Outcome Based Learning Tools at the University of Michigan Medical School

Dr. Charles Severance
University of Michigan
School of Information
www.dr-chuck.com
Outline

Pedagogy: Self Directed Learning Pedagogy
A New Approach to Medical Education
Next Generation LMS RFQ
Brainstorming
Experimental Learning Tools
The ENCORE Pilot Project
Casey White, Ph.D.
Assistant Dean for Medical Education

Casey White has been involved in medical education most of her professional career. Initially her efforts were focused on providing higher-level administrative support in the medical student educational program. In the last ten years, she has increasingly focused her efforts on academic areas related to medical education. Her specific academic interests include medical student self-assessment in the contexts of cognitive development and self-regulated learning, performance-based learning and assessment, and the effectiveness of active learning methods including the use and effectiveness of technology and simulation.

Dr. White has collaborated with Medical School faculty members on grants, research projects, educational innovations, and assessment activities. These efforts have yielded several co-authored publications, the majority of which are focused on self-assessment including its relationship to medical student learning across multiple tasks and longitudinally over time. She has developed a framework for examining variables that influence self-assessment, and cognitive benefits of self-assessment, and is using that framework to continue her research.
Student-centered

Based on framework for self-regulated learning

3 distinct but interactive levels

Institutional

Personal

Portfolio

http://tinyurl.com/asme-white
A Model for Self-regulated Learning*

Inner ring is the users’s learning cycle.

Outer ring is the institution’s learning cycle.

*White CB, Gruppen LD. 2007. Self-regulated Learning in Medical Education. Association for the Study of Medical Education: Understanding Medical Education.
Self-regulated Learning
4-phase cycle
Continuous (formative/summative)
Feedback = key
Student responsibility & Accountability
Lifelong learning
Responding to the need for tracking of competencies defined by others.
The student process operates within the institutional process under the student’s control

AAMC/LCME/Faculty COMPETENCIES

Personal/Career Goals

- Independent of (community service), enhancement to (interest in orthopedics) or deeper extension of formal curriculum
- Expectation students will populate (review w/ faculty mentor 2x/yr)
- Several layers of access
Learning Management System: Self-regulated Learning Model

**Personal Portfolio**
- Series of folders, at least w/ student access only
  - Customizable
  - Personal representation learning/aspirations
  - Journaling
  - Repository (eg, patient letters)
  - Can draw in materials from either/both outer circle(s)

**Personal Goals**
- Independent (community service), Enhancement (interest in orthopedics) or Deeper extension of formal curriculum
- Expectation: students will populate (review w/ faculty mentor 2x/yr)
- Several layers of access
Learning Management System: Self-regulated Learning Model

**Personal Portfolio**
- Series of folders, at least w/ student access only
- Customizable
- Personal representation learning/aspirations
- Journaling
- Repository (eg, patient letters)
- Can draw in materials from either/both outer circle(s)

**Personal Goals**
- Independent (community service), Enhancement (interest in orthopedics) or Deeper extension of formal curriculum
- Expectation: students will populate (review w/ faculty mentor 2x/yr)
- Several layers of access

**Characteristics across levels**
- Search engine
- Drag and drop
- Seamless access to web and databases (Sakai, Portal, MSIS/Oracle, PubMed, etc.)
- Presentation functionality
The Social Dimension

These pictures focus on the view from the institution into the individual. The processes and flows are around and toward the student at the center.
What are we doing with the resources?

What are we putting in our portfolio?

Do those things just sit there forever?
The “learning turbines” are producing new resources all the time.

These can be people or even groups - constantly making, consuming, and enhancing resources.
So we have a pedagogy that suggests that we completely rework our approach to medical education....

Now what?
Can we buy self-regulated learning?

In 2007, we put out a Request for Information (RFI) for a student centered learning system. It had a very clear vision of what we wanted.

The University of Michigan

REQUEST FOR INFORMATION
# M-0222-07GB

PURCHASING SERVICES
2592 MSRB 2
1150 W. Medical Center Drive
Ann Arbor, MI 48109-0670
Fax: 734-936-2089

Buyer: Gabriel Benitez
PHONE: 734-936-2511
Return RFQ By This Date: 4/13/2007
Due by 5 p.m. unless noted otherwise

All inquiries regarding this RFI should be directed to this e-mail address: ted@umich.edu
Please refer to the RFI number in all correspondence.
RFI Results…

http://failblog.org/2009/07/06/wildlife-photography-fail/
RFI Results…

The desired software cannot be purchased or downloaded. Period. Nothing comes close.

Let’s just write it. Let’s build/adopt/extend a student centered learning environment. This is not a new feature in an LMS - this must be for the student. It must compete with Facebook.
First Brainstorm: Survey The Market to Learn from others

Not happy with classic LMS software like Sakai and Moodle
Look for personal portfolio systems and content management systems and Facebook
Start from the student perspective and work outwards…
Things to Look At…

LAMS  
Moodle Portfolio  
Open Source Portfolio  
Mahara  
Chisimba  

Elgg  
Drupal  
Plone  
Joomla  
Facebook  

Always think “personal” not institutional. The institution has an interest - but the user interface must be personal fit institutional needs into a user-centered interface.
Sadly, all brainstorming phases must come to an end…

Joseph C. Fantone, M.D.

Associate Dean for Medical Education
Professor of Pathology

Joseph C. Fantone, Ill, M.D., earned his M.D. degree from the University of Connecticut in 1977, following which he served as a resident in anatomic pathology at the National Institutes of Health. He then returned to the University of Connecticut for a postdoctoral fellowship in immunopathology from 1979-80. In 1980, Dr. Fantone joined the faculty of the University of Michigan as an Instructor in Pathology. He advanced through the academic ranks and was promoted in 1986 to Associate Professor of Pathology, with tenure. He achieved his present rank of Professor of Pathology in 1991. He has served as Director of Educational Programs for the Department of Pathology since 1986 and appointed Godfrey Stobbe Professor of Pathology Education in 1995.

In addition to his research, teaching and administrative activities in the Department of Pathology, Dr. Fantone has been actively involved in the administrative and educational programs of the Medical School, as Component I and II Director and was appointed Associate Dean for Medical Education in January, 1998. As Associate Dean, Dr. Fantone
Let's do something and get feedback…

It is OK for it to be rough
It is OK to try something
It is OK to take risks
It only has to work for one course
Focus on agile, user-led design
It is OK to throw away
Don’t worry about money…
Three Successive Projects

Advanced Medical Therapeutics (P4)
  Web based content – add collaborative tools
Longitudinal Case Study
  Clear learning objectives – wanted to surface
  Group work
Encore Project
  Bring Clinical Experiences into the very first Semester
M4 Therapeutics: Overview and Syllabus

Course Description | Video or Text
--- | ---
Course Overview (Student Perspective) | NA
Course Introduction | NA
Online Modules | NA
Seminars | NA
Individual Research | NA
Grading (Quizzes, Projects, Seminars) | NA

Syllabus

<table>
<thead>
<tr>
<th>Week Dates</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wk 1 Nov 24-Nov 30</td>
<td>Drug Development • ENT • GI • Infections I • Respiratory</td>
</tr>
<tr>
<td>Wk 2 Dec 1-7</td>
<td>Geriatrics • Infections II • Pain Management • Polypharmacy • Prescription Writing • Transfusion &amp; Thrombosis</td>
</tr>
<tr>
<td>Wk 3 Dec 8-14</td>
<td>Diabetes • Direct-to-Consumer Drug Advertising • PM &amp; R • Psychiatry • Seizure</td>
</tr>
<tr>
<td>Wk 4 Dec 15-21</td>
<td>Cardiovascular • Pharmacogenetics • Electrolyte Disturbances • OB/GYN</td>
</tr>
</tbody>
</table>

Online Content
Sandro Cinti, M.D.

Transferring data from ctools.umich.edu...
Advanced Therapeutics…

Add a collaborative tool bar to existing web/distance course
Software development time 2 – two months

Zero technical problems with popup LMS
Students loved the idea and gave us lots of feedback – but it did not help them learn

Was first prototype of “CloudSocial”

www.cloudsocial.org
M2 LMS Pilot

Instructor:
Date: Wednesday, March 11, 2009; Room: TBA

Questions

Question 1

After learning that one of the twins might have spina bifida, the issue of selective reduction, i.e., abortion, of one of the fetuses is raised. Ms Gasco and her husband turn to you, as their physician, for advice and guidance. How will you respond? Is it right to let your own views of abortion influence the advice you give? Is it possible to be objective about something that stirs passionate emotions, like abortion? Design an interactive exercise to critique different possible physician approaches to these questions.

Associated Learning Objectives

ILO Knowledge 1 ILO Knowledge 3 ILO Attitudes 1 ILO Attitudes 2

Shared Items

Add a File: Choose File no file selected
M2 Longitudinal Case Study

First experiment with a very class-focused “Learning Tool” – hardcoded everywhere
Designed as a one-class throwaway tool
Designed, developed and in production in two weeks

It worked! Students used it for coordination, gathering data, synthesizing data as a group and presentation preparation
Meet the Developer - Mike
The ENCORE Project

Curriculum revolution: First-year students dropped into clinical situations
Faculty mentoring
Self-regulated learning
Students must pursue learning objectives as opportunities present themselves
Students must reflect, students must plan…
Technology was a small part of the risk
The LEM Cycle

**Your Goals**

- **Clinical Encounters**
  - Observation Feedback
  - Debriefing
    - Write ups Clinical, Reflections

- **Independent Learning**
  - Progress Test
  - Journaling

- **Together Time**
  - Collaborative learning
    - Case studies
    - Big Discoveries
    - Presentation
    - Skills development

- **Assessments**
  - Faculty
  - Self
  - Peer

- **Assessments**
  - Faculty
  - Self
  - Mentors, Self
  - Faculty
The ENCORE Pilot

Rajesh S. Mangrulkar, MD
Director, Encore Education
Encore Faculty Demonstrations

http://www-personal.umich.edu/~chapmanc/encorevideodemos/
Show Screen Shots
Thanks To

Ted Hanss, Joe Fantone, Casey White, Raj Mangrulkar, Joseph Hardin, Chris Chapman, Mike Bleed, Amitava Shee, Gaurav Bhatnagar, Noah Botimer, Tiffany Marra, Monica Lypson, Ali Asad Lotia, Clint Newsome, Eileen Quintero, Amanda Visconti
Participation / Cooperation?

Can you have the software?
  You don’t want it.

Can you come visit and get a demo?
  Of course! Bring your medical education folks.

Are you interested in talking about new approaches to Medical Education?
  Raj Mangrulkar – I have business cards