Laboratory for Educational Technology Annual Report

2009

University of Pittsburgh School of Medicine
July 2008 to June 2009
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Note from the Director

Innovation in health science education is the primary focus of the Lab for Educational Technology and the 2008-2009 academic year was no exception. Our mission was most prominently reflected in the Lab’s new virtual patient simulation tool called “vpSim.” This novel web-based software application allows, for the first time, medical educators to rapidly and easily develop virtual patients for education and assessment.

Virtual patients (VPs) are computer-based simulations of clinical encounters in which a student interacts with a patient’s on-screen story. Students interview and examine the patient, collect data and, most importantly, make clinical decisions and observe the consequences. Earlier this year, Cook and Triola published a review of the virtual patient literature supporting the unique value of VPs in teaching clinical reasoning.1

The Lab’s vpSim web-based authoring and playback application eases the creation of complex branched-narrative VPs through an intuitive graphical user interface. Based on local experience and feedback from 24 beta-testing schools, vpSim reduces the time to create a VP by 60 – 90% of the original production time. It is, furthermore, the first VP application built to the new MedBiquitous VP data standard and, as a result, vpSim was awarded the MedBiquitous Implementation Award at its annual meeting in April. (Please see page 8 for a complete description of the vpSim application.)

During the 2008-2009 academic year, the Lab embarked on other new projects and significantly expanded and upgraded existing programs. For example, all clerkships now use our custom web-based clinical encounter Learning Log (page 18) and even preclinical students are using it to record both live and simulated patient encounters. In addition, the Lab is the first school to electronically connect our own Navigator curriculum management software (page 13) to the AAMC’s CurrMIT national database of medical school curricula (page 15). This past year also saw a major upgrade of the lecture capture and online playback through acquisition of state-of-the-art Mediasite Live (page 11) and a complete overhaul and upgrade of the students’ Zone web portal (page 19) including new personal websites, social networking tools and a custom integrated calendar with comprehensive access to all curricular, school, and social events.

Dissemination of the Lab’s academic and development activities took place at various national and international meetings including the Association of Medical Educators of Europe (Prague, Czech Republic), International Association of Medical Science Educators (Salt Lake City, UT), the Association of American Medical Colleges (San Antonio, TX), Society of General Internal Medicine (Miami, FL), International Conference on Virtual Patients (Krakow, Poland), MedBiquitous meeting (Baltimore, MD)

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and at invited presentations at the University of Connecticut, University of Maryland, and Keio University in Tokyo.

For the 2009-2010 academic year, the Lab plans to focus on the dissemination of vpSim and on promoting the creation of high-quality virtual patients through case writing guidelines and workshops. Plans are also underway to critically evaluate VP’s as an assessment tool for clinical reasoning. We recently and notably received approval for licensing vpSim outside of the university as a means to sustain research and development in technology for education.

On behalf of everyone at the Lab for Educational Technology, we hope you enjoy reviewing this annual report and encourage you to contact us directly with questions and comments.

J.B.

James B. McGee, MD
Associate Professor of Medicine
Assistant Dean for Medical Education Technology
Director, Laboratory for Educational Technology
University of Pittsburgh School of Medicine

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For additional information ...

For more information about the Laboratory for Educational Technology, its projects, or opportunities for collaboration, please contact us at 412-648-9679, labedutech@medschool.pitt.edu, or visit us at:

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2008-2009 Highlights

**Virtual Patient Simulation:** Developed an online virtual patient (VP) authoring and playback system ("vpSim") allowing medical educators to create clinical simulations for education, assessment, and sharing with other institutions. This program won the MedBiquitous 2009 conference award for best implementation of an education technology standard. Since winning the award in April 2009 there are more than 25 medical schools either evaluating or using vpSim in their curriculum. [page 8]

**Lecture Capture and Playback:** Initiated an upgrade of the school’s popular lecture recording and web-based playback system. The new hardware and software offers improved stability, compatibility, sustainability, and functionality to faculty and students. [page 11]

**Major Upgrade to Student “Zone” Web Portal:** Upgraded the Zone Student Portal and Learning Portfolios technology platform without major disruption to UPSOM students, faculty, and programs such as the Scholarly Project, Dean’s Summer Research Program, and Medical Scientist Training Program. The migration resulted in improved security, compatibility, management, and functionality for the platform supporting 2248 student, faculty, and administrative users. [page 19]

**Automated the Export of Curricular Data to AAMC’s CurrMIT Database:** Implemented a unique software application for exporting UPSOM curriculum information to the AAMC’s CurrMIT (Curriculum Management and Information Tool) database. CurrMIT is a publicly accessible database used to assess and compare medical school curricula. [page 15]

**Student Clinical Patient Logs:** Implemented clinical education event logging for all UPSOM clerkships and clinical courses including 83 electives. The implementation resulted in increased faculty review of student clinical education activity and data collection to fulfill ED2 and LCME accreditation requirements. [page 18]

**Online Musculoskeletal Medicine Curriculum:** Launched the online Musculoskeletal Medicine curriculum of 20 modules for UPSOM MS3-4 students. Organized and compiled by Dr. John Mahoney, Associate Dean for Medical Education, the curriculum has been well received with 1949 unique visits since release in April 2009. [page 17]

**Just-in-Time Learning Modules:** Expanded implementation of online, just-in-time clinical learning modules targeted to improve medical student palliative care education by combining them with the Surgery & Perioperative Care clerkship. David Barnard, Ph.D. (Professor, Department of Medicine) (PI) has finished data gathering for the NIH grant-funded project. The modules have been accessed 1907 times (from May 2007 to June 2009). [page 18]

**Agile Project Management:** Implemented an Agile project management methodology which resulted in a 158% increase in productivity and improved our focus on high-value, high-return projects and tasks for UPSOM and the broader medical education community. [page 23]
**Dissemination:** Lab members presented at 3 international and 4 national conferences, conducted a national workshop on virtual patients, gave 3 invited presentations and published 2 peer-reviewed publications. [page 22]

**Collaborative Learning Portfolios:** Supported 530 student-mentor teams use of collaborative learning sites including those for the Scholarly Project. [page 19]

**Post-graduate Training:** Developed and supported departmental educational websites for Pediatrics, Internal Medicine, and Gastroenterology. Faculty from those departments have made national presentations and published peer-reviewed articles related to use of these educational innovations. [page 16]

**Increase in Application Users:** The number of students, faculty, staff and external medical professional accounts within the Lab’s applications grew from 8,477 to 11,253, an increase of 25% from June 2008 to June 2009. [page 24]
2008-2009 Projects

This section details the major projects and programs of the Lab for the 2008-2009 academic year.

1. **Virtual Patients** – a virtual patient case authoring system (vpSim)
2. **Lecture Capture and Recording** – streaming audio, slides, and optional video of lectures
3. **Virtual Microscopy** – online virtual microscopy for medical student education
4. **Navigator Learning Management System** – the University of Pittsburgh School of Medicine’s online curriculum
5. **Custom Learning Management Systems** – a series of customized Learning Management Systems for undergraduate, graduate, and continuing medical education
6. **Clinical Encounter Learning Log** – a clinical event logging system for medical education (UPSOM)
7. **Student Portal and Collaborative Learning Portfolios** – Microsoft SharePoint™ platform supporting the “Zone” UPSOM medical student portal and “Learning Portfolios” collaborative team sites
8. **Dissemination** – national and international dissemination of academic activities of the Lab
Recognizing a long-standing need, the Lab embarked on a large-scale development project to create a standards-based, ease-to-use, online virtual patient case-based authoring and playback system for medical education and assessment. Virtual patients (VPs) are computer-based simulations of clinical encounters where the student interacts with a patient’s on-screen story. Students obtain a history, examine the patient, collect data and most importantly make clinical decisions and observe the consequences. In May, an article published in Medical Education concluded that branched-narrative VPs like vpSim are the best technology for teaching clinical reasoning skills. The same article also concluded that VPs have historically been expensive and complicated to create and maintain.
By the summer of 2009 the Lab developed a Beta version of its online, virtual patient authoring and playback system called “vpSim” based on extensive needs assessment and feedback from medical educators. The system supports an online, Flash-based graphical user interface for outlining branched cases and uses web forms for entering case data and multimedia. Students use the web-based player application to interact with their virtual patients while the system tracks performance metrics such as cost, time, and quality of care. The system is the first application compliant with the MedBiquitous Virtual Patient XML data standard for exchanging cases between different institutions’ virtual patient authoring systems.

Dr. McGee has presented vpSim to many national and international audiences resulting in direct interest in supporting vpSim from the AAMC as well as licensing requests from American and European medical schools. Dr. McGee received an award for vpSim for the best implementation of the virtual patient standard at the 2009 MedBiquitous Annual conference. Formal beta testing, focus groups, surveys and interviews with faculty and students resulted in strongly positive responses. Early implementation and use includes a pilot program with pharmacology doctorate students, general internal medicine educators, and a workshop at a national medical education conference. The university has approved vpSim for commercial licensing.

Institutions currently evaluating and beta-testing vpSim:

1. American College of Surgeons (Chicago, IL)
2. Association of American Medical Colleges (Washington, DC)
3. George Washington University Health Sciences Program (Washington, DC)
4. Imperial College of London (London, England)
5. Jacobi Medical Center/Albert Einstein College of Medicine (Bronx, NY)
6. Johns Hopkins University (Baltimore, MD)
7. Karolinska Institutet (Stockholm, Sweden)
8. Loyola University Strict School of Medicine (Chicago, IL)
9. Ludwig Maximilians Universität (Munich, Germany)
10. MedBiquitous (Baltimore, MD)
11. New York University School of Medicine (New York, NY)
13. Universitas Iuliu Hatieganu Cluj-Napoca (Cluj-Napoca, Romania)
14. Universität Heidelberg (Heidelberg, Germany)
15. Universität Witten/Herdecke (Witten, Germany)
16. Universiteit Maastricht (Maastricht, The Netherlands)
17. Uniwersytet Jagiellonski (Krakow, Poland)
18. University of Connecticut Health Center (Farmington, CT)
19. University of Pennsylvania School of Medicine (Philadelphia, PA)
20. University of Pittsburgh Medical Center (Pittsburgh, PA)
21. University of Pittsburgh School of Medicine (Pittsburgh, PA)
22. University of Pittsburgh School of Pharmacy (Pittsburgh, PA)
23. University of the Sciences in Philadelphia (Philadelphia, PA)
24. University of Virginia (Charlottesville, VA)
25. Warwick Medical School, University of Warwick (Coventry, England)
Lecture Capture and Recording (2006 to present)

The Lab supports lecture audio recording and synching with PowerPoint slides for UPSOM courses. Surveys and usage data revealed that students strongly appreciate the availability of lectures for review at any time. In summer 2009 we will switch to Mediasite (by Sonic Foundry) for recording lecture audio and slides in UPSOM courses. Mediasite offers better reliability, and compatibility with operating systems and web browsers including the highly-popular variable speed playback now for both PC and Mac operating systems. It supports editing of recorded lectures (VGA and audio) and includes a player for embedding in web pages.
Virtual Microscopy *(2009 to present)*

The Lab is facilitating exploration into using virtual microscopy in the UPSOM curriculum. Dr. Cynthia Lance-Jones focused the faculty effort of the Department of Pathology (Drs. MacPherson, Parwani, Murdoch, Nichols) and course directors (Drs. Duker & DeFranco). Dr. McGee has provided guidance on the selection of virtual microscopy programs and support from Lab staff such as Peter Kant.

The Lab will implement a pilot version of a web-based virtual microscopy system for UPSOM within the Cellular and Pathologic Basis of Disease course starting in mid-October 2009. Based on this pilot, we may expand the program to other courses and educators.
Navigator Learning Management System

Navigator is our flagship application, serving as the learning management system (LMS) for the University of Pittsburgh School of Medicine.

**Medical Student Curriculum on Navigator (2002 to present)**
([http://navigator.medschool.pitt.edu](http://navigator.medschool.pitt.edu))

Navigator continues to be used by all core pre-clinical courses, clinical clerkships and an increasingly large number of elective courses. Use of the course director’s “blog” has proliferated and remains one of the most visited course pages. It facilitates student-faculty interaction and is used by all Basic Science Block and most Organ System Block courses.

In 2008-2009, we collaborated with the Introduction to Pathobiology and Cellular and Pathological Basis of Disease course director (Dr. Lawrence Nichols) and students to create a comprehensive online “Practical Pathology Tutor” used in both MS1 & MS2 courses.

Other 2008-2009 Navigator activity:

- Created a custom Educational Credit Unit (ECU) report suite for the Office of Medical Education (OMEd) based on faculty and course data from Navigator
- Added support for large video playback in Navigator
- Added a search engine for locating course content by topic, learning objectives, and keyword
- Added a course content locking system to ensure accurate archiving of online course content
Continuing into 2009-2010 we are exploring video recording of student "exemplar" presentations initiated by Dr. Goutham Rao for the Introduction to Medical Decision Making course and Drs. Drain & Givelber for the Methods and Logic in Medicine course to improve student & faculty understanding of performance expectations.

**Integrated Case Studies (2005 to present)**
http://navigator.medschool.pitt.edu/ICS/

Integrated Case Studies is a 2nd year medical student course designed to help students integrate basic science and organ system content and apply it toward clinical problems as a preparation for the clinical years.

In addition to providing support for content development, we added the display of normal medical test and examination values to all cases.

**Anesthesiology Residency Program (2005 to present)**

The Anesthesiology Residency Program continues to use Navigator for posting recorded lectures and materials for introductory, 1st year, and 2nd year Anesthesiology resident education.

**GI Rounds Online (2003 to present)**
http://girounds.pitt.edu/

The Gastroenterology, Nutrition and Hepatology Division faculty led by Dr. David Whitcomb continues to create high-quality CME online cases covering contemporary advances in gastroenterology. There are currently 14 online accredited cases including 5 completed during AY 2008-2009. Five additional cases are in production for AY 2009-2010.
**AAMC CurrMIT curriculum export (2009 to present)**

http://www.aamc.org/meded/curric/start.htm

The Lab recently completed work on a novel system allowing UPSOM curriculum data to export from Navigator to the AAMC's CurrMIT system. CurrMIT allows Association of American Medical Colleges (AAMC) members to compare our curriculum with other schools. The AAMC is very pleased with UPSOM’s lead in systematically exporting granular data into their curricular database. The tool is currently being used by the Office of Medical Education to increase UPSOM’s curricular visibility.

**Course Blogs / Discussion System (2005 to present)**

The course blog software is used by:

1. course directors to centrally broadcast and answer student questions
2. students and faculty to communicate and document project progress and concerns

Blogs are widely used in UPSOM basic science and organ system block courses. The application also serves as the primary point of communication between students, mentors, and directors for the Scholarly Project program as well as the MLM course, SRP, and Small Group learning sites. The application has increased student, faculty, and program director online communication and interaction for SOM courses and programs.
Custom Learning Management Systems

The Lab develops and supports customized learning management systems for undergraduate, graduate, and continuing medical education (CME) specific to each program’s needs.

**Pediatrics Education (2006 to present)**

http://pedsed.pitt.edu/

The Pediatric Education (PedsEd) website is used nationally by pediatricians and allied health professionals for CME on pediatrics topics as well as resident and fellow training in the Department of Pediatrics at Children’s Hospital of Pittsburgh of UPMC. The PedsEd website quadrupled the number of health professionals using its materials in the past year, in large part due to the quality of its Otitis Media curriculum and resident and fellow continuity clinic curriculum.

The General Academic Pediatrics group received the Academic Pediatric Association teaching award in May 2009 for the comprehensiveness and quality of their education, highlighting the web-based content on the PedsEd website. The group has a publication “in press” with the journal Pediatrics scheduled for the October 2009 electronic issue. Currently the PedsEd website is being used by other medical institutions around the U.S such as the St. Louis Children’s Hospital / Washington University School of Medicine Pediatric Residency Program.

This year the Lab redesigned the learner interface for cases on PedsEd, added automated CME reporting for learners, and optimized reports for administrative users.
Anesthesiology Grand Rounds (2006 to present)
http://anes.nav.pitt.edu/

We continue to support the Department of Anesthesiology’s Grand Rounds series through a LMS that tracks and reports CME completion for live and online lecture participation.

General Medicine Modules (2007 to present)
http://genmedmod.nav.pitt.edu/

Ongoing support and content development continues for this online educational series for resident training in Internal Medicine run by Dr. Gary Tabas, Director, Transitional Year Residency and Ambulatory Education at UPMC Presbyterian Shadyside. This year the lab added a separate website for display of educational modules submitted for peer review to the AAMC’s MedEdPortal.

UPSOM EBM Virtual Center (2007 to present)
http://ebm.nav.pitt.edu/

The EBM Virtual Center website is used to author and distribute online Evidence Based Medicine training materials for University of Pittsburgh School of Medicine faculty and trainees. Dr. Goutham Rao leads this initiative for the Academy of Master Educators. This year Dr. Goutham Rao, Dr. JB McGee, and Dr. Steven Kanter submitted an NIH Challenge Grant application to improve and evaluate EBM education at UPSOM.

Dental Medicine Online curriculum (2007 to 2009)
http://dental.nav.pitt.edu/

We supported an online learning management system for the School of Dental Medicine that they used to provide curricular access to 165 students and faculty in addition to prospective students.

Clinical Curriculum (2007 to present)
http://clinical.nav.pitt.edu/

Support continues for this website comprised of clinical topics for UPSOM students. The Palliative Care online educational curriculum provides modules that are referenced by students and their faculty preceptors during clinical rotations. These modules are delivered “Just-in-Time” to the student and faculty member based on the clinical encounters a student reports. The Palliative Care curriculum is part of an ongoing $1+ million NIH grant (P.I. David Barnard, PhD, JB, Professor, Department of Medicine) to assess ways of improving palliative care education at the undergraduate medical level. The system also provides clerkship directors with reports and information to adapt the teaching of Palliative Care topics on clinical rotations. We are in the final stage of the grant, providing data to assess the impact of the online, Just-in-Time learning system.

During 2008-2009, Dr. John Mahoney, Associate Dean for Medical Education, created a 20-module online curriculum on Musculoskeletal Medicine curriculum for UPSOM medical students located on the website. The Lab provided support and development of specialized reporting tools for these modules.
Clinical Encounter Learning Log
http://log.nav.pitt.edu/

The Learning Log application is used by UPSOM medical students to record clinical education patient encounters for review with faculty preceptors and for UPSOM institutional accreditation purposes.

SOM Learning Log (2006 to present)

This year we added new reports and administrative tools for clerkship directors and the Office of Medical Education to track and improve student clinical education. We supported release of the Log to all 267 clinical electives and three 1st and 2nd year clinical courses. The Learning Log is now used by all clinical clerkships, electives, and three Introduction to Patient Care block courses. These changes resulted in improved monitoring of student clinical education by clerkship directors, improved ability to report required data to accrediting bodies, and data for clinical curriculum assessment.

Just-in-Time learning (Palliative Care) (2006 to present)

As part of an NIH grant-funded project described earlier, the Learning Log prompts students and their preceptors to access Palliative Care educational modules whenever the student logs an encounter with likely palliative care issues.

This year we added reports and administrative tools for administrators and clerkship directors using the palliative care modules. We supported release of the modules into the Surgery & Perioperative Care clerkship. The modules are also used in the Adult Inpatient Medicine clerkship and formerly in the Family Medicine clerkship.
Student Portal and Collaborative Learning Portfolios

SharePoint™, a Microsoft online collaboration and web portal suite, is used for the medical student “Zone” portal and for collaborative learning portfolio web sites.

**Zone Student Portal (2004 to present)**
http://zone.medschool.pitt.edu/

Added MyZone feature integrating student calendars, links to important resources, commonly used tools (Navigator, Log) and student profile information. Redesigned permissions configuration for more efficient management of student and faculty access to appropriate materials.

**Collaborative Learning Portfolios (2005 to present)**
http://zone.medschool.pitt.edu/sites/portfolios/

Learning Portfolios are course-, project-, or learner-centered websites for faculty and student collaboration using documents, discussion posts, and email alerts. Learning portfolios are used for learning, project development, research collaboration, and assessment. Learning portfolios have resulted in improved student-faculty collaboration, tracking of research activity, and clarity regarding program requirements and processes.

We use Learning Portfolios to support major University of Pittsburgh School of Medicine (UPSOM) initiatives such as:

1. Scholarly Project (SP) – a longitudinal, required scholarly endeavor for all UPSOM medical students
2. Dean’s Summer Research Program (SRP) – an elective summer research program for UPSOM medical students between their first and second years of medical school sponsored by the Dean
3. Medical Scientist Training Program (MSTP) – the MD/PhD program at UPSOM
4. Methods and Logic in Medicine course (MLM) – a required course focusing on critical evaluation of research, application of medical knowledge to patient issues, and use of the scholarly process to formulate valuable questions related to the field of Medicine

Additional programs:

1. Clinical Scientist Training Program (CSTP)
2. Physician Scientist Training Program (PSTP)
3. Gastroenterology Fellowship Training Program
4. Pulmonary Fellowship Training Program
5. Neuropathology Fellowship Training Program
6. Inter-professional course (IP)
7. UPSOM Areas of Concentration websites (AOCs)
8. Medical Student Training Program in Aging Research (MSTAR)
9. Medical Student Small Group Learning in Basic Science and Organ System block courses

New programs for the 2009-10 academic year:

1. Medical Student Advisory portfolios
2. University of Pittsburgh Pre-health VAULT (Virtual Assessment for Undergraduate Learning and Training) portfolios

This year we designed MLM course small group sites for improved student and faculty usability. We also created training & help materials for program administrators to more easily manage their program sites and work more closely with users.
The Scholarly Project and Dean’s Summer Research Program support the development of skills in medical students for research, critical thinking, and application of research to medical practice. Approximately 530 student-mentor teams use collaborative SP & SRP sites to develop, review, and monitor project progress. The programs’ five directors oversee each student’s project using project web sites and reporting tools developed by the Lab and Mike Willochell and Kyle Landis of the Health Sciences information technology group (iTarget).

This year we added additional features to ease director management of student and mentor projects that have resulted in improved tracking of student projects, and collaboration between students, faculty, and program directors. The directors are pleased with the progress of the initiative:

“The Scholarly Project’s success is built on the backbone of the LET / iTarget infrastructure.”

- Dr. Michael Boninger
Associate Dean for Medical Student Research
Interim Chair and Professor, Department of Physical Medicine and Rehabilitation
Director, Scholarly Project

This year the Scholarly Project resulted in 14 students winning 27 National and State awards, 100 publications, and the completion of the graduation requirement for the Class of 2009.
For the coming year, we will enhance integration of the Scholarly Project Director’s management tool with the Learning Portfolios and add additional usability enhancements for the program. Dr. McGee and Peter Kant are participating in a manuscript submission to Academic Medicine about the Scholarly Project and its supporting technology.

SharePoint™ 2007 Migration (2008)
We upgraded to the most recent version of Microsoft SharePoint™ the technology platform supporting the Zone student portal and Learning Portfolios websites. The change included a redesign of the look and feel of the web portal and additional administrative features. We also introduced a student-centric personal portal area called MyZone where students can access an integrated calendar, email, and links to their most commonly used educational and school-related resources. We managed the migration to cause little disruption to students and the programs.

Dissemination
This section details achievements of members of the Laboratory for Educational Technology relating to dissemination of its academic and development work.

Dr. James B. McGee, Director, presented the Lab’s accomplishments at a number of national and international conferences in the US, Europe, and Japan during the 2008-09 academic year as a plenary, keynote or invited speaker at six education conferences. He was invited to AAMC headquarters to review the Lab’s work with virtual patients and to Keio University in Tokyo to review advances in education technology. He published two refereed articles in Medical Teacher.

Dr. Gary Tabas, Director of Clinical Education, was promoted to full Professor in 2008 and appointed to the University of Pittsburgh School of Medicine Academy of Master Educators. He was Team Leader for the E-Learning Task Force, Association of Program Directors in Internal Medicine. He also taught in the Behavior, Illness, and Society and Introduction to Clinical Decision Making MS1 courses, and continues to train residents, fellows, and is active at all levels of medical education.

Dr. Tabas conducted two workshops at national meetings this year, “Virtual Patient Simulation for Medical Education” at the Society of General Internal Medicine Annual Meeting (May 2009) and “Teaching Using Virtual Patient Technology” at the International Association of Medical Science Educators (IAMSE) national annual meeting July 2008 Salt Lake City, Utah.

Peter Kant, Production Director, facilitated a small group in the Methods and Logic in Medicine course and a short course on virtual patient authoring at the Society for General Internal Medicine’s Annual Meeting. Peter provided educational consultation for course directors for all 31 medical school courses, 8 core clerkships, and additional electives as well as 34 educational programs including the Scholarly Project and Dean’s Summer Research program.

In addition, Peter led the implementation of an Agile Project Management framework over the past year that improved the Lab’s development focus on high-value projects and increased productivity by 158%.
Agile Project Management

The Laboratory for Educational Technology implemented an agile project management approach in June, 2008 to improve productivity and management of competing project priorities. In this approach, the development team identifies explicit work items, prioritizes and estimates them, and then commits to completing a certain number of items during a work period of 2-4 weeks.

The figure below charts the ratio of work items completed to the amount of time available during the work period May 2008 to May 2009. From work period #4 to #16, there was a 160% increase in the ratio of work items completed to time available. While a number of factors could explain these gains, we believe the increased productivity is due to improved planning, greater focus, and rapid adjustment to changing development priorities from use of this project management approach. This graph does not account for time spent doing routine maintenance and operational responsibilities.

* work period #8 excluded due to measurement error
User Statistics

The number of individual accounts in LET applications from August 2004 to May 2009 has increased appreciably as demonstrated below.

User accounts by LET application by date

<table>
<thead>
<tr>
<th>Program</th>
<th>Aug-04</th>
<th>Jan-07</th>
<th>Apr-08</th>
<th>Jun-08</th>
<th>Jun-09</th>
</tr>
</thead>
<tbody>
<tr>
<td>Navigator</td>
<td>1800</td>
<td>3493</td>
<td>4015</td>
<td>4049</td>
<td>4455</td>
</tr>
<tr>
<td>Custom LMS</td>
<td>1659</td>
<td>1890</td>
<td>3597</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zone/ Portfolios</td>
<td>500</td>
<td>1400</td>
<td>1832</td>
<td>1971</td>
<td>2248</td>
</tr>
<tr>
<td>Learning Log</td>
<td>463</td>
<td>567</td>
<td>878</td>
<td></td>
<td></td>
</tr>
<tr>
<td>vpSim</td>
<td></td>
<td>75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>2300</td>
<td>4893</td>
<td>7969</td>
<td>8477</td>
<td>11253</td>
</tr>
</tbody>
</table>
School of Medicine Courses

The chart below displays the percent of University of Pittsburgh School of Medicine (UPSOM) required courses and clerkships using Navigator and the Learning Log systems over time.

The chart below displays the change in number of elective courses using Navigator and the Learning Log.
Number and percent of UPSOM courses using Navigator LMS

<table>
<thead>
<tr>
<th></th>
<th>Core courses</th>
<th>Core clerkships</th>
<th>Electives</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-2009</td>
<td>32 / 32 (100%)</td>
<td>8 / 8 (100%)</td>
<td>45</td>
</tr>
<tr>
<td>2007-2008</td>
<td>32 / 32 (100%)</td>
<td>8 / 8 (100%)</td>
<td>25</td>
</tr>
<tr>
<td>2006-2007</td>
<td>32 / 32 (100%)</td>
<td>8 / 8 (100%)</td>
<td>22</td>
</tr>
<tr>
<td>2005-2006</td>
<td>30 / 31 (97%)</td>
<td>8 / 8 (100%)</td>
<td>25</td>
</tr>
<tr>
<td>2004-2005</td>
<td>21 / 31 (68%)</td>
<td>8 / 8 (50%)</td>
<td>9</td>
</tr>
<tr>
<td>2003-2004</td>
<td>15 / 35 (43%)</td>
<td>8 / 8 (19%)</td>
<td>3</td>
</tr>
</tbody>
</table>

Number and percent of clerkships using UPSOM Learning Log

<table>
<thead>
<tr>
<th></th>
<th>Core clerkships</th>
<th>Electives*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-2009</td>
<td>8 / 8 (100%)</td>
<td>34 / 267 (13%)</td>
</tr>
<tr>
<td>2007-2008</td>
<td>8 / 8 (100%)</td>
<td>n/a</td>
</tr>
<tr>
<td>2006-2007</td>
<td>3 / 8 (38%)</td>
<td>n/a</td>
</tr>
<tr>
<td>2005-2006</td>
<td>1/8 (13%)</td>
<td>n/a</td>
</tr>
</tbody>
</table>

*In 2008-2009, there were 34 elective clerkships where students had logged entries. There were 69 electives that had been created in the Learning Log system. There were 267 clinical courses in the Student Affairs database.
Lab Members

Jane Alexander
Jane is a systems programmer in the Lab. She develops web applications for medical education. She supports development in SharePoint™ 2007 (Student Portal, Learning Portfolios) and legacy .ASP and .NET Learning Management and clinical event logging systems (Navigator, custom LMS, Learning Log).

Dmitriy Babichenko
Dmitriy Babichenko is a software developer at the Laboratory for Educational Technology. He supports and develops new features for web-based applications such as Navigator, Anesthesiology Grand Rounds, PedsEd, EOL, Learning Log and vpSim. Dmitriy provides technical consultation to lab staff on various web technologies and programming languages such as ASP.NET, Flash/ActionScript, ASP, Javascript and SQL.

Christopher Toth
Chris Toth is a systems programmer at the Laboratory for Educational Technology. He maintains and develops Lab applications such as Navigator, custom learning management systems, and vpSim using web-based technologies such as CSS, XML, ASP.NET, and SQL. He supports and develops content management systems, SharePoint™ 2007, and Mediasite. He assists in the administration and maintenance of the Lab’s computers, servers, and backup hardware. Chris also provides technical and creative support to the Lab’s staff and clients.

Teppituk Krinchai
Teppituk Krinchai is a Microsoft-certified system engineer / solution developer for the Laboratory for Educational Technology. He develops and supports various web-based applications including SharePoint™ 2007. He also provides technical consultation on both client- and web-based technologies.

Maria Malingowski
Maria Malingowski is the Web Portal Administrator at the Laboratory for Educational Technology. She is the main support contact for the Lab’s many programs. Her duties include working with students, staff, and faculty to create a supportive technological learning environment. This is achieved through creating sites on the Lab’s main web portals, and keeping them up to date.

Peter Kant
Peter Kant is production director at the Laboratory for Educational Technology. He oversees software development project planning and coordination. He analyzes client educational and business needs and matches them with LET solutions. He manages the Lab’s relationships with clients and provides
educational consultation to directors for 31 courses, 8 core clerkships, numerous electives, and 34 specialized programs working with the Lab.

James B. McGee
Dr. McGee is Director of the Laboratory for Educational Technology and Assistant Dean for Medical Education Technology. He oversees the Lab, defines the Lab’s educational and strategic vision, and selects new projects and initiatives. He guides the design and development of Lab technologies. He lectures, presents, and disseminates the Lab’s work at national and international conferences. Dr. McGee is a practicing gastroenterologist.

Michael Stefanko
Michael Stefanko is a quality assurance tester at the Laboratory for Educational Technology. He works closely with the Lab’s software development team to identify system faults as well as technical and usability issues. He creates and updates testing plans, ensuring the continued release of high-quality educational software. He writes user guides for LET software and performs various Information Technology tasks and projects.

For additional information ...

For more information about the Laboratory for Educational Technology, its projects, or opportunities for collaboration, please contact us at 412-648-9679, labedutech@medschool.pitt.edu, or visit us at:

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