

June 25, 2004

Brief survey distributed to approximately 146 freshmen medical students and 60 basic science and clinical faculty engaged in teaching medical students. This was conducted by Ron Clark, Ph.D. as a very general and non-scientific assessment of student and faculty opinions regarding the learning environment.

Number of students that responded to the survey = 58

Number of faculty that responded to the survey = 17

PERCENTAGE

**STUDENTS (N = 58)**

	Excellent	Good	Fair	Poor	NA
1. Given existing constraints (time, etc.), my overall satisfaction with current lecture system is _____	8	64	24	5	
2. My overall satisfaction with the small group learning environment is _____	14	62	20	5	
3. My overall satisfaction with the longitudinal theme environment is _____	1	14	59	27	
4. My overall satisfaction with the testing and grading system is _____	14	41	38	7	
5. My overall satisfaction with the web site access to Power Point presentations, etc., is _____	62	33	5		
6. My overall satisfaction with the videotaping of lectures is _____	67	28	1		3*
7. My overall satisfaction with the student computer center is _____	33	52	12	3	
8. My overall satisfaction with the selection & use of textbooks is _____	10	41	36	10	3
9. My overall satisfaction with faculty teaching efforts is _____	21	66	13	1	

\*Didn't watch them

**FACULTY (N = 14)**

	Excellent	Good	Fair	Poor	NA
1. Given existing constraints (time, etc.), my overall satisfaction with current lecture system is _____	29	43	29		
2. My overall satisfaction with the small group learning environment is _____	7	64	7	14	7
3. My overall satisfaction with the longitudinal theme environment is _____		7	29	21	43
4. My overall satisfaction with the testing and grading system is _____	21	21	36	14	7
5. My overall satisfaction with the web site handling & distribution of teaching materials is _____	21	43	7	14	14
6. My overall satisfaction with the videotaping of lectures is _____	36	14	29	7	14
7. My overall satisfaction with students' use of textbooks is _____	7		36	36	21
8. My overall satisfaction with students' learning efforts is _____		36	43	7	14

JUNE 25, 2004 SEMINAR  
**Proposal to Modify the Learning Environment**  
Ron Clark, Ph.D., Department of Cell Biology & Anatomy

**A. Comments on the brief survey**

**B. My vision of an interactive lecture environment**

**C. Why this vision will not reach fruition in foreseeable future**

**D. Suggestions for modifications of current system:**

- Fewer lectures, less information -- we continue to present too much information in too many lectures!
- Establish a list of well-defined minimal concepts for each module
  - At the inception of the new curriculum, minimal concepts were addressed, but these need to be revisited and more clearly defined and stressed by the faculty to the students
  - The United States Medical Licensing Examination ([www.usmle.org/](http://www.usmle.org/) see Step 1 & Step 2 for minimal requirements)
  - Draw from individual discipline's national recommendations
  - List these concepts at the beginning of the syllabus for each module
  - Stress the concepts as learning objectives
  - Each lecturer addresses specific concepts from the master list
  - Match specific textbook assignments to these concepts
  - Match examination questions to these concepts
  - Consider mastery of the concepts at a certain high level to pass (e.g. 85%)
- PowerPoints
  - Animations useful in presentation but not as permanent record
  - Convert to PDF format for online retrieval
  - Supplement with either lecture notes or recorded voice over explanations
- Make all teaching materials available in advance of lecture
- Significantly improve the writing of questions
  - More faculty development
  - Another seminar from National Boards personnel
  - A medical education grand rounds in our Center for Research in Medical Education
    - Presentations from Drs. Mike & David Gordon
    - How to construct test questions for reliability and validity
    - How to construct questions at the various levels of difficulty
    - Use the Neurology Clerkship as a model for other clerkships

**E. Demonstration of technology that can assist in the learning environment**

- Adobe Acrobat Professional (small file size, embedded fonts, high resolution, any operating system)
  - Convert PowerPoints to (Portable Document Format) PDF format
  - Convert Word & WordPerfect documents to PDF format
  - Presentations & layered documents
  - Acrobat Reader vs Acrobat Professional or Standard
- Adobe Creative Suite (Acrobat Professional, Illustrator, Photoshop, InDesign, GoLive)
- Digital video & DVDs (will not give demos but will briefly discuss)
- Macromedia Flash
- Screen capture programs (will not give demos but will briefly discuss)
  - Mac: SnapZ Pro 2 = excellent for screen capture of individual images or movies
  - WIN: Camtasia Studio & SnagIt 7 = excellent for screen capture of individual images or movies
- Microphone recording of important concepts (relate to images as in lectures, etc.)
  - Mac: GarageBand, excellent voice presets (will demo): **Add track (+) > Real Instrument > Vocals > Male Basic > Monitor On > Double click track > Manual > Stronger bass**
  - WIN: Sound Forge (will not demo; must establish your own levels via experimentation with various filters & effects: graphic equalizer, normalization, echo, reverb, etc.)

## VISION OF AN INTERACTIVE LECTURE ENVIRONMENT

For years I've felt that the lecture environment is too passive and not particularly conducive to learning. My vision has focused on an interactive environment in which the lecturer punctures his/her talk with frequent questions and then immediately studies the podium computer screen as the responses came rolling in from the students via wireless devices (laptops, PDAs, etc.). Any student could be identified by a unique ID. Graphs would quickly appear to show the distribution of responses, and if most students appeared to have a good grasp of the concept, the lecturer would progress to the next point, and so fourth. Examinations could be presented with this same interactive system. Data would amass for each medical student, recording his/her development throughout the curriculum. Accurate records for attendance at lectures, small group activities, and examinations would be available. Such interactive response systems are available and being used by a variety of audiences from kindergarten through adult education. They are referred to as classroom (audience) performance (response) systems. Dr. Mike Gordon's Center for Research in Medical Education uses such devices during certain presentations.

Last year, at the Florida Educational Technology Conference, I participated in several simulated classroom response experiences. The teachers were outstanding and made algebra, art appreciation (lots of images) and geography exceptionally fun to learn in a highly interactive way. Some of us had PDAs, others laptops, and all of us had keyboards attached to the devices. In addition to answering typical multiple choice questions, we could respond by typing short comments or long statements. The teachers would show us charts after each question that represented the distribution of our answers. It was truly an exciting way to learn.

While several of the research projects investigating classroom performance systems look very encouraging, it is clear to me that our medical school will not have them in the lecture halls in the foreseeable future. There are enormous issues involving costs (hardware, software, technicians, training, authoring, maintenance, etc.) that make it prohibitive in the current financial environment. But, as I've watched technology evolve over the past three decades, as each of you either willingly or unwillingly made appropriate adjustments, I'm convinced that all medical schools will have web-based, wireless systems that will enable such a vision to ultimately reach fruition.

## BOOKS FOR SELF-STUDY

***Adobe Classroom in a Book Series (make sure that the edition matches the version of the Creative Suite that you have)***

***Adobe Acrobat 6.0 Standard Classroom in a Book - The official training workbook from Adobe Systems***, Adobe Press, 2004. Included CD contains all of the lessons files.

***How to Do Everything with Adobe Acrobat 6.0***, Doug Sahlin, McGraw Hill/Osborne, 2004.

Note: This book covers both the Standard and Professional versions of Acrobat.

***Adobe Illustrator CS Classroom in a Book - The official training workbook from Adobe Systems***, Adobe Press, 2004. Included CD contains all of the lessons files.

***Adobe InDesign CS Classroom in a Book - The official training workbook from Adobe Systems***, Adobe Press, 2004. Included CD contains all of the lessons files.

***Adobe Photoshop CS Classroom in a Book - The official training workbook from Adobe Systems***, Adobe Press, 2004. Included CD contains all of the lessons files.

## Macromedia Flash for Windows & Macintosh

***Macromedia Flash MX 2004: Training from the Source***, Jen deHaan, Macromedia Press, in association with Peachpit Press, a division of Pearson Education, 2004. Included CD contains all of the project lessons files.

***Macromedia Flash MX Professional 2004: Unleashed***, David Vogelee and Matthew Pizzi, Sams Publishing, 2004. Download source code and files for the examples presented in the book at [www.samspublishing.com](http://www.samspublishing.com).

***Foundation ActionScript for Macromedia Flash MX 2004***, Sham Bhangal, Friends of ED Designer to Designer, an Apress Company, 2004. Note: Although this book is intended for designers, it is a good way to start to learn ActionScript because the "author caters specifically to nonprogramming designers who want to learn programming in Flash quickly and thoroughly." The project lesson files are available on line:

- 1) [www.friendsofed.com](http://www.friendsofed.com)
- 2) Upper left corner, click on All Books
- 3) Scroll down to & select ***Foundation ActionScript for Macromedia Flash MX 2004***
- 4) Click on the box near the top center labeled "Downloads"
- 5) Download the files of interest

***Macromedia Flash MX 2004: ActionScript, Training from the Source***, Derek Franklin and Jobe Maker, Macromedia Press, in association with Peachpit Press, a division of Pearson Education, 2004. Included CD contains all of the project lessons files.

***Macromedia Flash MX 2004: Advanced***, Russell Chun with Joe Garraffo, Peachpit Press, 2004. Included CD

contains all of the project lessons files.

**Sites for purchasing hardware & software at educational discounts:**

- A. [www.academicsuperstore.com](http://www.academicsuperstore.com) (just one of many - I've had good luck with this company)
- B. online university sites (Apple & WIN)
- C. [www.music123.com](http://www.music123.com)

**Estimated software educational prices:**

Creative Suite Premium Plus Edition \$679.95

Adobe Photoshop CS 8

Adobe Illustrator CS 11

Adobe InDesign CS 3 PageMaker Edition

Adobe Acrobat Professional 6.0

Adobe GoLive CS 7

**Creative Suite Premium (1.1) \$379.95** (this version is quite adequate)

**Adobe Photoshop CS 7**

**Adobe Illustrator CS 10**

**Adobe InDesign CS PageMaker Edition**

**Adobe Acrobat Professional 6.0 (earlier versions do not support layers)**

Adobe GoLive CS

Note: Most faculty do not need the Adobe GoLive (internet web site hosting); however, this bundle price is much better than purchasing the other applications separately.

**Macromedia Flash MX Pro 2004 - Academic \$149.95**

Screen capture program - Mac = **SnapZ Pro 2** \$69

Screen capture program - WIN = **Camtasia Studio & Snagit 7 Bundle** \$149.95

**MACINTOSH OPERATING SYSTEM:** Estimated hardware & software educational prices for recording voice & music, and working with digital video and DVDs. Note: The Macintosh has outstanding built-in software & equipment for working with digital videos, sound and music.

iLife with GarageBand = Free with new Macs

iLife '04 \$29

GarageBand

iMovie (best if you have your own digital video camera)

iDVD (create your own DVDs with a superdrive)

iTunes

GarageBand Jam Pack \$79 (2000 prerecorded loops)

Final Cut Pro HD Academic (requires a digital video camera) (\$499)

(comes with Sound Track which includes 4000 instruments & sound effect loops)

(comes with many built-in filters & effects similar to Adobe After Effects)

DVD Studio Pro 3 Academic - \$249

**Note: Macintoshes with superdrives can burn CDs & DVDs**

**Global Audio by CAD GXL2400 Condenser Microphone w/Shock Mount \$ 70**

**M Audio Mobile Pre USB \$150**

- box that connects microphone to computer

- also connects your stereo headphones to box

**OnStage DS7200 Adjustable Desktop Microphone Stand \$15**

**Pro Co Ameriquad Mic Cable \$25**

**M-Audio Keystation 49e1 - USB Midi Keyboard** (no electric power required) - \$99

BF Distributing Music Making Tools ([www.MusicMakingTools.com](http://www.MusicMakingTools.com))

- Great inexpensive (\$20) CDs for GarageBand instruction & examples

- **I got my idea of recording voiceovers in GarageBand from their first CD**

**WINDOWS OPERATING SYSTEM:** Estimated hardware & software educational prices for recording voice & music, and working with digital video and DVDs.

**Sound Forge** (Sony) \$269.95

**Adobe Premiere Pro** (requires a digital video camera) \$219.95

Adobe After Effects 6.5 Standard \$269.95

Adobe After Effects 6.5 Professional \$359.95

AVID (requires a digital video camera; this program is used by many professionals)

**Also need to purchase equipment for burning CDs & DVDs**