

# Bridging lectures with summary podcasts

**Guillaume SCHILTZ**

*ETH Zurich (Federal Institute of Technology), Switzerland*  
schiltz@phys.ethz.ch

**Abstract:** At ETH Zurich undergraduate lectures in physics are supplemented with short audio-visual summary podcasts. Each podcast episode is published hebdomadally and covers 4 hours of lecture. An evaluation survey revealed that the summary podcasts are potentially useful learning aids. The achieved benefits are consistent with the relatively small production costs.

**Keywords:** podcast, m-learning, pedagogy, physics

## Introduction

In Higher Education (HE) the use of podcasts has extremely widespread over the last years [1]. Podcasting in traditional lecture settings, however, is often reduced to the audio-visual recording of the full lecture, which then is deployed via internet channels, such as RSS-feeds or iTunesU. In the context of distance learning and Open Educational Resources (OER) full lecture podcasts may play an important role, whereas the pedagogical benefits of these virtual lectures have been discussed quite controversially [2] [3] [4]. Recent research, however, attests that podcasts with additional content and supplementing the lectures can positively support the learning process. Especially podcasts providing revisions or summaries of lectures turn out to be extremely valuable [5] [6].

## 1. Summary podcasts at ETH Zurich

Since 2009 we have been supplementing 8 traditional physics lectures (undergraduate level, 100-350 students) with a weekly updated summary podcast. Each of the so far produced 108 podcast episodes takes 10-15 minutes play time and covers four hours of lecture. The podcasts are delivered as “enhanced podcasts” (AAC/M4A) including audio and static visual elements such as formulas, figures, pictures, texts (Fig. 1).

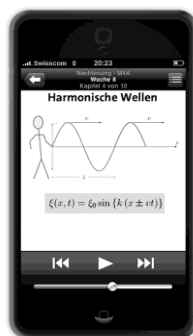


Fig 1: Summary podcast on the iPhone

Our motivation to introduce summary podcasts for lectures is based on the following goals:

- *Pedagogical outcomes:* A summary podcast is an adequate way to bridge sequences of lecture sessions. By means of this podcast, structural elements such as “activating prior learning” at the beginning and the “review summary” at the end of a lecture session are taken out of the lecture context. These elements are electronically archived for independent learning opportunities between two lecture sessions. Moreover, the podcast can be augmented by further relevant items, such as contextual embedding of the topics and specific learning hints. Thus, each episode supports students in reviewing the past session and in preparing the forthcoming session. Furthermore, the full collection of podcast episodes is helpful for students when they prepare their final exam. Students can recap the whole lecture in a very condensed way and identify vague topics that they have to look up in detail.
- *Mobility:* The podcast augments traditional learning opportunities in the way that it can be used in many different learning environments. E.g., students can listen to the podcast on their way to the campus and recap the preceding lecture just before the new one starts.
- *Teaching management:* By producing a weekly summary, lecturers can better reflect their teaching practice. Besides, the recorded summaries help them to prepare recurrent lectures.
- *Open resources:* The freely available summary podcast (e.g. on iTunes) makes the syllabus transparent to teachers from other institutions (Fig. 2).

At the end of each term, we surveyed the use of these podcast episodes by means of a standardized questionnaire. Students submitted a total of 649 records, which could be analyzed. Additionally, all the involved teachers were interviewed about their experiences made during the production of the podcasts.

Alle Podcasts für „nachlesung“



Fig 2: Summary podcasts available in iTunes

## 2. Results and discussion

### *Pedagogical outcomes / mobility*

The survey revealed that 79% of the students made use of the podcast during the lecture time. About 1/3 of them spend more than 30 minutes with each episode and used further material (lecture script, personal notes, etc.) while listening to the podcast. This is a good indicator that the podcast is used seriously in the students' learning process. 25% played the podcast on a mobile device, while the great majority played it on a computer. Thus, mobility seems to be less relevant in students' learning behavior. We compared the group of podcast users to the group of non-users and could identify that podcast users significantly felt better prepared for the final exam. Non-users, on the other hand, globally invested less time in self-directed learning activities than podcast users. The podcast seems to stimulate learning activities and to strengthen students' assertiveness.

We also carried out a second survey after the final assessment and asked students if the podcast has been useful to prepare for the exam. 77% (N=160) have (re)used the podcast

during the preparation phase and 23% found it very or extremely helpful. We also tried to correlate the two groups, users and non-users, with the achieved exam grades, but no significant difference could be observed. The available data turned out to be not suitable for an analysis of that kind, as the number of grades submitted by the students was too sparse and too inconsistent.

### *Teaching management*

The production process is optimized in order to reduce the additional time resources of the lecturers to a minimum. Usually the lecturer spends 60-90 minutes for recording a single podcast episode and for preparing the figures. Lecturers feel fine with this additional time investment. An assistant (senior student) compiles the episode by adding the selected figures and other visual material to the recorded audio file. The final episode is then published via an updated RSS-feed. The involved assistants take this opportunity to refresh their knowledge on the lecture topics.

## **3. Conclusions**

To summarize, podcasts used as lecture summaries can support students in their learning process, but should not be considered as an absolute remedy to learning problems. Further investigations have to prove that the deployment of supplemental learning resources has a positive impact on a sufficient great number of students.

The question of profitability has to be raised. In this context, the transfer of summary podcasts from academic to corporate environments also seems to be relevant. We designed the summary podcasts as a supplementary learning aid. In our specific context, the podcast reaches a sufficient large number of students to justify its investment costs.

Based on the results of the survey and on the interviews with the lecturers we are continuously expanding the production of summary podcasts to more lectures. Ongoing surveys will further investigate the pedagogical impact of these podcasts. With our contribution, we want to enter the discussion on learning effects of podcasts, currently a highly prominent topic being controversially discussed.

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