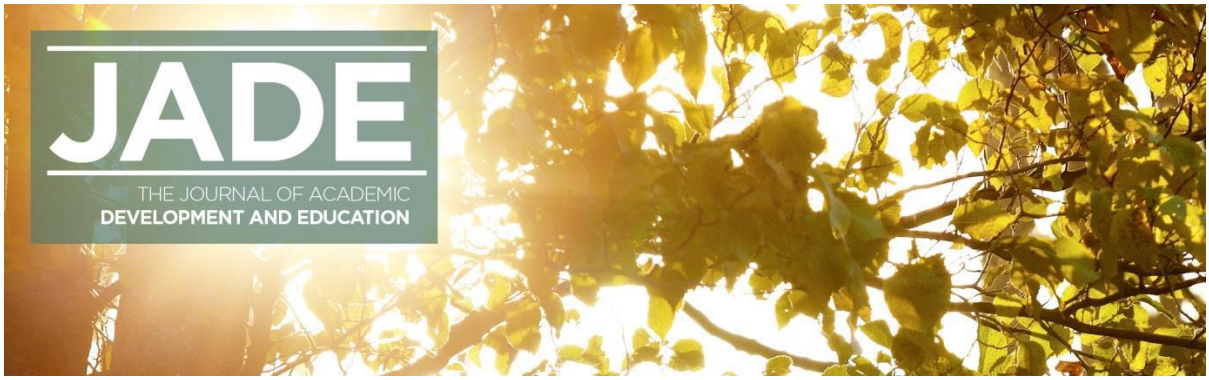

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Highlight:

Lecture Highlights: Repurposing Lecture Capture to Provide Learning Resources for Level 6 Chemistry Students

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Lecture Highlights: Repurposing Lecture Capture to Provide Learning Resources for Level 6 Chemistry Students

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The term "*lecture capture technology*" has been used in the literature to encompass a range of different technologies, ranging from pre-recording lectures in a separate environment to the recording of live lectures and their later distribution to students.[1-4] Currently, the system at Keele, PlayBack, allows the audio and the screen of a live lecture to be recorded a later released to students.[5] Lecture capture is a particularly inclusive tool, as it not only especially supports students who have genuine reasons for missing sessions (illness, caring responsibilities, work), but also students learning in a language that is not their own.[1, 6] The ability to re-live a lecture, to pause it and go at their own speed, is incredibly helpful for learners that are not studying in their native tongue. For many of the same factors, it is also helpful for students with particular learning disabilities.[1]

Lecture capture generates an extensive collection of learning resources, which can be used to support learning in various ways. However, although it has become commonplace, there are fewer examples of lecture recordings being edited to create shorter clips.[7] Here we report initial findings into the generation of *"Lecture Highlights",* learning resources created from editing lecture capture recordings by student editors, we also comment on the features that we included and how these were received and used by two related cohorts of students.

Implementation

The choice of topics for production of *Lecture Highlights*, was mainly based on the fact that in the 2017/2018 academic year, the first cohort of students from a 3+1 joint degree with Nanjing Xiaozhuang University joined the 3rd year chemistry students at Keele for the first time. As the two cohorts have not had the same prior learning experiences, we are dealing with a very diverse cohort in many ways. Providing these resources takes advantage of the benefits of lecture capture for diverse student cohorts, allowing students to access the material multiple times, independent of time and location, at a speed that suits them.

Through the support of a Keele Teaching Innovation Project the *Lecture Highlights* were created. These consisted of short, interactive resources, created from previously recorded lecture content, along with accompanying slides for note-taking. All resources have a clear

title, along with a concise one sentence summary of the key concept discussed, and a final slide with a handful of bullet points answering the statement “you should now be able to…”. One additional important feature is that these *Lecture Highlights* were fully captioned (subtitled in English). They are not necessarily of the polished quality of a standalone screencast, but require significantly less time and effort to produce.

The *Lecture Highlights* were produced by students who had previously taken the modules from which the lectures were taken. Some direction was provided by staff, such as guidance on the software to be used (Camtasia), the length of videos to be produced (5-10 min), the need for captioning and accompanying edited lecture notes to be provided. The students were mainly allowed complete freedom over the videos, which produced some interesting results, such as the introduction of the final “you should now be able to…” slide.

Lecture Highlights were provided to Level 6 Keele Chemistry students in various Semester 1 modules of the 2017/2018 academic year. The topics on which they were produced and made available were selected by asking colleagues what they wanted/thought was relevant for the cohort. They were then provided to the staff member, or put directly on the appropriate module virtual learning environment, and it was left to them to make the resources available to the students or signpost them.

Methodology

Level 6 chemistry students were asked to complete paper questionnaires anonymously and voluntarily; these were available to the students over a series of timetabled laboratory sessions towards the end of the 2017/2018 academic year. A little over a third of the cohort (26 students, 36%) completed the questionnaires; within that the students on the 3+1 joint-degree programme were somewhat over represented (42% as opposed to 27%), and thus results are considered both on average across the full Keele Chemistry cohort and per individual cohort (labelled throughout as “Joint cohort”, for students on the 3+1 degree, and “Keele cohort”, for students who have studied at Keele throughout their degree). Students were informed that data collected could be used for publication. Ethical approval was obtained through the LPDC Student Project Ethics Committee.

Evaluation

The first observation from the questionnaires was that approximately a third of those that answered reported having no knowledge of the availability of *Lecture Highlights* as learning resources; and even those that did were not necessarily aware of the breath of resources available (individual topics were known by a range varying from 36 to 62% of the students).

"*Didn't know they were available / where they were. Sound quite useful*." – Chemistry Student

"*I wasn't aware they were available for anything other than Laura's stuff*" – Chemistry Student

When asked about whether the various resources were used, 23 to 50% of students reported using them in various topics. To contextualise this, lecture capture and screencasts have been used extensively in chemistry at Keele for a number of years and previous studies show that the majority of students use them, preferring short videos on single topics.[8] In particular, 80% of third year chemistry students in the 2014/2015 academic year used recordings, when available, for example.[8] This would have led us to anticipate a high uptake of *Lecture Highlights* by the students. To look at this in a little more detail, usage only by students who were aware of the availability of *Lecture Highlights* was extracted, showing that over two thirds of these students did in fact use them, *i.e.* the majority of students who knew about the resources used them. This highlights the importance of signposting of available learning resources to students and the necessity of proper guidance on their use.

Students reported a variety of uses for *Lecture Highlights* as learning resources, as shown in Figure 1. Most students used them for revision before exams, although a significant number used them for clarification after lectures and/or as aid in doing associated coursework; this last category was particularly prevalent amongst the Joint cohort. Overall, there was more familiarity with the resources by the students on the joint programme when compared to the Keele cohort (>25% difference), which translated into higher usage of the *Lecture Highlights* by the Joint cohort. This can be explained in two ways: the need of the Joint cohort to review or learn more about aspects of chemistry covered in previous years or better signposting by staff members to the Joint cohort compared to the Keele cohort; it was, after all, part of the aim of the project to produce resources which would help minimise differences in prior learning experiences.

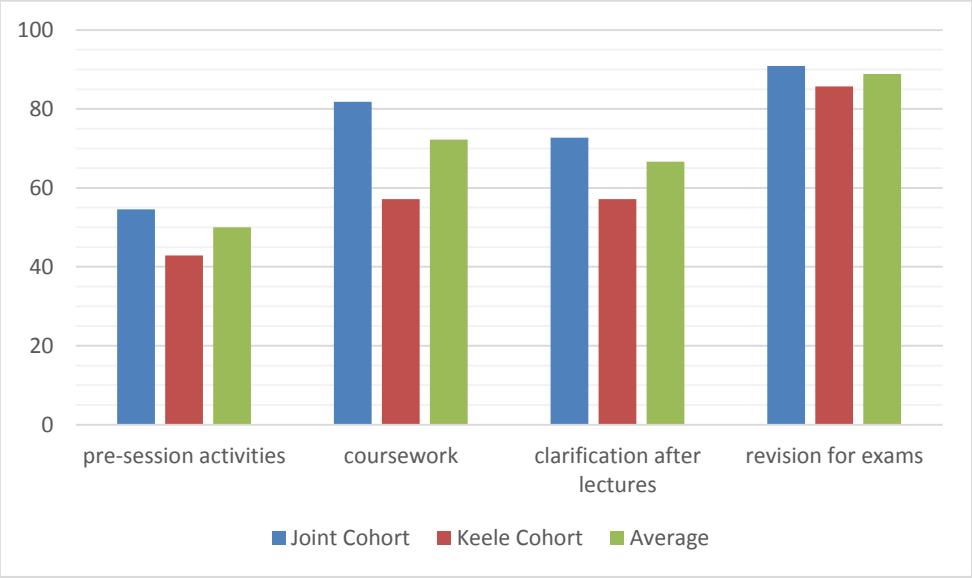

Figure 1. Reported use of *Lecture Highlights* by students, on average and separating the two cohorts.

A large majority of the students (>70%) stated that they found *Lecture Highlights* generally useful, and provided various reasons for this, as shown by selected quotes.

"*They are useful to find quick information on something*" – Chemistry Student

"*I think more people should do them … as pre-session work*" – Chemistry Student

Students were specifically asked whether they found the captions useful, with an overwhelming majority being in favour, as shown in Figure 2. Although we initially introduced subtitles thinking mainly of students whose native tongue was not English, particularly those on the joint programme, it is clear from the students' responses that they were useful to most students, independent of language barriers; less than half of the students responding being non-native English speakers (purple bar in graph), whilst over 80% found subtitles helpful. A range of reasons were provided, from aiding the "*clear understanding of terminology*" to allowing them to "*pause the video to write notes*", with captions found particularly useful in environments where the students could not have the volume on (*e.g.* in the library) or, in contrast, were there was a lot of background noise.

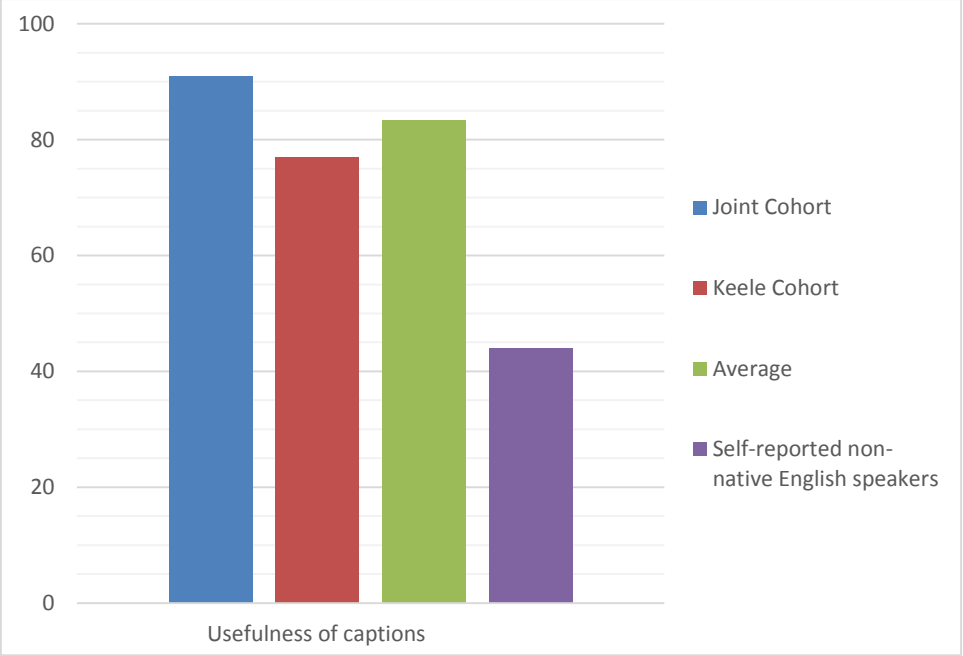

Figure 2. Percentage of students that found captions useful. The percentage of students who reported not being native English speakers is also shown for comparison.

Summary

With the help of students we have created a new learning resource, *Lecture Highlights,* from lecture capture recordings, which included the following features: clear topic titles for ease of searching, short length (5-10 mins), accompanying edited lecture notes, a final "you should now be able to…" slide and English captions.

Student feedback has been generally positive, describing *Lecture Highlights* as "*the vital information of the lecture but extracted and shortened for a quick review when you need to be reminded of key concepts*", mentioning that they are "*concise and easy to understand*". Although students from both cohorts (Keele cohort and Joint cohort) used the resources, we believe that better signposting could have increased take-up.

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