

# UBC edX Project Overview



# Outline



- Context for the UBC edX Project (5 mins)
  - Angela Redish, Vice Provost
- EdX Overview (25 mins)
  - Melanie MacFarlane, edX
- UBC edX Overview (25 mins)
  - Gregor Kiczales, Professor
- Questions (15 mins)



# UBC Flexible Learning

- For instructors, it means using evidence-based, technology-rich teaching methods to improve student learning and engagement.
- For students, it means more choice, access and success.
- For UBC, it's a strategic priority.



# FLEXIBLE LEARNING STRATEGIC PRIORITIES

Priority	Description
1. <i>Transformed teaching and learning</i>	<i>Greater integration of learning research and technology to improve student success.</i>
2. <i>Expanded continuing and professional education</i>	<i>New / expanded programs to create a learning continuum at UBC, with particular focus on practitioners.</i>
3. <i>Improved student experience</i>	<i>Strengthening UBC student experience within and beyond the classroom.</i>
4. <i>Enhanced personalization</i>	<i>Students will increasingly be able to customize their learning experience to meet short and long term educational goals.</i>
5. <i>Extended bridging programs</i>	<i>New programs to engage high-performing domestic and international high school students.</i>
6. <i>Strengthened academic partnerships</i>	<i>Expand and enhance academic programs by collaborating with peer institutions at home and around the globe.</i>

# What is edX?



3.3 million global learners & 10 million course enrolments  
400+ open courses,  
100+ blended courses at 25 institutions  
44 high school courses (155k enrolments)  
PE courses coming online

research  
projects,  
conferences,  
content...

## Open Source LMS

Code contributions from MIT, Harvard, Stanford,  
Google, Queensland, Tsinghua... and now UBC

[edx.org](http://edx.org)

Hosted installation for open  
enrolment courses – MOOCs,  
PE, High-school...

[edge.edx.org](http://edge.edx.org)

Hosted installation for small  
private online courses (SPOCs)  
like UBC credit courses

x Contributing Charter Members (including UBC)  
+ 38 Charter Members  
+ 28 Members



# FLEXIBLE LEARNING STRATEGIC PRIORITIES

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<i>6. Strengthened academic partnerships</i>	<i>Expand and enhance academic programs by collaborating with peer institutions at home and around the globe.</i>

# Presentation by Melanie MacFarlane, EdX



# Outline



- UBC edX project structure
- 3 kinds of use
- Results so far
- Plans going forward





# UBC EdX Project Structure

- UBC EdX Project — All edX related UBC activity
  - UBCx — UBC's presence on [edX.org](https://edX.org)
  - internal use of edX — on [edge.edX.org](https://edge.edX.org)
- Governance
  - Flexible Learning Leadership Team
  - Flexible Learning Implementation Team
- Project lead: Gregor Kiczales
  - Supported by Simon Bates and CTLT



# 3 kinds of projects

MOOCs

PE courses

large multi-skill teams  
faculty, course design, technical support,  
videography, marketing...

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TLEF & Selected Other Projects

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Do It Yourself Projects

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VERIFIED 

UBCx  
IndEdu200x

**Reconciliation Through  
Indigenous Education**

Current  
January 27, 2015





VERIFIED 

UBCx  
Forest222x

**Forests and Livelihoods in  
Developing Countries**

Archived  
January 6, 2015





VERIFIED 

UBCx  
Water201x

**Blue is the New Green**

Archived  
October 22, 2014



VERIFIED 

UBCx  
China300x

**Chinese Thought: Ancient  
Wisdom Meets Modern Science**

Archived  
October 14, 2014

- 4 edX MOOCs have run so far
- 1 is about to re-run
- 4 Coursera MOOCs are being ported
  - to become 6 edX MOOCs
  - Climate Literacy 1
  - Useful Genetics 1-2
  - Systematic Program Design 1-3



# MOOC & PE Processes Going Forward

- MOOCs
  - expect an open call late spring / summer
  - ~ 2 courses
  - probable focus on strengthening portfolio
  - units can propose other unit funded MOOCs
- Professional Education
  - typically associated w/ expanding CPE efforts
  - funded by unit (3 of 5 so far) or CPE team in Provost's office
  - key criteria include competitive strength and ability to execute quickly



# Research Goals

- Learn about our MOOCs and PE courses and their efficacy
- Develop reusable tools and frameworks
- Identify data-driven design guidelines to produce better courseware for public and on campus courses
- Contribute to the growing global research community.



L@S 2015

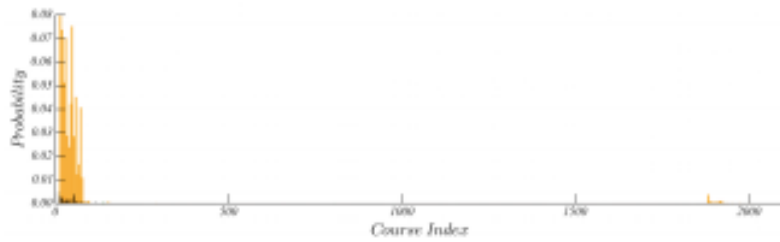
Learning at Scale

Vancouver, BC, March 14-15, 2015



a place of mind

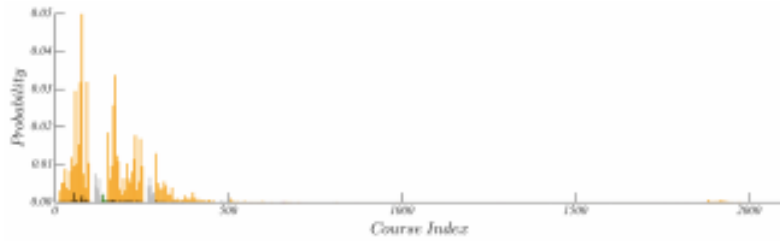
THE UNIVERSITY OF BRITISH COLUMBIA



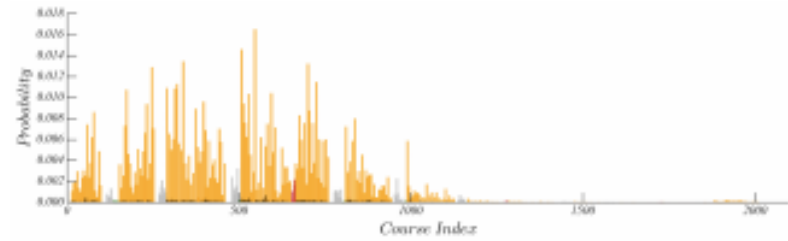
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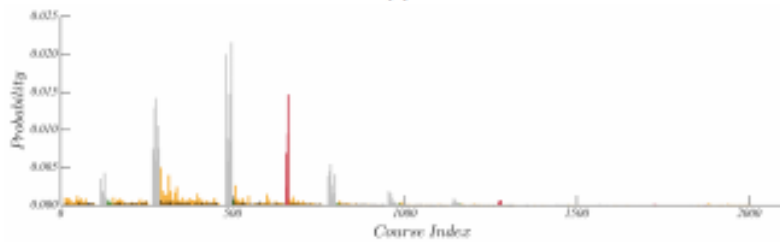
(b)



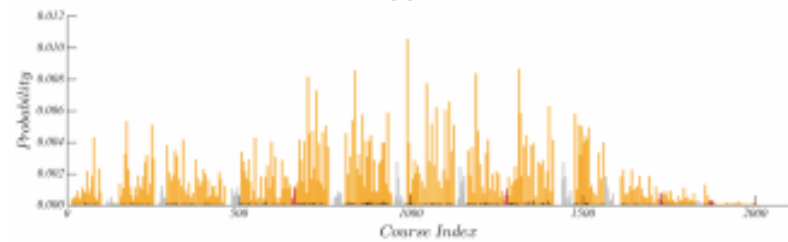
(c)



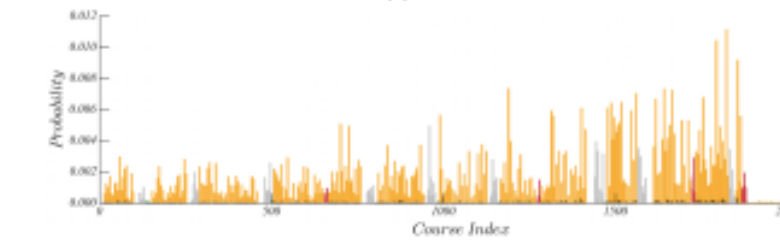
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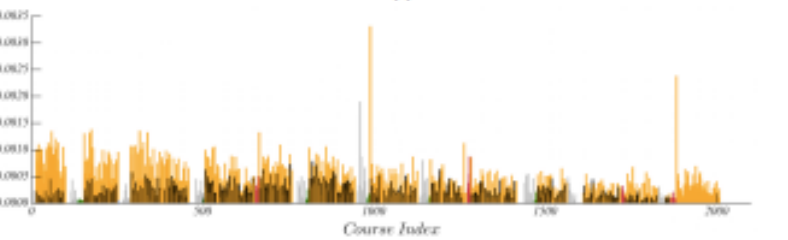
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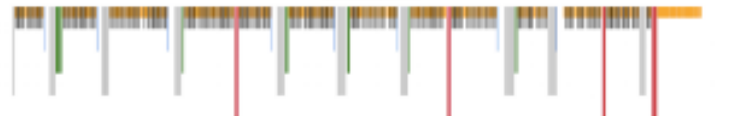
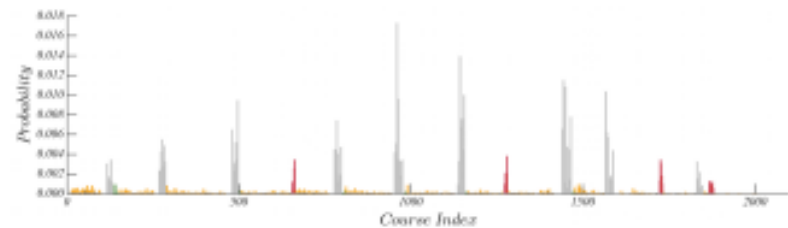
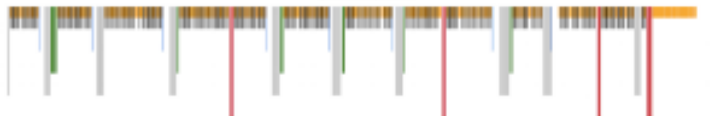
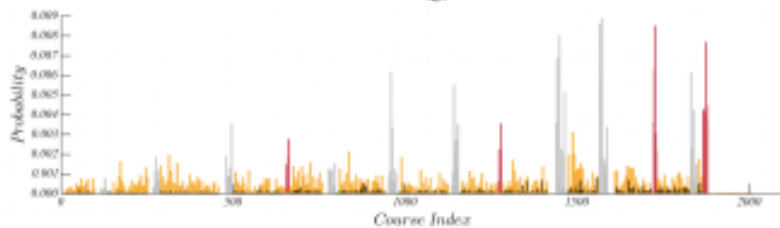
(f)



(g)



(h)



# UBC EdX Research Projects

- Social Network Analysis of MOOC Forums
  - Leah Macfadyen (Arts ISIT), Caroline Haythornthwaite (SLAIS), Drew Paulin (Sauder), & Karen Bakker (Geography).  
Initial context: Water201x.
  - Content and social network analysis to identify patterns of social interaction and cohort formation.
  - Identify markers of learning and relationship with design elements.
- Operationalizing Productive Engagement in MOOCs
  - Led by Heather O’Brien (SLAIS), Ido Roll (CTLT), and Joleen Timko (Forestry). Initial context: Forest222x.
  - Operationalize “engagement”, moving beyond completion rates and quiz scores to a more holistic understanding of learning experiences and outcomes.
  - Develop a framework for measuring learner engagement, understand how different student populations learn and benefit from MOOCs, and identify design elements that contribute to learner engagement.





# 3 kinds of projects

MOOCs

PE courses

TLEF & Selected Other Projects

Do It Yourself Projects



# Development Work

- Authentication and Integration
  - Development of edX as LTI tool provider
    - with Harvard, University of Queensland and EdX
    - demo MVP version - approx March 31
    - production MVP version (Edge / EdX) - June 30
  - SAML 2.0 Authentication plugin
    - contributing to MVP requirements
    - production Beta (Edge) - June 30
- Peer Instruction Application development:
  - peer instruction XBlock
  - demo MVP version - May 29
  - production - July 31?
- Adaptive Comparative Judgement Tool
  - development of LTI tool consumer functionality
  - production - July 31?
- Support for course production development and infrastructure requirements
  - Researching functionality and roadmap changes
  - Establishing supporting infrastructure - e.g. Analytics framework
  - Investigating community products that may be relevant to specific requirements : Xblocks / integrations
  - Low hanging fruit development / contribution to third party products



# 3 kinds of projects

MOOCs

PE courses

TLEF & Selected Other Projects

Do It Yourself Projects



View this course as: Staff**Courseware**

Course Info

Design Recipes

Language

Problem Bank

Glossary

Style Rules

Discussion

Progress

Instructor

[Introduction](#)[Beginning Student Language](#)[How to Design Functions](#)**Module Overview****Full Speed HtDF Recipe****Slow Motion HtDF Recipe****A Simple Practice Example****When Tests are Incorrect****Varying Recipe Order****Poorly Formed Problems****Practice Problems****Quiz**[How to Design Data](#)[How to Design Worlds](#)[VIEW UNIT IN STUDIO](#)

## HOW TO DESIGN FUNCTIONS

This module is where this course starts to differ from other introductory programming courses - we are going to start learning the design method, and this should be new material even for people who have programmed before. We repeat the advice that this is material you learn by doing: for each video you should download the starter file and type along with the video. Or you can pause the video occasionally and try to work ahead, then restart the video and compare what you did to what happened in the video.

### Learning Goals

- Be able to use the How to Design Functions (HtDF) recipe to design functions that operate on primitive data.
- Be able to read a complete function design and identify its different elements.
- Be able to evaluate the different elements for clarity, simplicity and consistency with each other.
- Be able to evaluate the entire design for how well it solves the given problem.

### Hints About this Material

At first the HtDF recipe may either seem like overkill, or seem overwhelming. You may suspect that these

View this course as: Staff

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  - Full Speed HtDF Recipe
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sections (aka modules)

sub-sections

VIEW UNIT IN STUDIO

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# overview for this module

Introduction

Beginning Student Language

How to Design Functions

**Module Overview**

Full Speed HtDF Recipe

Slow Motion HtDF Recipe

A Simple Practice Example

When Tests are Incorrect

Varying Recipe Order

Poorly Formed Problems

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Quiz

How to Design Data

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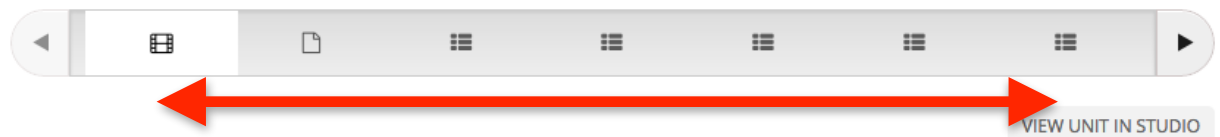
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- ====BREAK====



A slower presentation and discussion of the **units** How to Design Functions Recipe (HtDF recipe).

NOTE: Be sure to watch the BSL - Using the Stepper lecture before you watch this one.

The starter file for this video is

STAFF DEBUG INFO

```
PROBLEM:  
Design a function that consumes a number and produces twice that number.  
Call your function double. Follow the HtDF recipe and show the stub and  
template.  
  
;; Number -> Number  
;; produce 2 times the given number  
(check-expect (double 3) 6)  
(check-expect (double 4.2) 8.4)  
  
(define (double n) 0) ;this is the stub
```

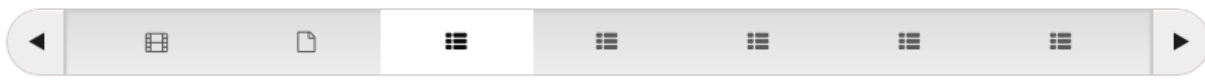
How to Design Functions (HtDF)  
To design a single function,  
Signature, purpose, stub  
Examples (wrapped in check-expect)  
Inventory - template & constants



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VIEW UNIT IN STUDIO

SIGNATURE (1 point possible)

**Problem:** Design a function that pluralizes a given word. (Pluralize means to convert the word to its plural form.) For simplicity you may assume that just adding s is enough to pluralize a word.

What is an appropriate signature for this function? Leave out the two semi-colons and the space, but otherwise be sure to get the capitalization and all other aspects of the signature correct.

Check Show Answer

SUBMISSION HISTORY STAFF DEBUG INFO





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VIEW UNIT IN STUDIO

PURPOSE (1 point possible)

**Problem:** Design a function that pluralizes a given word. (Pluralize means to convert the word to its plural form.) For simplicity you may assume that just adding s is enough to pluralize a word.

Continuing with the given problem, we now have a signature.

The following questions work through the HtDF design process for a given design problem. Each question builds on the answer to the prior question, so it is important to do all questions in order.

```
;; String -> String
```

Which of the following purpose statements is best?

- ;; Consume a string and produce a string.
- ;; Add "s". **X**
- ;; Produce the given string with "s" added to the end.

# Course elements

- Content types:
  - text, html
  - video
  - discussion forums
    - (per topic thread buttons)
- Question types:
  - multiple choice, checkbox, dropdown
  - text input, numerical input, math expr input
  - poll, word cloud
  - image mapped, drag and drop
  - molecule editor, circuit editor
  - external grader
  - peer graded problems
  - ...



# 3 kinds of projects

MOOCs

PE courses

TLEF & Selected Other Projects






range of edX use (whole course to one module)  
concierge level edX support

Do It Yourself Projects



# The Boundary Isn't Always Obvious

Editing: Multiple Choice EDITOR SETTINGS

H1   ABC 123   Advanced Editor 

A multiple choice problem presents radio buttons for student input. Students can only select a single option presented. Multiple Choice questions have been the subject of many areas of research due to the early invention and adoption of bubble sheets.

One of the main elements that goes into a good multiple choice question is the existence of good distractors. That is, each of the alternate responses presented to the student should be the result of a plausible mistake that a student might make.

>>What Apple device competed with the portable CD player?<<

- The iPad
- Napster
- The iPod
- The vegetable peeler

[explanation]  
The release of the iPod allowed consumers to carry their entire music library with them in a format that did not rely on fragile and energy-intensive spinning disks.  
[explanation]

Save Cancel

Simple multiple choice problem

# The Boundary Isn't Always Obvious

```
Editing: Purpose EDITOR SETTINGS
1 <problem>
2
3 <div style="border:1px solid #38B4EB; padding:10px; margin: 10px;">
4 <b>Problem:</b> Design a function that pluralizes a given word. (Pluralize means to
convert the word
5 to its plural form.) For simplicity you may assume that just adding s is enough to
pluralize a word.
6 </div>
7
8 <p>Continuing with the given problem, we now have a signature.</p>
9 <p>
10 The following questions work through the HtDF design process for a given design problem. Each
question
11 builds on the answer to the prior question, so it is important to do all questions in order.
12 </p>
13
14
15 <pre>; String -> String</pre>
16 <p></p>
17 <p>Which of the following purpose statements is best?</p>
18
19 <multiplechoiceresponse>
```

Save Cancel

with quite complex question formatting



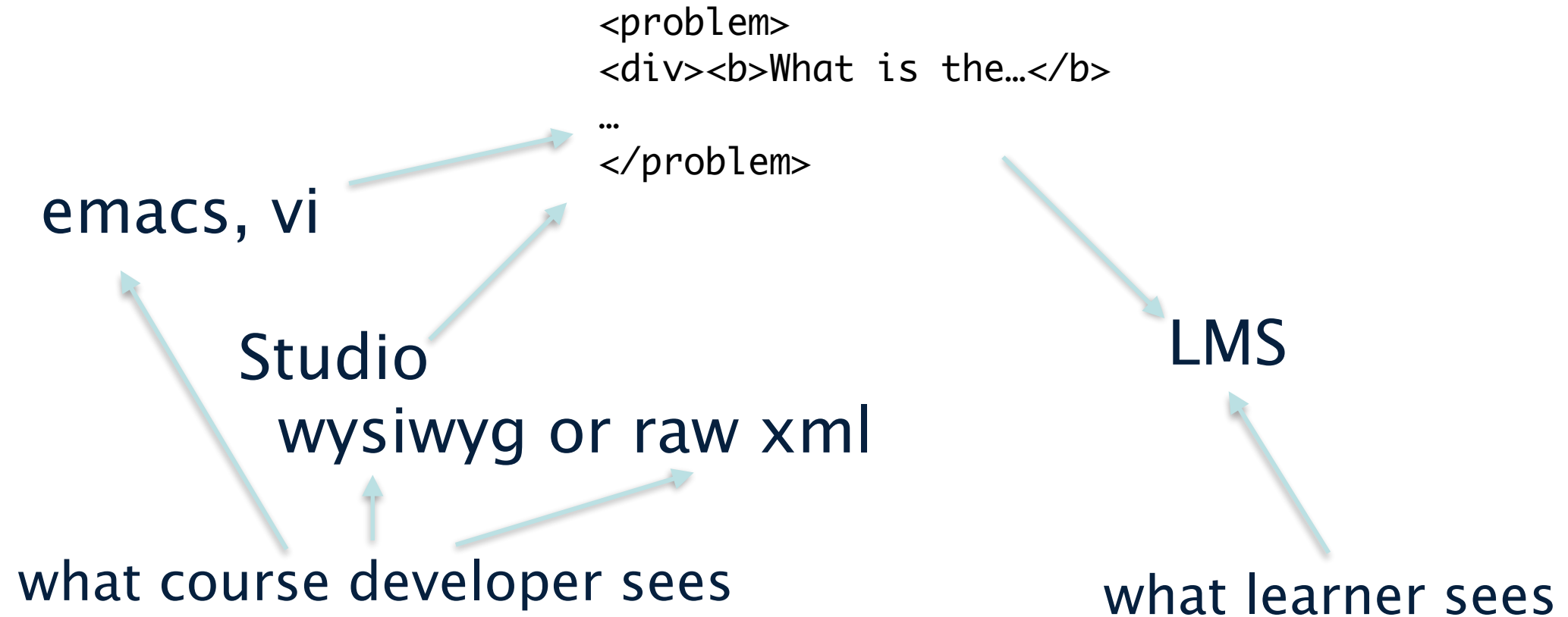
# The Boundary Isn't Always Obvious

```
Editing: M1-Q1A EDITOR SETTINGS
1 <problem>
2   <p>(A) Electricity driven pumping of groundwater for irrigation, in a region with depleting
   groundwater resources</p>
3   <multiplechoiceresponse targeted-feedback="">
4     <choicegroup type="MultipleChoice">
5       <choice correct="true" explanation-id="correct">Negative Synergy</choice>
6       <choice correct="false" explanation-id="feedback1">Positive Synergy</choice>
7       <choice correct="false" explanation-id="feedback2">Trade-off</choice>
8     </choicegroup>
9   </multiplechoiceresponse>
10  <solution explanation-id="correct">
11    <div class="detailed-solution">
12      <p>The section on global agricultural production on p9 highlights that groundwater is a finite
      resource, and that overextraction of groundwater has negative impacts on the groundwater supply
      sector and groundwater ecosystems. Given the increasing amount of electricity required to extract
      and treat depleting groundwater resources, the energy sector will also experience increased
      pressure. </p>
13    </div>
14  </solution>
15  <targetedfeedbackset>
16    <targetedfeedback explanation-id="feedback1">
17      <div class="detailed-targeted-feedback">
```

Save Cancel

with per-response feedback

# EdX Internal Architecture



- order of new feature development
1. information model (XML)
  2. learner interaction (LMS)
  3. staff development



# Next 18 Months

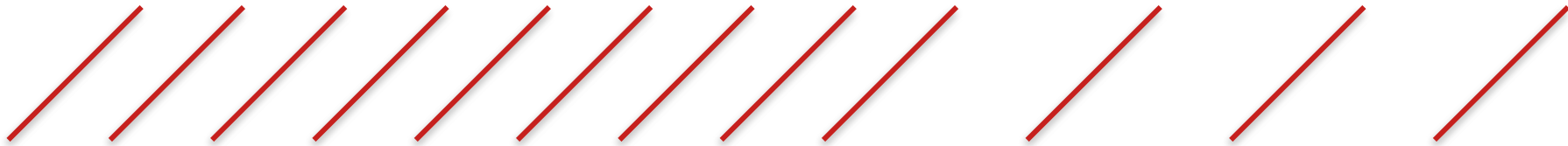
MOOCs  
PE courses

- limited on campus edX support
- will ramp up over this time
- limits projects to 3 categories
- and a “no-go” zone

## TLEF & Selected Other Projects

range of edX use (whole course to one module)  
concierge level edX support

about 15



## Do It Yourself Projects

drop in support





# Next 12-18 months

- Open call for MOOCs (~ 2 funded)
- PE proposals possible
  - unit CPE effort and [flexible.learning@ubc.ca](mailto:flexible.learning@ubc.ca)
- ~15 concierge level support credit course projects
  - nearly all TLEF funded
- Ask for consult for DIY+ projects
  - we can help determine which side of line
  - [flexible.learning@ubc.ca](mailto:flexible.learning@ubc.ca)
- Beyond that, expect evolving LTES edX integration.



<http://flexible.learning.ubc.ca/about-edx-edge/>

About edX Edge

edX Edge Shell Request >

## About edX Edge

[Overview](#)

[Features](#)

[Tour](#)

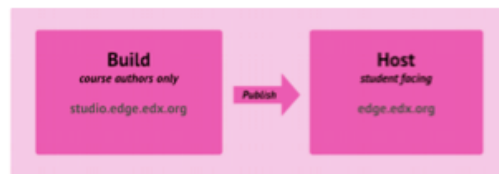
[5 Questions Answered](#)

[Resources](#)

### Overview

UBC is adding edX to the "evolving ecosystem of learning technology platforms, tools and applications on campus" (see [UBC edX Partnership](#)). This will provide the edX.org platform for new UBC MOOCs. It also supports a platform called Edge that can be used for regular UBC courses. Edge can be used to provide a blended learning experience for campus-based courses, it can also be used to support UBC online and distance courses. Both edX and Edge provide a course authoring tool called Studio. The Studio tools make it possible to use drag and drop functionality to help you build your course.

Both edX.org and edge.edx.org run the open source edx platform, so the two systems provide the same functionality, the only differences are in terms of special MOOC support on edx.org. So the open source community that is contributing to the evolution of edX.org is also contributing to the evolution of the system we are able to use at UBC. In fact, like UBC, most of the edX partners are more focused on using edX for their on-campus courses than their MOOCs.



source: [http://wiki.ubc.ca/Documentation:Learning\\_Platforms/EdX\\_edge/Overview](http://wiki.ubc.ca/Documentation:Learning_Platforms/EdX_edge/Overview)

to get an edX shell to play with



a place of mind

THE UNIVERSITY OF BRITISH COLUMBIA