

ADRIFT IN A SEA OF VIDEO TUTORIALS

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A pedagogical reflection on the benefits of, and challenges that arise from, the proliferation of online math video tutorials

Imagine a student registered in a math course, about which they are quite anxious. Imagine the student being informed that for every major topic in the course, for every “important” example they’ll see, there is a 10-minute video tutorial, freely available online, created by an enthusiastic and engaging teacher who is eager to demonstrate how to solve that kind of problem. While this would seem to be immensely comforting to the student, there is still the challenge of learning the material, and the question becomes: to what extent does the vast body of video content enhance learning?

The past few years have seen rapid growth of online video tutorials covering mathematical topics from across the spectrum (with a rather heavy concentration in algebra, pre-calculus, and calculus topics). The typical video runs 6-15 minutes and provides a step-by-step solution of a typical problem. The best known creator of such content is Sal Khan of Khan Academy, whose videos remain immensely popular among students and some educational reformers, though there have been some criticisms of his pedagogical techniques from the math ed community.¹

There is also some evidence² to suggest that a clear, concise video may not be as conducive to learning as a video that challenges preconceptions. What, then, constitutes an effective video tutorial? Furthermore, in addition to the challenges of creating a single effective video, there are immense challenges in the organization of such videos. There are individuals, organizations, communities, institutions and departments who have created their own content and host it in some way. While it can be easy to find several videos on a given topic, it can be challenging and time-consuming to determine which of these, if any, is genuinely appropriate for your students. Furthermore, even finding a relevant video can be challenging for a student who doesn’t know the jargon used to describe a problem or technique (e.g. “solving a linear system of two equations with three unknowns”). Might mathematical communities co-ordinate their content-creating efforts?

I would like to discuss, as a group, some or all of the following points:

- There is a need for video tutorials that present mathematical thinking as more than step-by-step solutions to given problems.
- There is a tremendous amount of overlap in the “solved problem” videos that are available, in part because it is quicker to create content than to pore over existing content; but it would be quicker still if there were a reliable bank of videos from which to draw.
- Students are not always equipped to navigate the video content, and time spent seeking “just the right video” might be better spent pondering the problem itself. We need to be mindful of a balance between creating content for consumption and creating time for our students to ponder.

I look forward to a dynamic discussion.

¹David Coffey and John Golden’s video critique, http://www.youtube.com/watch?v=hC0MV843_Ng

²Muller, D. (2008) *Designing Effective Multimedia for Physics Education*. Ph.D. Thesis. University of Sydney: Australia.