150K+ students per class: MOOCs, students, & learning

How to understand what’s happening in online learning

Daniel M. Russell, Google

July, 2014
“You can observe a lot just by watching.”

Yogi Berra
10 bits / semester

192k bits / second
The evolution of asking questions...

A story about what you can ask...
The crowd chants wildly along with a piece of music. Unfortunately, there are no words. How do you find the music?
How do you search for something like this?
What can you **query / ask** about?

My son didn’t know that  
[ oh oh oh oh ] was a crazy query

**Diagnosis:** I was *functionally fixated*

He was lucky…

… and now it’s a strategy:  
*look for texts of other people with the same question*
Finding text on a page

- Fundamental online reading skill
  - Control-F / CMD-F / Edit>Find>

- Lets you find a piece of text in an online document very quickly
• Find how long Beth Assuange took to run this race.
Study: How many people know Control-F?

• Survey of 2,225 US-English internet users:
  • 90.5% do **NOT** know how to “find” on a page

• Survey of 545 US-English internet using teachers:
  • 51.1% do **NOT** know how to “find” on a page

• Analysis of over 50K Firefox users (worldwide):
  • 93% have **NEVER** used the “find” command on a page
<table>
<thead>
<tr>
<th>Course</th>
<th>When</th>
<th>Registered</th>
<th>Did-something rate (students**)</th>
<th>Satisfaction (1-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Searching v1</td>
<td>July '12</td>
<td>154k</td>
<td>54%</td>
<td>4.43</td>
</tr>
<tr>
<td>Power Searching v2</td>
<td>Sept. '12</td>
<td>124k</td>
<td>65%</td>
<td>4.51</td>
</tr>
<tr>
<td>Advanced Power Searching</td>
<td>Jan. '13</td>
<td>38k</td>
<td>42%</td>
<td>4.57*</td>
</tr>
<tr>
<td>ping with Google</td>
<td>June '13</td>
<td>41k</td>
<td>24%</td>
<td>4.51*</td>
</tr>
<tr>
<td>YouTube Creator Academy</td>
<td>June '13</td>
<td>40k</td>
<td>45%</td>
<td>4.40*</td>
</tr>
<tr>
<td>Analytics Academy</td>
<td>Sept. '13</td>
<td>147k</td>
<td>33%</td>
<td>4.19*</td>
</tr>
<tr>
<td>Web Accessibility</td>
<td>Sept. '13</td>
<td>5k</td>
<td>19%</td>
<td>4.40*</td>
</tr>
</tbody>
</table>

*Based on survey sent to course completers.
**Did something in the course besides register.
“Books will soon be obsolete in the public schools.”
– Thomas A. Edison (1913)
Nothing new here, move along...

A long time ago in a university far, far away...

University of Illinois (1960s)

PLATO

forums, message boards, online testing, e-mail, chat rooms, picture languages, instant messaging, remote screen sharing, multi-player games
Expectations

• **Analytics**: the world debugs your course

• **Near-realtime feedback** loops for adaptive & personalized learning

• **Pervasive formative assessments**

• **Higher leverage of instructor’s time**
  (Bowen 2012, Buckminster Fuller 1971)

• **Massive scale**

• **Low cost / student**

• **We can change the world**
#1: Our first MOOC

July 2012
Power Searching #1:  Needs & Goals

• **Needs:**
  • search is easy to use, but many searchers don’t take full advantage of the possibilities
  • communicate what’s possible to do in search, while keeping the messages of simplicity and sophistication in balance

• **Goals:**
  • **teach** > 20K students how to be better searchers
  • **objective measure:** improve performance by 33% (as measured by standard test)
Our MOOC: Power Searching with Google

Power Searching with Google

Google Search makes it amazingly easy to find information. Come learn about the powerful advanced tools we provide to help you find just the right information when the stakes are high.

Daniel Russell
Senior Research Scientist
Google, Inc.

Schedule

Class 1 - Introduction
Class 2 - Interpreting results
Class 3 - Advanced techniques
Class 4 - Find facts faster
Class 5 - Checking your facts
Our MOOC: Power Searching with Google

- Deliver high quality educational experience to a very large number of students
- Short amount of learning time (6 hours / 2 weeks / ~10 hours total)
- Semi-synchronous
Activities: 1 – 3 per lesson

Class 4 - Find facts faster

Lesson 4.4 Activity

Search Tips:
- Limit results to sources published during a specific time period by clicking on Search Tools in the left panel, then selecting the appropriate time range.
- Time filters are available in Web Search, Books, Images, News, Videos, Blogs, Discussions, and Patents. Sometimes, in News, you may need to click on the 'Archives' link under the time filters on the left to access the Custom Range option.
- This feature is not available on tablet browsers.

Try this activity to test your ability to restrict time of document publication.

In 1883, a volcano on the island of Krakatau in Indonesia erupted. The dust from this massive volcano affected weather as far away as the United States. The volcano has recently become active again. Using the query [krakatoa volcano] and the time filter, identify the following pieces of information.

1. Which of these newspaper articles was published in 1883? Remember to search for [krakatoa volcano] and use time filtering.
- [Volcano Mystery Solved]
- [Venus has Volcanic Character]
- [The Volcano Heard Around the World]
- [Java's Canopy of Fire: A Volcano's First Effort]
Class 2 - Interpreting results

Lesson 2.5 Activity

Search Tips:
- In the left panel of the search results page, you can filter results by different categories.
- These categories include blogs, discussions, recipes, patents, books, 3D models, scholarly sources, and legal documents.
- The left panel does not appear on tablet computers (iPads and Android devices).

In the video, Dan explored results in different media for the word [cats]. What do you love? Compare the information you find by searching for a topic of your choice and clicking on all the different media options.

Share the most interesting thing you find in the forum.
Semi-synchronous waves? A best practice?

• Class 1 released Tues July 10
• Class 2 released Wed July 11
• ... etc ...
• Final exam due Mon, July 23, 2012
Typical xMOOC design style

- **Design challenge**—convert existing conventional lecture and exercise content into MOOC style

- **Our MOOC:**
  - 32 lessons
  - 4 hours of content
  - 2 hours of exercise
What we did... how we did it...

<table>
<thead>
<tr>
<th>May</th>
<th>June</th>
<th>July</th>
</tr>
</thead>
<tbody>
<tr>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
<td>S M T W T F S</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7 8 9 10 11 12 13</td>
<td>1 2 3 4 5 6 7 8 9 10 11</td>
<td>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31</td>
</tr>
</tbody>
</table>

- **Team formed**: May 14
- **Version 0**: 6 weeks later (June 18)
- **Registration opens**: June 25
- **Testing**: week 7, 8
- **Deliver**: week 9 and 10 (July 10-19; final due July 23)

Week 1: team organization
Week 2,3: design; specs; mocks
Week 4,5: coding; content dev
Week 6,7: V0; recode; usability test
Week 8: usability testing; iterate
Week 9,10: deliver course
• Find errors & irritants:
  
  • ... basic usability
  
  • Flow
  
  • Writing
  
  • Concepts
Design challenge 1: Software

• **Target:** develop MOOC application that will scale to potentially 100K simultaneous users

• **Requirements:**
  
  • clean visual design that works across all browsers
  
  • simple-to-use / internationalizable
  
  • use YouTube video; Google Groups
  
  • deliver content testing, validation, recording of exams
Design challenge 2: Restructure content

- **Prerequisite:** use pre-existing content
- **Target:** convert into MOOC style small elements
- **Task:**
  - creating MOOC content isn’t just dividing up long lectures into short ones...
  - each media type/genre has its own design
  - MOOC units must stand on their own... yet...
  - ... work into longer arc that feeds into large goals
Design challenge 3: Design a community

- **Prerequisite:** use existing Google social tools

- **Target:** smoothly functioning social tools to support potentially large (20 – 200K) population

- **Design:**
  - create one Group / lesson topic
  - add content to drive community use of Groups
  - setup community of TAs to provide 24/7 support
  - moderate groups so questions are answered quickly
What did we not expect?

• **Community effect:** lots of students helped out by answering questions
  - 33% of finishers joined in the forums
  - 7% of all students posted in the forums
  - A significant number of questions posted to forums were answered by students in the class

• **International issues:**
  - Imperial measures ≠ US measures
  - Language issues
How do you know when you’re succeeding?
People care enough to steal it

http://www.punchapaadam.com/forums/topic/93846-google-power-search-online-certification-course-q-a-incl-full-course/

Q: Where will the Summer Olympics of 2016 be held?
A: Rio de Janeiro

Q: You want to find some information on the Olympics from the United States State Department’s web address is. So, you search for it, and get this result:
A: Search within the State Department website for a specific term.

Q: How do you remove the time filter from your search?
A: Click on the small blue X on the right-hand end of the blue stripe.

Q: What category of media is represented here?
A: Discussions

Q: What search would you do to find out how to apply for volunteer opportunities through the official site for the 2016 Rio Olympics? It would get you results similar to those of:
A: [site:rio2016.com OR site:olympic.org]

Q: You wrote that great search, but found pages about people on the Olympic Committee get in the way of your search. What do you add to the query [volunteer apply] to tell Google to exclude Committee?
A: [“olympic committee”]

Q: You decide to follow the official site for the 2016 Rio Olympics in Portuguese, too?
A: "Vaquejário"
Amount of improvement: preclass to postclass tests

N = 22,391 course completers

mean improvement: 40.1%
• ~7 years of post-class YT video watching!
Learning communities

- **Hangout On Air:**
  - live narrowcast to class; recorded for out-of-time-zone students
  - Google Moderator used to collect and vote on questions from students (15K votes on 647 questions)
  - 40% of all students used a HOA
    (43% found it very helpful; 50% somewhat)
Patterns of attendance 1

- **2.8M** unique page views on site
- Avg time on page: **3:40**
- Total YouTube videos served: **87,630** hours
  (i.e., 10 person-years of video served)
Patterns of attendance 2

- 39% falloff between initial sign-ups and first class attendance
- ~6% decline / class
- Interesting 3% uptick at the first lesson of each class on all classes
- We later found out that this pattern is standard for all MOOCs
For MOOC #1 (July, 2013)...

- **154K** registrations
- **114K (74%)** attended first lesson
- **19% FCCR** (First-course-to-completion ratio)
- **22K** students completed course
- **4.5** Net Promoter Score (out of 5)
- **98%** of survey respondents said they would recommend this course to friends (n=19.8K)
- **40%** mean improvement in performance score between pre-class test and final
Community learning

Posts to forums by class

- July 13:
  - Class 1: 1601
  - Class 2: 1149
  - Class 3: 259

- July 17:
  - Class 1: 1649
  - Class 2: 1454
  - Class 3: 441

- July 20:
  - Class 1: 1649
  - Class 2: 1454
  - Class 3: 460

- July 23:
  - Class 1: 1841
  - Class 2: 1959
  - Class 3: 105

Legend:
- # Posts - Class 1
- # Posts - Class 2
- # Posts - Class 3
- # Posts - Class 4
- # Posts - Class 5
- # Posts - Class 6
Large cohort means rapid replies / diversity of approaches
I can not understand the challenge certificate predominantly that allow me to solve the problem. The two challenges please help @ Tasha.

Option 1:
This famous scrapbook enthusiast and patent-holder's first patent was issued the same year that he published his fake autobiography. According to that eponymous autobiography, what is the name of his earliest known ancestor?

Option 2:
My daughter recently received an heirloom cup that has been in my family for six generations. I wanted to know more about this cup. Refer to the two images below to solve this challenge. The second image is a magnified drawing of the bottom of the cup.

Add a comment...
M 10:32 AM - Challenges
How can I get my certificate in a pdf format? any help please

Hide comments

Michael 10:39 AM
On printer setting before actually printing change to pdf

M 10:43 AM
But I printed already, any chance to fix it

Michael 10:49 AM +1
Go back in to challenge and do it again. Then when it comes up change the setting. Be sure to change to landscape or portrait.

M 10:52 AM
I did it Michael, Thank you so much for getting back to me.

Michael 11:07 AM
My pleasure.
1. **Expect to iterate** on design and testing of software **AND** content

2. **Count on a community effect** to help run the class

3. **Plan on re-writing / re-designing** the assessments and exercises

4. **Plan for analytics** to track clicks and views of all pages, videos, exercises (etc) to help debug MOOC

5. **Certificates mean a LOT!**
Certificate of Completion

Presented to

Sergey Sorokin

for successfully completing the Advanced Power Searching with Google course in February 2013

Google™
What do we know about our students?

“What’s a URL?”
What we learned...

1. MOOCs as software development practice: with a focus on user testing

2. Surprising power of community effect

3. Hints that FCCR matters, and that “attrition” might not be what we thought it was

4. Still need to validate
#2: Our second MOOC

October 2012
We ran the MOOC again!  (#2)

• Offer the PSWG again in Oct, 2012
However...for this MOOC...

- 154K registrations
- 114K
- 90K (70%) attended first lesson
- 19%
- 36% FCCR (First-course-to-completion ratio)
- 22K
- 24K students completed course
- 4.5
- 4.6 Net Promoter Score (out of 5)
- 98%
- 99% of survey respondents said they would recommend this course to friends (n=9.2K)
- 40%
- 40% mean improvement in performance score between pre-class test and final
Adv search use post-registration to post-class
What we learned...

1. Measuring actual behaviors pre- post-class is tricky (but can be done in some cases)
2. Setting expectations correctly affects completion
3. Fixing bugs in content (issue tracking) affects attrition
#3: Our third MOOC

Advanced PSWG * Feb 2013
We created an ADVANCED PowerSearching MOOC! (#3)

- Challenge-based
- Non-linear org
- Video + text + examples (self-directed)
Challenge 12

What's that bird? 🕵️

You were hiking in the Rio Platano Biosphere Reserve and saw this feather on the ground. You sketched it out so you could identify it later. To what kind of bird did it belong?

Step 1: Explore skills relevant for this challenge.

<table>
<thead>
<tr>
<th>Lessons</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaining an international perspective</td>
<td>What Australian animal?</td>
</tr>
<tr>
<td>Context terms</td>
<td>Out my window</td>
</tr>
<tr>
<td>Using contextually appropriate language</td>
<td>Name that runway</td>
</tr>
<tr>
<td>Specialization and generalization</td>
<td>Videos</td>
</tr>
<tr>
<td>Comparing multiple sources</td>
<td>Texts</td>
</tr>
<tr>
<td>All skills</td>
<td></td>
</tr>
</tbody>
</table>

Quick Reference Guide
Videos on-demand (not placed into the sequence)

Skill Video: Verbatim and Double-quote (3:28)

Verbatim and double quote

Cobble or “cobble”? (a kind of shallow boat)

Google

“cobble” boat

Web Images Maps Shopping More - Search tools

About 370,000 results (0.39 seconds)

Cobble - Wikipedia, the free encyclopedia
en.wikipedia.org/wiki/Cobble

Three cobbles at North Landing, Flamborough Head. Cobble on Filey Cobble Landing. The cobble is a type of open traditional fishing boat which developed on the ...

Cobble & Keelboat Soc. / FrontPage
candks.pbworks.com/

The Cobble and Keelboat Society (CKS) is a social network for people with an interest in preserving and recording the historic maritime culture of North East coast ...

Images for “cobble” boat - Report images

Double-quote the single word, you get exactly that word, no
### Overview

**Right now**

**380**
active visitors on site

- **RETURNING** 63%
- **NEW** 37%

### Top Referrals:

<table>
<thead>
<tr>
<th>Source</th>
<th>Active Visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>lifethacker.com</td>
<td>19</td>
</tr>
<tr>
<td>google.com</td>
<td>13</td>
</tr>
<tr>
<td>habrahabr.ru</td>
<td>11</td>
</tr>
<tr>
<td>t3n.de</td>
<td>4</td>
</tr>
<tr>
<td>support.google.com</td>
<td>3</td>
</tr>
</tbody>
</table>

### Top Active Pages:

<table>
<thead>
<tr>
<th>Active Page</th>
<th>Active Visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>/</td>
<td>37</td>
</tr>
<tr>
<td>/course/aps/challenge?c=1</td>
<td>35</td>
</tr>
<tr>
<td>/course/aps/class?class=1&amp;lesson=1</td>
<td>27</td>
</tr>
<tr>
<td>/course/aps/class?class=1&amp;lesson=4</td>
<td>26</td>
</tr>
<tr>
<td>/course/aps</td>
<td>25</td>
</tr>
<tr>
<td>/course/aps/class?class=1&amp;lesson=3</td>
<td>25</td>
</tr>
<tr>
<td>/course/ps/course.html</td>
<td>20</td>
</tr>
<tr>
<td>/course/aps/introchallenge</td>
<td>18</td>
</tr>
<tr>
<td>/course/ps/lesson01.html</td>
<td>17</td>
</tr>
<tr>
<td>/course/aps/class?class=1&amp;lesson=2</td>
<td>13</td>
</tr>
</tbody>
</table>

### Top Social Traffic:

<table>
<thead>
<tr>
<th>Source</th>
<th>Active Visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook</td>
<td>18</td>
</tr>
<tr>
<td>Google+</td>
<td>17</td>
</tr>
<tr>
<td>Blogger</td>
<td>11</td>
</tr>
<tr>
<td>Twitter</td>
<td>8</td>
</tr>
<tr>
<td>Digo</td>
<td>1</td>
</tr>
</tbody>
</table>

### Top Locations:
All of the skills modules
Text versions of the lessons offered as well...

**Quotation marks around a single word**

For example, imagine that you want to look for information on **coble boats**. In a typical search, [coble boat], Google may try to spell correct that for you, thinking that you meant C-O-B-B-L-E. If what you really want was coble with just a single B, simply put the word in quotation marks: ["coble" boat].

![Google search results for "coble" boat](image)

*Figure 1: Results for the query ["coble" boat].*

**Verbatim mode**

The other way you can do this is to go to verbatim mode, which has the same effect as putting quotation marks around each word of your query.

Notice that when you turn verbatim mode on, it not only turns off synonymization and spell correction, but also all localized results.
<table>
<thead>
<tr>
<th>Title</th>
<th>Activity Type</th>
<th>Posts</th>
<th>Views</th>
<th>Updated Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>README: How to use this Google Group</td>
<td>Activity</td>
<td>1</td>
<td>46</td>
<td>12/11/12</td>
</tr>
<tr>
<td>Activity: Use the wildcard * operator</td>
<td>Activity</td>
<td>2</td>
<td>29</td>
<td>01/12/13 (6 hours ago)</td>
</tr>
<tr>
<td>The Water Cooler - Where folks gather during breaks</td>
<td>Activity</td>
<td>1</td>
<td>19</td>
<td>01/12/13 (7 hours ago)</td>
</tr>
<tr>
<td>Activity: Explore Google Trends</td>
<td>Activity</td>
<td>1</td>
<td>9</td>
<td>01/12/13</td>
</tr>
<tr>
<td>Activity: Set up Google alerts</td>
<td>Activity</td>
<td>1</td>
<td>8</td>
<td>01/12/13</td>
</tr>
<tr>
<td>Activity: Create a custom search engine</td>
<td>Activity</td>
<td>1</td>
<td>7</td>
<td>01/12/13</td>
</tr>
<tr>
<td>Activity: Compare multiple sources</td>
<td>Activity</td>
<td>1</td>
<td>4</td>
<td>01/12/13</td>
</tr>
<tr>
<td>Activity: Apply specialization and generalization to queries</td>
<td>Activity</td>
<td>1</td>
<td></td>
<td>01/12/13</td>
</tr>
</tbody>
</table>
Video vs. Text: Access of the course content
When sorted by total number of hits...
When sorted by total number of hits...

Distance from top of content
## First 3 MOOCs side-by-side

<table>
<thead>
<tr>
<th></th>
<th>#1</th>
<th>#2</th>
<th>Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>154K</td>
<td>127K</td>
<td><strong>38K registrations</strong></td>
</tr>
<tr>
<td></td>
<td>114K (74%)</td>
<td>90K (70%)</td>
<td><strong>16K (42%) attended first lesson</strong></td>
</tr>
<tr>
<td></td>
<td>19%</td>
<td>36%</td>
<td><strong>11% FCCR (First-course-to-completion ratio)</strong></td>
</tr>
<tr>
<td></td>
<td>22K</td>
<td>24K</td>
<td><strong>1.6K students completed course</strong></td>
</tr>
<tr>
<td></td>
<td>4.5</td>
<td>4.6</td>
<td><strong>4.7 Net Promoter Score (out of 5)</strong></td>
</tr>
<tr>
<td></td>
<td>98%</td>
<td>99%</td>
<td><strong>99% of survey respondents said they would recommend this course to friends (n=651)</strong></td>
</tr>
<tr>
<td></td>
<td>40%</td>
<td>40%</td>
<td><strong>NA mean improvement in performance</strong></td>
</tr>
</tbody>
</table>
Students submit projects → Students calibrate sample work → Students evaluate own work

Staff score random sample (17% of 3,181 submissions)
Comparison of student and TA grades

- 55% within 1 point
- 73% graded at least a B by TAs

max score: 16
Variation between student and TA scores on self-graded assignments
What we learned...

1. Comparing different kinds of content offerings can be revealing

2. Looking at the forums for content-you-don’t-expect can be revealing

3. Self-grading scores could be better. But how?
#4: Our fourth MOOC

Mapping * June, 2013
Mapping with Google (June 2013)
41,455 registrants
21,837 active students
Mapping with Google

Discover new ways to navigate the world around you with Google Maps and Google Earth.

Improve your use of new and existing features of Google's mapping tools.

Choose your own path. Complete a project using Google Maps, Google Earth, or both, and earn a certificate of completion.

Schedule

<table>
<thead>
<tr>
<th>Unit 1 - Course Overview</th>
<th>June 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 2 - Google Maps</td>
<td>June 10</td>
</tr>
<tr>
<td>Unit 3 - Google Maps Engine Lite</td>
<td>June 10</td>
</tr>
</tbody>
</table>

My Profile

My Goal for the course:

I'm interested in seeing how this online course is taught and not aiming to learn about Google's mapping tools.
Comparing Apples and Oranges in the Americas
2011 apple and orange production for the Americas. Data from Food and Agriculture
Mapping MOOC: Self-evaluation

- Students submit projects
- Students calibrate sample work
- Students evaluate own work

Staff score random sample (11.6% of 3,303 submissions)
Comparison of TA and student grades

- Mapping
- 72% within 2 points
- 94% scored at least a B by TAs

max score: 27
Self-graded assignments (example + rubric)

- 72% of grades ± 2 point of TA grade
- $r = 0.44$

TAs graded 535 assignments (random 20% sample)
3. What advanced feature(s) did you apply to your tour?
   a. The tour is narrated (with text or audio)
   b. At least one placemark includes a look around (360 degrees)
   c. A path is included
   d. The tour has a nice flow: not choppy, flies through
   e. A polygon is added
   f. The kmz file is embedded in a website
   g. The default touring settings have been changed
   h. The tour goes under water
   i. Other media (music, images, audio, clips) have been included
   j. Overlays and 3D models have been included
   k. The tour shows changes over time using historical images
   l. The tour includes an imported KMZ/KML file
   m. The tour uses street view

1. What problem are you trying to solve?
   a. Is the goal written as a complete sentence or phrased as a question?
   b. Does the description include why this research was important?

2. What questions do you need to answer in order to achieve your research goal?
   a. Are there at least three smaller or related questions?
   b. Are the steps sequenced appropriately?
   c. Are the questions directly related to the goal of the research?
Evaluate sample project 1

Answer the questions below based on the sample project.

1. Does your map have a title?
   - Yes □ No □

2. Does your map have a description?
   - Yes □ No □

3. How many points are in your map?
   - 0 □ 1 □ 2 □ 3 □ 4 □ 5 or more □

4. How many points have titles?
   - 0 □ 1 □ 2 □ 3 □ 4 □ 5 or more □

5. How many points include a relevant description?
   - 0 □ 1 □ 2 □ 3 □ 4 □ 5 or more □

6. How well does the styling enhance the distinction between map points?
   - 0 □ 1 □ 2 □ 3 □ 4 □ 5

7. How well do the advanced features included enhance the clarity of the map?
   - 0: no advanced features, 5: advanced features make it easy for viewers to understand the purpose of the tour
   - 0 □ 1 □ 2 □ 3 □ 4 □ 5

Sample Answer:

1. What story are you telling with your map?
   Sample Answer:
   This map shows the locations of and amount of cocoa in North and South America.

2. What is the URL of your map?
   Sample Answer:
   https://mapsengine.google.com/map/edit...

3. Did you change the base map for your map?
   Sample Answer:
   Yes, I selected the Light Political to show..."
How do we know what students want to get from the course?

A: Just ask.
Pre MOOC survey

Please answer the following questions to enroll in Mapping with Google. This information will help us improve the course and maximize your learning experience.

1. **Full Name [REQUIRED]**
   Note: The name entered here will be used on certificates at the end of the course.

2. **What goal do you hope to achieve by signing up for this course? [REQUIRED]**
   - Learn new things about Google's mapping tools in general, without necessarily completing the course
   - Learn about a specific Google Maps feature that I need, without necessarily completing the course
   - Learn about a specific Google Earth feature that I need, without necessarily completing the course
   - Complete the requirements to earn a Google Maps certificate
   - Complete the requirements to earn a Google Earth certificate
   - Complete the requirements to earn a Google Maps and Google Earth certificate
   - I am interested in seeing how this online course is taught and not aiming to learn about Google's mapping tools
<table>
<thead>
<tr>
<th>Pre MOOC survey</th>
<th>Students intending to complete course</th>
<th>Students not intending to complete the course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mapping with Google</td>
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<td>47%</td>
</tr>
<tr>
<td>Intro Web Accessibility</td>
<td>56%</td>
<td>44%</td>
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<tr>
<td>Goal</td>
<td>Students who met or exceeded</td>
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<td>------</td>
<td>-----------------------------</td>
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<tr>
<td><strong>learn...</strong></td>
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<tr>
<td>a specific Earth feature</td>
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<td></td>
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<tr>
<td><strong>earn a certificate</strong></td>
<td></td>
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<tr>
<td>Google Maps</td>
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<td></td>
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<td>Survey:</td>
<td>Behavioral Analysis</td>
<td>Course completers</td>
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<td>---------</td>
<td>---------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Met their goal</td>
<td>91%</td>
<td>91%</td>
</tr>
</tbody>
</table>
Big takeaways...

- Completion rate:  
  - many exogenous factors at work

- MOOCs as a public service – low stakes vs. high stakes

- Role of community

- Content as software  
  - Iterate / test / debug / deploy / not locked into slow cycle

- What makes MOOCs work?  
  - social factors (sense of a class)
SUMMARY: How do we know?

• Big data is great... but...

• Validate, validate, validate.

• For low-risk, free courses, non-completers might be the majority... and might well be completely satisfied

• Worth it to dig into marginal errors

• Remember there are real students with real lives behind those data streams
“All models are wrong, But some are useful”

George Box
Wednesday, February 1, 2011

**Wednesday search challenge (Feb 1, 2011): Where are you?**

*Imagine the following situation:* You've had a sudden episode of amnesia while on a trip and have suddenly just woken up in a strange place. You have no idea where you are. All you know is that *this* is the view out the window.

You need to get your anti-amnesia medicine to prevent blacking out again and you need it fast.

Insurance will cover the cost of sending your medicine via courier, but you need to know where to tell them to go.

**Question:** Where are you? Can you find the street address, in what building, in what city?

Wednesday, April 24, 2013

**Wednesday search challenge (4/24/13): What kind of trees are these?**

On a beautiful spring day, I went for a hike 2000 ft up into the foothills of the Santa Cruz mountains, the hills that make up the western part of Silicon Valley. Up in those rolling hills is a fragmentary grove of trees, remnants of the time when Silicon Valley was called "Valley of Heart's Delight."

I passed an interesting picture. When looking at it later, I realized that I didn't know what kind of tree they were. The Valley of Heart's Delight was once home to a thriving agricultural industry, but in this particular case, I couldn't identify them through the photo.

But after about a minute of SearchResearch, I was able to determine a whole bunch of information about this site. Can you?

Wednesday, May 22, 2013

**Wednesday search challenge (5/22/13): Finding political cartoons FROM the day...**

True story: I've been traveling a bit, and I find myself constantly taking pictures of stained glass everywhere I go. (Disclaimer: I used to be a glass painter, mostly when I was an undergraduate and had time for this kind of hobby work, so I've always had a real interest in this area.)

Wednesday, July 11, 2012

**Wednesday search challenge (7/11/12): Where can I get that book?**