The Value of Lecture Recording at the University of Edinburgh

Interim Evaluation Report

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Executive Summary

In 2017, the Media Hopper Replay service was rolled out in a university-wide implementation of lecture recording provision. This rollout represents a significant investment in capital and resources. A series of evaluation projects have been funded within individual schools as part of the Principal's Teaching Award Scheme. In this project, a qualitative exploration of current practice and attitudes with regards to lecture recording was conducted with a university-wide remit. Data was collected through 13 unstructured interviews with staff, a focus group with first year students, and a survey to first year students across eight schools. Analysis followed a constructivist grounded theory approach, allowing data from other sources such as the policy review and academic user groups to inform the findings.

Both staff and students have proximate concerns which affect the lecture space, and ultimate concerns which encompass the role of a lecture in wider learning. Generally, students conceived of lectures as a tool that could be used to advance their learning, and they highly valued recordings because of their ability to help students cope with unexpected events. Lecture recording is predominantly viewed as a positive addition to the student experience at university. In line with the literature, it is seen as an especially valuable resource for students who have caring responsibilities, learning adjustments, or who are non-native English speakers. However, students were not well able to identify study strategies incorporating lecture recording, suggesting the institution needs to provide greater guidance.

For staff, there was a conflict between the proximate concern of the 'stage show' of a lecture, which incorporated copyright, class management, and staff self-consciousness; versus the ultimate concerns that recordings made lectures 'canonical', creating a definitive version of the material in the student's eye. Lectures were often spoken of as a place to demonstrate what discipline-specific practice was like, and there was a worry that recordings might change this. The transformative power of recording was a common theme in staff concerns.

Overall, many of the challenges presented by lecture recording reflect more fundamental concerns about learning and teaching at a Russell Group institution. Staff were worried about student engagement and the purpose of a lecture in modern higher education, while students were concerned about wellbeing issues and had a slight focus on assessment. A centrally provided lecture recording roll-out therefore offers a key opportunity to discuss learning and teaching strategies at an institutional and disciplinary-level. Moreover, it offers an opportunity to bring the staff concept of a lecture and the student concept of a lecture to a middle ground, creating more shared understanding of the higher education experience in Edinburgh.

Background to Project

Lecture recording, the practice of capturing some aspect of the learning activity for later review, can cover a broad range of pedagogies (**Table 1**). There can be a degree of overlap between these terms: many refer to 'podcasted' lectures as having accompanying slides as a visual aid, or consider distance learning resources as their own discrete implementation of audio-visual recordings in education. In this report, lecture recording primarily refers to the audio and visual recording of all or part of a learning activity capturing both slides and staff presentation, and incorporating staff-student interaction.

Table 1: *Forms of lecture recording*

Term	Definition	Alternate Terms
Lecture recording (audio-visual)	Audio and video recorded live with students present	Lecture capture, supplementary recording
Podcast lectures	Audio of lectures recorded live with students present	
Pre-recorded lectures	Audio and video recorded prior to students access to materials,	E-learning materials, distance learning

Lecture Recording in Higher Education

The traditional lecture is sometimes referred to as 'sage on a stage', or 'didactic teaching'. An expert delivers a large amount of information to multiple students over a defined and relatively rigid and inflexible period of time. Lectures are 'teacher focussed' and can be considered a very economical method of teaching[1] due to the high number of students reached at any one time. It is also typically the method that current STEM lecturers learned from and, if they enjoyed that experience, were likely to favour themselves[2]. Students often find lectures difficult to follow despite their prevalence in the higher education system[3].

Lecture Recording at Edinburgh

Summary of Business Case

In the Russell Group, every university apart from Cambridge[4] has a centrally supported lecture capture solution. Cambridge University piloted a scheme in 2016-2017 academic year[5] as part of their Learning and Teaching Strategy 2015-2018. Lecture recording was a commonly requested resource from students from 2013 onwards.

A centrally-provided lecture capture system was proposed to the University Court in September 2016 and accepted on the basis that lecture recording was a) commonly requested by students and b) already occurring outwith central provision through ad hoc recordings and college-based licenses. A centrally provided system would upgrade teaching spaces and capture nearly 100% of lecture activity by equipping approximately 400 rooms across the campuses. The business case proposal highlighted that lecture recording was '*an investment in student satisfaction*', and so at Edinburgh it is fair to say that the roll out was student driven. However, the business case also highlighted over eleven separate areas where lecture recording may benefit the wider university community, such as providing new opportunities for research (such as this evaluation programme), supporting

pedagogical innovation, reducing the risk of lecturing as a 'high-stakes' activity, and better supporting students through stressful transitions.

Of the universities which have significant investment in lecture recording, there is limited reporting on the impacts and evaluation of such investments. The large programme of evaluation here at Edinburgh is unique within the UK in terms of its scale, not only the scale of the university's lecture recording roll out, but also the breadth of research as part of the Principal's Teaching Award Scheme special call, and this university-wide evaluation.

Rollout as of June 2018

From July 2017 rollout of the Media Hopper Relay is envisaged to be carried out in a three-year time period in three stages from Academic Year 2017/2018 to Academic Year 2019/2020.

- Transition Stage – September 2017
    - Lecture recording services replaced in 114 general teaching spaces
    - Training on service use and guidance on copyright
- Expansion Stage – September 2018
    - University-wide policy implemented
    - Extension of training to include how service will enhance teaching and learning
- Transformation Stage – September 2019
    - Service rolled out to 400 general teaching spaces
    - Extended into specialist teaching spaces
    - Benefits evaluated, including impacts of new ways of working.

Evaluation

There are multiple sources of information regarding the lecture recording at Edinburgh. These range from the informal, such as the information captured within training sessions, communication team visits to schools, learner analytics, and raised by academic champions in the academic user group. There also exists a ring-fenced fund for the Principal's Teaching Award Scheme[*] to explore teaching innovations or enhancements with respect to lecture recording.

This university-wide evaluation exists to span specifically the bridge between transition and expansion stage by highlighting aspects of learning and teaching which require attention, and reporting how the technology is being used at this present time.

A key element of this evaluation is the exploration of both staff and student perspectives from a qualitative perspective. The intention is to report widely on these findings so other HEIs can learn from the Edinburgh experience, and so that further research within Edinburgh can use this work as a baseline for repeated study throughout the stages of the roll-out.

Project Limitations

A full methodology is included in the attached appendices detailing data collection and analysis but there are a number of limitations to this project which should be considered prior to discussion of findings.

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[*] https://www.ed.ac.uk/institute-academic-development/learning-teaching/funding/funding

In the first instance, the period in which the initial lecture recording system roll out and evaluation took place encompassed the UCU Industrial Action with regards to the Universities Superannuation Scheme proposals[†]. At Edinburgh, industrial action commenced on the 26th February and escalated over a 14 day period until the 21st March. The industrial action had two main effects. The action occurred during the planned data collection phase and reduced the number of interviews and focus groups that could be run. It was decided not to extend data collection further because data saturation had been achieved within the interviews conducted. It should be noted, however, that interviews and focus groups with student participants were particularly limited. Secondly, the use of lecture recordings within Edinburgh to mitigate the effects of industrial action was a more pronounced theme than might have been otherwise, and was raised by both staff and students[‡]. One participant elected to follow up with the principal investigator to question why this occurred and provide updated responses to some of the thoughts they had expressed in their interviews.

Another limitation of the project is that all participants are self-selecting. While the academic champions from each school were asked to circulate details of the project participation around, participants tended to have strong feelings regarding lecture recording. There were also a number of 'early-adopters' within the participants, i.e. academics who had piloted different methods of lecture recording.

While this report focusses on interviews with academics, a student focus group, and a student survey, it is also informed by a range of other data sources (**Table 2**) that feed in to the larger evaluation of the project. It was considered that the concerns and queries observed in this study were representative of what had been gained elsewhere. Gaps in the existing knowledge base have been highlighted in the possible directions for future research.

[†] https://www.ucu.org.uk/strikeforuss
[‡] http://www.studentnewspaper.org/ucu-criticises-the-university-of-edinburgh-as-further-strike-action-is-being-planned-2/

Table 2: *Sources and focusses of data on Lecture Recording Expansion Phase (MLE 004)*

Data Source	Data About . . .			Data Type . . .	
	Attitudes	**Behaviour**	**Knowledge**	**Staff**	**Students**
Policy consultation	Yes	No	No	Qualitative	None
School visits	Yes	Some	No	Qualitative	Some student qualitative data, principally through staff filter
Academic user group	Yes	Some	Some	Qualitative	None
AUG Comms Group	Yes	No	Some	Qualitative	None
Service feedback	Yes	Yes	No	Qualitative and Quantitative	None
Feedback from SRS	No	Yes	Yes	Qualitative	None
Analytics from Echo 360	No	Yes	No	None	Quantitative
PTAS Projects	No	Yes	Yes	Qualitative & Quantitative	Qualitative & Quantitative
Training feedback	No	No	Yes	Qualitative	None
Larger evaluation project	Yes	Yes	No	Qualitative	Qualitative and Quantitative
JISC digital tracker	Yes	No	No	None	Quantitative with some free text
Space evaluation survey	Yes	No	No	No	Quantitative with some free text
Course evaluation survey and mid course feedback	Yes	No	No	No	Quantitative with some free text

Findings

The Act of Recording Is Transformative

The transformative nature of recordings was a key observation that underpins many of this project's findings. While this may not be a novel finding to those with an interest in digital education, it is worth highlighting here specifically because of the scale of the roll-out.

Recording is transformative regardless of the format of that recording (audio, visual, transcription, or some form of all of this and more). Choosing to record something is inherently selective[6], and suggests that there is something within that space worth capturing. The transformative nature of recording presents both questions of *interference*, how the provision of a camera and microphone may change the behaviour occurring within the setting, and questions of *media*, how qualities of the recording may preserve or change the content[7].

In addition, the present social environment makes recording more widespread and easily-implemented. For students, and staff, the act of recording and uploading media for dissemination in social media is now commonplace. In this environment, it is worth considering whether recording still contains the same transformative power, or if this will diminish with time.

Regardless, it is in this transitional period that lecture recording is implemented. Lecture recording has only become feasible with the reduction in cost of hardware, software, and digital storage, as well as the bandwidth to access such media. These factors may be lessening the transformative power of recording, but they have not yet mitigated it. Any higher education institution must consider what recording a lecture communicates about the lecture's worth to both staff and students. Any discussion surrounding how lecture recording can transform or enhance teaching must also encompass what is presently valuable about lectures, and what about lectures may be less valuable.

Consider the difference between the following two statements:

> I honestly don't think I'd be successful in my exams without lecture recordings being made available. They are my main source of revision (coupled with past papers)
>
> - *Student Participant (Survey)*

> For me, the worst way possible to envisage why we need this process is because the content of the lecture is important and the student needs to know this content and therefore they need to be able to get hold of it, because if they don't get this content and there's so much there, they will not be able to pass the assessment.
>
> - *Staff Participant S (Interview)*

This may be the fundamental challenge when it comes to implementing lecture recording. It is possible that the key to overcoming it is not to ask *how can we stop recordings transforming lectures*, but instead to ask *how would we like to see teaching transformed*?

Proximate Versus Ultimate Concerns

Across all participants, staff and student, lecture recording challenges are resolved in two broad manners. There are the proximate concerns, which can be described as the interactions that occur within the lecture space, and the ultimate concerns, which can be described as how the participants conceptualise lectures as part of their learning and/or work process. Staff and students have different proximate and ultimate concerns (**Figure 1**) and the disparity between these may reflect challenges in learning and teaching.

The ultimate concerns are of particular interest, as these are slower to be resolved, and difficult for the individual to manage. However, addressing the proximate concerns are where the greatest 'good' can be achieved in a short space of time.

Figure 1: *Summary model of concerns across staff and students*
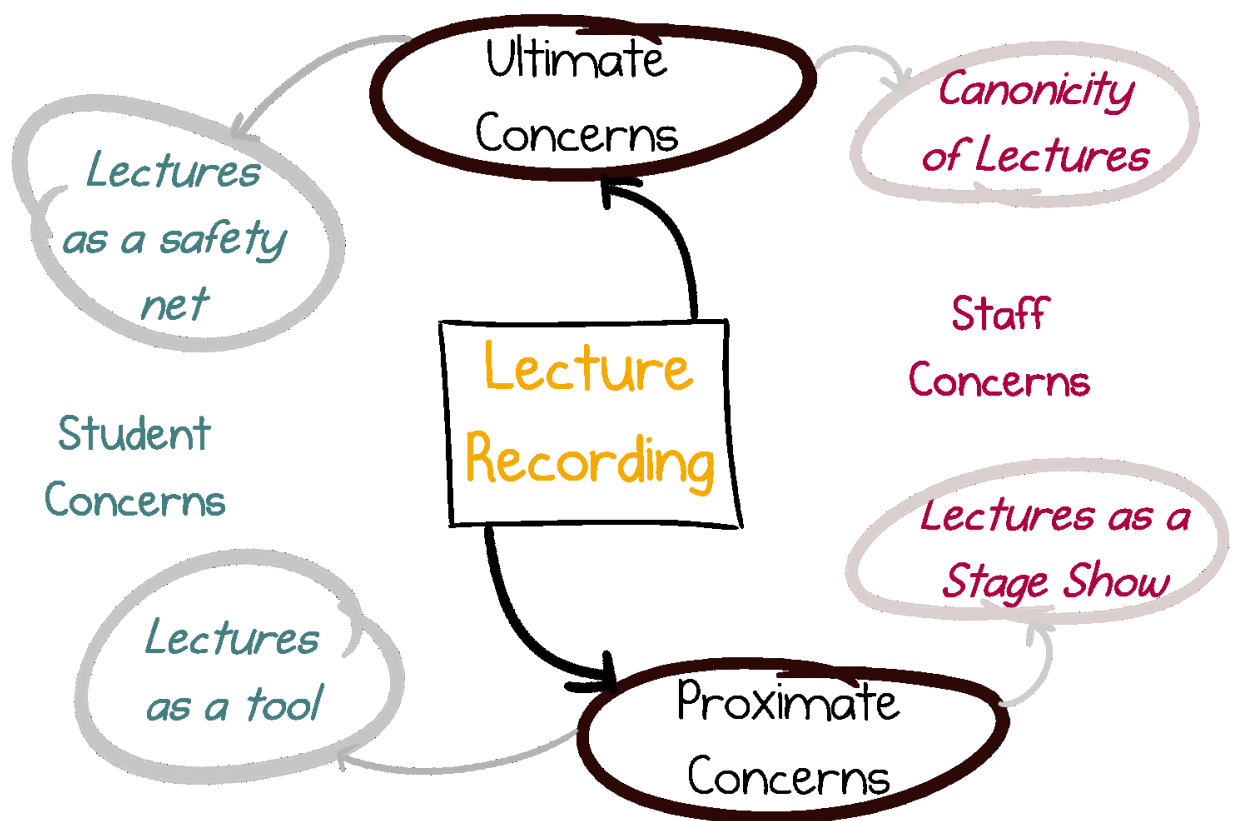
The Tool Versus the Performance

Within the lecture space, staff and students approach lectures with different concerns. For staff, the process of lecturing is performative, incorporating a range of feelings from the importance of being able to remain spontaneous, to the attention of the audience, to the anxieties that come from being a 'performer on a stage' and feelings of exposure. These feelings have been previously captured in the lecture recording literature, with staff considering that personal interaction is an integral part of the lecture experience[8], and worry about recordings making them less spontaneous[9]. At Edinburgh, these feelings often manifested in allegory regarding the lecture experience.

> … you might end up looking silly, you might get things wrong, you might, sort of, get stuck and forget what you wanted to say. Yes. And, I suppose, the other, sort of, metaphor I think of, is from music, it's like the difference between doing a live gig and a studio recording. So, if you're doing a live gig, it's a one-off, whatever happens, happens, you know, if the microphone breaks down, or your guitar string breaks, or whatever, you just have to, kind of, carry on and muddle through somehow, but once it's done it's over. Whereas, you know, a publication is more like a, kind of, studio recording, everything is finely crafted, and you try and get it all perfect, and you've got the luxury of being able to go over and over it and perfect it, as it were.
>
> - *Staff Participant K (Interview)*

> … There is an argument, which is you need to be entertaining as a lecturer and that's how you capture the audience, when there's some kind of edutainment going on and you are entertaining them and that makes it interesting, because you're competing with all the other aspects of social media and all the rest of it, and if you can just drop a few jokes in and make them laugh, then you've got it and you're doing okay.
>
> - *Staff Participant S (Interview)*

Recording this performance was a worry when participants felt as though their abilities were constrained. However, examples of precisely how recorded lectures would 'constrain' the material were limited. In fact, several participants spontaneously demonstrated practical applications of their teaching during interviews, either through illustration, referencing materials they considered good text, or through miniature experiments in their office. They were able to demonstrate application of their work quickly and easily, and often able to discuss how they could make this work within recorded lectures.

> [Resuming after a demonstration to interviewer]
>
> But, a video of that [demonstration] immediately makes the point; you can't explain that with a PowerPoint slide. So, that's one of my ... It's not my most exciting demonstration. [...] But, yes, that's where visuals help,
>
> - *Staff Participant J (Interview)*

The stage curtain aspect of lecturing also manifested in anxiety about appearance. For one participant, lecture recording combined constraints on their teaching alongside self-consciousness, and these feelings were manifested jointly in their responses.

> Respondent: I hate [lecture recording], absolutely hate them. It really changes the way, how you behave. For example, this year it happened to be that I'm teaching exactly the same course, but apparently that room was not equipped for lecture recording, and I can just jump to the whiteboard and write straight away what I want to illustrate the point, if instead I was lecture recording I would just not do that.
>
> Interviewer: Why not?
>
> Respondent: Because I would ... first of all, that specific technology that we was using requires that it's only the electronic stuff which is used, basically you have to go, I have to go through the ... what's the name, projector?
>
> Interviewer: Oh yeah, the tablet thing, yeah.
>
> Respondent: Whatever it is, so this is really, really clunky, and it also makes me to be far more conscious, self-conscious about myself, which is not a good idea, because if I'm self-conscious I will concentrate, like completely subconsciously I will be concentrating on things other than trying to deliver my ideas in the best way possible, or the information in the best way possible.
>
> Interviewer: Yeah, sure.
>
> Respondent: By the way, these things improve with time, but I believe that the lecture recording is particularly bad for people with any issues of self confidence, which typically very often affects young people, and also potentially more affect women.
>
> - *Staff Participant V (Interview)*

Concerns about appearance were referenced by several participants. These can be fairly characterised as issues of 'vanity', but that should not devalue these feelings.

> I hate watching myself back. That's one of the things with the recordings, I never listen to them, I never listen to them, yes. I mean, I maybe listen to the first few seconds, just to, kind of, trim off the beginning, but I just don't like hearing myself or seeing myself.
>
> - *Staff Participant K (Interview)*

> When I look in the mirror, I don't see baldness, but when I watch myself back all I see is baldness.
>
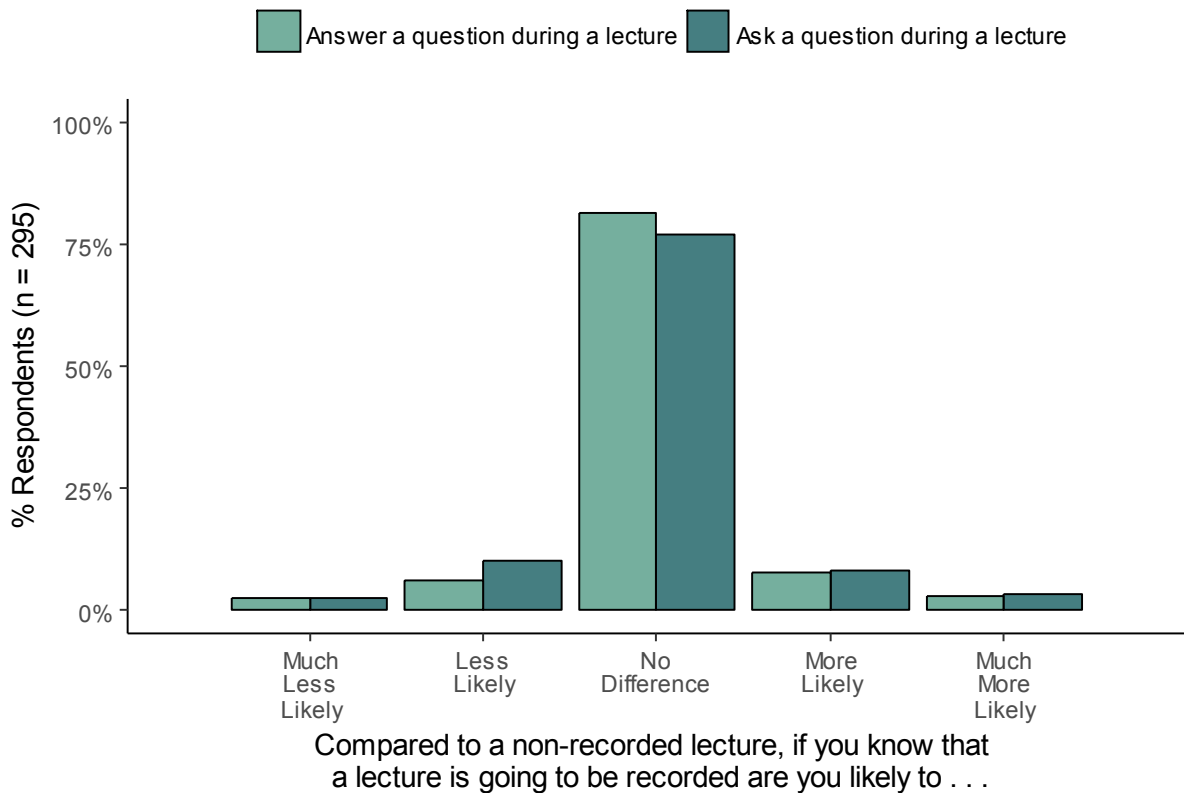> - *Staff Participant A (Interview)*

> I have no wish whatsoever to see a recorded version of my own lecture and see what I look like and hear what my voice sounds like. No wish whatsoever.
>
> - *Staff Participant F (Interview)*

And while staff were mostly pragmatic regarding the use of recorded materials outwith lectures, i.e. material being posted online for the purposes of 'mockery', they were more concerned with issues of copyright, slander and of the status of pre-published results. There is a perceived lack of information available to lecturers regarding the status of recorded lectures, and they are often unsure where to seek development on this (see below, *where is help*?).

In both the survey and focus group, student participants were not overly concerned with how lecture recording might open them to these issues. Over 77% of student participants in the survey felt there would be no difference in their likelihood to ask or answer questions when lectures were recorded (**Figure 2**).

Figure 2*: First-year student self-reports of question-related behaviour in recorded lectures*

While concerns about what students may do with recorded lectures were considered by the staff participants, the students within the focus group had a different view. The students stated that lecture recordings would *not* be used to make fun of staff because other technologies would be used instead. If a student wished to capture something with the specific intent of sharing, they would use an internet-enabled camera, i.e. a phone camera to do so, which would allow sharing within their networks easily and quickly. While this is not likely to be reassuring for the lecturers, it does highlight that lecture recording is not novel, and that these concerns exist outside of the implementation of the lecture recording system. It also highlights a need to reinforce for students (and likely for staff as well) messages about digital security.

Student A: Sometimes they would take pictures or videos of [the lecturer …] struggling to explain stuff, or completely losing their focus. But usually when they sit in the lecture, they're, "This is funny. This is hilarious," not necessarily like –

Because if you watch a lecture, just to get this clip and I put it online, that would be really purposely to hurt them. I don't know anyone who'd have that energy to do that, be adventurous enough to do that.

Student B: Not that it's good, not that it's happening even within small social circles, but the reality is that generally that happens between two or three people and it's like five seconds and then it's, like, moving on. It's not like we tweet it or . . .

Student A: Although in Facebook groups, closed ones, but usually just between people who are at that lecture, just like, "Yes, it's funny," and then –

Student B: It wouldn't really circulate outside of that small group.

Student A: Yes, it wouldn't really be anything negative about the lecturer, it's more like especially if you're a bit bored or something, it's just interesting. And also because lecturers are kind of like that bit above you, like they know all the stuff and they teach you, to say, "Okay, I can do that better than they do." Just seeing them making a mistake, for a lot of people that's a lot funnier than seeing other people make mistakes because lecturers have that authority.

- *Student Participants (Focus Group)*

Sub-Theme: Lectures and Student Engagement

One surprising feature of the 'stage curtain' theme was a recurring feeling of responsibility with regards to student engagement. Staff were conscious, particularly in early years where material was perceived to be 'dull' that they had to maintain student interest in the material. When questioned, staff often partially absolved students of this responsibility, and shouldered a great deal of the responsibility for student engagement themselves.

So I totally understand that it's not fair to say *"[this subject] is boring, guys, sorry, you're stuck with it"*, no, it's not like that. We've been trying quite hard to come up with real life examples and some topics and drafts […] So we're trying to do a lot and we're trying to give some examples, as many examples as we can possibly do. So our responsibility is obviously to make it as engaging and interesting as possible, but because the first few years we want to cover [technical details] to provide [a basis] for our [students] to specialise in any area they want, and that's good just because then we can hope for a wider variety of option courses in third and fourth year, and material was very challenging.

So there's always a little bit of trade off, we can spend a lot of time talking about fun stuff in less detail and not have enough time to cover more technical material which seems a little bit more boring, or we can do only technical stuff, but that's clearly a terrible idea because everyone will fall asleep and again will not study for the semester, try to revise, fall asleep, we don't want. So we're really trying to balance it, it's not an easy problem to solve but we are trying.

- *Staff Participant Y (Interview)*

It's a joint responsibility. I've got to be as clear as I can be, but the students have got to pay attention. If they're sitting on Facebook, which they commonly do in lectures, then they're not fully paying attention, but that is their responsibility. It's both. I don't think your question is provocative actually. It's both.

- *Staff Participant A (Interview)*

So, in terms of what we can control, it is up to the lecturer. Of course, it's up to the students, it's just like the theatre. It's up to the audience to make a play work as much as it's up to the actors, but the audience, to a certain extent, is passive. If it's a bad lecture or a bad play, no matter how hard the audience is trying, and especially if the audience is full of the actors' mums desperately laughing at every line, it's just a horrible experience, hugely embarrassing.

So, I think in that sense, it is up to the lecturer and if you're lecturing in a subject, you should be enthusiastic about it. Yes, maybe not every aspect of it but enough to fake it, if you see what I mean. That's, I think, part of the role.

- *Staff Participant N (Interview)*

It is particularly interesting to compare this with the student participants' view of engagement. Students rarely talked about lectures as engaging, but the focus group raised the importance of engagement in other settings, such as tutorials.

Student A: I know you're not supposed to watch lectures, that's what our school always tells us, we're not supposed to not go to lectures and then watch them afterwards. In general, I think that's a good rule but sometimes it's just impossible. Sometimes when you're sick or something, you just can't go to the lectures, and then there's no point in going if you can have a very similar experience by watching them at home, whereas tutorials you can't really get somewhere else. If that makes sense?

- *Student Participants (Focus Group)*

For students, the real value of lectures as a tool was the ability to receive large quantities of information. In this respect, lecture recording allowed them to concentrate more on the materials and fill in their notes later. It was therefore very frustrating for students when mics were not used (a common complaint) or when there were technical issues. This can almost be directly contrasted against the staff idea of a 'live performance' which has an inherent aspect of unpredictability.

There are a few common issues I have noticed throughout the year; for one the lecture seems to start recording on a pre timed schedule of the lecture theatre, i.e as soon as the timetabled lecture starts but everyone takes some time to settle and also drag on for up to 15 minutes after the lecture has ended. Secondly the second screen where normally lecturers write hand notes or working out on boards are quite often not captured, although this has significantly improved for this semester, so perhaps it was the equipment set up, but it proves to be a frustrating watch having only part of the lecture. And lastly a variety of lecturers seems to have difficulty solving any issues that they may have on the day and in some cases the lectures were not recorded at all to many of our frustrations, a suggestion could be an online help page to help with common problems e.g microphone not working or auto zoom becomes blurry.

- *Student Participants (Survey Free Text)*

> In my experience, many lecturers have had problem a getting the lecture recording system to work, sometimes to the point where they end up not being able to record the lectures. I assume lecturers will have been given some training in how to use the system, however this has clearly not been enough for everyone.
>
> - *Student Participants (Survey Free Text)*

> The lecture recordings are great when they work (especially for revision, making extra detailed notes and in case you missed what the lecturer said) however sometimes they do fail or the microphone is not switched on. Perhaps even tutorials could be recorded too.
>
> - *Student Participants (Survey Free Text)*

In this way, some students mentioned they would like older recordings to be made available as they perceived the recordings as highly valuable. By contrast, staff fundamentally felt as though the lecture captured something which was not repeatable.

> In the event a recording isn't picked up due to a technical fault, it would be helpful for the university to post a previous year's equivalent.
>
> - *Student Participants (Survey Free Text)*

> Please let students have access to the recorded lectures from the previous academic years if a class has not been recorded. Thanks.
>
> - *Student Participants (Survey Free Text)*

> […] for some obscure reason, I had to give the same lecture every week, to a different group of students. And, it was the same lecture, but it was never the same the second time, it was always different, because you learn something from delivering it. You think, you know, I didn't really explain that well enough, or, that bit went a bit too quick, or, I seem to be labouring this point, and you change your delivery, and you just bury it. Certainly, from year to year, my lectures change quite a bit, I'll rejig the material, or I'll maybe cover some slightly different things, because you're constantly reflecting on your own teaching practice, and trying to improve things..
>
> - *Staff Participant K (Interview)*

Sub-Theme: The Commodification of Lectures

Within this idea that lectures were a performance, there is also a concern that the performance could be commodified. For staff, this was also compounded by the industrial action. One participant

was motivated to follow up on their interview to reflect their changed opinions given activity that had occurred during the industrial action.

> My only issue is the latest strike action, so I missed a couple of lectures because I was out on strike. You know, I put the PowerPoints online and I told the students about the reading that they were supposed to be doing, and then when I was back from strike I said 'You'll all have read this and the PowerPoints online, you'll all have done the reading', but I did think that if this had happened next year they could have just broadcast my lectures, they'll just undermine the strike even more than me putting my PowerPoints online and stuff.
>
> - *Staff Participant U (Interview)*

> Using lecturer recordings to break or undermine legitimate industrial action is, I think, a completely unacceptable practice, and against the spirit and intention of the lecture capture initiative, as well as the principles of the University. I sincerely hope that any repeat of this can be ruled out in any future guidance around the use of captured recordings.
>
> - *Staff Participant K (Follow-Up Email)*

The Safety Net Versus the Canon

There is a blurred distinction at times between the proximate and ultimate concerns with lecture recording. For staff, the 'canonicity' of lectures can be broadly summarised as the worry that providing recorded materials will fundamentally and detrimentally affect student learning. This theme rests on the idea that recording transforms and formalises a space, and encompasses concerns about performance rights, copyright, worries about staff members saying something factually inaccurate and having that quoted back to them in exams, and worries about fact retention being prioritised over critical reasoning skills.

'Canonisation' of materials is a nebulous concept which covers a range of overlapping concerns, and fundamentally links back to the purpose of lectures in student learning. Staff often highlighted their worry about this in terms of assessment.

> So, you've reminded me of a thing that cropped up in an exam two years ago, where the question was, explain why … whatever, and in the lecture notes, because I knew that exam was coming, I'd given basically a bulleted list of ten things. Actually only two of them were relevant to the answer, but I hadn't explicitly said, that year, 'I'm not interested in regurgitation'. So, when someone answering that question gave me a list of ten things, including the two correct ones, they weren't wrong.
>
> -   *Staff Participant J (Interview)*

Within the student survey, students were asked what they thought of lectures as a learning resource. **Figure 3** demonstrates that while the majority of first year students considered lectures a 'good resource' for exam revision, 28% of survey respondents (n = 83) stated that lectures were the 'best resource' for exam revision. While these are first year students, this survey was conducted at the end of May, when students were likely consider revision strategies, and likely to have had experience of their first university exams in December. Although a small number of students in comparison to our total headcount, it is likely that these students will require more assistance making use of recorded lectures.

Figure 3: *First-year students' reported beliefs regarding the usefulness of lectures for exam revision.*
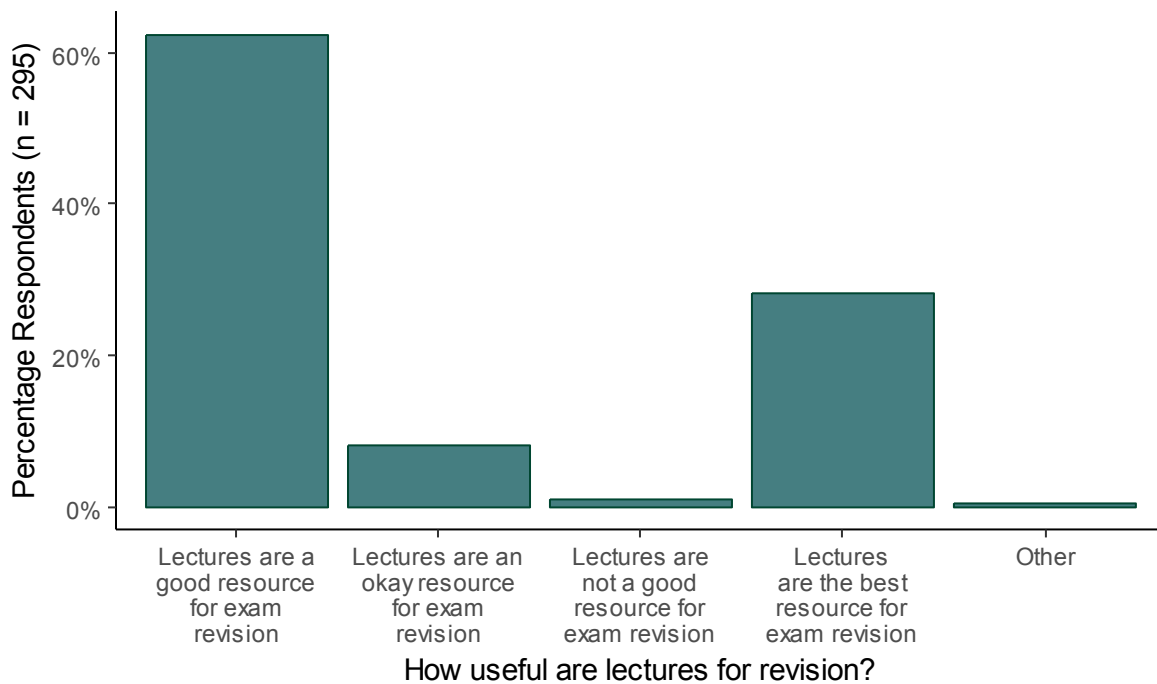
They are essential. Especially for those of us who use handwritten notes and so need to go back and fill in gaps of whatever we missed during the actual lecture. I honestly don't think I'd be successful in my exams without lecture recordings being made available. They are my main source of revision (coupled with past papers)

- *Student Participants (Survey Free Text)*

For students, the overarching concern was not about their learning, but about how lecture recordings would help them to absorb 'shock' to the system. Students frequently discussed how having recorded lectures reduced their worry about keeping up, or helped them to balance their study with living in Edinburgh.

As someone who struggles with anxiety especially in situations such as lectures, the recordings are an invaluable resource which I depend on greatly.

- *Student Participants (Survey Free Text)*

In terms of supporting vulnerable students, there were a small number of self-identified carers (5%, n = 15) who responded to the survey, and a few more who reported having learning adjustments

(9%, n = 26). Their comments in particular highlighted the importance of the 'safety net' to these groups. These groups were particularly sensitive to technical challenges and lack of communication. For example, when microphones are not properly utilised, these groups suffer disproportionately. Students who disclosed learning adjustments in the survey were more likely to report being unable to find recorded lectures ($H^{(7)} = 39.429$, $p < 0.001$).

Personally I feel recording the lectures has been invaluable to me. I have [caring responsibilities to a chronically ill child]. Having access to the recorded lectures, that I may have missed, has allowed me to keep on top of my studies during these times, without the worry and anxiety of missing vital topics/lectures. For people in the same situation as me it is an invaluable resource and one that I feel should be rolled out across the university. I do however feel that this could be abused in order to justify not attending lectures but I feel that people with a justifiable and legitimate reason for not being able to attend a lecture(s) should be able to access recordings, if required in order to prevent disruption in their studies.

- *Student Participant (Survey Free Text)*

Sub-Theme: Where is Help?

Often, when attempting to resolve these larger questions about the purpose of a lecture, staff asked where assistance could be found. This led to conversations between interviewer and participants about how staff could support one another and their students with study skills. In the focus group, students were keen to highlight that their lecturers had discouraged them from using the recorded lectures too prevalently within their revision and they considered recorded lectures 'the step before revision'.

I don't [point students towards central resources for study]. They're just too generic. Yeah. They're generic. One, they're generic, two, they're naïve, three, it's just the same thing again, how do you write an essay, look, here's this, you know, here's a catchy five-minute video you can look at.

- *Staff Participant F (Interview)*

> Sometimes I found to watch something at twice the speed is helpful, if I just needed to go to some certain aspects of it. If it's a topic that I already know but I want to watch it in case I miss something or in case there is something new. I wouldn't pay attention to every single detail because I already knew the stuff that is going on. Especially in the first semester when we did a lot of stuff that I already did in school, sometimes I was just, "Okay, I'll watch it again." I'd pay attention but I'd only pause and I'd play them all at speed if they bring up something that I haven't seen before or that I wouldn't know exactly how to do already.
>
> - *Student Participant (Focus Group)*

There is a lack of knowledge among staff as to how to best direct students to make us of recorded lectures, and in that absence students are exploring a range of tactics. A number of methods were referenced by students, such as watching specific parts of lectures, watching lectures at double speed, listening to the audio in the car, however the majority of students in the survey said they most frequently watched a full lecture again, at least once a month (**Figure 4**). Guidance for best use of recorded lectures is a crucial topic for future research, and may well require some discipline-specific thinking.

Figure 4: *First-year students' self-reported frequency of use of recorded lectures*
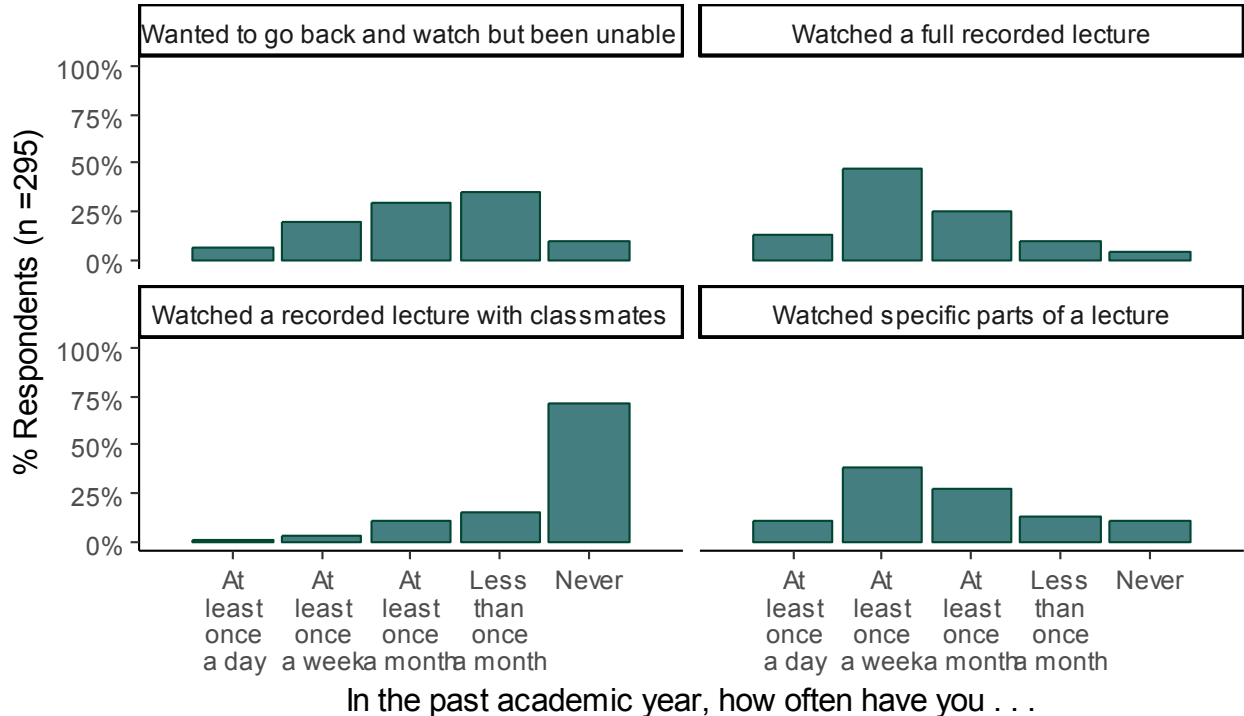
Suggested Directions for Future Evaluation Projects

Future research into the implementation of lecture recording at Edinburgh has the opportunity to address two broad research questions:

- How can the roll-out of a widespread lecture recording system enhance student learning?
- How can the roll-out of a widespread lecture recording system enhance student experience?

Both questions can and should be addressed at the level of institution as a whole, and at the level of the discipline. Future research should have a strong focus on student support for appropriate use of the lecture recording tool, and assisting academics to build communities of practice within their classes in order to a) construct a good relationship between staff and students to ensure that recorded lectures are not seen as a replacement for the lecturer and b) to model the academic behaviour and skills that academics believe may be missing within lectures.

The following suggestions are not comprehensive, nor fully developed, but may provide some guidance or points of interest for researchers hoping to apply for PTAS grants.

Co-Constructing Digital Pedagogy at an Institutional Level

Possible Research Questions:
- What strategies can students use to incorporate lecture recordings into their studies?
  - Do different strategies work for different groups of students?
  - Where do students seek out information about study strategies?
  - Where do academic support staff (e.g. personal tutors?) draw information about study strategies?

These questions will likely be most suited to a large qualitative project involving participatory approaches, discussing with students across different stages of study. It is also important that IAD and EUSA feed into these research questions. Many of the outcomes of lecture recording evaluations, formal and informal, have been based on in-depth discussions with staff and larger surveys with students. It could be said that we discuss with our colleagues, and yet demand answers from our students.

Within this evaluation we repeatedly see a concern from staff that students may not use lecture recordings in the most appropriate manner, while students have discussed how they are not sure how best to make use of the resource. This likely cannot be addressed without considering how information archival and retrieval has been impacted by the digital age. Students from the early 2010s onwards have had a very different student experience from the vast majority of their lecturers, and even their nearest colleagues. We do not truly support student learning with an informed understanding of how social networks, group chats, fast and cheap image sharing, and shareable documents can shape this experience.

While lecture recording is not the sole cause of such changes, it represents a significant investment in terms of cost and staff and student feeling. The lecture recording project may provide the opportunity to start the discussion to explore these wider issues.

Discipline-Based Lecture Provision

There are a number of commonalities across disciplines that should be addressed at an institutional level, however it is also important that each discipline is given space to explore opportunities that may be unique to them. These projects are uniquely suited for continued PTAS funding.

Possible Research Questions:

- How are communities of academic practice constructed within and across a discipline?
    - Do recorded lectures reflect this community of practice or sit outside it?
    - How does lecture recording sit within a community of practice?
    - How can recorded lectures facilitate discipline specific learning?
- How can disciplines share good practice with one another?
- What are the similarities between teaching at distance and recording lectures?
    - How have those who teach at distance resolved the ultimate and proximate issues raised in this evaluation?
    - Learning cross modes of delivery?
- What skills can be taught in lectures?
- How can we transform the boundaries of a lecture? (Bringing the outside in, students recording as well, etc.)
- How can students use the facilities – develop generic presentation skills, or produce condensed materials, also ICT, and critical thinking skills.
- How can lecture recording be facilitated in skill-learning spaces (e.g. labs, tutorials, etc.)
- How can recorded lectures be used for staff development?
    - Can lecture recordings facilitate peer observation of teaching?
    - Can lecture recordings facilitate self-reflection on practice, through structured reflection tools?

Conclusions and Recommendations

The introduction of a centrally-provided lecture recording service has surfaced some underlying opportunities for learning and teaching. Both staff and students have uncertainties about how lecture recording will affect study strategies, and lack some digital literacy skills, particularly around ethics and security. The lecture recording roll-out offers a natural 'jumping off' point to address these issues at an institutional level.

The act of recording is, by nature, transformative. The narrative surrounding lecture recording can therefore tend towards the preventative: how can we stop lecture recording from changing fundamental aspects of higher education? However, in conversations about teaching and learning both staff and students question the value of the lecture in its present format.

Lecture recording therefore provides an opportunity to evaluate teaching practice at Edinburgh and to consider pedagogical underpinnings of higher education at a discipline and institutional level.

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