Online Course Design

Some thoughts as you begin to develop massive online courses

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Outline

- Introduction
- Confluence of events

  "The world is changed."

- Are you asking the right questions?

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Introduction

About Me

- B.S. & M.S. in Mechanical Engineering
- Taught multimedia design and open education
- 20 years in digital learning
  - Decade or more each in educational digital libraries, engineering education, Open Education
- "Been There, Done That"
  - Multimedia courseware design and course support, web software design, digital libraries, metadata, learning objects, educational technology standards, open educational resources/OpenCourseWare

Disclaimers

- This is very much a *work in progress*…
- Much of this *is not new or novel*…
  - We *might* be at a point where technology and the environment may make it easier to do these things
  - But, your mileage may vary
- And, some of this is *personal opinion*…

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Confluence of Events

"The world is changed."

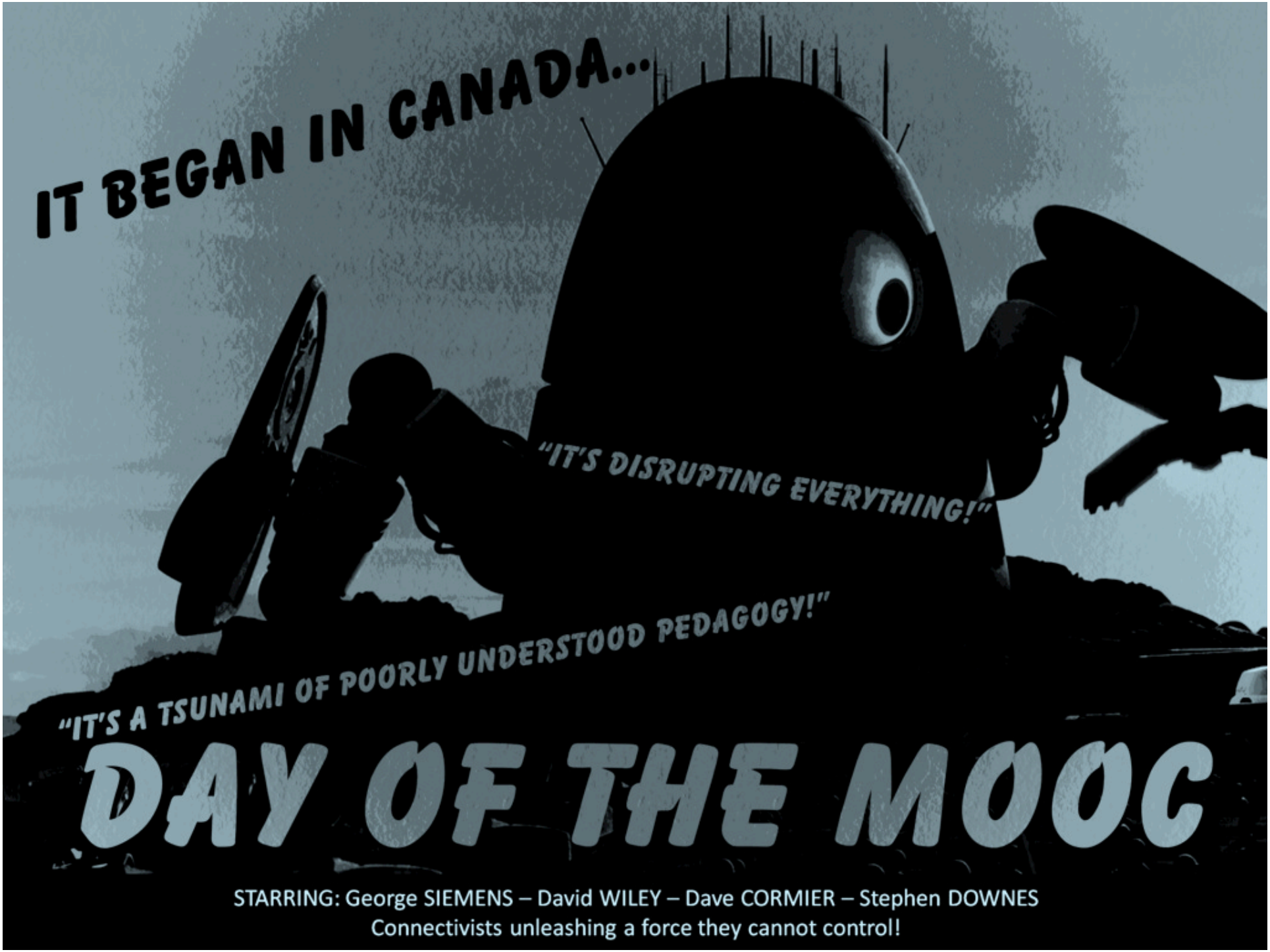
— Galadriel, Lord of the Rings

Confluence of Events

- Global financial crisis…
  - Dramatic reduction in education budgets, continuing rise in costs, and rise in student loan debt
- Changing perceptions of the value of a degree
- Competency-based education/prior learning assessment

Confluence of Events (cont.)

- Changing methods of accessing information and knowledge
- Recognition of the half-life of learning in many disciplines
  - Transition to continual learning in many career paths
- Rise of openly accessible information, learning materials and opportunities, at scale
  - Wikipedia, Open Educational Resources/ OpenCourseWare, Creative Commons licensing
  - Khan Academy, Codecademy
- And…


IT BEGAN IN CANADA...
"IT'S DISRUPTING EVERYTHING!"
"IT'S A TSUNAMI OF POORLY UNDERSTOOD PEDAGOGY!"
DAY OF THE MOOC
STARRING: George SIEMENS – David WILEY – Dave CORMIER – Stephen DOWNES
Connectivists unleashing a force they cannot control!

What I find unique about MOOCs

- It's not their instructional design/pedagogy…
- It's not their use of video…
- It's not the hype!
- It is their scale!
- It is their departure from "traditional" online courses
- For today's talk, it is mostly their interleaving of content and (parameterized) formative assessment

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Are you asking the right questions?

As you begin to develop online courses…
some thoughts to consider…

Ask yourselves
3 simple questions…

① Are you “designing” your online courses?

Online Course DESIGN GUIDE

Exploring the Guide

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Setting the Stage

- **Have you taken a traditional online course?**
- **A MOOC course?**
- **Have you taught a traditional online course?**

Online Course Design

Designing an good online course is designing a good course!

Online Course Design Guide Organization

1. **Pre-Design**
2. **Design and Development**
3. **Facilitation**
4. **Evaluation**

Part 1: Pre-Design

Part 1: Pre-Design

- **"Gathering all of the necessary information to ensure that the course will meet the needs of the learners and engage them throughout the learning journey."**

- **What's different online:**
  - More difficult to make spontaneous adjustments
  - The asynchronous nature means you need to be thoughtful about creating interaction opportunities

Pre-Design Questions (1)

- **Who are my learners?**

… you need to make sure you can produce content for their level and the correct voice.

- **What do they currently know?**

…so you can avoid repetition and focus on growing what they have learned.

Pre-Design Questions (2)

- **What do they need to know before starting the course?**

…so you can provide prerequisite materials to learners and they can plan accordingly before the course begins.

Pre-Design Questions (3)

- **What other content is available that supports meeting learning outcomes?**

…curating content you already have means not having to start everything from scratch.

- **Do you have existing material that can be used in the course?**

…being able to identify other resources that support your key topics adds greater depth to the course.

Pre-Design Questions (4)

- **What content must be revised for an online format or created from scratch?**

… taking inventory of the varying stages of content will inform the design phase and give you a better sense of how much work it will require to prepare the content for online use.

Going Behind The Curtain

Exploring a online course OEIT recently developed

(not a MOOC)

Best Practices for Teaching and Learning

- **Course Goals:**

  How do we design a course?

  What are the best methods for promoting critical thinking skills, knowledge retention, and transfer?

  …primarily for in-person classes

Background on the Course

- **Created for as a proof-of-concept for an online teacher education program**
- **Based on a 14 week course that MIT provides for graduate students and Post-Docs who wish to learn how to teach**
- **Course is run by the MIT Teaching and Learning Laboratory (TLL)**
  - They work with faculty on education research and pedagogically informed teaching practice
  - Perform some of the functions of a Center for Teaching and Learning

Background on the Course (cont.)

- **Instructors have taught the face-to-face version of this course**
  - Experienced in teaching in Biology
  - Experienced in research in Biology, both have Ph.D.s
  - Deep interest in biology education, especially preparing students for careers in Biology
- **Instructors have not taught online before**
  - Relying on others for that experience ← it takes a team!

Question: Who are my learners?

- **Faculty interested in learning "best practices"**
  - Might be in teacher education departments
  - With possible focus on Science / Math education
- **Challenges**
  - Different from the course upon which it was based
  - MIT graduate students ≠ faculty in teacher education programs

Question: What do my learners currently know?

- **Unknown**
  - Might, or might not, have experience with “good” teaching practice
  - Might not have been formally trained to “teach”
- **Challenge**
  - Didn’t have the opportunity to really find out about the participants before designing the course, had to make assumptions

Question: What do my learners need to know before starting the course?

- **Participants should have:**
  - Experience in teaching
  - Perhaps experience in teaching pre-service teachers
- **Challenges**
  - Didn't have the opportunity to really find out about the participants before designing the course
  - Had to make assumptions

Question: Who are the subject matter experts?

- **Each session comes with pre-session readings from "experts"**
- **Topics presented in each session that represent the work of "experts" are clearly cited**

- **Challenges**
  - Not overwhelming participants
  - But providing a deep enough research basis for those interested in finding out more
  - Serendipitous linkage with the Online Course Design Guideline and Digital Learning Toolkit

Question: Do you have existing material that can be used in the course?

- **Yes!**

- **Challenges**
  - Material designed for face-to-face interactions
  - Materials designed for a 14 week course

Question: What other content is available that supports meeting learning outcomes?

- **Lots and lots**

- **Challenges**
  - Pre-supposes learning outcomes!
  - Some materials are referenced in pre-session readings
  - Some materials are referenced during the session videos (as citations)

Question: What content must be revised or created from scratch?

- **Lecture videos**
  - Most of the course is an interactive discussion in class based around the pre-session readings
- **Slides**
- **Activities**

- **Challenges**
  - Developing a mostly-asynchronous learning experience for what was a highly synchronous course

Part 2: Design and Development

Part 2: Design and Development

- **"In this phase, learning strategies are mapped out, learning content and media are developed, organized, and sequenced, and supporting technology is selected."**
- **What's different online:**
  - Online learning is more exploratory in nature, and oftentimes less directed than in-person
  - Learners access materials asynchronously: The easier it is for learners to locate and engage with learning activities, the more mental energy they will have to focus on the content.

Objectives and Outcomes

- **"Learning outcomes are general statements that describe the essential learning (knowledge, skills, and attitudes) that learners will achieve by the end of the course. They should encompass the depth of the knowledge and skills that you will be ultimately assessing. When composing outcomes, be mindful not to combine elements that cannot be assessed by a single method."**

Designing a Blueprint

- **What's a blueprint?**
  - A comprehensive plan that allows "you to design with the big picture in mind to ensure you reach every milestone and build consistency throughout the curriculum."
- **Key Elements**
  - Course information
  - Course learning objectives and outcomes
  - Lesson topics and format
  - Learning resources
  - Activities and assessment

Content Patterns: Organizing & Sequencing (1)

- **"Constructing patterns in your curriculum is one way to infuse consistency throughout the course, which helps the learners manage time and resources. How you approach your content each week should be organized in such a way that the learner understands what is being taught and how to interact and engage with the material and community."**
- **What's different online:**
  - The easier it is for learners to locate and engage with learning activities, the more mental energy they will have to focus on the content.

Content Patterns: Organizing & Sequencing (2)

- **Write all course content using a consistent voice**
- **Create patterns in activity structure (e.g., description, rationale, deliverables, and resources)**
- **Establish a consistent schedule (e.g., standardize due dates and plan synchronous sessions, virtual meetings, office hours, and other activities at the same time each week)**
- **Align learning objectives to each segment of content**
- **Structure the content into smaller pieces**

Creating Content Relationships

- **"Strategically organize and present all course content to leverage the learners' existing expertise on a topic against the concepts and skills they are going to learn."**

1	2	3
Create a pre-assignment that activates prior knowledge before new material is introduced as a method of contextualizing new information.	Introduce a topic by connecting prior knowledge to the new learning.	Present a discussion board where the learner can engage and contextualize prior knowledge with new learning.

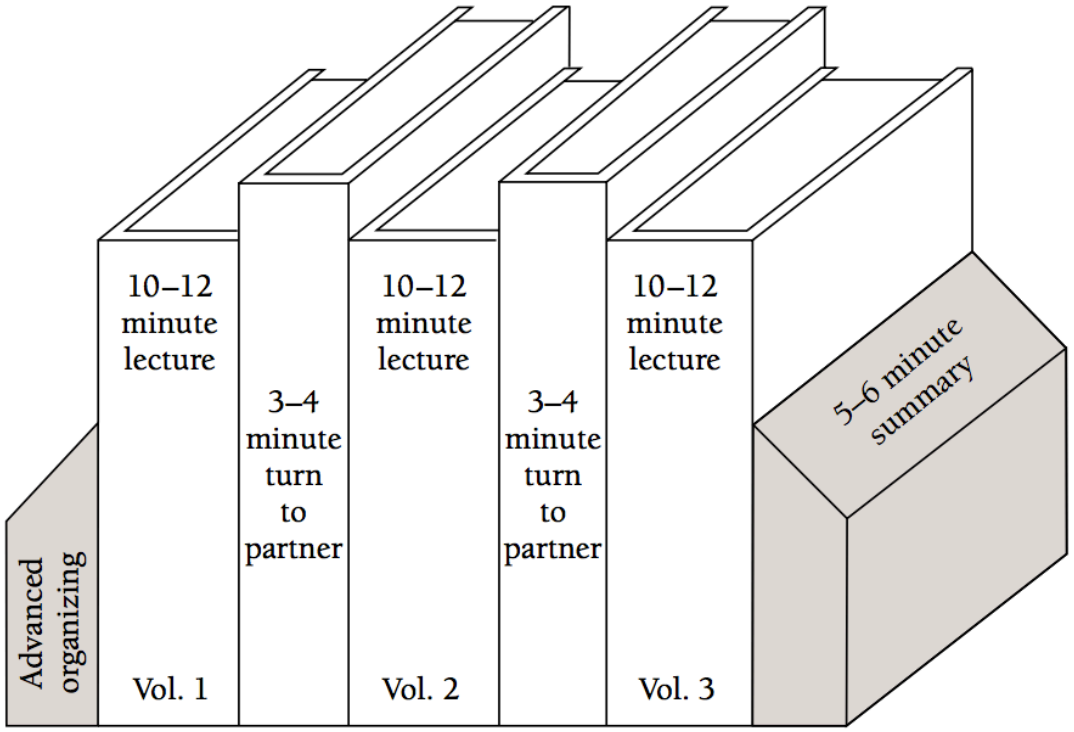
Lesson Development with Media (1)

- **"Depending on how you choose to introduce, curate, or present the learning topics, creative applications of media can further engage learners in the material."**
- **What's different online:**
  - Just posting your slides does not leverage the opportunities in an online course
  - Simply recording a video of an in-person lecture does not leverage the opportunities in an online course

Lesson Development with Media (2)

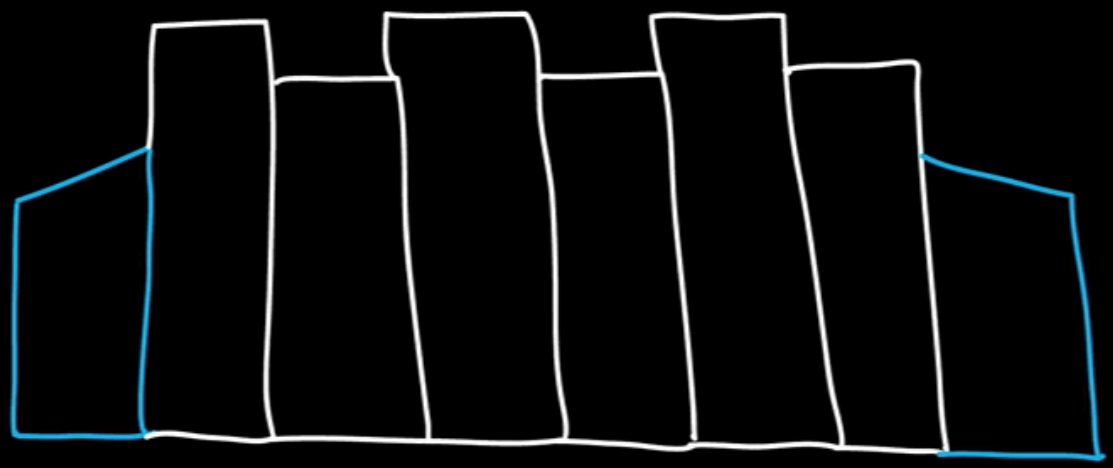
- **Media can:**
  - Introduce and guide main concepts
  - Generate interest in a subject
  - Reinforce confusing or complex ideas
  - Frame overarching themes
  - Set the stage for an activity
  - Curate a particular approach for how the learner should explore a topic

Best Practices Course: Media Example



Smith, K. (2000). *Going Deeper: Formal Small-Group Learning in Large Classes*

Best Practices Course: Media Example



Adapted from Smith, K (2000)

Content Licensing

- **Keep in mind licensing laws**
  - What materials developed by others can you use?
  - Will you share your materials—license them—in such a way as others can build upon them (e.g., Creative Commons licensed)

Designing Community

- **"While meaningful learning can happen outside of a community, the overall learning experience usually benefits from community."**
  - Build rapport
  - Encourage interaction with clear expectations

Designing Assessments

- **"Align each assessment with specific learning objectives and course outcomes"**
- **"Diversify assessment types to align learning with particular objectives"**
- **"Create both formative and summative assessments to evaluate the progression of learners throughout your course."**
- **What's different online:**
  - Some assessments can be automatically scored, and can be parameterized

Checklist (1)

Course Introduction

- ☑ The syllabus that was created as a part of your blueprint clearly describes the course and its connection to the overall degree/certification program and to the profession/discipline.
- ☑ There are easy-to-understand instructions for learners about how to get started.
- ☑ It is clear what materials will be used in the course and how they can be accessed.

Learning Objectives & Outcomes

- ☑ The course landing page and syllabus state clear course objectives.
- ☑ The syllabus clearly states what outcomes the learner will achieve after successful completion of the course.
- ☑ The learning outcomes are measurable.
- ☑ The course objectives and outcomes are appropriately designed for the course level.

Checklist (2)

Learning Resources

- ☑ The learning resources support the course objectives.
- ☑ The learning resources are appropriately designed for the level of difficulty of the course.
- ☑ The learning resources are diverse to cater to a range of different learning styles.

Assessment

- ☑ Levels of learner performance are clearly outlined.
- ☑ The assessment measures are aligned with the stated course outcomes.
- ☑ The assessment methods are consistent with activities and learning resources.
- ☑ The assessments fit the appropriate level of difficulty for the course outcomes.

Part 3: Facilitation

Part 3: Facilitation

- **"Learners should be able to absorb the information presented and share their interpretations and knowledge with their peers so that the online environment feels like a collaborative community."**
- **What's different online:**
  - In person, we're adept and reading eye-contact, body language and human gestures—online we have limited opportunities
  - In person, it's easy to ask spontaneous questions—online this requires intentional design

Instructor Presence

- **“Online courses do not replace the instructor”, the instructor’s role “shifts to guiding the learning process, encouraging interaction, and prompting reflection.”**
  - Welcome learners
  - Encourage community
  - Connect with learners
  - Actively participate

Learner Feedback

- Leverage Learner Contributions
  - Encourage, nurture, and recognize
  - Focus the discussion in forums
  - Respond to individual learners
  - Involve learners as co-facilitators
  - Facilitate synchronous events

Time Management

- **Instructor's Perspective:**
  - Can require more time to prepare and teach an online course
  - Time shifts from in-class activities (lecturing) to answering emails, participating in chats / discussion forums (facilitating)
  - Tip: Set expectations on when you'll respond
  - Tip: Engage students in supporting each other
- **Student's Perspective:**
  - Students will spend time understanding the course organization, and interacting with the online resources
  - Tip: Students should formally set aside time to do the course activities

Part 4: Evaluation

- "Evaluation is a critical part of the teaching and learning process. It completes the feedback loop, and helps you determine if the learners have understood the material presented to them. During this phase, you should be assessing the knowledge and skills that were defined in the learning outcomes statements."
- **What's different online:**
  - In person, it's easy to ask spontaneous questions—online this requires intentional design for reflection
  - Technologies allow peers to easily review each others' work

Online Course DESIGN GUIDE

Digital Learning Toolkit

Coming Soon!

http://dltoolkit.mit.edu/

Online Course DESIGN GUIDE

Exploring the Guide

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October 2, 2013

② Are you developing and managing content and curricular materials for re-use?

Managing Content for Re-Use

- Design and manage for the long-term, platforms will come and go
- "Own" your content, separate from the delivery of it
- The time to start is, NOW!

- Experiences: Berkeley, Open University

③ Are you developing content to be modular and tied to learning objectives/concepts?

Modularity & Learning Objectives

- Design learning experiences, and hence content, to be small, modular "chunks"
- Identify learning objectives (outcomes, concepts) for individual "chunks"
- It's really just good instructional design…

- Experiences: Modularity experiments, concept-based tools

③+ Are you prepared to *think different*? Are you *really* thinking about the learning experience?

This is the big opportunity!

Think different!

- Learner control versus institutional mandate
- Smaller "course" length, 4 weeks instead of semester-length?
- Small tools, loosely joined (services-based)

③+ Are you developing formative assessments that are validated and tied to learning objectives/ concepts?

Formative Assessments

- Design formative assessments to allow learners to gauge their understanding/mastery, and interleave with content
  - Be creative; start simple and layer in complexity (psychometrics, IRT, etc.)
- Use the power of computers to create parameterized assessments (problems)

- Examples: Embedded assessment tools

There are probably lots more "simple" questions to ask yourselves…

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