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# STUDENT USE OF RECORDED LECTURES

A report reviewing recent research into the use of lecture capture technology in higher education, and its impact on teaching methods and attendance.

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## Executive Summary

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This report aims to explore student use of recorded lectures by reviewing literature on four main research questions:

1. How do students use recorded lectures?
2. When do students access recorded lectures?
3. What effect do recorded lectures have on student attainment?
4. What effect do recorded lectures have on student attendance?

The findings are as follows:

### ***How do students use recorded lectures?***

- Students largely use recorded lectures to catch up on missed lectures and as a revision tool for exams and assessments, and often find recorded lectures to be a useful learning tool.
- Students prefer blended teaching methods which incorporate both lecture recordings and live lectures, and often do not view recorded lectures as a replacement for attending live lectures.

### ***When do students access recorded lectures?***

- Students tend to access lecture recordings more actively at the start of the academic semester (i.e access the recording within one week of posting), with reducing activity as the semester progresses (Phillips *et al.* 2010). However, students start to increase access to lecture recordings again to prepare for assessments and exams.
- Students tend to view specific sections of recordings to reinforce their understanding of concepts, instead of viewing lecture recordings in their entirety.
- However, students with lower academic achievement tend to access recorded lectures more frequently and are more likely to view the lecture in its entirety.

### ***What effect do recorded lectures have on results?***

- Some studies claim that recorded lectures have little to no effect on student results (Leadbeater *et al.* 2013; Franklin, *et al.* 2011), whilst Von Kinsky *et al.* (2009) suggest that higher-achieving students tend to supplement recorded with live lectures.

- Traphagan *et al.* (2009) and Phillips *et al.* (2011) suggest that more frequent access to recorded lectures leads to more positive results and learning behaviours.
- Traphagan *et al.* (2009) also found that reductions in student attendance of live lectures due to the availability of lecture recordings had a negligible effect on students' attainment.

### ***What effect do recorded lectures have on student attendance?***

- The complexity of student behaviour using recorded lectures makes it difficult to make linear conclusions about whether access to recorded lectures does reduce attendance.
- In general, access to recorded lectures has little to no effect on student attendance at live lectures (Von Kinsky *et al.* 2009; Holbrook & Dupont, 2009; Pursel & Fang, 2012). However, some studies have found that recorded lectures do seem to have a slight negative effect on lecture attendance (Gorissen *et al.* 2012), which may be explained by natural declines in student attendance over time, the maturity of students, and inability to attend live lectures due to disability.

In conclusion, students find lecture recordings to be a useful tool, and mainly use recorded lectures to make up for missed lectures and to prepare for assessments (Soong *et al.* 2006; Traphagan *et al.* 2009; Gosper *et al.* 2008), which also explains student access patterns to recorded lectures. Having access to recorded lectures has generally not been found to have any significant effect on students' results. While some students recognise the motivation to miss lectures due to the availability of recorded lectures (Traphagan *et al.* 2009), there seems to be little evidence that students actually believe that having access to recorded lectures is the main cause or incentive to miss lectures. In fact, the majority of students (55%) surveyed by Traphagan *et al.* (2009) strongly agreed that they preferred receiving lecture content in class, even when it is available through other means. There is scope for further research into how specific groups of students with high rates of access utilise recorded lectures, including neurodiverse students and students from a non-English Speaking Background (NESB).

## Introduction

Recording lectures using *lecture capture* technology is a common practise at institutions around the world. Indeed, recorded lectures are popular amongst on-campus students as well as distance learners (Woo *et al.* 2008), and students often find lecture capture to be a useful learning tool (Soong *et al.* 2006; Williams & Fardon 2007; Gosper *et al.* 2008), allowing greater flexibility for students to manage other commitments, such as work and family life (Phillips *et al.* 2010; Cooner 2010). Students with physical, or learning disabilities are thought to find recorded lectures particularly useful as a way to manage the pressure of note-taking in class, or managing their disabilities with regards to attending lectures (Williams 2006). Students from non-English Speaking Backgrounds (NESB) could also find this technology beneficial to their studies (Soong *et al.* 2006; Leadbeater *et al.* 2013).

However, academics remain concerned about the impact of lecture capture on attendance, student interactions and changes to lecture format deemed antagonistic to current teaching practises (Chang 2007). This report aims to review literature on student use of recorded lectures, and aims to understand and address key concerns about the use of lecture capture technology.

## Method

This report aims to address four key questions by reviewing existing literature:

1. Why do students use recorded lectures?
2. When do students access recorded lectures?
3. What effect do recorded lectures have on results?
4. What effect do recorded lectures have on student attendance?

A literature search for the review was conducted using Google Scholar, The British and Australian Education Indexes, and a cross searching tool at the LSE Library. .

Please see Appendix 1 for a list of search terms.

## Student use of lecture capture

### Why do students use recorded lectures?

The reasons why students access recorded lectures have been explored in a number of studies. Indeed, studies in various subject areas and university settings show that the majority of students use recorded lectures during the course of their study if they are available (Franklin *et al.* 2011; Leadbeater *et al.* 2013; Inglis *et al.* 2011; Gorissen *et al.* 2012). Gorissen *et al.* (2012) found that over 90% ( $N=517$ ) of students surveyed across two Dutch universities reported accessing video lecture recordings outside of campus. A survey of 1160 students by Soong *et al.* (2006) found that 94.9% ( $N=1140$ ) of students agreed (strongly agree or agree) that video recorded lectures were useful for their studies.

Soong *et al.* (2006) identified key themes for why students use recorded lectures. These included:

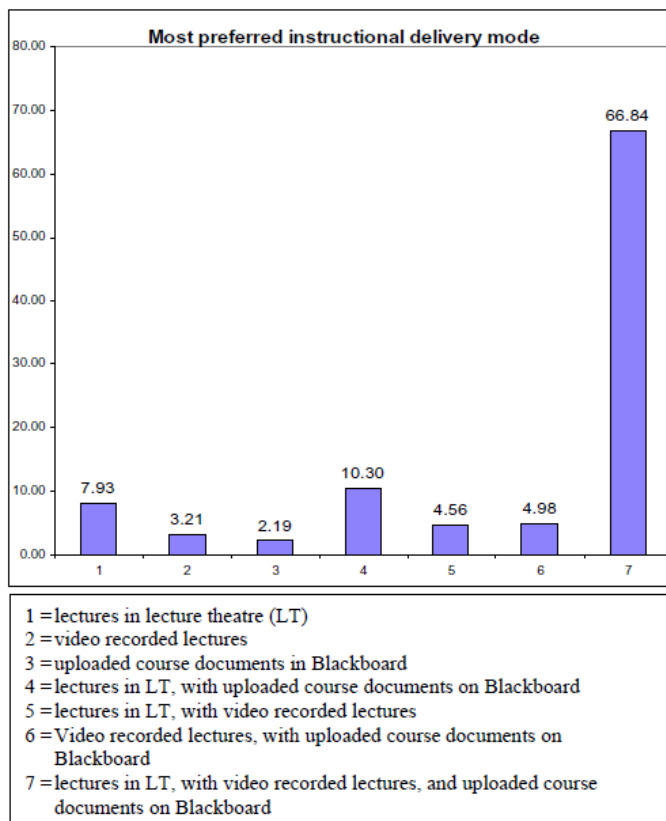
- *I can watch selected parts of the lectures which I don't understand (34.51%)*
- *I find that video recorded lectures help me in preparing for exams (21.46%)*
- *I can view the recorded lectures anywhere, anytime (18.14%)*
- *I access video recorded lectures when I am on MC (Medical Certificate – i.e. off sick) (10.73%)*
- *I do not have to get up for lectures (7.52%)*
- *I am too busy/ unable to attend classes (4.54%)*
- *Other reasons (1.77%)*

Traphagan *et al.* (2009) found that 83% ( $N=364$ ) of students used webcasts to make up for a missed class, 70% to review course materials before an exam and 46% to better understand course materials.

Craig *et al.* (2009) explored the preferred formats which 1,350 First and Second year medical and dental students used to access lecture material over two years (2005 and 2006). Rich Media formats (which synchronise Audio with PowerPoint in their online or zip format) were accessed at 22%, and MP3 recordings of lectures were accessed 15% of the time. Downloading PowerPoint slides was by far the most common form of accessing lecture material (40%), and although video versions were available, these were less often used, although still accounted for nearly 10%; i.e. over 10,000 accesses. They concluded that the Rich Media formats were a valuable addition to the suite of options for students, perhaps due to the ability for the user to navigate to the section of the recording required by selecting the slide from the index.

Van Zanten *et al.* (2012) conducted a more in-depth study comparing students' preferences for short summary audio podcasts and full length video podcasts. The 52 marketing students studied were found to download summary audio podcasts more frequently. However, when asked about their preferred format, students reported favouring full-length video podcasts. Student evaluations of podcasts revealed that students tended to download audio summaries as a reminder of course content, and only downloaded video podcasts when they wished to review the lecture in greater detail. Students reported reviewing full-length video recordings as time-consuming, and therefore adopted a more strategic approach to understand difficult concepts.

Whilst recorded lectures do provide an alternative to live lectures, the majority of students still prefer to receive lecture material at live lectures (Traphagan *et al.* 2009). Schreiber *et al.* (2010) conducted a cross-over randomised control trial on 66 medical students, comparing student preference for live lectures and lecture video podcasts, and the results of an assessment over two lectures. They found that, whilst the difference in results from assessments was not statistically significant, students often preferred live lectures, finding podcasts to be "less engaging" and "easy to put off". The authors concluded that video podcasts of lectures were a useful tool to reinforce student learning, but would not be a popular replacement for live lectures.



**Figure 1:** Student preference for instructional delivery mode. Soong *et al.* (2006) found that students preferred to have blended methods of receiving lecture material instead of only recorded or only live formats.

Soong *et al.* (2006) also found that access to recorded lectures did not diminish students' preference for face-to-face lectures. 66.8% of students ( $N=1134$ ) preferred to have conventional, live lectures, supplemented with video recorded lectures and with course documents included on to a Virtual Learning Environment (VLE).

Many students reported that access to recorded lectures had a positive impact on their learning and exam results. Gosper *et al.* (2008) found that 66.8% ( $N=815$ ) of students in their survey believed that recorded lectures helped improve their results, and 79.9% of students felt that recorded lectures made it easier for them to learn. Traphagan *et al.* (2009) found that 69% ( $N=305$ ) of the students surveyed in their study reported that recorded lectures "reduced their anxiety" about the course. Settle *et al.* (2011) found that 86.3% of students reported finding recorded lectures to be useful, whilst 63.7% of students felt that recorded lectures improved their performance ( $N=429$ ). Williams & Fardon (2007) found that 99% ( $N=1,070$ ) rated lecture capture as being 'essential' or 'very useful' to their studies.

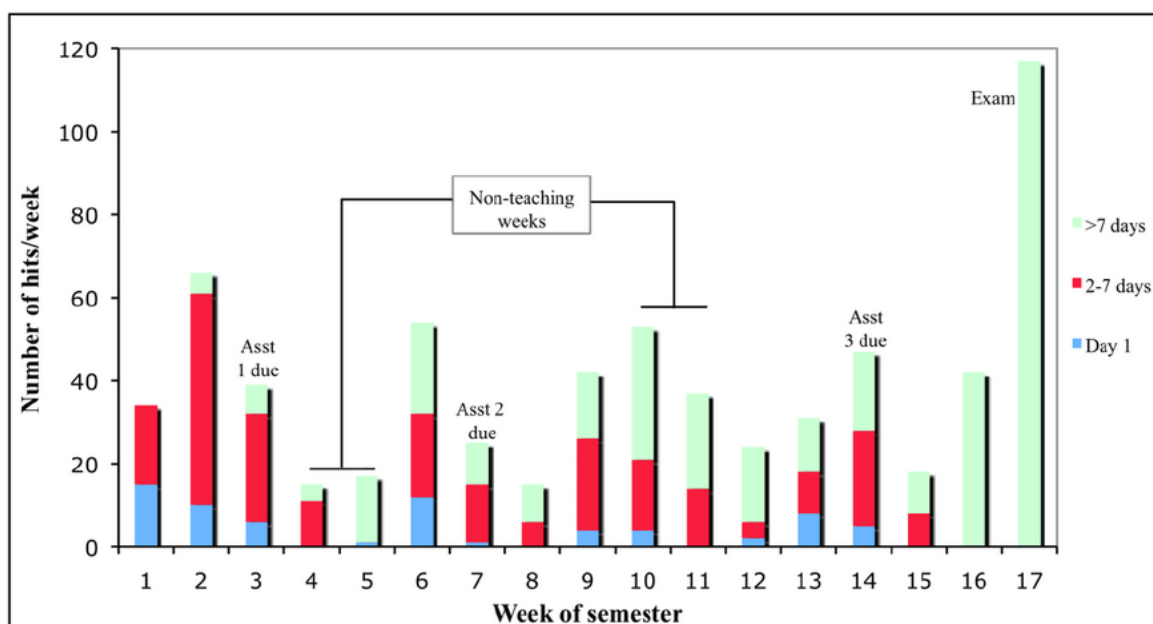
In summary, students largely find recorded lectures to be a useful learning tool, and use recorded lectures strategically to revisit sections they would like to reinforce and when preparing for assessments. However, students also prefer blended teaching methods which incorporate both lecture recordings, and live lectures, and often do not regard recorded



lectures as a replacement for attending live lectures. Rich media formats, including audio and video overlaid on to lecture slides were still found to be downloaded less than PowerPoint slides of lectures or PDFs (Craig *et al.* 2009).

## When do students access recorded lectures?

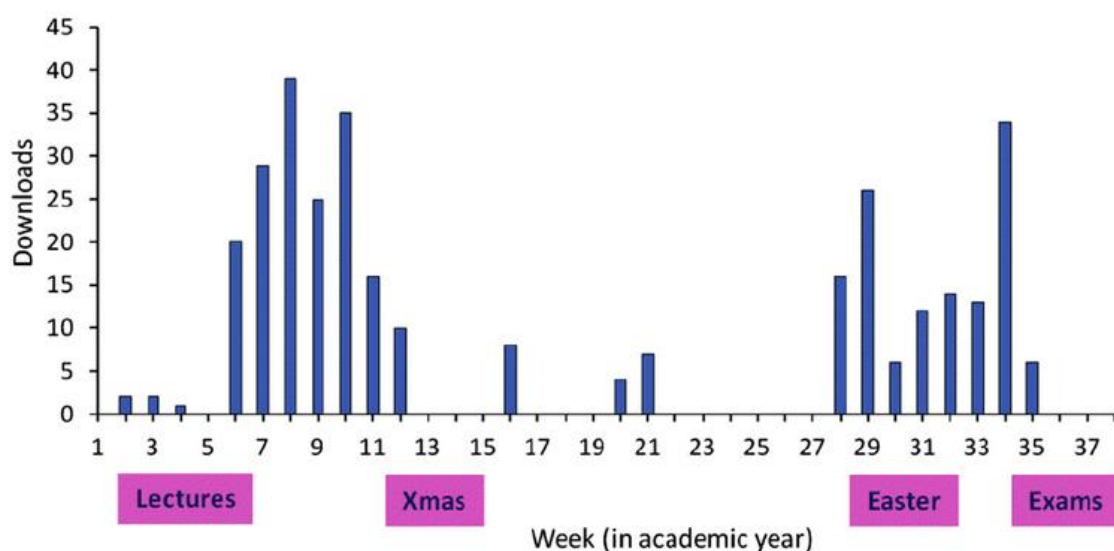
The timing of student access to recorded lectures was studied by Phillips *et al.* (2011), whose pilot study monitored *Lectopia* log files for a cohort of third year undergraduate Sociology students at an Australian university. They found that students' use of recorded lectures was relatively high in Weeks 2 and 6, prior to submission of Assignments 1 and 2, respectively, and in Week 14 – the week for submitting the final assignment. The highest use was during the week of the examination. The delay before listening to a lecture recording is shown in Figure 2. In the first three weeks of the semester, the majority of access was in the first week of publication. As the semester progressed, approximately 50% of recordings were accessed more than one week after the lecture was recorded.



**Figure 2:** Representation of the delay in listening to recordings against the week of the semester. The time between the recording of the lecture and the time recordings were accessed is shown as an extra dimension (coloured blocks) with three intervals: on the day of the lecture, during the first week, and after the first week (Phillips *et al.* 2011). Please note that weeks 15 -17 were also non-teaching weeks in this study.

Furthermore, Leadbeater *et al.* (2013) explored the strategies used by students when accessing lecture recordings. Their analysis of recorded lecture access by “low users”

(students who listened for more than 15 min/module) and “high users” (students who listened to more than 5 h recordings/module) showed that “low users” listened to small sections, or to one part multiple times, while “high users” listen strikingly more often to the whole lecture, consistent with a larger commitment to the material. “High users” also downloaded all or most of the recordings within a week of uploading, suggesting that these students were dependent on recorded lectures for their learning. Notably, six out of seven of the students in the “high user” group reported as being dyslexic, or from a non-English Speaking Background (NESB), suggesting that recorded lectures form an important part of the learning strategy for these students. Van Zanten *et al.* (2012) support the view that students use lecture recordings strategically, preferring to download shorter summary podcasts over full-length lectures, unless they wish to review the full contents of a *specific* lecture.



**Figure 3:** Download data for recordings in 2010/11 (Leadbeater *et al.* 2013)

The findings of these studies seem to indicate that students largely tend to access specific sections of recordings instead of watching recordings in their entirety. Students also access lecture recordings to prepare for assessments and exams, and students who accessed recorded lectures more frequently were thought to be revisiting recorded lectures to overcome linguistic or learning difficulties, and therefore were more likely to be NESB students or students with conditions such as dyslexia (Leadbeater *et al.* 2013).

### What effect do recorded lectures have on results?

The following conclusions were made by the articles reviewed in this paper on the effect of recorded lectures on student results. A study of attendance versus use of online lectures by Inglis *et al.* (2011) found that engineering and mathematics students who preferred online attained lower marks than students who preferred attending live lectures or support classes. They suggest that students primarily using online lectures in their studies may be less motivated than their peers, and may be using recordings to replace attendance to live lectures and seminars, leading to lower attainment.

However, Franklin *et al.* (2011)'s study comparing the use of recorded lectures by 206 undergraduate medical students with their Medical College Admission Test (MCAT) results found that average (mean) MCAT scores for the lecture-only category of first year students was 30.6, compared to 30.1 for the lecture and recording category, and that MCAT scores were statistically the same across the second-year courses (ranging from 30.0 to 30.2). The study concluded that lecture capture technology, statistically, had no effect on MCAT scores for six out of seven modules across the 2-year study. Leadbeater *et al.* (2013) also found no difference in exam results for 142 undergraduate medical students over a two year study.

Furthermore, Traphagan *et al.* (2009) compared the results of students with and without access to lecture webcasts, and found that students in the webcast and no-webcast sections performed similarly when differences in Grade Point Average (GPA) were controlled, suggesting that students effectively replaced attending live lectures by viewing webcasts.

A survey by Owston *et al.* (2011) of 869 undergraduate students found that the rate of access to recorded lectures was significantly related to student grades. Further tests to explore the significance of this relationship indicated that students who accessed the recordings once per month or less often achieved significantly higher grades than those who accessed them 4 to 6 times per week or more often. Additionally, students who accessed them only 2 to 3 times per month scored significantly higher than those who viewed them 4 to 6 times per week. The authors explained this finding by suggesting that students with a better understanding of the course content are less likely to view the same lecture repeatedly, whereas students who struggle with the content may revisit sections to strengthen their understanding, or to make up for a lack of confidence or skill in note taking.

Variable	Rate of access				
	Once per month or less	2 or 3 times per month	2 or 3 times per week	4 to 6 times per week	1 or more times per day
Frequency (%)	85 (20)	109 (25)	129 (30)	65 (15)	46 (11)
Mean grade	6.27	5.80	5.64	4.69	5.11

**Table 1:** Frequency of accessing lecture recordings and mean grades ( $N=434$ ) (Owston *et al.*)

Furthermore, the study found that over half of students (56%) accessed recorded lectures regularly (2 or 3 times a week), but also that a significant minority (20%) only viewed recorded lectures once a month or less. The authors interpreted this finding as suggesting that these students were using recordings for revision purposes only, although this interpretation does not necessarily follow from the data as more detailed records on how students use lecture recordings were not kept. The authors also conceded that the study relied on student self-assessment on the use of lecture recordings, and did not consider usage data compiled by the lecture capture software itself.

Von Kinsky *et al.* (2009) used log files from lecture capture from *Lectopia* lecture capture software, and compared average attendance to lectures with the usage mix for Web-based lecture technology, and the grade attained by 108 engineering students. They found that students with higher grade achievement also had a higher percentage of students both attending lectures and accessing lecture recordings, and were more likely to do so for lectures given earlier in the semester.

Phillips *et al.* (2010) also considered data logged by *Lectopia* software, as well as conducting interviews with coordinators and analysing assessment results. This study went a step further, and attempted to categorise the learning behaviours of students based on their usage patterns. The study devised eight categories which were explored in a later study of 109 undergraduate students at an Australian university (Phillips *et al.* 2011). Semi-structured follow up interviews were then conducted with six students assigned to various categories, and interviewed students were informed about the category they had been assigned, and discussed whether the findings reflected their own perceptions on their study. Interestingly, the student categorised as “Disengaged” did report difficulty in concentrating

at times leading up to assignment deadlines, and received a lower grade, whilst the student categorised as “Conscientious” received the highest grade of the group interviewed.

However, the study did not measure lecture attendance and therefore effectively excluded the impact of students attending live lectures instead of accessing recorded lectures. Furthermore, students categorised as “Crammer” and “Random” were able to challenge their categories, citing attendance at live lectures. This study also contradicted the findings of Owston *et al.* (2011), who concluded that students who accessed fewer recordings tended to achieve better results, possibly due to a greater understanding of the lecture material. Although the study was effective in highlighting the potential studying behaviours used by students and the motivations behind these strategies, ethical issues around interviewing students during semester time, and difficulty in getting students to agree to give an interview also hampered the study’s ability to effectively justify their categories.

The articles reviewed in this section seem to have contradictory views on the role recorded lectures play on student’s attainment. Whilst Traphagan *et al.* (2009) and Phillips *et al.* (2011) suggest that more frequent access to recorded lectures leads to positive results and learning behaviours, other articles suggest a more complicated connection between lecture attendance, access to recorded lectures and student attainment. Von Konsky *et al.* (2009) suggest that higher-achieving students tend to supplement recorded with live lectures, whilst others claim that recorded lectures have little to no effect on student results (Leadbeater *et al.* 2013; Franklin *et al.* 2011).

### **What effect do recorded lectures have on student attendance?**

There remains concern amongst educators that access to lecture recordings could lead to fewer students attending lectures (Chang 2007). Gorissen *et al.* (2012) found a weak positive relationship between a greater use of recorded lectures and a decline in lecture attendance (Spearman’s Rank Order  $rs=0.239$ ,  $N=513$ ,  $p>0.0005$ ), as did Traphagan *et al.* (2009). However, it should be noted that several papers are reliant on student survey data (Holbrook & Dupont 2009; Williams 2006; Franklin *et al.* 2011), rather than the actual attendance data (Traphagan *et al.* 2009; von Konsky *et al.* 2009).

Pursel & Fang (2012) reviewed 47 articles on lecture capture, concluding that “...self-reported data and actual attendance counts indicated no influence or no negative influence of lecture capture technologies on attendance in the majority of studies”. On the contrary, Schreiber *et al.* (2010) found that students recognised the importance of attending lectures, and perceived recorded lectures as supplementary to class attendance. However, Pursel & Fang (2012) also reported that 20% of studies found that students identified a link between lecture capture utilisation and decreased attendance.

Traphagan *et al.* (2009) found that attendance in the group given access to webcasts was lower than attendance in the control group (51% in webcast access group compared to 60% in the control group). However, despite absenteeism being significantly higher in the access to webcast section, the findings of the study suggest that there was a negligible effect on student results, and lecture webcasts were either not affecting student performance or the effect was being nullified by the availability of webcasting. Von Kinsky *et al.* (2009) concluded that making lecture recordings available had no significant impact on lecture attendance, and failing students were absent in just as many lectures as students who passed their assessments.

Holbrook & Dupont's (2009) survey of 894 first and second year biology undergraduates found that first year undergraduates were more likely to contemplate avoiding lectures than second year students, possibly due to a lower level of maturity compared to second year peers. The study did not have any evidence to show that missing lectures had an adverse effect on the performance of absentee first years.

However, Franklin *et al.* (2011) found that 26.9% ( $N=108$ ) of second year undergraduates would not have attended lectures, regardless of whether recorded lectures were available or not. Interestingly, the study also found that attendance of some second year students to live lectures actually increased by 5.4% as a result of having access to recorded lectures, perhaps because these students could devote undivided attention to lecture content without having to focus on note-taking during lectures. These findings indicate that factors other than just the availability of lecture content affected students' decisions on whether to attend lectures.

Having a disability was recognised to be a factor affecting lecture attendance. In a survey of 130 undergraduate and Master's students identifying themselves as having a physical or learning disability, 65.7% of students regarded recorded lectures as an "essential" tool for their learning needs. 24.6% of students stated that their disability affected their ability to attend live lectures, whilst 56.4% claimed to have difficulties taking notes during live lectures (Williams 2006).

Recorded lectures do seem to have an effect on lecture attendance in certain cases, but falling student attendance may also be explained by natural declines in student attendance over time (Franklin *et al.* 2011), the maturity of students (Holbrook & Dupont 2009) and inability to attend live lectures due to disability (Williams 2006). Students' motivation to attend lectures could also affect their decision to attend lectures (Inglis *et al.* 2011), and Massingham & T. Herrington (2006) argue that, fundamentally, students are more likely to attend live lectures if they perceive value in them. Von Kinsky *et al.* (2009), Holbrook &

Dupont (2009) and Pursel & Fang (2012) did not find any significant correlation between a decline in student attendance and access to recorded lectures, whilst Traphagan *et al.* (2009) found that reductions in student attendance to live lectures had a negligible effect on students' attainment. The complexity of student behaviour using recorded lectures discussed above also makes it difficult to link access to recorded lectures and attendance.

### Discussion

The articles reviewed in this report paint a complex picture of students' use of recorded lectures in their studies.

Although students often report preference for a mix of live and recorded formats, Inglis *et al.* (2011) actually found that students often use learning strategies in exclusive and limited ways, and argue that it may be contradictory to wish to develop students' learning skills, whilst devolving the responsibility of developing learning strategies to those very students. They suggest that students may benefit from being better informed about blended learning techniques in order to develop more effective learning strategies.

Taplin *et al.* (2011) argue that some studies may be biased towards students with a preference for lecture capture. For example, as only 39% of students surveyed by Gosper *et al.* (2008) claimed to "almost always or always" attend live lectures, Taplin *et al.* (2011) argue that sample used by Gosper *et al.* (2008) largely consisted of students who were already using and valuing lectures recorded by *iLecture*. Taplin *et al.* (2011) raise a valid point that the methodological approaches used in some of these studies could lead to biased results. Indeed, variations in sample sizes, response rates, formats of lecture recordings and the teaching practises deployed by lecturers in various subjects mean reaching common conclusions on the impact of recorded lectures can be a challenge. However, it could be argued that this study was also affected by its own bias, as 81% ( $N=171$ ) of students showed a strong preference for attending live lectures, these students may not have valued recorded lectures to the same extent as students surveyed by Gosper *et al.* (2008), Williams & Fardon (2007) and Phillips *et al.* (2010).

Student feedback on recorded lectures has largely been positive (Woo *et al.* 2008). Positive student feedback on recorded lectures may be explained by the cognitive theory of multimedia learning, which posits that students' benefit from an enhanced learning experience, particularly in increased retention and transfer of information, when "...information is presented in visual and auditory modalities operating simultaneously, as it reduces the student's cognitive load and optimizes the use of working memory" (Mayer, 2001). Davis *et al.* (2009) add that watching recorded lectures alongside attending lectures



can be especially beneficial for student learning, as students would be freed from concentrating on note-taking, and would engage more in active learning, such as engaging in discussions during lectures and problem solving activities.

Owston *et al.* (2011) suggested that students may have a preference for receiving some lecture information through a recorded lecture format, citing Bassili's (2008) study using media richness theory. This theory suggests that different media have different degrees of richness based on their ability to reproduce the information transmitted over them. Face-to-face discussion is considered to be the richest mode of communication because of its ability to transmit nuanced language and verbal cues. By that logic, e-mail would be a less rich medium than telephone communication, because of its inability to transmit verbal cues. Therefore when information is ambiguous or a person is uncertain, the person will seek the communication medium that best resolves the ambiguity or uncertainty. On the other hand, unambiguous information can be communicated by a less rich medium. Thus, as presumed by the theory, students would attend live lectures when they expected the learning content to be difficult, but would watch recordings when they perceived the content to be less difficult, live lectures offer the possibility of face-to-face discussion with lecturers, whilst recordings do not.

However, studies on the use of recorded lectures seem to suggest that usage patterns for recorded lectures are more complex than that proposed by the media richness theory. Students often access lecture recordings to prepare for assessments or assignments (Von Kinsky *et al.* 2009; Phillips *et al.* 2011), and students who struggle with certain subjects may be compensating for their lack of understanding by revisiting sections of the recording multiple times in order to understand the concept being taught (Leadbeater *et al.* 2013), instead of accessing recorded lectures when content is less difficult.

Whilst some articles considered in this report seem to justify academics' concerns that recorded lectures reduce attendance, there seems to be little evidence that students prefer recorded lectures to attending live lectures. Woo *et al.* (2008) explored lecturer's perceptions on using lecture capture technology, and found that lecturers often made a distinction on which students may benefit from lecture capture, suggesting that external, or distance learning students may benefit more from the technology, whilst internal students would be prone to abuse the system:

*"For internals [students] I think it can help them to justify not coming to lectures. They think, 'it's OK not to go, I'll listen to the iLecture later'. I fear later never comes or comes too late and they cram for assessment. Externals [students], however, brilliant!"*



Fardon (2003) explored the perception that certain lecture formats were incompatible with lecture capture, highlighting that the discipline being covered in the lecture may not be suitable for recording. For example, the visual nature of lectures in physical sciences may make them less suited to recording than the oral nature of social science disciplines (Secker *et al.* 2010). There is also a view amongst lecturers that student demand is pressurising them to use lecture capture technologies, even if lectures are unsuitable for recording. Indeed students, especially first year undergraduates, often perceive better performance in assessments when using lecture recordings (Franklin *et al.* 2011).

The perception that student demand is leading to the imposition of lecture capture may have been influenced by the concept that contemporary students are “Digital Natives” (Prensky 2001), or part of the “Net Generation” – students who are “digitally literate, constantly connected to others, ‘immediate’ in nature, experiential learners and socially centred beings” (Oblinger & Oblinger, 2005), and that ensuring student’s demands are met leads to perceived increases in lecture preparation time, and restrictions on presentation style based on the technology available (Chu *et al.* 2012).

However, other factors may be affecting lecturers’ perceptions about student demand for lecture capture. In a study exploring the challenges of teaching geography online, Ritter (2012) found that lecturers often found making lectures available online to be time-consuming, and were less likely to engage in the process, unless it was a recognised aspect of their professional development.

These attitudes and perceptions may also be changing as lecturers interact with lecture capture. A survey of 96 academic staff at six Melbourne-based institutions by Germany (2012) revealed that 72% of respondents wanted the ability to schedule recordings in advance and 83% wanted the ability to stop and start the recording when they were ready. The papers reviewed here, therefore, seem to indicate that, whilst many lecturers still remain unconvinced that lecture capture is beneficial to the courses they teach, lecturers are using these technologies, and the demands from students for this technology will have to be tempered with added flexibility for lecturers in their use of it.

A review by Moskal *et al.* (2012) argues that student demand for lecture capture is positive, as it indicates that students are engaging with the topic. Moskal *et al.* (2012) argue that satisfied students actually create a positive climate by increasing demand, which impacts on program planning. Conversely, dissatisfied students depress demand and create an equal but compensatory impact on strategic decisions. Moskal *et al.* (2012) did concede that effective blended learning and teaching, including lecture capture, required student, lecturer, administrative and operational support networks to be effective. Blended learning

needs all parties to consider the impact it will have on their activities, and whether this aligns with the wider goals of the institution.

As this report is only a surface-level scan on the issues surrounding lecture capture use by students, it is not in a position to confirm, or comment on the validity of any of the theories above on students' actual experience with lecture capture technologies. This report has also not considered the experiences of neurodiverse students and NESB students, who may have different experiences with recorded lectures than the rest of the general student body. The attitudes of lecturers and academic staff have also only briefly been explored in this report, and a more in depth analysis of the literature exploring this and other themes could be considered for future work.

### Conclusion

The papers reviewed in this report, whilst using varying measurement parameters and studying different groups of students studying a variety of courses, have reached some common conclusions on the questions of student use of recorded lectures and its effect on attendance. The majority of these papers concluded that students liked having access to recorded lectures, and mainly used them to make up for missed lectures, and to review lectures in order to prepare for assessments (Soong *et al.* 2006; Traphagan *et al.* 2009; Gosper *et al.* 2008). Students in most studies also preferred access to live lectures, with most preferring a blended format incorporating lecture recordings, live lectures, course materials and additional classes. Studies have suggested that lecture capture may also be a helpful tool for students with learning disabilities (Giliberti *et al.* 2012) and NESB students (Shaw & Molnar, 2011). Therefore, there is scope for further research into the use of recorded lectures by these students.

The perception that access to recorded lectures lowered student attainment has also been disputed by most of the papers considered in this review, with lecture recordings having a slightly positive, or negligible effect on student attainment, and even a rise in student grades and lecture attendance in some cases (Franklin *et al.* 2011). This may be due to the strategic manner in which students use lecture recordings to reinforce their understanding of lecture material, rather than viewing recordings as a replacement for attending lectures.

Whilst access to recorded lectures was reported to be the reason for some students being absent at live lectures, attendance could have been affected by a range of factors, including the level of student maturity and natural declines in student attendance over time. There seems to be little evidence that having access to recorded lectures is the main cause or incentive to miss lectures. In fact, the majority of students (55%) surveyed by Traphagan *et*

*al.* (2009) strongly agreed that they preferred receiving lecture content in class, even when it is available through other means. Massingham & T. Herrington (2006), found that illness or competing priorities such as work or other lectures were more cited reasons for students missing lectures than availability of recorded lectures. However, Massingham & T. Herrington (2006) also note that “students only attend lectures if they perceive ‘value’ in them”, and having access to lecture recordings is unlikely to have an effect on classes which are not generally valued by students.

Therefore, whilst lecture capture technology offers many benefits and pitfalls, its current role in higher education remains a supportive one in relation to live lectures, which are yet valued higher by students than their recorded equivalents.

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## Appendix 1: Search terms

Search terms/ phrases	Source(s)	Paper
How do students use lecture capture technology?	Google Scholar, Summon	(Gorissen <i>et al.</i> 2012) (Traphagan <i>et al.</i> 2009) (Owston <i>et al.</i> 2011) (Inglis <i>et al.</i> 2011) (Franklin, et al., 2011) (Phillips <i>et al.</i> 2010) (Phillips <i>et al.</i> 2011) (Craig <i>et al.</i> 2009) (Cooner 2010) (Soong <i>et al.</i> 2006)
Does lecture capture benefit dyslexic undergraduate students?	Google Scholar, Summon, Wiley Online Library, LSE Library index, Swetwise	(Williams & Fardon 2007) (Leadbeater <i>et al.</i> 2013)
"lecture capture" student interaction	Google Scholar	(Davis <i>et al.</i> 2009) (Ritter 2012)
"lecture capture" languages	Google Scholar	(Germany 2012) (Chu <i>et al.</i> 2012) (Moskal <i>et al.</i> 2012)
Educational demands of digital natives	Google Scholar	(Jones <i>et al.</i> 2010)
Student reasons to miss lectures	Google Scholar	(Massingham & T. Herrington 2006)
Lecture Format Preference	Google Scholar	(Schreiber <i>et al.</i> 2010) (Van Zanten <i>et al.</i> 2012)
Lecture Podcast Preference		
Student preference for lecture format		