Students' Use of Lecture Recording and Other Digital Resources in Flipped and Non-Flipped Maths and Physics Lectures

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Research Questions

1) How do students in Maths and Physics use lecture recordings?
2) How does the pedagogical approach affect students' use of lecture recordings – comparing flipped with non-flipped classes.

Method

- In-depth interviews with 10 students.
- First years taking core maths and/or physics classes.
- Data analysed using thematic analysis.

Context

Flipped Classes:

- Pre-reading and quiz before the lecture.
- About 50% of lecture time spent on problem solving
- Use of clickers and small group discussions
- Students provided with online textbook and digital notes

Non-flipped Classes:

- Material presented in the lecture for the first time
- Lecturer writes on the chalkboard
- Students take notes during the lecture

Implications for Practice

Guidance should:

- Consider the use of digital resources in general, not focus **solely** on lecture recordings.

- Be specific to the pedagogical approach of the lecture.

For active learning lectures:

- Encourage students who have missed a class to 'play along at home' by thinking about the quiz questions for themselves - don't just fast forward to the explanation.

- Encourage students to form study groups to discuss the questions, rather than watching the recordings alone.

- Students who have attended class could also benefit by returning to the lecture capture to test themselves with the quizzes.

Supporting Learning in Live Lectures

- Active learning was seen as an additional reason for attending live lectures.

"in physics we use Top-hat [clickers]…. and obviously if you don't go to the lectures you miss out on that"

- Students used lecture recordings to supplement lecture attendance.

"I will pay attention in the lecture, and then either download the PowerPoint or re-watch the lecture, but only the parts where I miss something."

Key Findings

1) Students saw lecture recordings as just **one** of a range of digital resources available to them.

2) Students prefer to be in lectures, particularly where there is perceived added value e.g. active learning or demonstrations.

3) Availability of digital resources means that students make fewer notes in lectures.

4) Students used lecture capture more often when classes were information dense (i.e. non-flipped classes)

Pedagogical Approach of the Lecture

- Students noted the difficulty of keeping up when there was a lot of new information in the lecture - and that it was often necessary to re-visit material through lecture capture.

"they just bring up a slideshow and then just flick through it and talk. And I find I need a lot more time to process the information from them talking and then all the information on the screen, and that's where it [lecture recordings] comes in really useful,"

- This implies that students used lecture capture less for flipped classes which are less information dense.

"But physics, because the lectures were more question and answer, I didn't refer to them [lecture recordings] so much."

Ameliorating Multi-tasking in Lectures

- Students noted a tension between taking notes and listening to the lecturer.

"So when I'm writing down when I'm actually in the lectures I can't really listen to what else is happening because multi tasking is difficult"

- Digital resources helped students to overcome these difficulties.

Some students take fewer notes or just annotate the notes they are given -

"because the slideshows are uploaded online sometimes I don't even take that many notes"

Others shift note-taking to personal study time -

"I'd probably look through the slides after the lecture itself with my notes and then write up proper notes."

Digital Resources

Include:

- Digital notes
- Online text-books
- Quiz Questions
- PowerPoint slides
- Videos

Safety Net

Both lecture captures, and digital resources more generally were seen as a safety net -

"It takes off the stress of having to panic about getting all the notes down that you need, or listening one hundred percent to the lecturer. "

Affordances

Students choose the resource which they felt best met their needs in a particular situation. Ease of accessibility was one concern.

"it's just a bit easier to just flick through a slideshow than to find a specific point in the lecture where he talks about this one thing"