Design Considerations for a Teacher Professional Development MOOC

Hedieh Najafi¹, Stian Haklev¹, Jim Slotta¹, & Rosemary Evans²
¹University of Toronto; ²University of Toronto Schools

Learning with MOOCs II, October 2015
Outline

• INQ101x: Teaching with Technology & Inquiry
• Issues in Teacher Professional Development
• Knowledge Community & Inquiry (KCI)
• KCI in Teacher Education
• INQ101x: Curriculum Design
Teaching With Technology and Inquiry: An Open Course For Teachers

Instructors from the worlds of research and practice engage you in design-oriented collaborative activities focused on STEAM+ learning.

- K-12 teachers
- Research & Practice
- July 2015: Six + Two weeks
- EdX
Teacher Development: Challenges

• Practice oriented content, not suited for online context
• Limited time during school year
• Content highly discipline specific
MOOC for Teacher Development

• Research & practice informed
• Persistent professional community
  – Resource collective
  – Encourage reflective practice
  – Design partnerships
Design Principles
- Distributed cognitive responsibility
- Shared knowledge base
- Technological learning environment

KCI (Slotta, & Najafi, 2013; Tissenbaum, & Slotta, 2015)
KCI Design Components

Community knowledge base

Collaborative knowledge construction

Scaffolded inquiry activities

Emergent themes & community voice

Content expectations & learning goals

Assessable learning outcomes
Curriculum Design

- Community knowledge base
  - Collaborative knowledge construction
  - Emergent themes & community voice
  - Scaffolded inquiry activities
  - Content expectations & learning goals

- Assessable learning outcomes
Curriculum Implementation

- Community knowledge base
- Collaborative knowledge construction
- Scaffolded inquiry activities
- Emergent themes & community voice
- Content expectations & learning goals
- Assessable learning outcomes
Post Implementation

Community knowledge base

- Collaborative knowledge construction
- Scaffolded inquiry activities
- Emergent themes & community voice
- Content expectations & learning goals
- Assessable learning outcomes
KCI & Teacher Education

- Professional knowledge community
  - Persistent knowledge base
    - Lesson design for technology integration
    - Annotation of technology resources
  - Scripted & scaffolded collaboration
    - Peer review & knowledge co-construction
    - Scripted process of creating a lesson design

- Reflective teacher
Follow links below, make your contributions, and build pages with peers.

Syllabus PDF (updated Sept 6, 2014) Lesson Design Assignment PDF (updated Sept 6, 2014)

Course Themes

Week 1 - Introductions
Week 2 - MindTools
Week 3 - Collaboration and Peer Exchange
Week 4 - Distributed and Handheld Devices
Week 5 - Tangible and Embodied Learning
Week 6 - Online teacher Communities
Week 7 - Ethics and Teaching in the Internet Age
Week 8 - Equity and Diversity in the Classroom
Week 9: Final Presentations
Follow links below, make your contributions, and build pages with peers.

Course Themes

Week 1 - Introductions
Week 2 - MindTools
Week 3 - Collaboration and Peer Exchange
Week 4 - Distributed and Handheld Devices
Week 5 - Tangible and Embodied Learning
Week 6 - Online teacher Communities
Week 7 - Ethics and Teaching in the Internet Age
Week 8 - Equity and Diversity in the Classroom
Week 9: Final Presentations
1. Describe the class you are teaching -- either hypothetically or for real.

What age are the students? What demographic? What kind of diversity is present in the classroom? Are there any particular challenges confronting your students, school or community?

- Students are between the age of 12 and 13 years old
- We will be designing this lesson for a grade 7 class of 24 students in a suburban York Region school, within new expanding neighbourhoods
- Our school population has a significant number of ELLs
- Some children with educational accommodations, IEP
- It is ethnically diverse, but demographically similar with respect to socio-economic status, access to technology
- The students in our class will have regular access to mobile devices, notebooks and internet.

2. Describe the major theme of the lesson.

What is the topic area to be addressed? Will the lesson integrate several topic areas?

- This lesson will focus on informational report writing and effective oral communication
- This lesson will also focus on the organization and effective and engaging presentation of research and learning
- This lesson will require students to analyze the effects of human activities on the environment by examining an environmental issue of their choice
- Topic areas: Literacy link with a Geography unit for grade 7: The Five Themes of Geography

3. What are the learning goals of the technology-enhanced lesson?

What do you hope students will gain? What expectations will the lesson address? What technology skills might students develop as a result of the lesson? What lifelong learning skills?

Learning Goals:

- Students will enhance their collaboration skills, peer assessment skills (constructive and specific feedback), and self assessment skills (success criteria). Constructive feedback during Google Docs and Google Forms
- Students will be using technology to compile research and visually present their learning using various platforms
- Students will further their critical thinking skills by learning to recognize authentic sources
- Students will further enhance their oral communication skills
- Students will improve their lifelong learning skills such as: organization, collaboration and independent work

Curriculum Expectations:
INQ101x
Teaching with technology & inquiry
Learning Outcomes

• Research-informed, design-oriented approach to teaching with technology & inquiry

• Important themes in lesson design, enactment, & student learning

• Identify affordances of various technologies for teaching/learning
INQ101x Timeline

Pre-Course: Teachers’ Lounge
- Orientation & community building

Main Course
- Six technology & inquiry themes

Post-Course
- Persistent community knowledge base
Collaboration Configuration

- Register in INQ101x
  - Intro survey
    - Yes: 10 Special Interest Groups
      - Yes: Design Project (opt)
        - Yes: Design Strand
          - Certificate
        - No: Foundation Strand
      - No: General discussions
    - No: Audit/No Cert Watch vids

- Foundation Strand
Teachers’ Lounge: Two Weeks

- Introduction
- Survey
- SIG selection
- Resource sharing
Teachers’ Lounge: Two Weeks

Introduction → Survey → SIG selection → Resource sharing

---

Section 2
STEAM+ sub-categories
Please select any specific sub-categories that describe your teaching

Mathematics
- Algebra
- Geometry
- Statistics & Probability

Tags
Please enter a number of tags to describe your teaching areas. These tags will help us connect you with other people, resources, and groups relevant to your interests.

While you type, you will see suggestions based on what other people with your teaching interests have entered - in this way we hope to build up a "folksonomic" tag cloud.
Teachers’ Lounge: Two Weeks

- Introduction
- Survey
- SIG selection
- Resource sharing

Choose a Special Interest Group (SIG) *

You are currently a member of Secondary Technology Instruction, if you would like to change SIGs, please choose another one below. Note that when you change SIGs, you will be put in a different discussion forum cohort, see different design groups, have access to different resources, etc. Updating the forum settings might take up to a day.

- Please select from this list
- Foreign Languages and English as Second Language
- Elementary English, History and Social Studies
- Informal Learning in Museum and Out-of-School Settings
- Higher Education and Online Learning
- Secondary Science
- Secondary Math
- Secondary English
- Secondary Technology Instruction
- Arts, Media and Design
- Elementary Math, Science and Technology

Submit
Teachers’ Lounge: Two Weeks

**Introduction**

**Survey**

**Resource sharing**

ADD RESOURCES TO YOUR SIG (EXTERNAL RESOURCE) (10.0 points possible)

These resources will be available to other students, and design groups. So the more contextual information you provide, the easier it will be for us to send it to the right people.

Items with red stars are required.

**Name of resource** *

If you see in the autocompletion that the resource has already been submitted, it will be better to choose another resource. You will get a chance to review and add information to resources submitted by other people later in the process.

**URL** *

**Description** *

What does the resource do, how could it be used for inquiry teaching? Have you used it yourself?

At least 10 more words required

**What kind of a resource is it?** *

- This resource can be used to teach many different subjects (like Pinterest)
- This is a discipline specific resource
Weeks One to Six
Themes

- Week 1: Inquiry and student-centred pedagogy
- Week 2: Designing Activities and Assessments
- Week 3: Collaborative learning
- Week 4: Handheld/mobile devices
- Week 5: Knowledge co-construction
- Week 6: Inquiry Enactment
Generic Weekly Design

Curricular Content

Scaffolded Collaboration

Shared Knowledge Base

Reflection
Curricular Content

• Videos, Research, Practice, Classroom Implementation

Scaffolded Collaboration

Shared Knowledge Base

Reflection
Curricular Content
• Videos, Research, Practice, Classroom Implementation

Scaffolded Collaboration

Reflection
Curricular Content

Scaffolded Collaboration
- Resource sharing/review
- (Design Strand) Lesson design
- Lesson design critique
- Prompted SIG discussions

Shared Knowledge Base

Reflection
Lesson Design: Week 2-6

Idea brainstorm: Large group

Design brainstorm: Small group

Iterative lesson design & improvement

Weekly Community Feedback

Last week, the design teams worked on defining their basic learning goals, topics, possible technologies and approaches - and we gave them feedback. Now, we would like to help them think about collaboration. How are their lessons helping students interact with peers and discuss ideas? What advice or concerns do you have for this team? How could they add greater levels of productive peer interaction into their lesson?
Lesson Design: Week 2-6

Idea brainstorm: Large group

Propose your lesson idea
Topics to be addressed:
- some examples: gravity, tables and their fall, walking and the problem of wearing wellies, composition: artistic elements or Canadian history.
- Short description of basic inquiry approach:
- At least 20 more words required!
- how can technology help students build their own ideas and collaborate with peers?

Design brainstorm: Small group

Iterative lesson design & improvement

Gallery walk

Please select a group on the left to view their design project, and leave at least one comment to get graded
Curricular Content

Scaffolded Collaboration
- Resource sharing/review
- (Design Strand) Lesson design
- Lesson design critique
- Prompted SIG discussions

Shared Knowledge Base

Reflection
Let's talk about integrating inquiry into our courses. How much class time do you think you could give to an inquiry project? Is that enough to make a difference in student learning?

**The time.**
Discussion posted 23 days ago

Basically, for an inquiry class, the teacher must be in charge and in control, all the time. It has to be previously prepared concerning the...
This post is visible only to 6.

**Integrating inquiry into writing course at my College**
Discussion posted 25 days ago

The idea of inquiry learning seems effective on the part of students. Therefore, it would be better if we could integrate inquiry method to our...
This post is visible only to 6.
Reflection

• Weekly personal reflection questions
Curricular Content

Scaffolded Collaboration

Shared Knowledge Base
- Lesson design repository
- Annotated resource collective

Reflection
LTI: EXPLORE RESOURCES (EXTERNAL RESOURCE)

**tag: college**

Back to tag cloud

---

VetPrep, VetTechPrep, OptoPrep, and HyperPrep offer test prep for students in higher ed seeking financial aid. I have not used them. PrepScholar (SAT prep) is one that I will be signing my son up for soon.

---

The information society / The knowledge society

How important is it in our society to educate these resources talks about teacher duties.

---

TEACHER DUTIES AND RESPONSIBILITIES

The Ontario Association for Mathematics Education

This is a game of jeopardy developed by the university of Pittsburg.
INQ101x: Post Course

- Material shared on a public wiki
- Ways for the knowledge community to live on
- Next: Technological design and implementation