

# YouTube for the Poor and Lazy Professor

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Taking the cost and the pain out of media production has become the holy grail of e-learning research. This talk presents a light-weight approach of creating [video lectures](#) on the fly on a Tablet PC with free or inexpensive software and uploading them onto YouTube. The experiences made during a 14-week German-language [mathematics course](#) for engineering students are reported on. It turned out that the astonishingly deep technical amenities of YouTube offer huge educational potential.

Free video hosting services such as iTunesU and YouTube EDU are particularly aimed at university lecturers, but remain closed to a small number of admitted institutions and are rarely exploited to their full potential. Rather, virtually all uploaded video lectures stick to a unidirectional, broadcast-type mode, possibly because they are intended to serve as showcases for prospective students. In addition, YouTube currently contains hardly any university-level education material in languages other than English.

Experience with the mathematics course that employed YouTube as one of many media demonstrates that ratings are extremely often used and—together with the search function—attract much interest from users outside the class, without any further advertisement. Some of these subscribe to the video feed. Some topics generate much more attention than others do. This talk reports on details.

These and much other insights are available from the detailed statistics that the site offers for instance on the geographical location of the viewers. Comments are used by outside users to pose questions about the content, but also serve as a medium for discussion, such as to point out more elegant derivations or to indicate errors, hence turning the course into an openly reviewed publication.

In other systems, correcting such errors would require re-rendering the video. It turned out, however, that YouTube's graphical annotation feature is perfectly suited for this task. In future experiments, this feature could be opened up to students to add their own annotations. Another YouTube feature that would reward experimentation are crowd-sourced translations in other languages, in particular for students who struggle with German as a second language. This group of students forms an increasing percentage of the student population. Full-text search in the audio tracks is another highly awaited feature, which is already present for a small collection of videos.

There seems to be one significant catch when using YouTube: A regular account allows uploading only videos of less than the eleven minute's length. It turned out, however, that this limit can be incorporated into the lecture, to provide a welcomed sense of rhythm.

The mathematics lecture is not based on PowerPoint slides but on notes written in real time by hand: A Tablet PC serves as an electronic whiteboard, with all students in the lecture theater watching a large-scale projection that is much better legible than a whiteboard would be, in particular due to the oversized writing. Mathematical software such as GNU Octave and Web sites such as Wolfram Alpha are presented as well. The lectures include questions *to* the audience and *from* the audience. Lecture notes—written in prose, not as bulleted lists—are available upfront on the Internet. However, for further activation of the students, these notes are not complete but leave out many diagrams and formulas, which are to be added by the students, in the spirit of a cloze text.

This talk will report on the software used, for instance on how to make and undo annotations on the TabletPC and on how to include a webcam image of the lecturer with minimal technical effort. Furthermore, a preliminary report of the students' satisfaction and the usage patterns will be given.