

# L@S 2014 Demo: Best Practices for MOOC video

**Dan Garcia**

UC Berkeley, EECS  
101 Sproul Hall, Berkeley, CA  
ddgarcia@cs.berkeley.edu  
(510) 517-4041

**Michael Ball**

UC Berkeley, EECS  
101 Sproul Hall, Berkeley, CA  
michael.ball@berkeley.edu  
(909) 993-3988

**Aatash Parikh**

UC Berkeley, EECS  
101 Sproul Hall, Berkeley, CA  
aatash@berkeley.edu  
(510) 304-8334

## ABSTRACT

UC Berkeley's CS10 course captures high-definition lectures featuring a unique overlay of the professor over slides. This paper is a brief overview of the demo we presented at L@S 2014. We'll also go into other forms of video we incorporate into the class. Finally, we'll present tips and tricks we've learned in both the pre-production and production stages of the video process.

## Categories and Subject Descriptors

K.3.2 [Computer and Information Science Education]:  
Computer science education; Curriculum

## General Terms

Design, Documentation, Experimentation.

## Keywords

MOOC; video; CS1; production; study resource;

## 1. INTRODUCTION

When teaching CS10, we decided to use two complimentary formats of video production. Traditional lectures were filmed using a green screen during live class lectures. These were designed to feel more personal with students. Lab walk-through videos were filmed via screen recording using a tablet computer.

### PART 1: HOW BERKELEY'S CS10 DOES VIDEO

#### Green-screen instructor capture

We've captured over 30 lectures and produced newscast-quality online videos for Berkeley's CS10 course. These videos were produced during a live lecture and later composited before being released online. We've used these videos for entirely online versions of CS10 and they are used by current students as a popular study resource. The lectures were captured using DSLR cameras and edited using Final Cut Pro X. A 50 minute lecture usually resulted in around 35-40 minutes of edited content.

Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage, and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the owner/author(s). Copyright is held by the author/owner(s).

L@S 2014, March 4–5, 2014, Atlanta, Georgia, USA. ACM 978-1-4503-2669-8/14/03.



Figure 1. Video with instructor overlaid on screencast

#### Screen-walkthrough tutorial videos.

Show students how you would approach a coding or other hands-on problem by walking through it yourself, capturing both your mouse clicks and your thought process. These videos were made for each of CS10's lab assignments. They were recorded via screen capture and microphone with a TA explaining the through process behind solving lab exercises. A two hour lab exercise usually resulted in a 45 minute video. We chose to do one video per lab, rather than one per problem to keep the number of videos more manageable.

Example: CS10's Lab Walkthroughs.

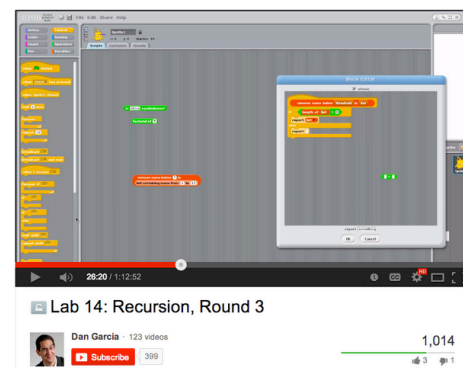


Figure 2. Lab walk-through video

### PART 2: TIPS AND TRICKS FOR VIDEO PRODUCTION

#### Pre-production

##### Equipment budgeting and purchase

- Budgeting: Using Consumer Equipment for high quality results
- We chose DSLR cameras with video capabilities
- Resource-sharing between multiple courses

- Additional hardware for advanced setups (Video capture cards and microphones)

#### Staging the production

- Wiring up the classroom
- Setting up a green screen
- Setting up the video/sound capture equipment
- Single vs multi-camera options

#### Updating your content for video production

- How to make slides look good in videos
  - Most students watch videos in a small window
- Considerations for embedding video and software demos
- Consistent slides help make editing easier

#### Testing and dry-runs:

- Minimizing the issues that will inevitably come up during production
- Try producing at least two full classes with all the technical staff present

#### Fitting your class in the “bigger picture” of online instruction

- How decide where to put your time and effort
- Getting help from the administration and outside resources
- Many universities have a video or technology department so reach out for help when you need it.

### Production

- Setup, and minimizing setup time
  - How to be effective with zero prep time
  - Simple details are important!
  - It is worth making quality sacrifices to make sure class still runs smoothly
- Considerations a dry-run won't reveal:
  - Students and camera interference
  - Microphone quality problems
  - Where and when to have backups
    - You should always use screen recording when available
- How to minimize class distractions
  - Although this is a production, make sure your students can still learn from (and enjoy) the in-class experience
  - Place the camera behind, or away from, students if possible.
- How to handle audience questions and interactivity
  - What do you do with audience questions?
  - Restating questions vs. capturing students audio
    - Consider ease of use and legal issues of using students in the final product

- We chose to cut students from the video and repeat questions .

- How are “clickers” or other options relevant to video?

- Consider what the final product will look like. Not everything needs to be captured at the same time.

- How to prep the live audience
- Be aware of storage and camera limitations
  - We occasionally ran into problems with the 20-minute video limit on our camera.
- Communication between the professor and cameraman is hard
  - Decide a scheme for delivering important messages, whether it is hand gestures or text chats
  - Be sure it doesn't show on the final video!

### Post - Production

- Picking Software for Editing
  - Choose software you can (or your editors can use)
  - We chose Final Cut Pro X due to ease, speed, and cost.
  - Consider software that will run on university computers if students will be editing.
- Achieving quality quickly:
  - Use an iterative process with multiple reviewers
  - When to use screen recordings or recreate materials during editing
  - Scripting and templates will save tremendous time
- Always allow for as much editing time as possible
- Use computers which can handle the editing load
  - Many students are better equipped than university labs
  - Make upgrades to RAM, disk drives or GPUs before purchasing new computers
  - Edit video in “chunks” instead of long lectures to save resources
- Keep notes and stay organized
  - Using a consistent file and folder scheme allows more editors to collaborate
  - Give yourself flexibility to update videos (or sections of videos) as needed
- Never forget to have backups!