Educational Informatics – New Tools and Opportunities

Marc Triola, MD; Adina Kalet, MD, MPH; Martin Nachbar, MD

School of Medicine, New York University

Context

Innovations in educational technology play major roles in driving curricular evolution. They enable the school to meet its educational goals amidst growing challenges, and serve as the basis of our reporting and regulatory compliance. For over two decades, the Division of Educational Informatics (DEI http://edinfo.med.nyu.edu) has served as the locus of educational technology and innovation for the undergraduate medical school. DEI has had a tremendously successful history and through its efforts has brought NYU School of Medicine to the forefront of Educational Informatics innovation and Medical Education research

Mission: The Division of Educational Informatics is an educational technology laboratory within Medical Center IT and the Dean's Office of the New York University School of Medicine. DEI supports the goals of the School through the discovery, development and validation of new information technologies for medical education and through academic collaborations focusing on novel research and curricular transformation.

DEI Activities:

School of Medicine:

- Strategic planning for future educational technology requirements and initiatives
- Participation in ongoing curricular transformation projects
- Preparing the institution for the increased use of computer-assisted instruction
- Working with faculty and students to facilitate the process of content creation and maintenance
- Implementing evolving standards for educational technology (SCORM, Medbiquitous Virtual Patient, etc.) into our applications and content.
- Continuing to support the legacy applications, ongoing research and grant projects, and other functions currently in place
- Serving as the liaison and point of communication for the Students and Faculty, MCIT and the Curricular/Education Committees where needed to implement or explore solutions to support needs or innovations

University Level:

- Acting as a model for driving intra-university educational technology innovation
- Acting as a catalyst for university collaborations
- Conducting rigorous collaborative research on the effectiveness and impact of the use of technology in medical education

National/International

- Demonstrating leadership in educational informatics research
- Contributing on a national and international level to the development of technologies and standards in the realm of medical educational technology

Current Grant Funded Initiatives:

DREAM: This is an HRSA-funded effort to create a Database for Research in Education and Academic Medicine. This ambitious project is using the lessons learned from clinical medicine and clinical research to create analogs of the electronic data repository in the realm of medical education. The goal is to create a database that includes the continuum of a learner's data from UME through GME and CME. For the first time DREAM would allow us to link educational interventions with patient-important clinical outcomes.

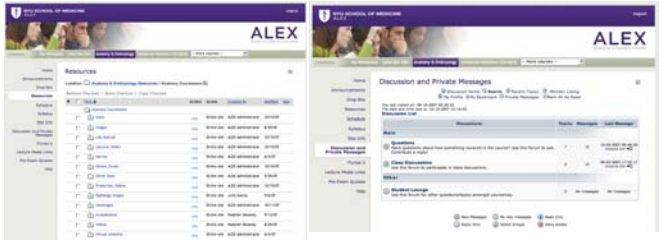
NLM R01: Dr. Adina Kalet (the Director of Research for DEI) is in the process of resubmitting a $1.4 million RO1 to the NLM that builds upon the pedagogical approach of the WISE-MD program. Her project would conduct a multi-institutional randomized trial to better determine the educational effectiveness of computer-assisted learning modules like this are and how they are best used in an eCurriculum.

National Library of Medicine G08 LM008806-01 (Triola) NYU Medical Center Integrated Advanced Information Management Systems (IAIMS) : We have a IAIMS planning grant from the NIH/NLM to consolidate gains in our technology and curricular infrastructures with those in educational technology to create a computer-based learning system for use in the Comprehensive Cancer Center (CCC). The overall project will produce a four-year plan to implement demonstration projects in the CCC to create a learning-in-context environment that can provide computer-based education to faculty and staff in support of patient-centered, multi-disciplinary care and research. These demonstration projects will build upon current educational technology projects within the SOM: ALEX, the WISE-MD rich media education modules, and the Virtual Patient simulations.

National Science Foundation IIS-0537252 (Grimm) Exploiting the Edge: A Web-Based Content Management and Delivery System to Enable Rigorous Assessment of the Impact of a Rich Media Educational Intervention on Clinical Competence: This investigation, in collaboration with the School of Computer Science, is funded by the National Science Foundation to develop new tools and new assessment techniques for multimedia teaching applications. This project also proposes to build a technical infrastructure for dissemination of content (and for data collection) globally using a trusted network.

Key Initiatives

The Advanced Learning Exchange (ALEX): Based on the open-source Sakai project (www.sakaiproject.org) this is our largest and most central effort. ALEX is a Learning Management system through which all of our eCurricular content is delivered. It supports teaching, learning and collaboration through a series of web-based tools that are integrated with online course sites. ALEX provides similar functionality to our former Curriculum Materials Management System and Curriculum Web Site but also includes many new features and is continuously being developed by an open source community of higher educational institutions.



iTunesU is a free, hosted service provided by Apple for universities that provides easy access to educational content, including lectures and video. Through iTunesU, students can download and view that content on their Mac or PC, or transfer it to an iPod for listening or viewing on the go. It provides us a mechanism for providing offline multimedia content with minimal technology overhead. It allows us to distribute selective content without constraining our bandwidth.

Virtual Patients: Computer-based simulations of patient encounters are recognized as a valid and effective way to improve our learner's clinical reasoning skills. VPs can also help us address the challenge of case diversity and patient contact time for our learners. We have already established NYUSM as a leader in this approach and are participating in the developing international standards for these technologies. A key technology that we will be collaborating on over the next two years is a novel web-based Virtual Patient application that we are developing and will integrate the system into our ALEX framework.

WISE-MD: These modules are designed to provide students with the core of the curricular material and with accessory material available for those who wish to explore a topic in broader depth. One goal of the WISE-MD modules is to enhance the educational value of actual clinical experiences by "priming" students with core information and principles in an environment that is user-driven and free from the constraints implicit in the clinical context. Our vision is that the WISE-MD modules will foster independent clinical reasoning in students, and allow them to optimize actual contact time with patients. The modules are intended not to replace traditional didactic teaching within the curricula but to enhance the sophistication and level of these interactions. These modules have been our most successful endeavor to date, with over 20 medical schools now using them as an integral part of the third year medical student surgical clerkship.

Lessons Learned

Education should drive technology, not other way around.
Computer Assisted Instruction (CAI) works, if done thoughtfully.
Simulation works to accelerate the expertise curve.
Faculty and student autonomy present unique challenges to the use and implementation of CAI.
CAI is resource intensive.
Without Faculty Development, these approaches fail.
Inter institution needs are amazingly similar, collaborations are successful.

Opportunities/Next Steps

- Broader dissemination of these tools and approaches throughout NYUSM and nationally
- Implementation of ALEX in the GME programs
- Enforcing educational standards that allow us to share this content easily with others
- Implementation of our new QuestionMark computer-based testing system
- Implementation of eValue at the SoM