

Case for Support

A New Age in Communications: Technology in Education

For centuries, universities and their libraries have propelled the creation, dissemination, collection, and preservation of knowledge. Columbia University has long been the source for significant original contributions to the world of ideas, and has sought to accumulate and convey that intellectual heritage to future generations of students and scholars.

Until recently, the technology of the printing press, and the resulting pedagogies—books, periodicals, newspapers, and other documents—have dominated education. However, the computer has dramatically altered the landscape of teaching and scholarship. New possibilities—digital libraries, simulations, tools for analysis, authoring environments—have transformed the ways we create and access knowledge as well as instruct and study. Technology enables us to do things faster, but also enables us to do things we have never done before.

Columbia University recognized early the potential of digital technology and made a significant commitment of resources, pioneering in networks, basic services, pedagogical innovation, software inventions, and digital libraries. Columbia's integration of these has made it a leader in technology transfer among education institutions in the United States.

CCNMTL: Service, Expertise, and Partnerships

Columbia University has demonstrated its leadership in the area of technology through the creation and continued support of the Columbia Center for New Media Teaching and Learning. CCNMTL provides faculty with the necessary guidance and expertise not only to help them shift from the world of print to digital, but also to partner in leading the University into the expanded teaching, learning, and study possibilities of the twenty-first century.

Since its inception in 1999, CCNMTL has done extensive work with the faculties of all eighteen schools of Columbia University, laying a strong foundation to act as an agent of change in the reinvention of education in the digital age. To date, CCNMTL, which is a part of the University's Information Services Division, has collaborated with over 3,500 faculty clients, and has completed more than 200 large-scale projects. Projects vary in depth and complexity, leading to the creation of interactive and media-rich applications that provide students with convenient access to online course information, including customized content and selections from Columbia's Digital Library Collection. Developing partnerships with campus departments, institutes and other centers is a major focus of CCNMTL. These partnerships aim to leverage expertise in diverse fields and have led to numerous projects with great results.

The Center's service philosophy is to provide the most supportive environment possible for faculty who invest their time and energy in using new media technologies for their courses. We attempt to create flexible tools and engaging study environments that faculty can shape to fit their particular classroom context.

The CCNMTL staff represents a wide range of backgrounds in the arts and sciences. An experienced team of educational technologists is ideally suited to offer advice and direction for faculty who wish to discover and develop best practices in the educational uses of new media. Their diverse expertise allows for productive engagements with faculty in many fields; what unites them is a dedication to creative uses of technology to attain educational goals. No faculty question or request is too small, no vision or dream too large.

In the spring of 2002, Columbia University launched CourseWorks@Columbia, a course management system customized by CCNMTL that allows faculty members to easily update course information on the Internet. Using CourseWorks, faculty have the freedom to develop a basic course Web site on their own and work with CCNMTL to develop enhancements such as multimedia presentations and case studies. Projects include a range of different approaches: visualization and modeling tools, real-time data collection tools, data sharing programs, annotation and study tools, media archives, training environments, simulations, and multimedia study environments, all enabling in-depth focus on a specific object of study, such as a work of literature, performance, article, or artwork. Projects emphasize collaboration, interaction and student activity. They promote better communication, personalization and extension of classroom space and time, in which students are invited to study, research, communicate and learn.

Examples include:

- Video Interactions for Teaching and Learning (VITAL), a web-based training application developed for Teachers College and the School of Social Work. The environment allows pre-service teachers to view a digital video library of classroom observations and clinical interviews and to construct multimedia essays incorporating references to the video library.
- Brownfield Action, a simulation created for the Barnard College Environmental Science Department, where students embark on an environmental investigation of a suspected contaminated land site. Brownfield Action was recently chosen as a national curricular model by the Association of American Colleges and Universities.
- A multimedia resource focusing on the dramatization of Salman Rushdie's acclaimed novel *Midnight's Children*. This media-rich site provides students with the opportunity to gain a richer understanding of the historical and cultural context in which the story is set. The project, created for the Columbia University School of the Arts, sustains and enhances the educational impact of the theatrical production, mounted by Columbia, the University of Michigan, and the Royal Shakespeare Company; it provides a wealth of related content including scenes from the live performance, and reflections from Rushdie, Columbia faculty, and members of the Royal Shakespeare Company.

- The Heart Simulator (HeartSim), created in partnership with the College of Physicians and Surgeons, allows students to manipulate parameters to simulate conditions and pathologies useful for teaching and learning the function of the heart. Modeling the pressure-volume relationship, this revolutionary model of physiological function provides a continuous graphic output of the relationship between pressure and volume in the heart under varying conditions.

Design Research

CCNMTL's project work is both practical and experimental. To that end, the Center engages in a process of design research. "Building to learn, learning while building" is their underlying philosophy, rooted in the notion that each of CCNMTL's projects represent a hypothesis about learning to be tested in the classroom. Through an iterative cycle of research, development, and assessment, CCNMTL and its faculty partners experiment with innovative uses of technology within university courses and create unique advancements in the field of new media teaching and learning. These assessments become the point of departure for refinement of both the projects themselves as well as the process of development. Once established as successful, a project or approach becomes part of the University's best practices and as such made available to all instructors.

Leadership

The Columbia Center for New Media Teaching and Learning, led by Frank Moretti and Maurice Matiz, is part of the University's Information Services Division, which also includes the University Libraries and the Electronic Publishing Initiative at Columbia (EPIC). These divisions fall under the leadership of James G. Neal, Vice President for Information Services and University Librarian.

Frank Moretti is co-founder of the Columbia Center for New Media Teaching and Learning, for which he provides pedagogical, strategic and managerial leadership. He also serves as Professor of Communications, Computing, and Technology at Teachers College. Prior to joining Teachers College, Frank served as the Associate Headmaster at the Dalton School, where he was also co-founder and Executive Director of their New Laboratory for Teaching and Learning, and of the internationally known Dalton Technology Plan. He holds a Ph.D. in History and an M. Phil from Columbia University, an M.Ed. from Teachers College and a B.A. in Greek and Latin from St. Bonaventure University. Frank is recognized as one of America's leading theorists and practitioners in the use of digital technology in education.

Maurice Matiz is a co-founder of the Columbia Center for New Media Teaching and Learning and currently plans and oversees its direction, focusing primarily on technical, design, and operational issues. His work and interest has focused on the application of video in multimedia environments and in the use of dynamic, database-driven information. His role at CCNMTL is a natural evolution of his work at Columbia's Academic Information Systems (AcIS), where for more than a decade he led the Academic Technologies Group. There, Matiz was involved in a number of initiatives, such as the University's first electronic classroom project, and the Sonic Glossary, a musical reference tool. These projects fueled his interest in educational technology and led to his involvement in the creation of CCNMTL in 1999. Before joining Columbia University, Maurice worked on

the Trident submarine missile project at General Dynamics Corporation. Maurice has a B.S. and an M.S. in Computer Science from the School of Engineering and Applied Science at Columbia.

Prior to coming to Columbia, James G. Neal served as dean of the Johns Hopkins University Libraries (1998–2001), Sheridan Director of the Milton S. Eisenhower Library (1995–2001) and dean of the University Libraries at Indiana University (1989–1995). He has also held administrative positions in the libraries at Penn State, Notre Dame, and the City University of New York. Neal is a published researcher in the areas of scholarly communication, intellectual property, digital library development, organizational change, human resources development, and library fundraising. He served on the Board of Project Muse, the electronic journal publishing program at Johns Hopkins; on the advisory boards for the e-history book project at the American Council of Learned Societies and PubMed Central at the National Institutes of Health, and on the steering committee for SPARC, the Scholarly Publishing and Academic Resources Coalition. Neal has served on the Council and Executive Board of the American Library Association, on the Board and as President of the Association of Research Libraries, as Chair of OCLC's Research Library Advisory Council, and is currently Chair of the Board of Directors of the Research Libraries Group.

CCNMTL Staff

Frank Moretti	Executive Director
Maurice Matiz	Vice Executive Director, Director of Technology
Daniel Beeby	Associate Director of Services
Jonah Bossewitch	Senior Technical Architect
Elizabeth Day	Creative Director
Michael Deleon	Media & Production Coordinator
Schuyler Duveen	Programmer Analyst
John Frankfurt	Educational Technologist I
Teresa Gonzalez	Executive Assistant
Michelle Hall	Associate Educational Technologist
Ryan Kelsey	Associate Director for Education & Research
Zarina Mustapha	Webmaster
Brian O'Hagan	Media and Production Coordinator
Stephanie Ogden	Senior Digital Video Specialist
Anders Pearson	Programmer Analyst
Michael Preston	Educational Technologist I
Marc Raymond	Webmaster
Jessica Rowe	Associate Educational Technologist
Eddie Rubeiz	Programmer Analyst
John Zimmerman	Associate Director – Medical Campus
Gerard Zoehfeld	Digital Media Specialist