

# Outcome Based Learning Tools at the University of Michigan Medical School

Dr. Charles Severance  
University of Michigan  
School of Information  
[www.dr-chuck.com](http://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



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## 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.

#### Related Links

[Office of Research](#)

[Department of Internal Medicine](#)



Self-regulated learning in medical education

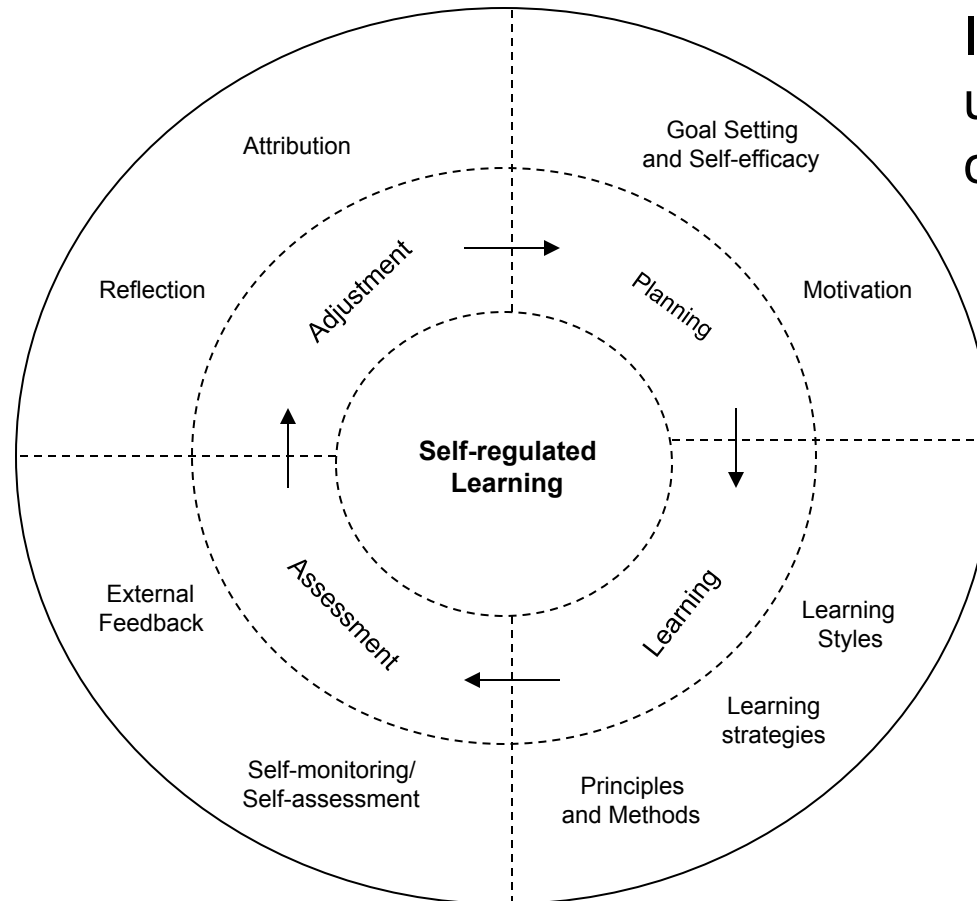
Casey B White and Larry D Gruppen

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.



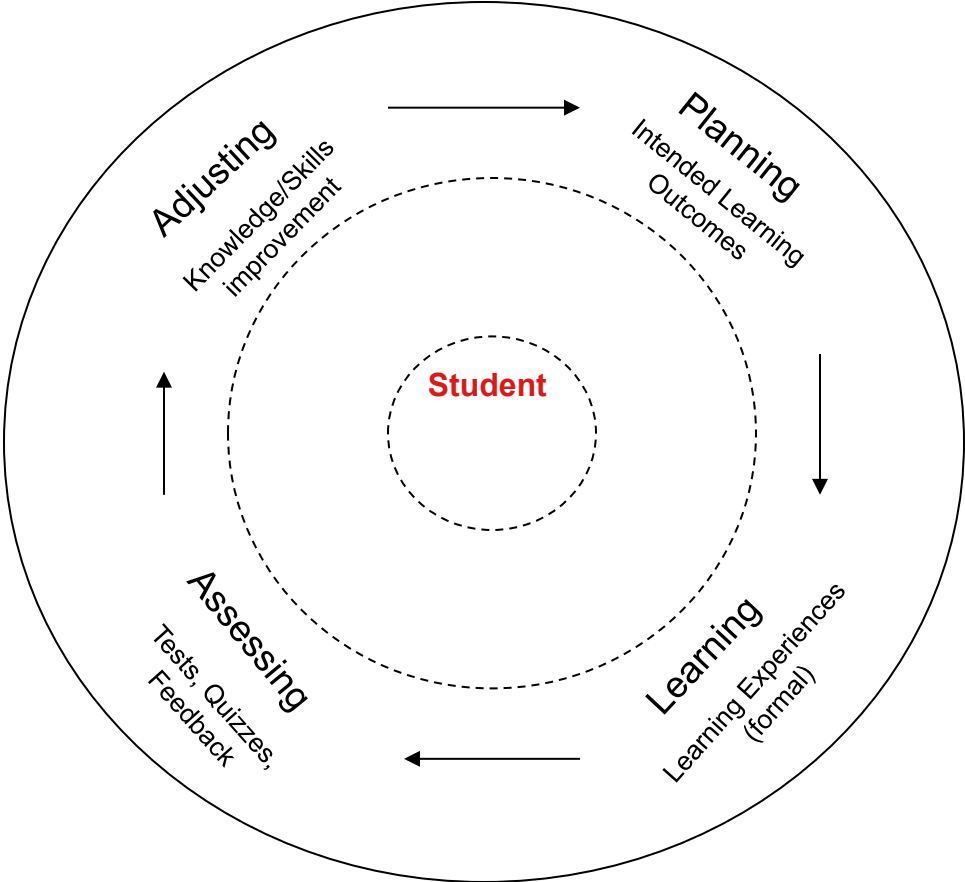
Outer ring is the  
institution's  
learning cycle.

•White CB, Gruppen LD. 2007. Self-regulated Learning in Medical Education. Association for the Study of Medical Education: Understanding Medical Education.

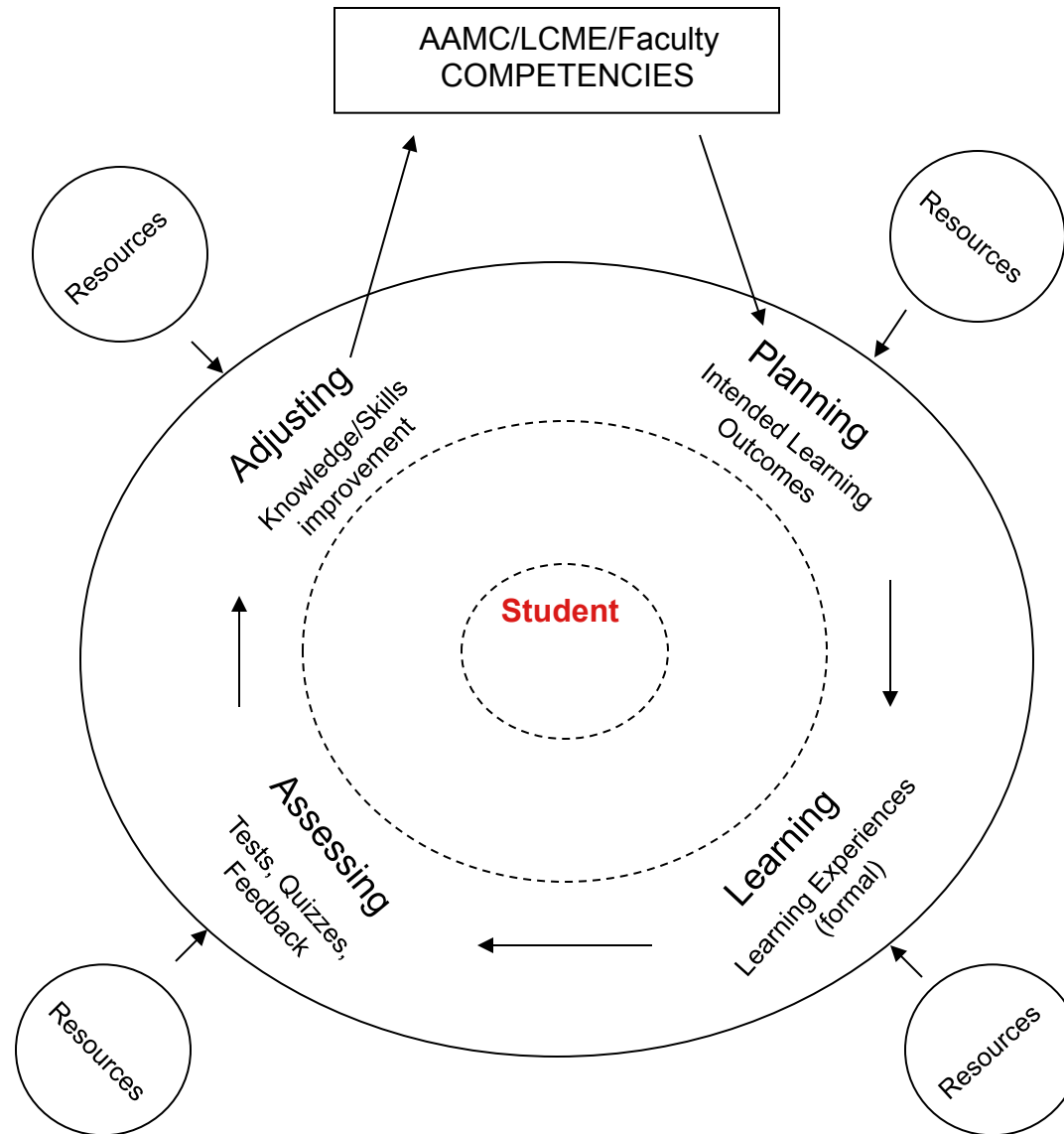


**Self-regulated Learning**

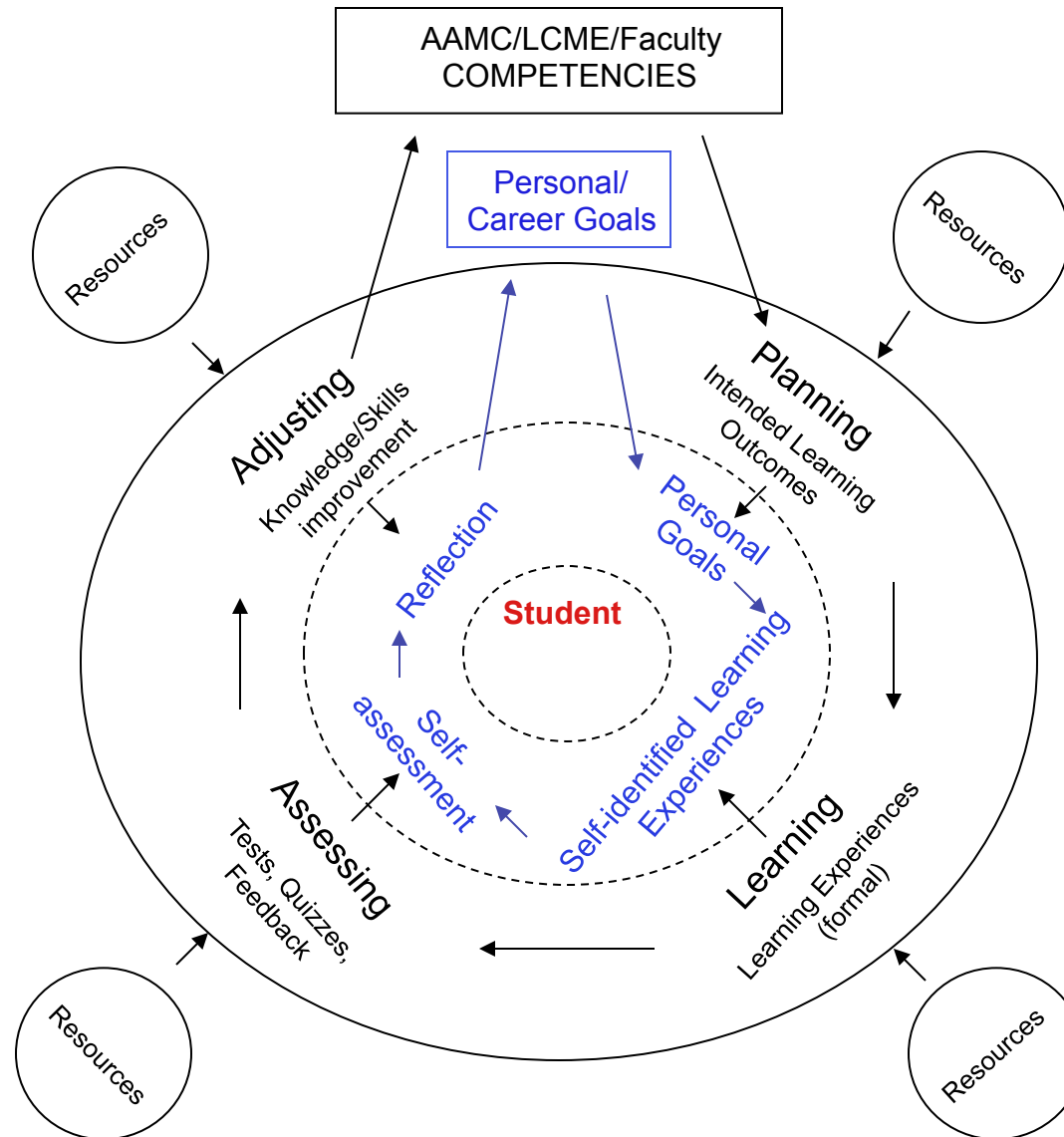
- 4-phase cycle
- Continuous (formative/summative)
- Feedback = key
- Student responsibility & Accountability
- Lifelong learning



# Responding to the need for tracking of competencies defined by others.



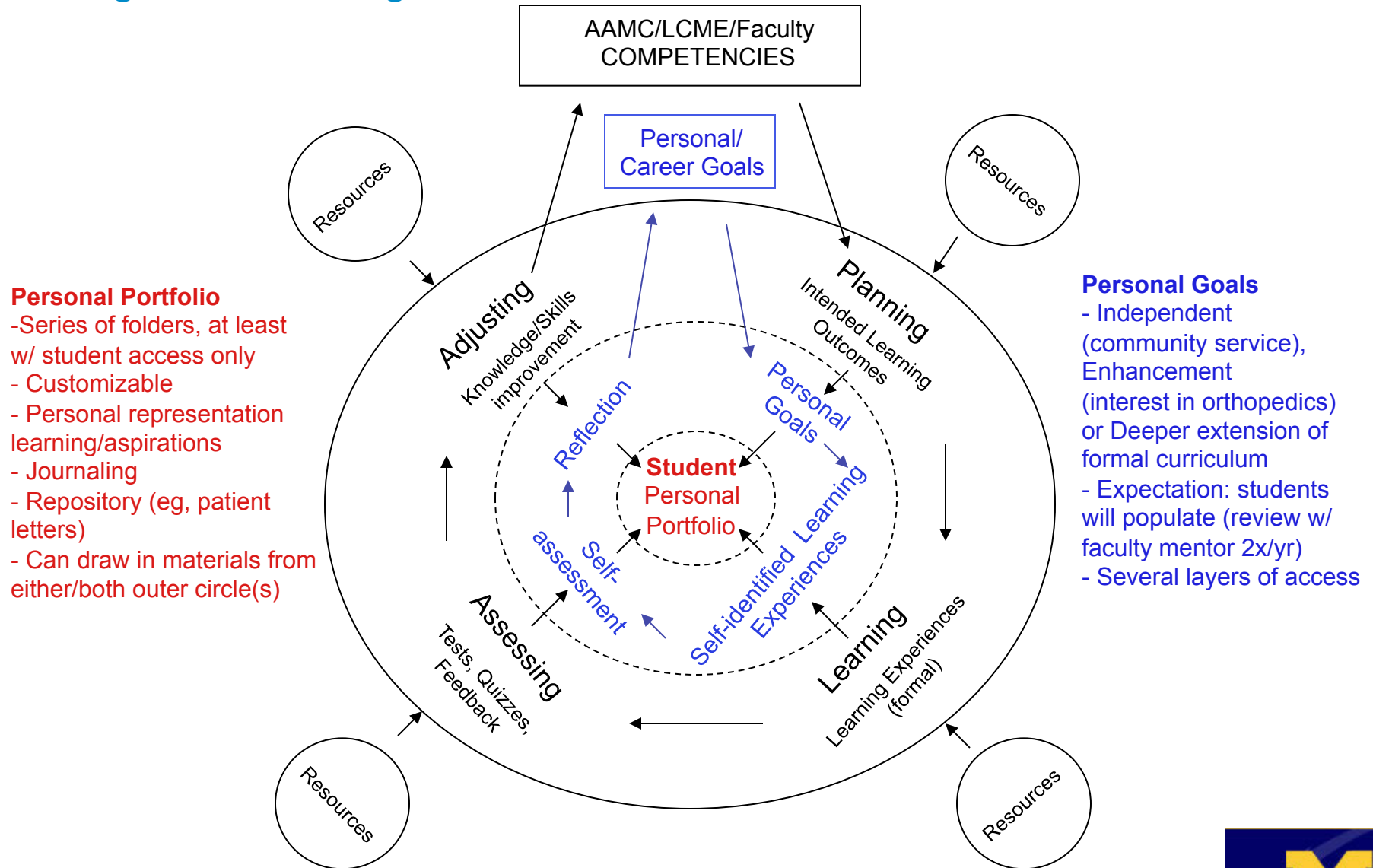
# The student process operates within the institutional process under the student's control



- Personal 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



# Learning Management System: Self-regulated Learning Model

## Characteristics across levels

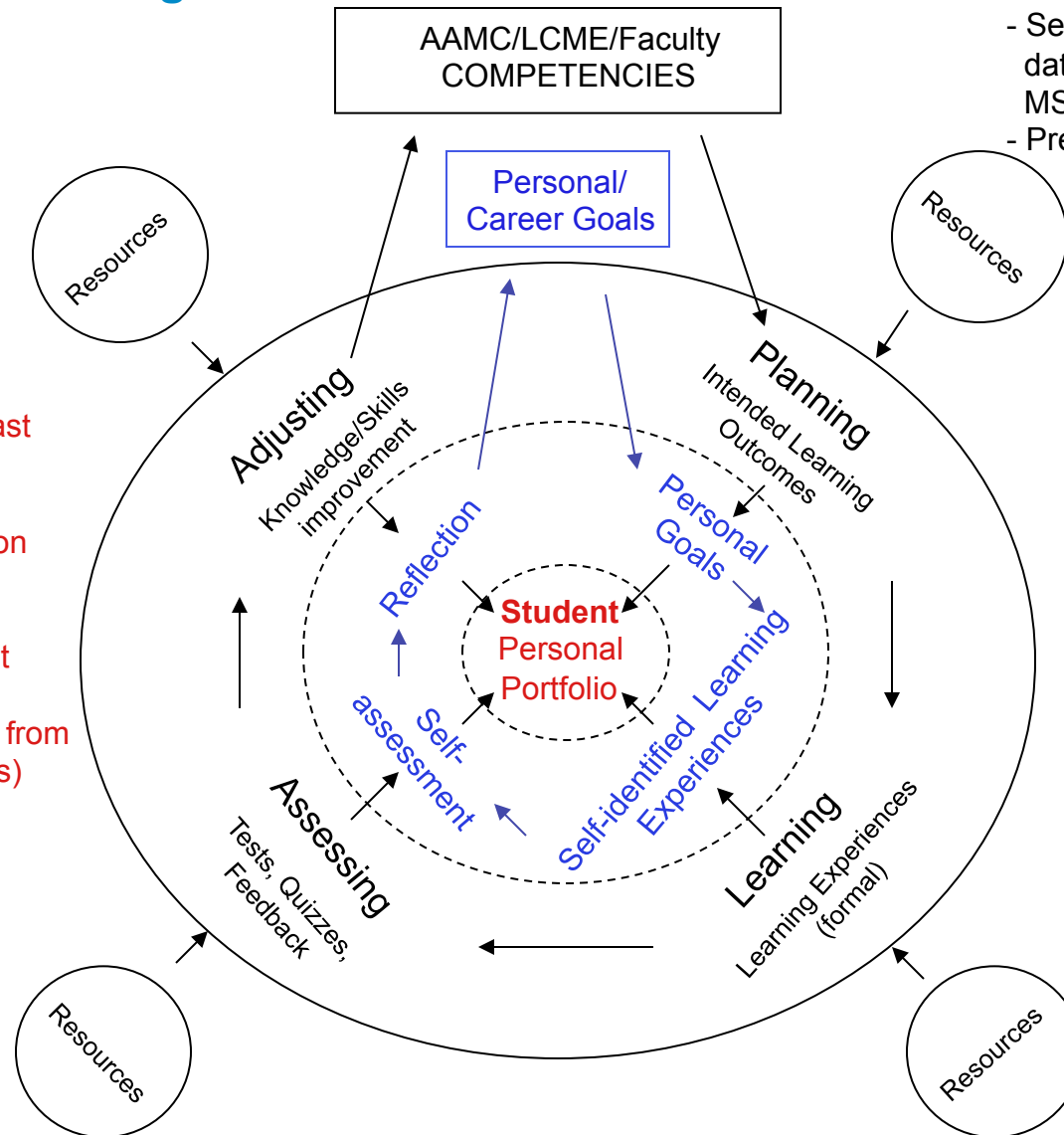
- Search engine
- Drag and drop
- Seamless access to web and databases (Sakai, Portal, MSIS/Oracle, PubMed, etc.)
- Presentation functionality

## 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

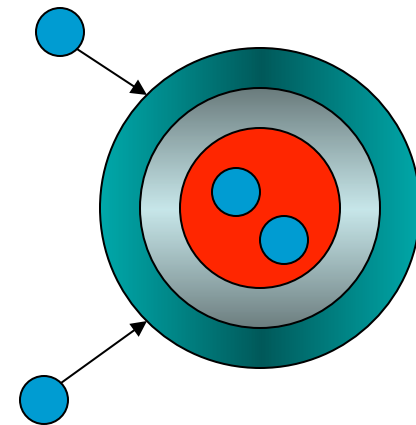
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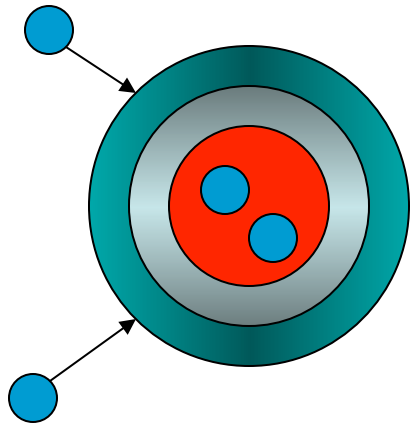


# The Social Dimension

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



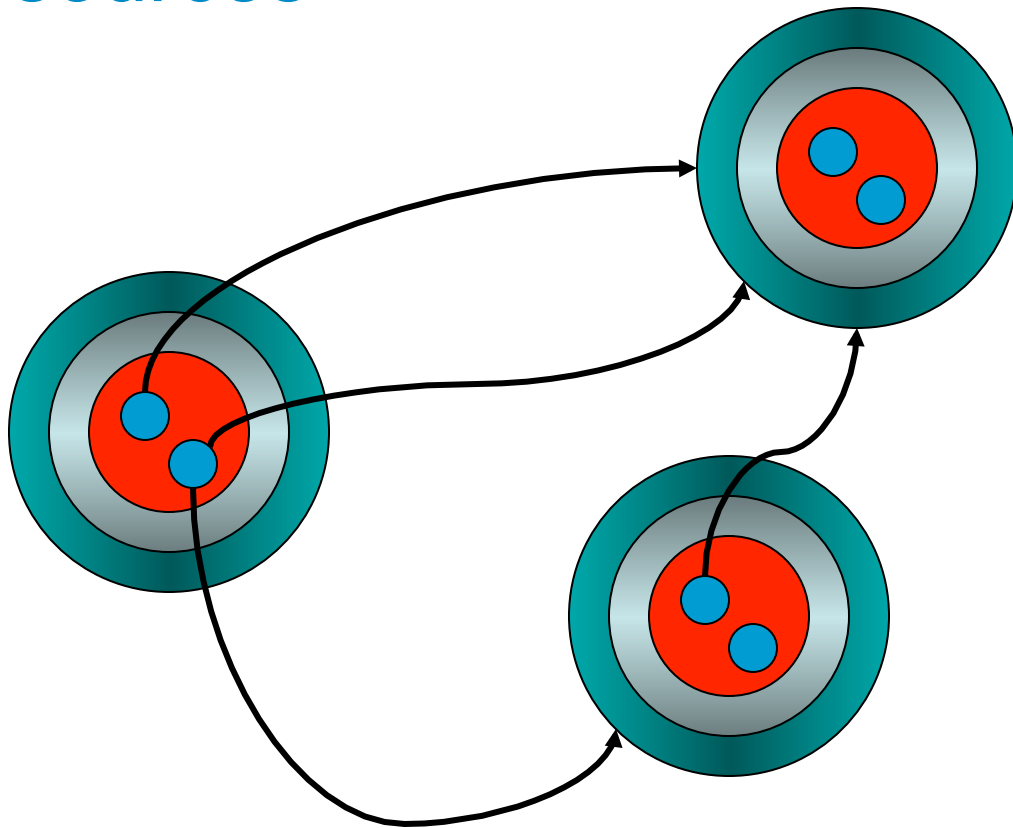


What are we doing with the resources?

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?





Ted Hanss  
Director, Enabling Technologies



# 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**

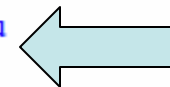
**REQUEST FOR INFORMATION  
# M-0222-07GB**

**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](mailto: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.

Lets just write it. Lets 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...

<ul style="list-style-type: none"><li>Home</li><li>Biography</li><li>Dean's Communications</li><li><b>Associate/Assistant Deans</b></li><li>Past Deans</li><li>Office Hours</li><li>Contact the Dean</li></ul>	<h2>Joseph C. Fantone, M.D.</h2>	<b>Related Links</b> Department of Pathology
	<b>Associate Dean for Medical Education</b> <b>Professor of Pathology</b>	
	<p>Joseph C. Fantone, III, 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.</p>	
	<p>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, 1999. As Associate Dean, Dr. Fantone</p>	



# Lets 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 <i>(Student Perspective)</i>		NA
Course Introduction		
Online Modules		
Seminars	NA	
Individual Research		
Grading <i>(Quizzes, Projects, Seminars)</i>		

### Syllabus

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

### Misc

[Seminar schedule and materials](#) (recordings, PowerPoints, etc.)



**Online Content**  
Sandro Cinti, M.D.



# 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](http://www.cloudsocial.org)



- Home
- Resources
- Site Info
- Dashboard
- Announcements
- Google Docs Intro
- Help

Users present:

Charles Severance

Simple Learning Tool Interoperability

## M2 LMS Pilot

Instructor:

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

Course Info

Case

Questions

Feedback

Jump to: [Question 1](#) | [Question 2](#) | [Question 3](#)

### 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:  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

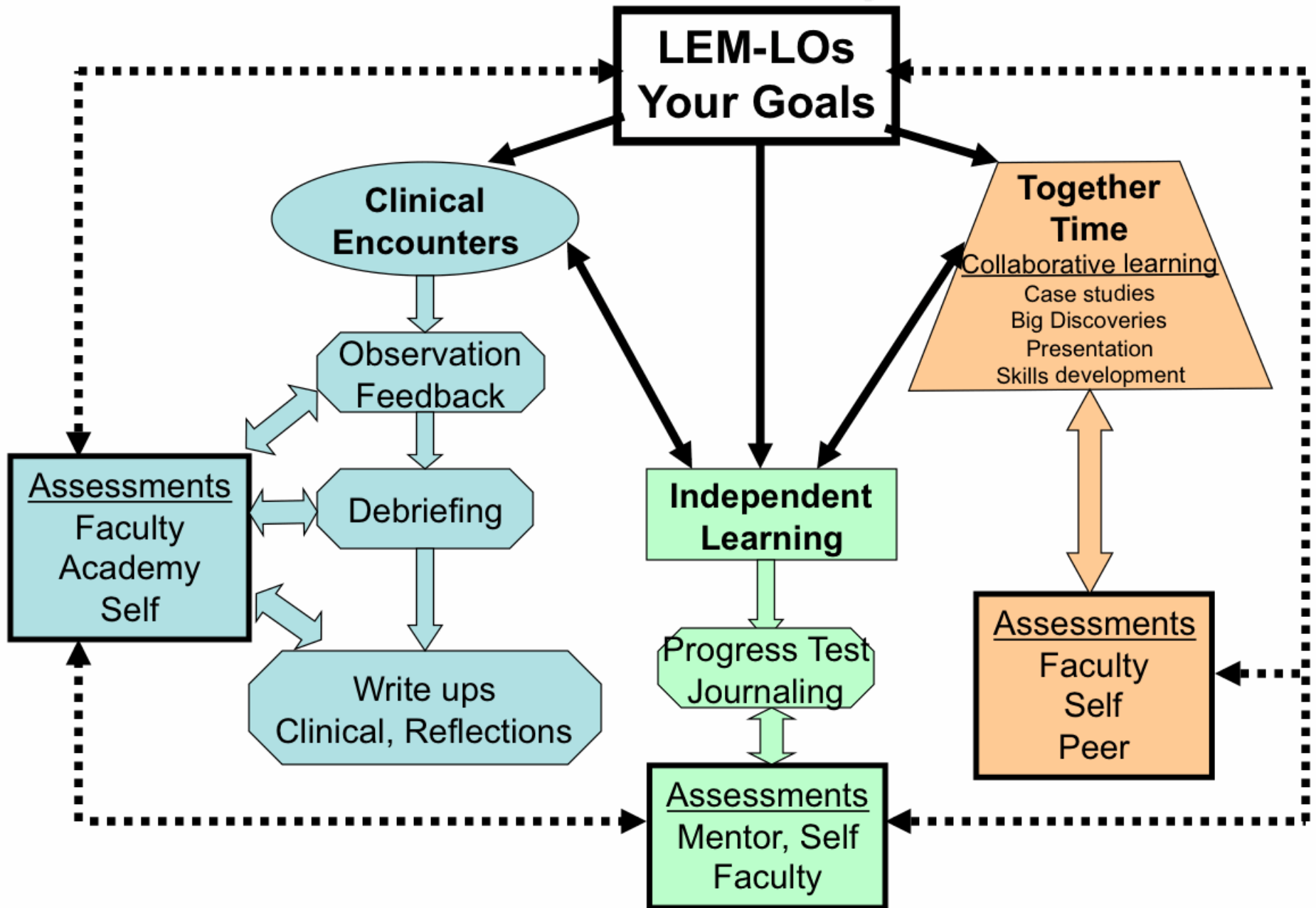
Students must pursue learning objectives as  
opportunities present themselves

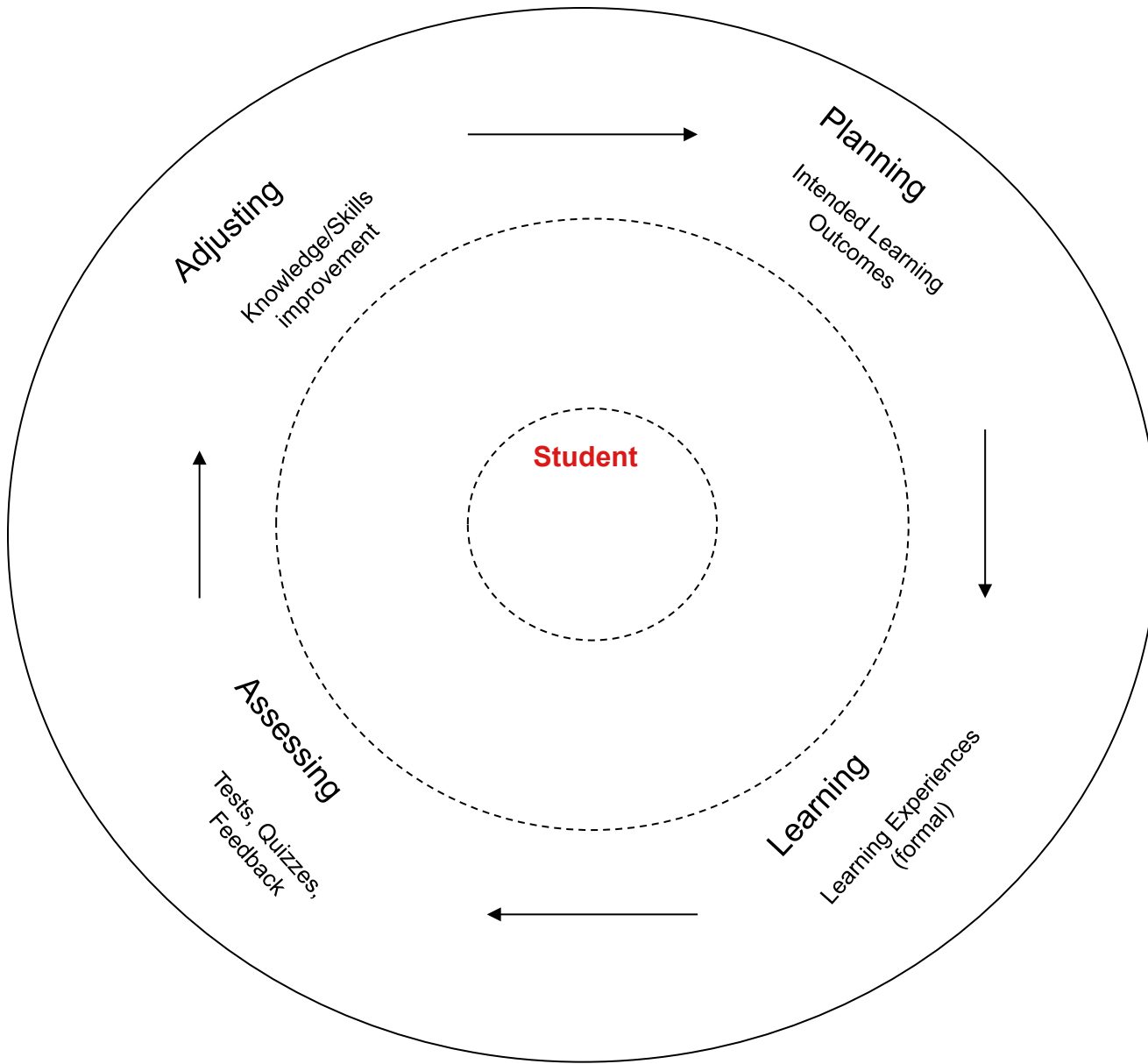
Students must reflect, students must plan...

Technology was a small part of the risk

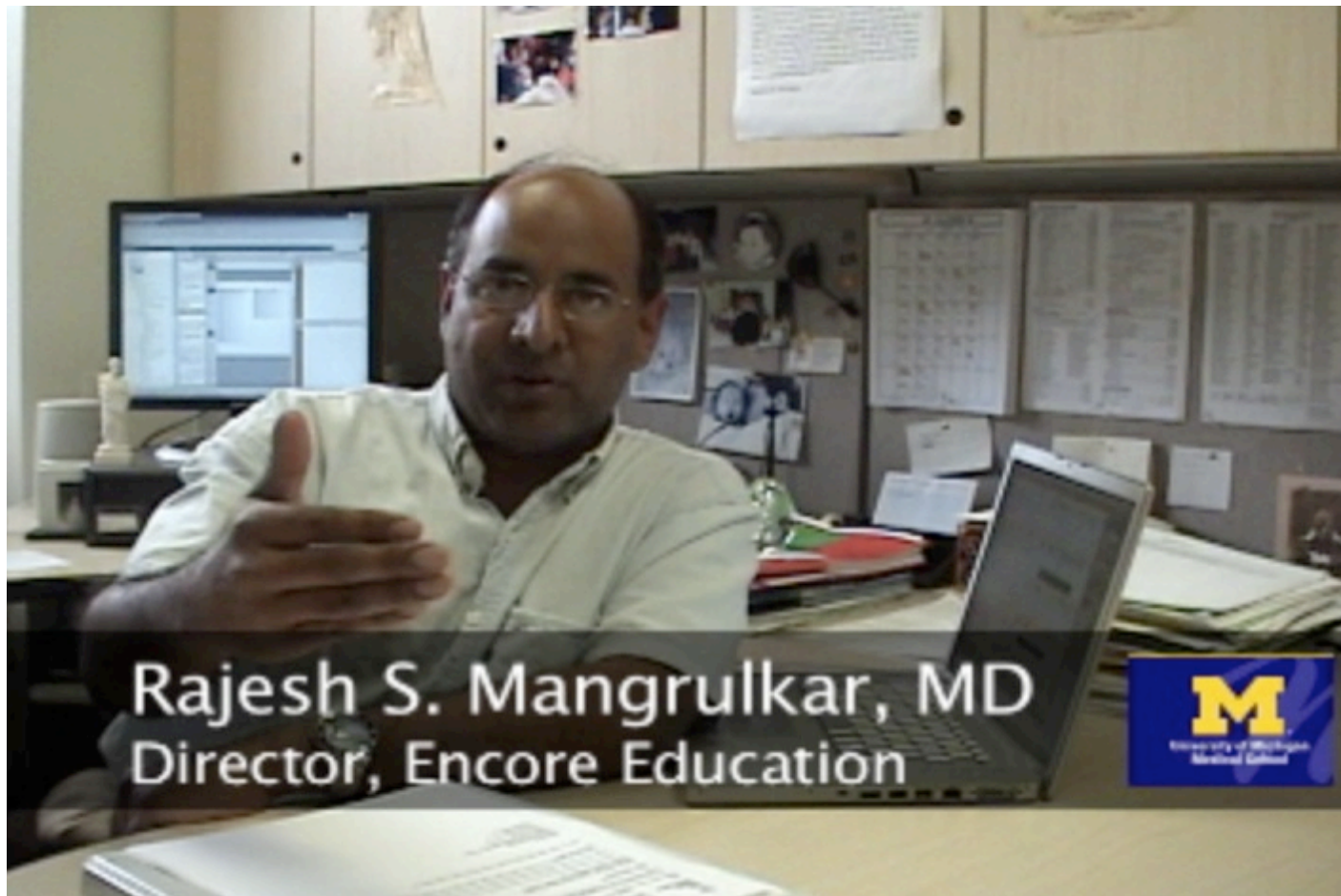


# The LEM Cycle





# The ENCORE Pilot




# Encore Faculty Demonstrations

• Rafael Alvarez  
• Chris Chapman

### Artifacts Review for Chris Chapman

Clinical Encounters Together Times Journals Personal Goals Portfolio

	Date	Clinical Problem	Chief Complaint	Comments	Actions
 <a href="#">View</a>	2009-06-19	Renal Failure	Nausea, weight loss	No comments	<a href="#">Add a Comment</a>
<a href="#">View</a>	2009-06-19	Renal Failure	Tired, anxious	No comments	<a href="#">Add a Comment</a>
<a href="#">View</a>	2009-06-19	Renal Failure	SOB	No comments	<a href="#">Add a Comment</a>
<a href="#">View</a>	2009-06-19	Hyperglycemia	Tired, lack of energy	No comments	<a href="#">Add a Comment</a>
<a href="#">View</a>	2009-06-17	Trauma	Broken arm	<a href="#">View 1 comment(s)</a>	<a href="#">Add a Comment</a>
<a href="#">View</a>	2009-06-18	Renal Failure	lethargy	No comments	<a href="#">Add a Comment</a>
<a href="#">View</a>	2009-06-16	Renal Failure	weakness	No comments	<a href="#">Add a Comment</a>

Waiting for bezak.umms.med.umich.edu... bezak.umms.med.umich.edu

<http://www-personal.umich.edu/~chapmanc/encorevideodemos/>



# Show Screen Shots





**568 pages were viewed a total of 8,563 times**

Content Performance						
Pageviews	Unique Pageviews	Avg. Time on Page	Bounce Rate	% Exit	\$ Index	
<b>8,563</b>	<b>3,958</b>	<b>00:01:12</b>	<b>11.74%</b>	<b>8.06%</b>	<b>\$0.00</b>	
% of Site Total: 100.00%	% of Site Total: 100.00%	Site Avg: 00:01:12 (0.00%)	Site Avg: 11.74% (0.00%)	Site Avg: 8.06% (0.00%)	Site Avg: \$0.00 (0.00%)	
Page	Pageviews	Unique Pageviews	Avg. Time on Page	Bounce Rate	% Exit	\$ Index
/encore/faculty.php	670	207	00:00:49	6.70%	8.06%	\$0.00
/encore/objectives.php	497	168	00:01:04	45.45%	8.05%	\$0.00
/encore/	360	297	00:01:04	12.28%	12.37%	\$0.00
/encore/encounters.php	375	137	00:00:39	0.00%	4.53%	\$0.00
/encore/faculty.php?id=5	358	106	00:00:55	0.00%	3.35%	\$0.00
/encore/journals.php	293	155	00:00:59	5.00%	6.48%	\$0.00
/encore/index.php	266	157	00:01:25	12.20%	25.00%	\$0.00
/encore/faculty.php?id=7	223	86	00:01:21	0.00%	3.14%	\$0.00
/encore/togethers.php	216	91	00:00:24	0.00%	2.29%	\$0.00
/encore/faculty.php?id=6	215	81	00:00:47	0.00%	6.05%	\$0.00
/encore/faculty.php?id=8	190	76	00:00:47	0.00%	5.79%	\$0.00
/encore/faculty.php?id=10	177	71	00:00:46	0.00%	5.65%	\$0.00
/encore/resources.php	172	89	00:02:27	42.66%	11.63%	\$0.00
/encore/faculty.php?id=9	167	65	00:00:43	0.00%	3.59%	\$0.00
/encore/notifications.php	145	81	00:00:55	0.00%	12.41%	\$0.00
/encore/encore/faculty.php	121	19	00:01:32	0.00%	8.26%	\$0.00
/encore/plans.php	114	64	00:00:53	0.00%	8.77%	\$0.00
/encore/together.php?t=11	94	25	00:00:54	0.00%	6.38%	\$0.00
/encore/encounter.php?e=6	93	21	00:02:00	0.00%	4.30%	\$0.00
/encore/independents.php	91	55	00:00:29	0.00%	4.40%	\$0.00
/encore/together.php?t=5	82	25	00:01:23	100.00%	10.98%	\$0.00



**690 Visits**

**22.26 Visits / Day**

Saturday, June 6, 2009	0.00% (0)
Sunday, June 7, 2009	0.00% (0)
Monday, June 8, 2009	0.00% (0)
Tuesday, June 9, 2009	0.00% (0)
Wednesday, June 10, 2009	0.00% (0)
Thursday, June 11, 2009	0.00% (0)
Friday, June 12, 2009	0.00% (0)
Saturday, June 13, 2009	0.00% (0)
Sunday, June 14, 2009	0.00% (0)
Monday, June 15, 2009	3.33% (23)
Tuesday, June 16, 2009	5.07% (35)
Wednesday, June 17, 2009	7.63% (54)
Thursday, June 18, 2009	5.51% (38)
Friday, June 19, 2009	7.66% (53)
Saturday, June 20, 2009	1.30% (9)
Sunday, June 21, 2009	0.72% (5)
Monday, June 22, 2009	6.96% (48)
Tuesday, June 23, 2009	5.94% (41)
Wednesday, June 24, 2009	8.26% (57)
Thursday, June 25, 2009	4.64% (32)
Friday, June 26, 2009	6.23% (43)
Saturday, June 27, 2009	1.88% (13)
Sunday, June 28, 2009	2.75% (19)
Monday, June 29, 2009	7.54% (52)
Tuesday, June 30, 2009	7.25% (50)
Wednesday, July 1, 2009	6.09% (42)



# 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

