How Video Production Affects Student Engagement: An Empirical Study of MOOC Videos

Philip J. Guo
Juho Kim
Rob Rubin

MIT CSAIL - University of Rochester
MIT CSAIL
edX
cMOOC

Cormier, Downes, Siemens. 2008 –

xMOOC

Coursera, edX, Udacity. 2012 –
Which kinds of videos lead to the best learning outcomes in a MOOC?

Which kinds of videos lead to the most engagement at a reasonable cost?
How does video production affect engagement?
(largest-scale study to date)
METHODOLOGY

Video data
4 edX courses, Fall 2012: CS1, A.I., Stat, Chem
862 videos, 128k students, 6.9 million sessions

Engagement metric
video watching session length

Interviews
with edX video producers & program managers
RECORDING STYLE

a.)

b.)

c.)

3.091 Screencast

Calculate the surface energy of the (110) surface of potassium crystals.

\[
E_{\text{tot}} = E_{\text{atom}} + E_{\text{inter}}
\]

\[
E_{\text{inter}} = \frac{1}{2} E_{\text{bond}}
\]

Basic principle: Perform analysis within each matched group and then pool to obtain a summary average.

Typical format for results from a case control study involving 1-1 matching on a single factor:

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Status of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>+</td>
</tr>
<tr>
<td>B</td>
<td>-</td>
</tr>
<tr>
<td>C</td>
<td>-</td>
</tr>
<tr>
<td>D</td>
<td>+</td>
</tr>
</tbody>
</table>
Five Findings and Recommendations
1. Shorter videos much more engaging
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Invest in pre-production to plan for < 6-min segments
2. Pre-production improves engagement

Both courses recorded as live classroom lectures with highly-rated lecturers.

a.) with pre-production, b.) only post-production
2. Pre-production improves engagement

![Graph showing median engagement over video length with two categories: a.) Lectures prepared for edX (CS188.1x) and b.) Chopping up old lectures (3.091x).]
Always plan for MOOC format, even for live lectures
3. Talking head more engaging
3. Talking head more engaging

![Graph showing engagement over video length]

- Median engagement (normalized)
- Video length (minutes)
- Head + Slides/Code
- Slides/Code
RECOMMENDATION

Record and insert talking head at opportune times
4. Informal shots can beat expensive studios
RECOMMENDATION

Strive for one-on-one, personal feel instead of high-end studio production
5. Khan-style tutorials beat slides/code
5. Khan-style tutorials beat slides/code
Use hand-drawn motion and extemporaneous speaking
Which kinds of videos lead to the most engagement at a reasonable cost?

1. Short
2. Pre-planned
3. Talking head
4. Personal
5. Khan-style

Question: Future of educational videos?

Philip Guo @pgbovine www.pgbovine.net