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La Conférence internationale sur la formation des résidents

A Toolkit To Flip Your Classroom

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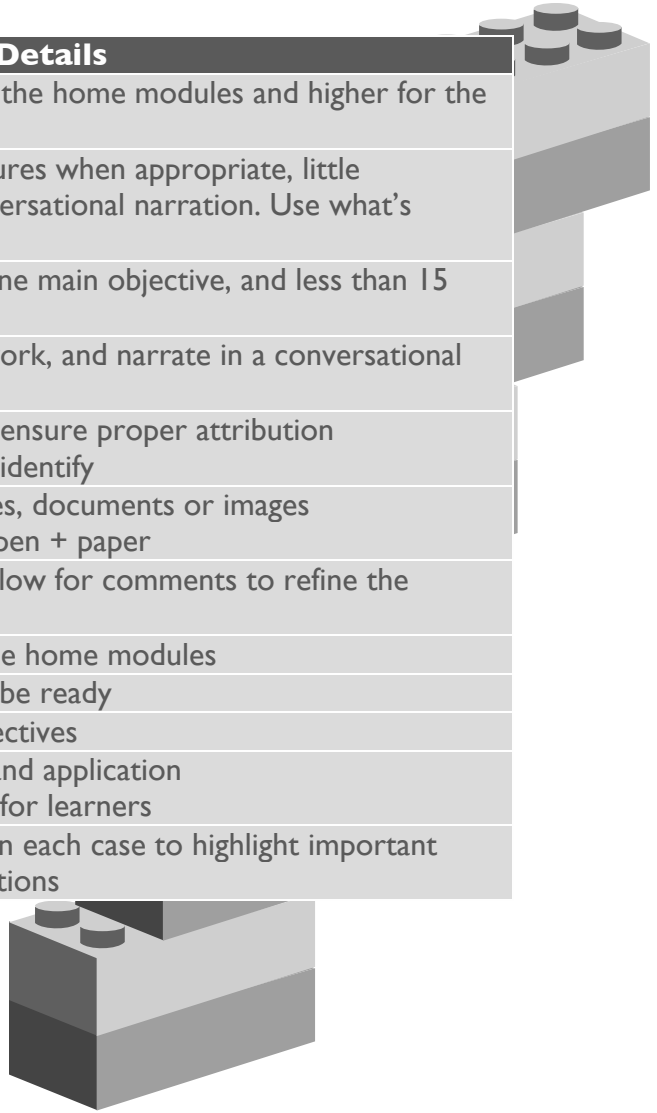
More information and examples can be found at
http://flippedEMclassroom.wordpress.com

FlippedEM classroom

12 Tips for Flipping Your Classroom

Tip	Description	Details
1	Create **clear objectives** for your overall session and both home modules and class activities	Use lower-level objectives for the home modules and higher for the in class activities.
2	Create **home modules** adhering to multimedia design principles and targeted to the level of learner	The modules should have pictures when appropriate, little distracting materials with conversational narration. Use what's already available.
3	**Segment** lesson	Each module should address one main objective, and less than 15 minutes in length
4	Script or **storyboard** ahead of time	Use a loose script as a framework, and narrate in a conversational manner
5	Care with using **images**	Can use common licenses but ensure proper attribution If use own images, need to de-identify
6	Create resources with **familiar technology**	Narrate over PowerPoint slides, documents or images Or video on camera phone + pen + paper
7	Upload modules onto **public domains**	Upload onto public domains allow for comments to refine the modules
8	Build **quizzes** and links for next-step reading	Ensure learners understood the home modules
9	**Prime** the learners	Tell the learners they need to be ready
10	Design **classroom activities**	Activities need to address objectives
11	Adapt to classroom **discussion** styles	Teach knowledge integration and application Resist urge to complete work for learners
12	Give **feedback** to learners	Use a debrief either in between each case to highlight important points and clear up misconceptions



Timeline of your existing class

Select a teaching session that you'd like to flip. Within each box below, write what currently happens before class, in class and after class.

Learner level:

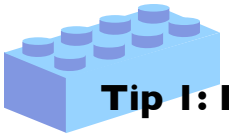
Before Class	In Class	After Class

Revised timeline based on flipped classroom model

Given the description of the methodology of flipped classroom, what would you now envision doing before, during and after class.

Before Class	In Class	After Class

Why did you make those changes?



Tip 1: Designing Objectives

List two or three objectives for your current teaching session.

1. _____

2. _____

3. _____

APPLICATION & PROBLEM SOLVING

REMEMBER	UNDERSTAND	APPLY	ANALYZE	EVALUATE	CREATE
List, Name, Identify, Show, Define, Recognize, Recall, State, Visualize	Summarize, Explain, Interpret, Describe, Compare, Paraphrase, Differentiate, Demonstrate, Classify	Solve, Illustrate, Calculate, Use, Interpret, Relate, Create, Manipulate, Apply, Modify	Analyze, Organize, Deduce, Contrast, Compare, Distinguish, Discuss, Plan, Devise	Evaluate, Choose, Estimate, Judge, Defend, Criticize	Design, Hypothesize, Support, Schematize, Write, Report, Justify
lecture, visuals, video, audio, examples, illustrations, analogies	questions, discussion, review, test, learner presentation, writing	exercises, practice, demos, projects, sketches, simulation, role play	problems, exercises, case studies, critical incidents, discussion	case studies, critiques, appraisals	projects, develop plans, construct simulations, creative exercises

RECALL / RECOGNITION

For each of the objectives above, write one lower-order (i.e., recall / recognition) and one higher-order (i.e., application / problem solving) objective.

1/low: _____

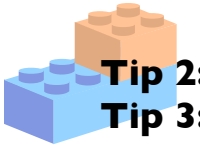
1/high: _____

2/low: _____

2/high: _____

3/low: _____

3/high: _____



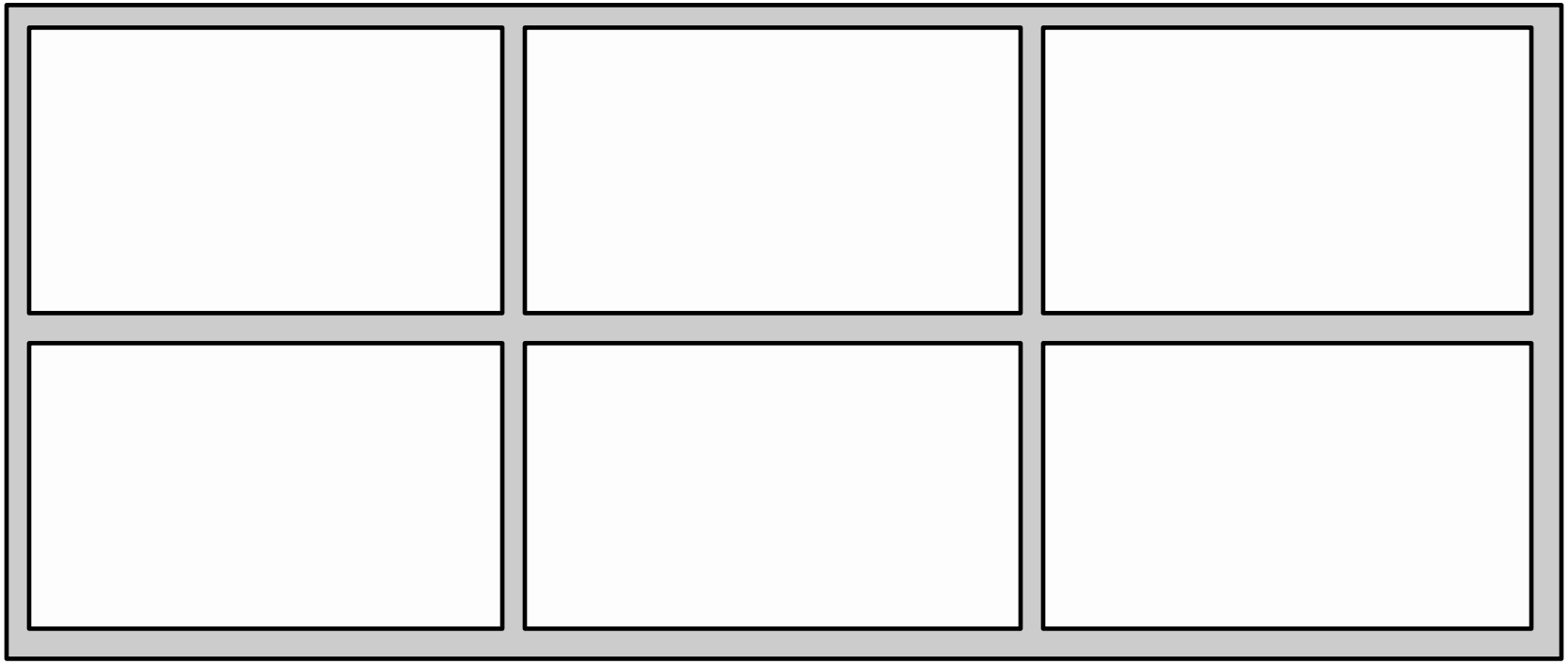
Tip 2: Follow proven multimedia principles
Tip 3: Segment lessons

These principles of eLearning championed by Richard Mayer have been shown to improve learner learning when material is presented in a digital format. For a good summary on this subject, we refer you to Ruth Clark and Richard Mayer, *E•Learning and the Science of Instruction, 3rd edition,* Pfeiffer Publishing, August 16, 2011.

1. **What material to include**
    a. **Multimedia Principle** – People learn better from words and pictures than from words alone.
    b. **Modality Principle** – People learn better from graphics and narrations than from animation and on-screen text.
    c. **Redundancy Principle** – People learn better from graphics and narration than from graphics, narration and on-screen text.
    d. **Coherence Principle** – People learn better when extraneous words, pictures and sounds are excluded rather than included.
2. **Arranging the material**
    a. **Signaling Principle** – People learn better when cues that highlight the organization of the essential material are added.
    b. **Pre-training Principle** – People learn better from a multimedia lesson when they know the names and characteristics of the main concepts.
    c. **Spatial Contiguity Principle** – People learn better when corresponding words and pictures are presented near rather than far from each other on the page or screen.
    d. **Temporal Contiguity Principle** – People learn better when corresponding words and pictures are presented simultaneously rather than successively.
3. **Chunking**
    a. **Segmenting Principle** – People learn better from a multimedia lesson is presented in user-paced segments rather than as a continuous unit.
4. **Voice & personalization**
    a. **Personalization Principle** – People learn better from multimedia lessons when words are in conversational style rather than formal style.
    b. **Voice Principle** – People learn better when the narration in multimedia lessons is spoken in a friendly human voice rather than a machine voice.
    c. **Image Principle** – People do not necessarily learn better from a multimedia lesson when the speaker's image is added to the screen.

Tip 4: Script or Storyboard ahead of time

Use the space below to write a script or draw out a storyboard for the home module.



What resources will you need to produce this module?

Tip 5: Care with images

Use images in the public domain or with a creative commons license (with proper attribution). Some good resources:

1. Wikimedia Commons (http://commons.wikimedia.org) – most can be used with proper attribution
    a. Look especially for scalable vector graphic image files. There are many anatomic SVG images.
2. Flickr (http://www.flickr.com) - not all are for public use, be sure to check
3. CDC Public Image Library (http://phil.cdc.gov/phil/home.asp)

When using images from your own practice, be careful to properly remove personal health information (PHI).

1. If taking a picture, crop PHI from the photo.
2. Simply cropping a photo in editing software does not remove information. Many times it can easily be "uncropped."
    a. Even deleting patient information from a Word document doesn't remove that information from the file. It can easily be recovered from the version history through restore changes. Use the Document Inspector in Microsoft Word to remove the revision history.

*Remember that the **coherence principle** states that extraneous images (such as clip art) are detrimental to learning.*

Tip 6: Use familiar technology to make the home modules

- Web Based
    - Jing (http://www.techsmith.com/jing.html)
    - Movenote (https://www.movenote.com/)
- Computer
    - Record Narrations in Keynote and PowerPoint
- Tablet based
    - Explain Everything (iOS and Android) – many features
    - DoodleCast Pro (iOS) – simple interface
    - Other software: ShowMe, Educreations, ScreenChomp

Break Time!

Stretch your legs. Get some coffee. Talk with your neighbors.

Also if you have any questions at this point, please be sure to write them down and hand them to the moderators. We'll try to answer the questions at the end of the session.

Tip 7: Upload modules to the public domain 

Putting your material in the public domain has several benefits:

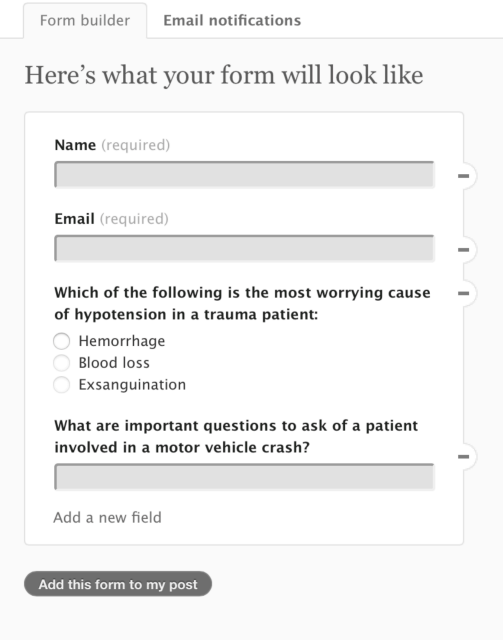
1. It allows for easier access by learners on various devices
2. It allows learners outside of your institution to also benefit from your material (participate in Free Open Access Medical Education: FOAMed).
3. Instructors from other institutions can incorporate your materials into their teaching, thus broadening your impact
4. Demonstrated international adoption of your teaching materials (often with testimonials to include in your promotions packet)
5. Let the big websites handle the streaming, storage and video & comment management

Some commonly used public repositories include:

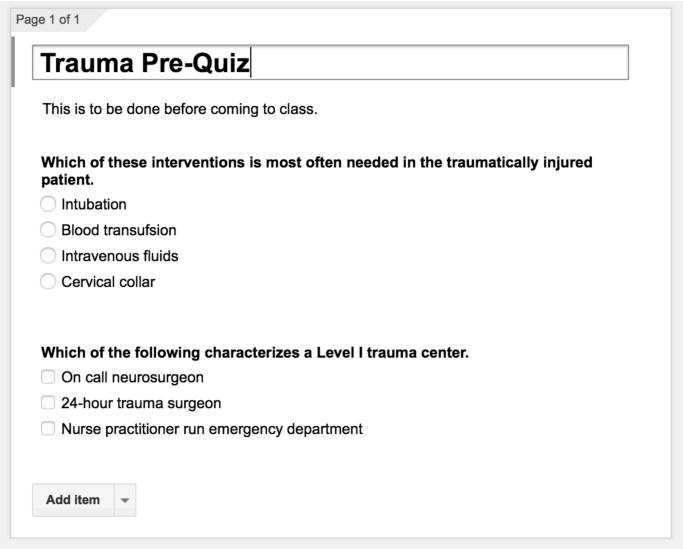
- For videos:
  - YouTube (www.youtube.com)
  - Vimeo (www.vimeo.com)
- For written materials
  - MedEd Portal (www.MedEdPortal.org)
- Your own website or blog
  - WikiSpaces Education (www.WikiSpaces.com)
  - WordPress (www.wordpress.com, www.wordpress.org)
  - Weebly (www.weebly.com)
  - SquareSpace (www.SquareSpace.com)

Tip 8: Build quizzes into the home modules to test comprehension

The **contact form in WordPress** allows you to ask questions of your learners. Their answers are automatically emailed directly to you.



Forms in Google's suite of applications can easily be embedded into a website. The answers are collected in a spreadsheet.



Both are easy to use.

Tip 9: Prime learners

Let your learners know that they need to study the material beforehand because in class they will need to be using this material (and teaching it to one another).

Start with an Individual Readiness Assessment Test (IRAT). Before moving on to the class activities, be sure to clear up any misconceptions learners may have.

Tip 10: Build classroom activities

These activities should explore Bloom's higher domains such as application, analysis, evaluation and creation, and synthesis. The objectives should build upon the core knowledge from the home modules.

		APPLICATION & PROBLEM SOLVING			
REMEMBER	**UNDERSTAND**	**APPLY**	**ANALYZE**	**EVALUATE**	**CREATE**
List, Name, Identify, Show, Define, Recognize, Recall, State, Visualize	Summarize, Explain, Interpret, Describe, Compare, Paraphrase, Differentiate, Demonstrate, Classify	Solve, Illustrate, Calculate, Use, Interpret, Relate, Create, Manipulate, Apply, Modify	Analyze, Organize, Deduce, Contrast, Compare, Distinguish, Discuss, Plan, Devise	Evaluate, Choose, Estimate, Judge, Defend, Criticize	Design, Hypothesize, Support, Schematize, Write, Report, Justify
lecture, visuals, video, audio, examples, illustrations, analogies	questions, discussion, review, test, learner presentation, writing	exercises, practice, demos, projects, sketches, simulation, role play	problems, exercises, case studies, critical incidents, discussion	case studies, critiques, appraisals	projects, develop plans, construct simulations, creative exercises
RECALL / RECOGNITION					

Here are some examples:

- **Application**: table top case scenarios and simulation
- **Analysis**: debate over controversies or journal articles, comparing diagnostic and treatment strategies, analyze the quality of a case management (from M&M or even a television show)
- **Creation**: have learners create and role play scenarios involving patients, family members, physicians and other health care team members for difficult conversations

Using the objectives you designed in Tip 1, come up with some possible activities for learners to do.

Also brainstorm with your peers at your table on what you can do. What did they choose to do?

Tip 11: Let learners run the discussion

Instruction is shifted from instructor-focused to learner-centered. Let learners lead the discussion as much as possible, ask questions of one another and teach one another. Teachers adopt a supportive, but far from passive role. The instructor's job is to:

1. Design activities that promote discussion between members of the group
2. Help initiate discussion with probing, open-ended questions. Ask learners to:
    a. Explain or elaborate their ideas,
    b. Provide the rationale for their decisions,
    c. Ask for alternative methods to approach the problem,
    d. Link these concepts to previous material by creating a concept map
    e. Reflect on how well the group is completing the assignment predict outcomes, or
    f. Generate hypotheses.
3. Provide feedback when learners are going off track or quiet
4. Continually observe and make adjustments as appropriate.

Will the learners really teach each other? If learners attained the foundational knowledge outside of class and the classroom activity is properly created, there is usually spontaneously participation. When this happens, the instructor can simply step out of the way and observe. You become "the guide on the side" instead of the traditional lecturer role of "sage on the stage" (King 1993). As Dr. Eric Mazur said in his "Confessions on a Converted Lecturer" talk, our job should "shift [the] focus from teaching to helping learners learn."

A few last pieces of advice:

- Avoid the temptation to lecture in class, this work has already been done in your videos.
- Resist the urge to complete the work for learners, let them struggle with the problems.
- You don't need to cover everything, the activity of critical thinking is much more important.
- Lead learners so that they can discover the answers themselves.

Tip 12: Feedback

The second role of the instructor during class time is to provide feedback to learners. However, feedback can come from multiple sources, such as the environment (e.g., a simulation mannequin provides feedback), other learners (e.g., from classroom discussion) and the learner themselves (e.g., self-reflection – one of the most powerful methods).

Instructors continually observe learners and assessing their work during the class activity. While learners are allowed to make and explore their mistakes during discussion, the instructors are there to redirect learners if they deviate too far or become frustrated. Teachers can also identify individual learners that may need extra attention and provide individualized, directed feedback in real time.

The takeaway knowledge, skills and attitudes with which learners should walk away come from your objectives. Both the instructor and learner need to measure how well the learner achieved those objectives.

Learners use this feedback to adjust their performance on subsequent activities, whether that is in another classroom activity or in a real-world application. Novice learners may need advice on how they can tweak their performance in order to achieve the objectives. Advanced learners, who have easily attained the objectives, can benefit from advice on the subtleties to make their performance more efficient.

Instructors use this feedback to design future instruction. If a large proportion of the class has difficulty in one area, the teacher can alter the pre-class modules or in-class activity to better emphasize those areas.

How would you create feedback sources for your learners:

From self:

From the environment:

From peers:

From instructors:

Revisit the timelines

Let's revisit the timelines we created for our existing class. Given the previous activities, is there anything you would change?

Learner level:

Before Class	In Class	After Class

Revised timeline based on flipped classroom model

Given the description of the methodology of flipped classroom, what would you now envision doing before, during and after class.

Before Class	In Class	After Class

Why did you make those changes?

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Thank your for your time and attention. If you have any questions or feedback for us, please feel free to contact us by email or on Twitter.

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