Final report (August 2018)

PROJECT TITLE

Flipping Information Studies: Increasing PBL Efficacy through the Integration of Online Video Lectures

PROJECT TEAM

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PROJECT DESCRIPTION

This project aimed to examine the benefits of using online video lectures for flipped-classroom teaching in Problem-Based Learning (PBL). To achieve this, we proposed a pilot project with online video lectures in the *Information Studies* Master's degree at AAU-CPH that investigates how best to incorporate video lectures and transforming existing courses around them. This two-year pilot project consisted of two phases, each originally allocated a full year: (1) one year to capture existing lectures spread over two semesters on video and establish an efficient practice for capturing, editing and sharing them with students, and (2) one year for incorporating the video resources into the degree by transforming existing courses into a flipped-classroom variant and evaluating this phase.

In phase 1 lectures were selected based on, among other things, their potential for effective transformation into active PBL sessions and how well their content could be split into relatively short five- to ten-minute topical videos that cover the individual topics needed in the student's individual learning process. In phase 2 the main focus was on determining how to integrate video lectures into existing courses and how to flip the lectures they originated from into student-centered lab sessions. Examples of successful activities could include (additional) case-based problem solving, the discussion of worked examples, and pre-class quizzes.

PROJECT TIMELINE & ACTIVITIES

In the Spring of 2017, we captured approximately 10 hours of lectures on video (or 106.1 GB), divided over three different courses. This does not include any lab sessions or in-class project work as it is not relevant to share as a video lecture. Not all lectures were equally suitable for recording or sharing; some topics are easier to study at home than others.

Unfortunately, in March 2017, one of the original project members and core teachers in the *Information Studies* degree accepted a new position at a different university and also pulled out of the project. This meant heavily increased teaching loads for the two remaining project members from March 2017 to June 2018, until his replacement had been hired. This meant that nearly no additional lectures were recorded in the Fall 2017 semester as originally planned.

Foreseeing these problems, we requested and were granted a six-month extension in December 2017. This meant the original end date of the project was postponed from December 31, 2018 to June 30, 2019. The original idea was to record additional content during the 2018 Spring semester. This was also necessary, since the new assistant professor took over the majority of the courses that were previously recorded, which meant that with a new teaching approach, the old lecture videos were outdated. However, 'training' a new colleague still meant a much higher workload than usual. This means that we are in principle back to square one and that it will be very unlikely that the second phase of the project can be executed successfully.

FUTURE OF THE PROJECT

Due to the abovementioned circumstances as well as several other contributing factors, we believe it is unrealistic and unlikely that the project can be completely successful. We would therefore like to request the **permanent deactivation of the project**.

This does not mean that nothing was learned from this project however. In the following sections we will outline the specific and more general barriers to a low-cost approach to recording video lectures for use in PBL as we originally envisioned. We will also highlight some of the lessons learned and provide recommendations for future projects with video lectures to increase their chances of success.

BARRIERS TO LOW-COST VIDEO LECTURE RECORDING

Our original plan for phase 1 of the project involved developing an efficient and low-cost approach to recording, editing and distributing lecture videos for use in PBL teaching. Originally, the project budget DKK 20,000 for the hardware and software required to record video lectures. The actual implementation of this budget was changed when we discovered that recording equipment and hardware and software for video editing were either already in-house and available for free or procured through another project. This mean that the money in the budget could be used for a storage solution for the lecture videos instead, something that was originally underbudgeted. This meant that the actual costs for long-term recording and storage of video lectures were indeed kept low.

However, the project revealed there were several other serious barriers that made our low-cost solution impractical, both specific to our setting and in general.

General barriers

- **More labor-intensive than expected** — In our original project proposal[1], we had already expected that the most labor-intensive project activity would be capturing, editing, and uploading the video lectures. A typical rule of thumb in producing video lectures is to budget in 3.5 hours for each hour of lecturing that needs to be captured (1 hour for recording and 2.5 hours for editing and uploading). While the recording was always planned to be done by us (thereby saving on costs for student assistants), we had planned for student assistants to perform the editing and uploading. Unfortunately, this phase was much more labor-intensive than originally expected, as student assistants are not able to determine which parts of the lecture videos should be kept and how they should be divided into bitesize topics. This would

[1] See Appendix A for the original project proposal.

require the originally teacher to go through the lecture video as well and mark the timecodes of the segments to be kept. The integration of lecture slides and lecture videos also turned out to require more input of the teachers. This makes recording high-quality video lectures a high-cost affair despite our low-cost approach to recording.

- **Availability of qualified video editors** — Student assistants were expected to be a logical workforce for the editing and distribution stage, but locating qualified students with video editing skills proved to be a difficult task. Students from related degrees would be preferred, because they could be expected to be more self-sufficient in editing the video due to their increased understanding of the topic matter. However, these students are more likely to be part of the same degree and thus have scheduling conflicts. In contrast, students from other degrees would require more supervision from teachers in their video editing. We believe that if AAU wants to make recording video lectures a strategic choice in the future, then an investment in a dedicated team of video editors would be required for success and decreasing the burden on teachers.
- **GDPR compliance** — The enactment of the General Data Protection Regulation (GDPR) may also have an effect on our project by making it harder to simply record video lectures and share them through Moodle or other Learning Management Systems. According to the AAU GDPR course, the phrasing of the GDPR text seems to suggest that voice recordings also constitute personal information. That means that video recording of students asking and answering questions in class would also be personal information. As teachers, we must of course handle general personal data regarding our students, but only to the extent that is necessary in order to carry out the educational task that the university has been given. It is still unclear whether recording video lectures is an essential part of that educational task or whether this requires special consent from the students. In the worst-case scenario, this means that all student interactions (questions & answers) would have to be edited out of lecture videos, resulting in extra work. It also means that, without explicit consent, we would not be able to use our old lecture videos at all. We sent these questions to AAU's Data Protection Officer two months ago, but we have not received a reply yet as she is understandably overburdened with the implementation at AAU.

Specific barriers

- **Staffing changes** — The aforementioned staffing turnover and changes meant that it was hard to spare extra time for the capturing, editing and distribution of lecture videos. In addition, the arrival of a new assistant professor meant that any extra time had to be spent helping the new colleague to acclimatize.
- **Dynamic nature of teaching** — The teaching that our new colleague took over was also sufficiently updated and changed from the previous year, that nearly all of the lecture videos recorded in 2017 immediately became obsolete. While not as extreme as when a new teacher joins, we are expected to update our teaching in general. This means that, especially for topics that are in flux—such as data analytics & visualization or social media analysis—each year the teaching has to be updated, making re-use harder. One recommendation is that video lectures should perhaps be used more in introductory classes with relatively stable topics (e.g., introductions to calculus, linear algebra & statistics) as there is more of an opportunity for and benefit of re-use.
- **Recording venue** — A specific issue with the AAU-CPH campus is that the classrooms were converted from their original purposes when Nokia still rented the buildings. This means that many classrooms have odd shapes. The classroom used in Information Studies in Spring

2017 were very wide, but only three table rows deep. That means that the recording and viewing angles are often less than optimal, with the camera positioned in a corner of the room. A recommendation for future research & application is to dedicate more appropriate classrooms and/or auditoriums for recording video lectures to alleviate these problems.

- **Video quality** — Another issue that compounds the previous one is that the default cameras we borrowed from the HUMLab in Copenhagen as part of our low-cost approach did not record video of great quality in the lighting and noise settings we used them in. Noises from the building's airconditioning systems often mess up the sound. Other problems included entire hours of video without any audio or video recording just cutting out for no apparent reason. This means that some video lectures have holes in them, making them less practical for self-study use by students.

RECOMMENDATIONS FOR FUTURE WORK

As the above list of general and specific issues attests, our experiences with low-cost video lecture recording were mostly negative. However, we do have some recommendations for future work with video lecturing based on our experiences in this project. In addition to listing them in this report, we will of course also gladly share our experiences with others. To obtain useful lecture videos, we believe it is necessary to record high-quality video lectures, which requires a more substantial financial investment in the following:

- **Professional recording support** — Proper focusing, zooming and panning of the camera will greatly increase the quality of the videos, but this requires a human operator as the teacher is supposed to focus on the teaching. A better camera plus an additional microphone would also increase the reliability of the recording setup. Another recommendation would be to setup an automatic link to the teacher's laptop so that slide transitions are captured automatically as well and synced with the video recordings.
- **Professional editing & distribution support** — Editing the videos in an appealing format and making them easily available on a responsive system is essential for adoption by students.
- **Stable course content** — Lecture video are more likely to be of use if the course content is relatively stable. Introductory courses would make for better places to implement the use of video lectures.

BUDGET & EQUIPMENT

Because we are requesting that the project be terminated prematurely, we will not use all of the budgeted funds. The original budget can be found in Appendix A. Of the total requested sum of DKK 70,200, we have only used DKK 15,879.28 for a data/video storage solution, meaning DKK 54.320,72 can be returned to the funding pool.

The costs of the data/video storage solution were not in vain, as they can also be used for the storage of data and recordings for research purposes. We will also keep our video lecture recordings on there, which may become useful at some point.