Podcasts, a flora of methods for increasing learning and decrease teacher workload?

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Abstract— **Educational podcasts, audio- or video feeds/files with learning material, are becoming abundant and are available through several different distribution platforms e.g. iTunes-University, YouTube and web-sites such as TED.com. The quality, length and purpose of these podcasts vary considerably, which may be part of the reason why conclusive strong evidence of their general effectiveness in promoting learning seems to be lacking. There is, however, anecdotal evidence e.g. taken from my own experience of using podcasts for five years, which indicate that podcasts have a huge potential in making lives easier for teachers as well as students.**

Index Terms—**Podcasts, YouTube, iTunes-U**

I. INTRODUCTION

THERE is an abundance of inspirational and educational videos on the web on places like TED [1] and youtube channels like Vsauce [2], Numberphile [3] and Veritasium [4]. So why is there so little on the web from our faculty?

There are numerous published articles that investigate the effectiveness of podcasts in teaching. Hew and Cheung [5] argued in their review article from 2012 that the evidence regarding the impact of Web 2.0 technologies is fairly weak but that none of the studies in their review reported detrimental impact on student learning. Similarly, Kay [6] finds in his review from 2012 that podcasts can have positive effects including things like higher test scores and more positive student attitudes. As for negative effects Kay [6] finds decreased attendance in one study, although it was not shown in that study that this decreased attendance was a disadvantage for the students.

In my podcast for this conference and in the text below I share some experiences that I hope may inspire a discussion at your department regarding how different kinds of podcasts can be used and what benefits they can offer.

II. WHAT IS A PODCAST?

As Kay (2012) points out, there are different ways to categorize podcasts according to their purpose, segmentation, pedagogy and academic focus. With respect to purpose, Kay identifies four kinds: lecture based, enhanced, supplementary and worked examples:

A very simple way to create an audio only **lecture based podcast** [7] is simply to hang an MP3 player around the lecturer's neck and record what happens. Copley [7] describes how screen dumps of e.g. PowerPoint slides can be added to make a video podcast. Another simple way is to place a video camera in the lecture hall and press record when the lecture starts. A student who missed the lecture, is studying off-campus or simply wants to reiterate what was said can then view the lecture at the time of hir own choosing.

An easy way to create an **enhanced podcast** is to buy a commercial recording software such as Camtasia or Screenflow and record what happens on your computer screen. When using such software you may choose if you want to record your own voice (and face) at the same time as you e.g. flip through powerpoint slides or if you want to lay multiple recordings on top of each other. There are also many possibilities to edit your recording, e.g. zooming in, highlighting, cutting out, speeding up, etc. before you make your podcast available.

A **supplementary podcast** is a podcast where you add additional information, be it information regarding how to find your way to the department (e.g. recording yourself walking there), discipline content that the student is supposed to understand before taking the course or things that are only loosely connected to the course.

In a **worked examples podcast** you could take e.g. the students through a calculation to be solved by hand or introduce them to a new software by guiding them through a calculation step by step.

III. MY EXPERIENCES WITH PODCASTS

In the courses I'm involved in we do not use lecture based podcasts, one of the reasons being that we can't force ourselves to ask of the students to look at podcasts that are each 90 minutes long. Rather we use the other three kinds, with an emphasis on **enhanced podcasts** which are either short versions of entire lecture, part of a lecture or a replace a lecture. When I started deploying podcasts in 2009 I used the now discontinued "Podportal" system that CED at Lund University ran, which had some rudimentary viewing statistics. A colleague, Per Warfvinge, and I then shifted to iTunes University in 2011 where we still have some material. The autumn of 2014 we created a YouTube channel for our department where we now deploy our
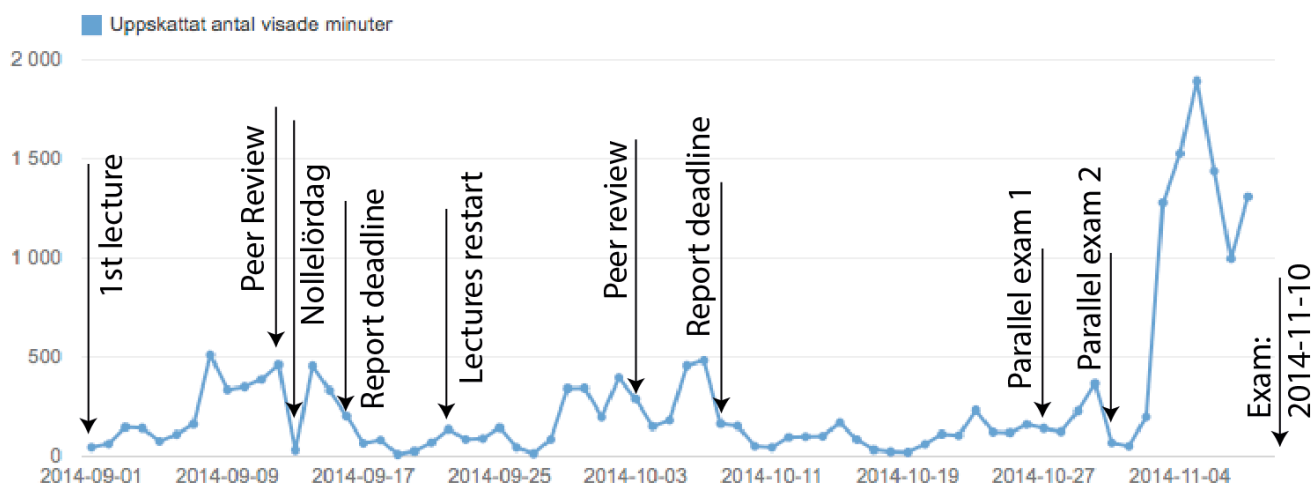
Fig. 1. Total estimated viewed minutes (YouTube data) for the 29 podcasts in the course FMI031. The written exam in FMI031 was scheduled to Monday, November 10, i.e. two days after the last data point. The total sum for the period shown above is 19 063 minutes out of which 47% was for views of the five most popular podcasts. This can be compared with the 720 minutes I gave lectures and the 260 minutes of available podcasts (the five most popular: 68 minutes).

podcasts in different playlists, typically one playlist per course. YouTube has some advantages over iTunes-U e.g. in that we have direct access to rather advanced viewing statistics and that it is possible to create links to other podcasts within a podcast.

Due to the shift in platform, the first course I have detailed viewing stats for is an ongoing course (FMI031) with around 80 students. The course is given with PBL-methodology with 3 cases where the students write individual reports on the first two. I have 8 lectures and supply two playlists, one with supplemental material (College level chemistry) and one with short versions of lectures. The viewing statistics (Figure 1) seem to correlate well with events in the course as well as with events in the lives of our students, with a big dip in viewing during "Nollelördag", a big social event and a huge increase in viewing after the written exams in parallel courses. This may indicate that most of the views are in fact due to the students in the course, but viewing stats after the written exam will be analysed to look for further support for that notion.

For technical reasons we are currently in the process of moving from one YouTube channel to another, thus the channel for which viewing stats reported here can be found on

https://www.youtube.com/channel/UCoV1tKPa7iEgX-PGmf6XSNw

whereas our new channel "Kemiteknik LTH" can be found on

https://www.youtube.com/channel/UCTcBhAB55irgVf4c6ASN6nw .

We are waiting for guidelines from the Faculty of Engineering regarding URL naming of YouTube channels, hence we currently have a more complicated URL than we would prefer.

IV. PERCEIVED BENEFITS WITH PODCASTS

In my own experience benefits of podcasts include
- improving lectures through critically listening to and editing recordings of oneself
- decreasing preparation time next time the course is to be given
- decreasing risk associated with teacher's sick leave
- decreasing risk associated with student's sick leave
- making it easier to address a heterogeneous student group (using supplementary podcasts)
- improving student attitudes

Over the years I have received many positive comments from students regarding the podcasts, during lecture breaks, in emails, in course evaluations etc. By supplying the students with step-by-step introductions in how to use Comsol Multiphysics (course KTE170) we have also managed to decrease the workload for teachers and teaching assistants without any signs of decreased student performance.

REFERENCES

[1] TED: https://www.youtube.com/user/TEDtalksDirector or http://www.ted.com (2014-10-31)
[2] Vsauce: https://www.youtube.com/user/Vsauce (2014-10-31)
[3] Numberphile: https://www.youtube.com/user/numberphile (2014-10-31)
[4] Veritasium: https://www.youtube.com/user/1veritasium (2014-10-31)
[5] Hew, K. F. and Cheung, W. S. 2012: Use of Web 2.0 technologies in K-12 and higher education: The search for evidence-based practice. *Educational Research Review* 9: 47-64
[6] Kay, R. H. 2012: Exploring the use of video podcasts in education: A comprehensive review of the literature. *Computers in Human Behavior* 28: 820–831
[7] Copley, J. 2007 Audio and video podcasts of lectures for campus-based students: production and evaluation of student use. *Innovations in Education and Teaching International*, 44: 387-399