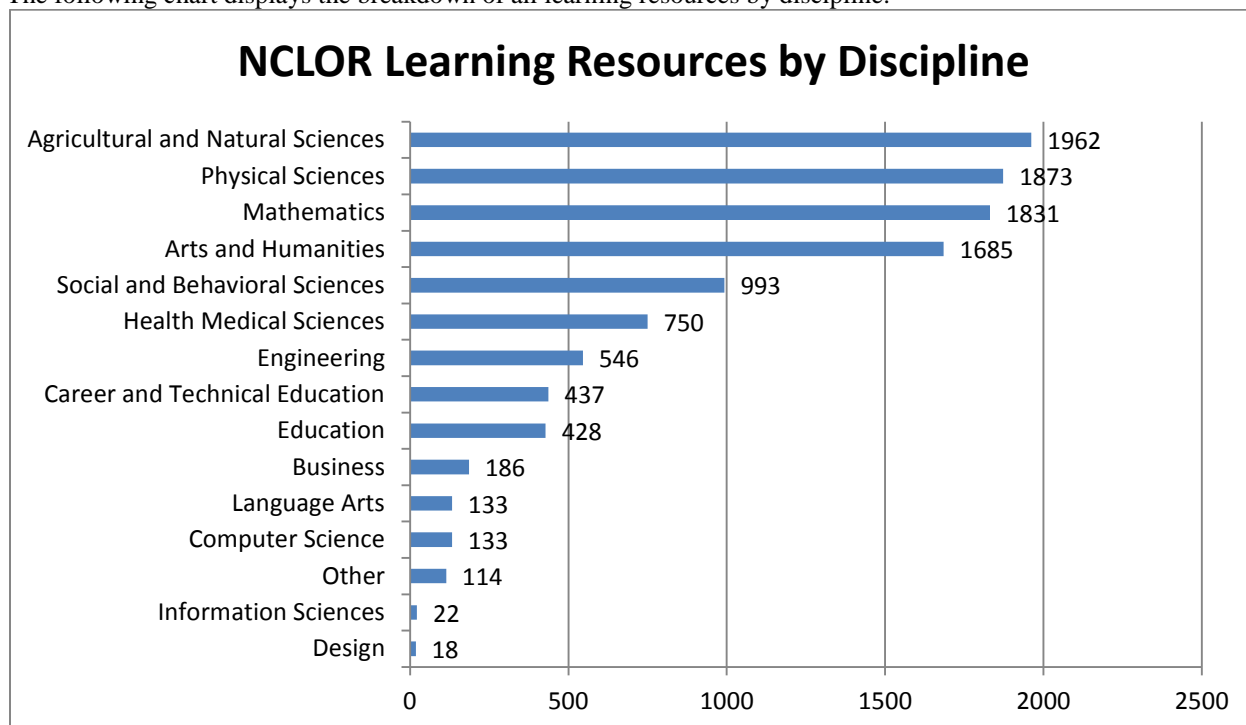
Virtual Cell Animations	The goal of the Virtual Cell (VCell) animation project is to create high-quality animations of selected molecular and cellular processes that support student learning.
Wisc-Online	Wisc-Online is a digital library of Web-based learning resources.

All resources in the NCLOR are cataloged by the appropriate education level of the intended audience. The following chart displays the breakdown of all learning resources by education level.



Note: Some Resources may have multiple education levels.

All resources in the NCLOR are also cataloged by the appropriate academic discipline to which they are intended. The following chart displays the breakdown of all learning resources by discipline.



Note: Some resources may have multiple Disciplines.

Usage Statistics

The following statistics are derived from Google Analytics (GA) for the NCLOR web application from January 1st, 2010 to February 28th 2011. Because GA is a 3rd party, java script based tool, each number

represented is roughly 90%-95% of actual traffic totals. These numbers are pulled directly from that tool and have **not** been scaled up to match known limitation.

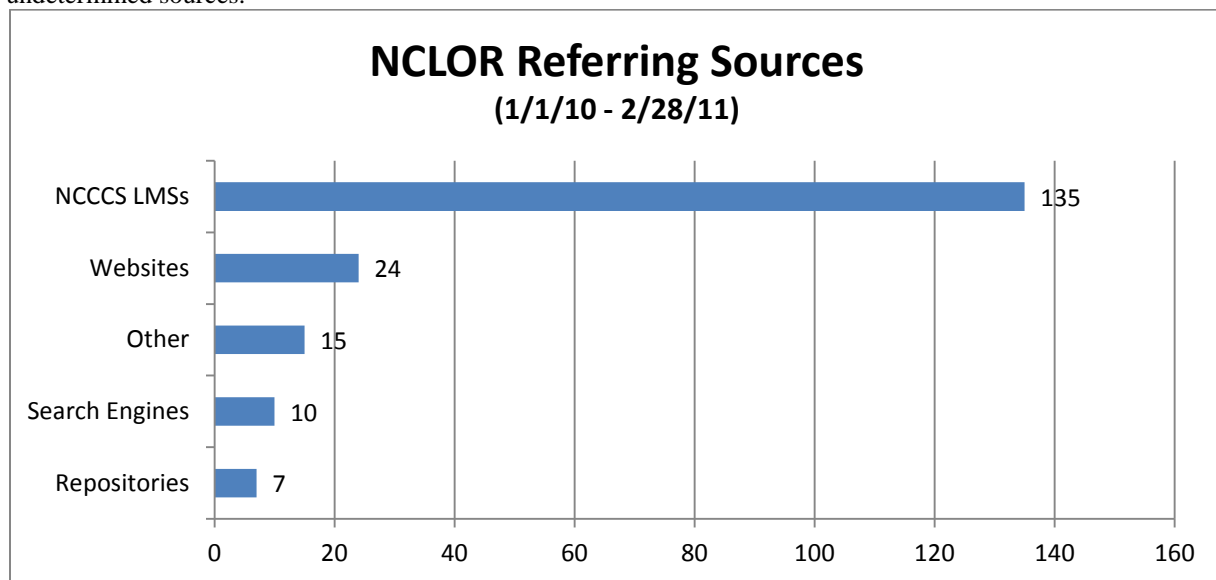


There were **34,196** total visits during the reporting period which include hits from **441** cities in North Carolina. Of those 34,196 visits, there were **224,896** page views.

Referring Sources:

Referring sources are defined as any website that links to (i.e. refers users to) the NCLOR.

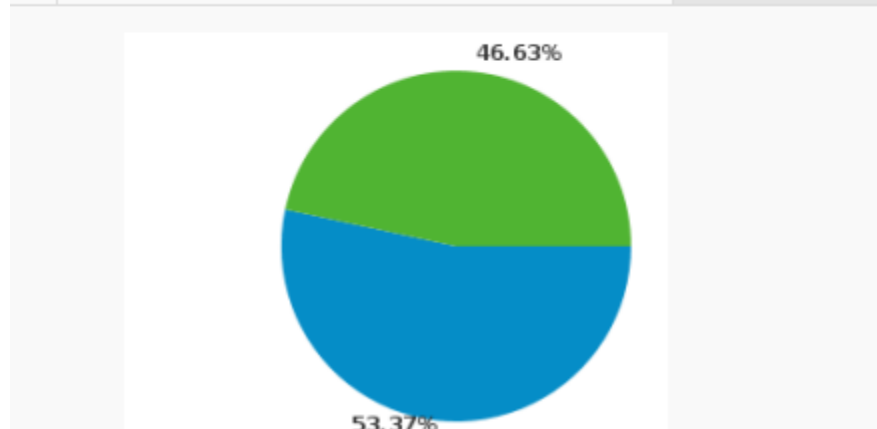
During the reporting period there were 34,196 visits from 191 referring sources. Of those 191, 135 were NCCCS learning management systems (LMS), 24 general websites, 10 search engines, 7 state repositories, and 15 undetermined sources.



New vs. Returning Visitors

Of the 34,196 visits during the reporting period, 18,251 were new visitors to the NCLOR. The chart below shows the new vs. returning users to the NCLOR.

1.	■ New Visitor	18,251	53.37%
2.	■ Returning Visitor	15,945	46.63%



Appendix E

Open Source Collaborative Statistical Analysis (Aug 09 –Jan 11)

The State Board of Community Colleges contracted with the University of North Carolina General Administration (UNC-GA) to establish the joint Systems Open Source Collaborative (OSC) Moodle Assessment. Funds were approved to provide hosted hardware, application administration, training, and customized programming in critical areas to support a centralized Moodle implementation capable of supporting 100,000 online students and to provide a testing platform for multiple community colleges.

Current Colleges Using the OSC:

- AB Tech CC
- Carteret CC
- Haywood CC
- James Sprunt CC
- Wake Tech CC
- Wayne CC
- Martin CC
- Cleveland CC
- McDowell tech CC
- Brunswick CC (test)
- Halifax CC
- Sandhills CC
- Piedmont CC
- Craven CC
- Edgecombe CC
- Wilson CC
- Mitchell CC
- Sampson CC
- Davidson C CC

Other Current Active instances:

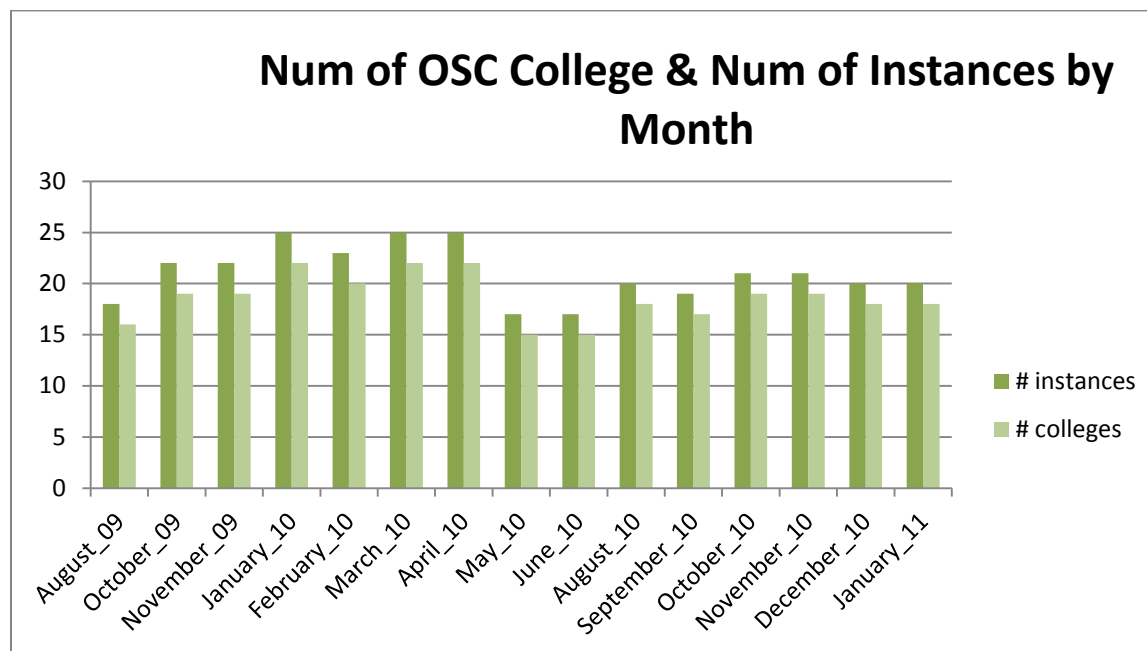
- System Office Moodle instances (VLC and NCLOR testing)
- NC BioNetwork

OSC colleges who have moved to an individual contract or self-host Moodle:

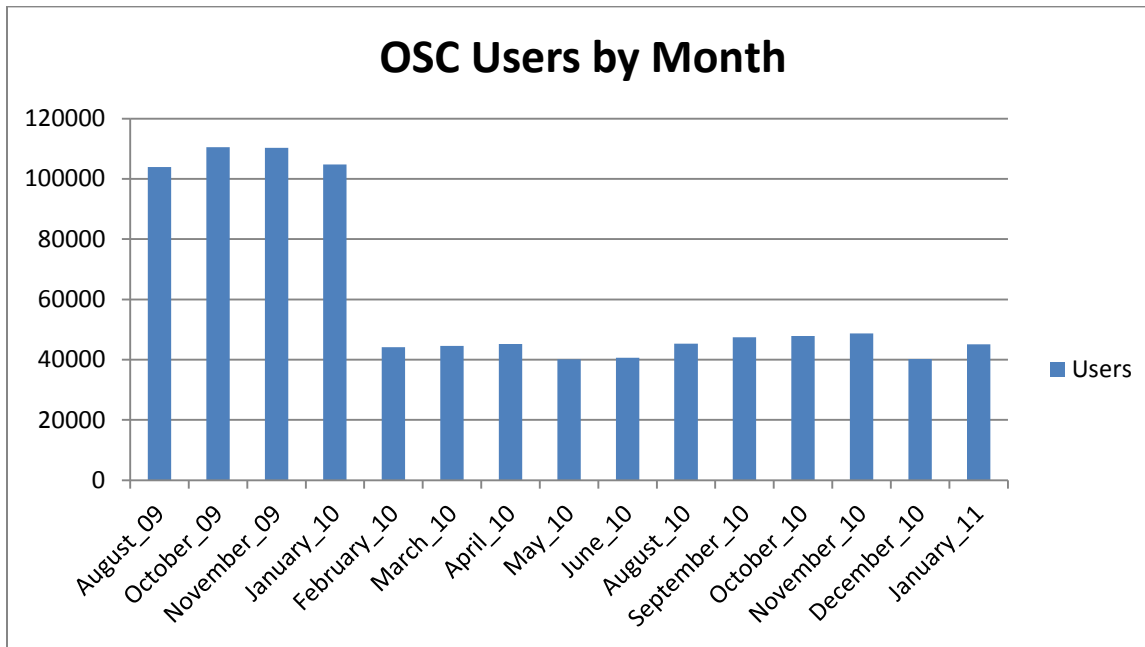
- Pitt CC
- Vance Granville CC
- Randolph CC
- Brunswick CC
- Alamance CC
- Lenoir CC
- Rockingham CC
- Sandhills CC

The data used for the charts below represent the approximate activity on the OSC cluster Moodle servers for the last 17 months. There was no data supplied from Remote Learner for the months of December 2009 and July 2010.

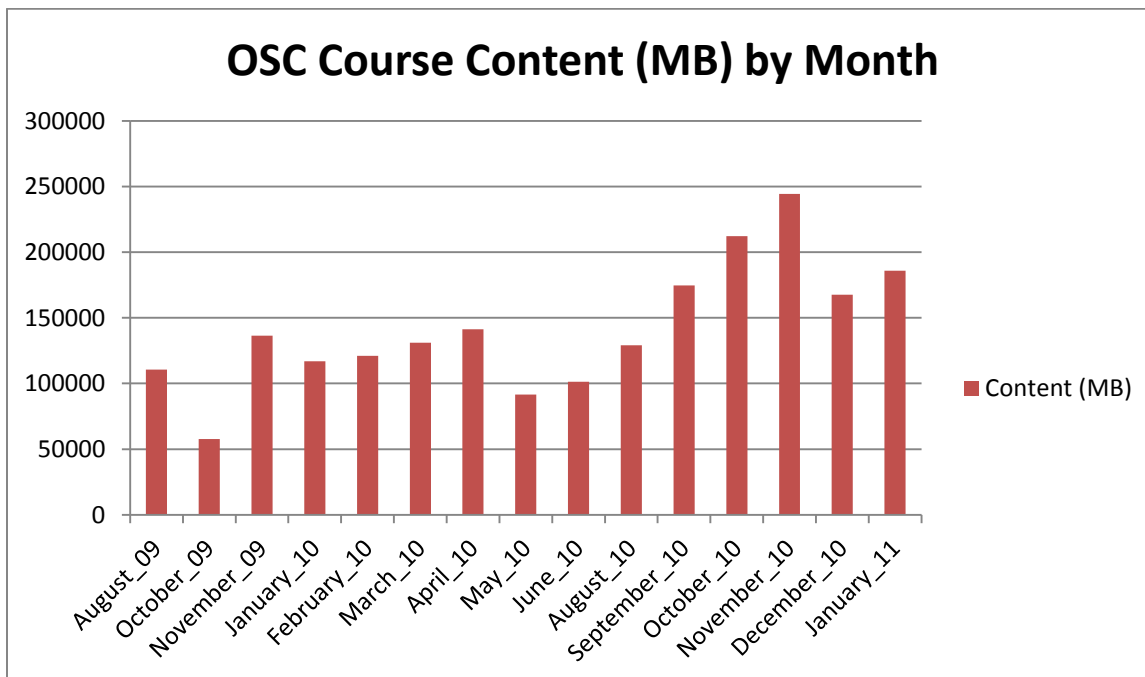
The **Number of OSC Colleges and Instances by Month Chart** below shows the college participation in the OSC and the number of actual Moodle instances loaded on the servers. During any month there was an average of 18 colleges on the cluster with 21 instances. There was not a 1:1 ratio of colleges to instances because there were 2 System Office, 1 BioNetwork , and 2 ContEd instances of Moodle included on the OSC cluster.



The **OSC User by Month Chart** below shows the number of user profiles on the OSC servers for the corresponding months. The average number of users per month on the cluster is between **40,000 - 45,000**. There was a significant drop in users in January of 2009 because Cape Fear CC left the cluster. Cape Fear CC was using LDAP to create Moodle profiles for all Cape Fear students including student not taking Moodle courses.



The **OSC Course Content by Month Chart** below shows the amount of content space used the OSC colleges measured in megabytes per month. The rapid increase in content space used in the cluster from January – December of 09 mirrors the academic semester. This represents faculty added content to courses as the courses progress.



The **Moodle Migration Status of OSC Colleges Chart** below shows the number of colleges that currently use or in the past have used the OSC cluster compared to the college's current LMS status. There have been 8 colleges that used the OSC cluster and have moved on to separate Moodle contracts or self-host Moodle. There are 12 colleges that have announced a transition to Moodle or are using Moodle heavily as a secondary LMS. Lastly, there are 10 colleges that have not announced a migration to Moodle, decided not to use Moodle or it is simply too early in their pilot to determine.

