

From traditional into digital education at faculties of medicine

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Medical students are skipping class in droves — and making lectures increasingly obsolete

By Orly Nadell Farber Aug. 14, 2018

[Reprints](#)



ALEX HOGAN/STAT

The future doctors of America cut class. Not to gossip in the bathroom or flirt behind the bleachers. They skip to learn — at twice the speed.

Nationally, nearly one-quarter of second-year medical students [reported](#) last year that they “almost never” attended class during their first two, preclinical years, a 5 percent increase from 2015.



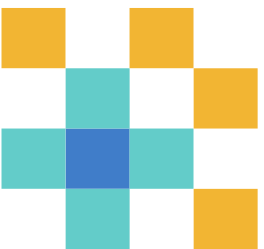
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Medical education

- Knowledge
- Memorization
- Factual recall
- Pattern recognition
- Problem solving
- Critical thinking



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Medical lectures

- Traditional lecture
 - delivered live, in-person, and with no or minimal online component; typically limited student-lecturer interaction,
 - Design components: video, slide decks, and drawing on projector screen or blackboard
 - Interactivity: minimal (students ask questions, but do not influence lecture output or pace)
- Can be delivered on-line, live



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Medical lectures

- Online lecture
 - intended for students to independently watch online, at their own pace; defined by low student interaction with the teaching modality (in some ways akin to a traditional lecture except viewed online)
 - Design components: audio, slide decks, drawings on blackboard, talking head
 - Interactivity: low to minimal (students can control speed of lecture, rewind, and fast-forward)



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Medical lectures

- Online module
 - intended for students to independently complete online, at their own pace; involves interactivity, in which students “click through” the module or complete “drag and drop” or other activities
 - Design components: “click-through” modules, embedded exercises (eg, matching, multiple choice questions); may also include components of online lectures
 - Interactivity: moderate to high (students actively engage with the online interface)



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Flipped-classroom model

- Students learn the content at home, and then apply it during in-class exercises
- Clinical exposure
- Practical skills



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Creation of the course

- Learning objectives
- Select the course content (what remove?)
- Course plan (how to divide into small lectures, seminars etc.)
- Effective delivery methods
- Production phase
- Setting up online
- Checking the acquisition of specific skills, knowledge etc. (learning objectives)



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Module content

- Learning objectives
 - Don't underestimate the importance of **learning outcomes**
 - Because *you* know what your course will give your students, it does not mean that they will know.
 - If your students don't know HOW your course is going to help them, they are unlikely to enroll in it.
- Learning outcomes clearly explain, with measurable verbs, what the learner will be able to do, know and feel by the end of your course.
 - What skills will they be able to demonstrate?
 - What new knowledge will they have obtained?
 - What feelings will they have moved away from or to?

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Selection of lecture/course content

- Literature-driven development of content (eg, 6-step approach to curriculum development)
- Faculty or expert selection of content
- Medical student consultation

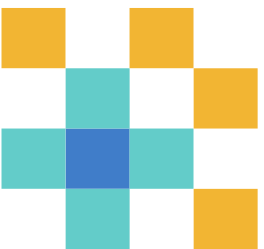


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Lecture development

- Developed from live lectures or recordings of live lectures
- Consideration of multimedia design principles



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Applying multimedia design principles enhances learning in medical education

Nabil Issa,¹ Mary Schuller,¹ Susan Santacaterina,¹ Michael Shapiro,¹ Edward Wang,¹ Richard E Mayer² & Debra A DaRosa¹

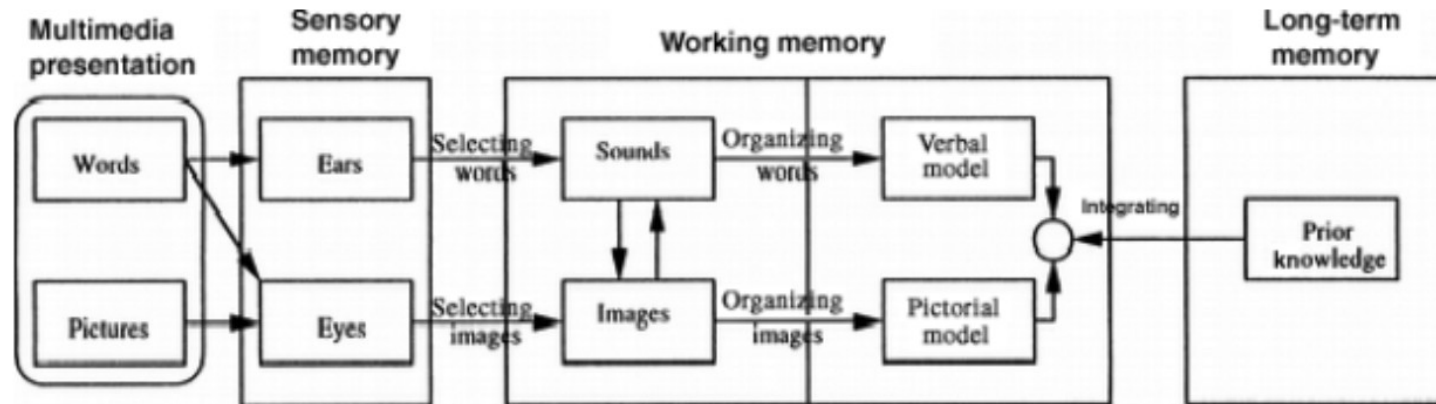


Figure 1 A diagrammatic representation of dual-channel theory for multimedia learning, adopted with permission from the American Psychological Association²¹



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Table 1 Mayer's principles for designing effective instructional multimedia materials

Eliminate external distracters

Coherence principle

Signalling principle

Redundancy principle

Spatial contiguity

Temporal contiguity

Exclude extraneous words, pictures and sounds

Highlight essential material

Do not add on-screen text to narrated animation

Place printed words next to corresponding graphs

Place corresponding narration and animation at the same time

Encourage learners to establish 'mental frames' for the material

Segmenting principle

Modality principle

Pre-training principle

Present animation in learner-paced segments

Present words as narration instead of printed text

Prepare/read ahead of time

Facilitate integration of new material with prior established knowledge

Multimedia principle

Personalisation principle

Present words and pictures rather than words alone

Employ conversational style instead of formal dry style to present words

Adapted from Mayer²²



Treatment of hypovolemic shock

- Crystalloids
 - 0.9%NaCl
 - Ringer solution
 - 5% glucose
- Colloids
 - Albumin
 - Synthetic colloids
- Blood and blood products



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Jagiellonian University – our journey

- Placing teaching materials for students in the cloud (presentations used in class)
- Placing recorded lectures in the cloud
- Preparation of the first on-line courses
- Enabling academic teachers to choose the form of giving lectures (stationary or on-line)
- 2019 - decision to discontinue classroom lectures, to choose from live online lectures or uploading recorded lectures on the distance learning platform (Pegaz UJ).



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Jagiellonian University – Medical College

On-line lectures

- 57 obligatory courses
 - 364 on-line obligatory modules
- >150 elective courses



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Thank you for your attention

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