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1 **A qualitative approach to understanding the role of lecture capture in**
2 **student learning experiences**

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1 **Abstract**

2 Lectures continue to be the dominant form of university teaching, and lecture
3 capture technologies are tentatively taken up to support this form of delivery, rather than
4 being used as a viable alternative. Much of the previous research, however, has been
5 self-reports or survey based, with far less attention given to qualitative explorations.
6 This study aims to bridge this gap by using qualitative methods in order to examine
7 students' experiences of lecture capture provisions within the context of their own
8 learning by utilising 6 focus groups to generate data. Thematic analysis was used to
9 understand group opinions and experiences of lecture capture within a university
10 teaching. Two conceptual themes emerged: enhancing the learning environment and
11 working and learning strategically. Results showed that lecture capture provisions could
12 not be fully evaluated independent of current learning environments where they
13 contribute to alleviating negative perceptions of lectures. In addition, the extent to
14 which lecture capturing develops and enhances the learning experience is discussed.
15 Recommendations for how learning and teaching committees can utilize lecture
16 capturing are proposed.

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18 Lecture capturing, Thematic analysis, Qualitative methods

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1 **Introduction**

2 To facilitate widening participation in Higher Education and to meet the needs of
3 so called ‘Digital Native’ learners (Prensky, 2001; Miliken & Barnes, 2002), institutions
4 have reconsidered the nature and role of traditional learning environments. These
5 considerations include integrating technology enhanced learning, such as lecture
6 capturing provisions (Owston, Lupshenyuk, Wideman, 2011). Broadly, however, the
7 integration of technology into learning and teaching practices has not been universally
8 accepted by academics. Particularly in relation to lecture capturing, issues around
9 attendance to lectures and redundant lecturers have been discussed in the literature and
10 media (Charlton, 2006; Wolff, 2011). More recently, pre-recorded courses, such as
11 Massive Open Online Courses, have generated further concern that education will
12 become about entertainment, facilitate privatisation of Higher Education, while also
13 lowering academic attainment in distance learners (Vernon, 2013). However, given the
14 continued dominance of traditional didactic lectures is evident enough that learning
15 technologies have not had the negative impact they were feared to have had; lectures are
16 still the dominant delivery method of content and lecturers and students still attend.

17 **A brief overview of lecture capturing**

18 Lecture capturing has achieved notable attention in the literature on learning
19 technologies, affectionately termed ‘podogogy’ by some scholars (Rosell-Aguilar, 2007,
20 p. 487). The general consensus, however, is that the benefits of lecture capturing in
21 Higher Education are ambiguous or minimal with some populations of students (e.g.,
22 international students; those with learning difficulties; lower performing students)
23 benefiting more than others (Karnad, 2013; McGarr, 2009); lecture capture’s role,
24 therefore, is in a supportive capacity that provides added value to the student

1 experience. Some of the main arguments against using lecture capturing is its potential
2 impact on attendance and attainment (Kanrad, 2014; McGarr, 2009; Owston et al., 2011;
3 Von Konsky et al., 2009), and perhaps it is these issues that stifle its uptake and
4 development.

5 Whilst literature on attendance has evidenced a decrease in student numbers
6 when lecture capturing has been made available (e.g., Gosper, et al., 2008; Traphagan,
7 Kuscera, & Kishi, 2010), this might be explained as a result of the discipline itself
8 (Wang, Mattick, & Dunne, 2010), or that students considered to be academically mature
9 in their attitudes have considered reasons for not attending (Holbrook & Dupont, 2009;
10 Owston et al., 2011). However, other literature has demonstrated little influence on
11 student attendance (e.g., Toppin, 2011; Walls et al., 2010). Medical students, for
12 example, preferred live lectures over streamed and recorded lectures, and that the
13 availability of streamed or recorded lectures did not affect their motivation to attend.
14 Rather, the perceived opportunity to interact with a lecturer motivated students to attend
15 whilst also having a more satisfying learning experience (Wang et al., 2010). However,
16 studies relating to attendance need to be interpreted with caution as many provide self-
17 reported attendance rather than actual observed attendance (see Bongey, Cizadlo, &
18 Kalnbach, et al., 2006). Further still, those studies that reported observed attendance do
19 not report that their courses were already poorly attended or provide pre intervention
20 attendance data (see, for instance, Traphagan et al., 2010).

21 In terms of student attainment, the evidence is also ambiguous as comparing
22 marks between previous cohorts is difficult given the fluctuation between student
23 performance and changes in tutors and content, which can cause fluctuations in grades
24 between those who had access to recorded lectures and those who did not (McGarr,

1 2009). In general, some literature has shown increased attainment when didactic
2 lectures were substituted with lecture capturing while other studies have shown
3 attainment is dependent upon complexity and comprehension of tasks (recorded lectures
4 were less useful with complex information that required combining with other
5 knowledge, Giannkos & Vlamos, 2012), student performance (e.g., those who were
6 failing are more likely to improve; Traphagan, Kucksera, & Kishi, 2010), as well as
7 amount of note-taking needed in class where being able to review lectures facilitated
8 attainment for those who could not keep up with note taking (McKinney et al., 2009).
9 This is also experienced by students whose first language is not English and so recorded
10 lectures help overcome initial linguistic and/or learning difficulties (Leadbeater,
11 Shuttleworth, Couperthwaite, & Nightingale, 2013). In contrast, however, other studies
12 have not evidenced an increase in student attainment (Hove & Corcoron, 2008; von
13 Konsky et al., 2009).

14 What is not as present in the literature is discussion about lecture capturing's
15 benefits in terms of pastoral support to enhance attainment, student retention, and
16 progression. In addition to overcoming linguistic diversity (Leadbeater et al., 2013) it is
17 likely that pastoral support through recorded lectures can be extended to students who
18 have long-term illness, other learning difficulties beyond dyslexic, are mature-students
19 with family commitments. In this sense, lecture capturing could be a useful tool in
20 helping make Higher Education more accessible to such students in manner that was
21 originally intended.

22 In general, McGarr (2009) suggests that the impact of lecture capturing (and
23 related technologies, such as podcasts) upon learning and traditional lecturing is related
24 to how educators choose to use such provisions. As such, research in this area needs to

1 move beyond assessing its implementation during didactic lectures and impact on
2 assessment and attainment and focus upon the benefits of using the technology
3 intelligently, and in educating students in using these technologies in a manner that
4 enhances their learning experiences.

5 Finally, despite several studies about lecture capturing having utilised qualitative
6 methods and data (e.g., Gosper et al., 2010; Woo et al., 2008), they consist mainly of
7 open-ended statements as part of a self-report survey. These studies only offer a narrow
8 perspective of learners' subjective experiences with lecture capturing within the context
9 of their overall education. Qualitative methods provide rich data in order to explore a
10 particular experiential phenomenon (see further, Smith, 2008; Willig, 2008), which seek
11 to develop, amplify, or refute the more dominant findings outlined in the quantitative
12 research relative to survey designs and open-ended statements. While survey methods
13 provide information about the extent of learning and teaching experiences of, and
14 attitudes towards using lecture capturing, they do not help us to understand why there
15 are differences in attitudes and perceptions. Given the call in studies (e.g., Kanrad,
16 2014; Taplin, Low, & Brown, 2011) for further 'in-depth' research about experiences
17 with lecture capturing, many of the remaining ambiguities may be explained by the
18 limitations of survey methods and their lack of scope in exploring these issues more
19 deeply.

20 In summary, it appears that there is consensus about lecture capturing
21 provision's ability to negatively influence lecture attendance, but most studies have
22 shown this not to be supported. Similarly, the literature concerning its impact upon
23 student attainment is perhaps less convincing, but learning is not impaired either.
24 Although, far more rigorous experimental methods and long-term studies are required in

1 order to understand the impact of lecture capturing on student attendance, so too are
2 detailed case studies about why students experience lecture capturing differently during
3 their study habits.

4

5 **Study justification**

6 The research documents that lectures continue to be the dominant form of
7 university teaching, and that technology enhanced learning tools – specifically lecture
8 capture in this instance – are tentatively taken up to support learning. Further still,
9 studies about lecture capturing have been based primarily on attendance and attainment
10 using surveys, with far less attention given to qualitative methodologies; there is very
11 little research that draws on students’ experiences, expectations, and perceived value in
12 interacting with lecture capturing provisions and why there are differences in student
13 experiences.

14 This study, therefore, has several aims. Firstly, given the ubiquitous use of
15 qualitative methods in other disciplines, namely those in the Social Sciences, it seems
16 unusual to have a field of research that seeks to understand users’ experiences that
17 deviates from qualitative methods as a frequent and valid method of inquiry. To address
18 a recognised distinct scarcity of qualitative research about student learning experiences
19 with lecture capturing (c.f., Wang et al., 2010), we aim to develop the qualitative
20 literature in this field in order to further our understanding of students’ experiences of
21 lecture capture provisions in ways that self-report measures and other quantitative
22 designs have not been able to do. Secondly, by utilising qualitative methods, we aim to
23 identify and explore the dominant themes and debates made relevant in students’ talk

1 about the different ways of experiencing lecture capturing as part of their study habits
2 and learning process.

3 Our core research aim, therefore, seeks to address the question how do students
4 make sense of lecture capturing as a learning aide at university? To conduct our study
5 we utilise the trend in Higher Education to introduce and standardise lecture capturing
6 as a minimal expectation for learning experience (Owston et al., 2011), and we present
7 data from one UK University that introduced lecture capturing into the lecture
8 environment in 2013.

9

10 **Method**

11 *Design*

12 A qualitative design that utilised focus groups was employed. Focus groups were
13 used in order to generate data via group interaction as Barbour and Kitzinger (1999)
14 posit that focus groups are ideal for exploring people's experiences and opinions, and
15 how they are responded to by others through conversation with the group.

16 *Participants*

17 In total 42 undergraduates (males; $N= 23$ and females; $N= 19$) who were
18 studying at a British university in Wales took part and ranged in age from 19 – 26.
19 Students came from eight different departments that were already piloting lecture
20 capturing in their modules (Computer Science; Psychology; Art History; Sports
21 Science; Criminology; Geography; European Languages; Accounting), with lecture
22 enrolment ranging from 40 to 120 students. Participants had used lecture capturing
23 provisions in varying amounts, ranging from five to ten unique views in one module.

24

1 ***Procedure***

2 Six focus groups were held lasting between 60 and 90 minutes. In an attempt to
3 reduce convergence in responses, participants in each focus group responded to themed
4 “yes” and “no” or “agree” and “disagree” statements using Qwizdom voting system,
5 such as “Did lecture capturing increase your understanding of topics covered in class?”
6 Results of the responses were displayed on a computer monitor as percentages in a bar
7 graphs. Participants were then asked to elaborate upon their answers together as part of
8 a semi-structured interview that encouraged more detailed responses (e.g., why do you
9 think recorded lectures influenced your understanding of topics covered in class?) of the
10 focus group discussions. The study received ethical approval from the department’s
11 ethics committee and was conducted in accordance with the British Psychological
12 Society’s ethical code. All personal data were kept confidential and student responses
13 fully anonymized.

14 ***Data Analysis***

15 Recordings of the groups were transcribed verbatim and analysed using Braun &
16 Clarke’s (2006) six step procedure for conducting thematic analysis (Table 1). An
17 important feature of thematic analysis in the selection process is establishing internal
18 homogeneity – external heterogeneity. For example, extracts that fitted into multiple
19 themes were collapsed into a higher order theme and a new candidate theme was
20 generated. As the stages progressed, some extracts were removed as stronger extracts
21 that demonstrated each theme were used as examples. This pattern was repeated until
22 there was a consensus between the authors that there were distinct themes; two
23 overarching conceptual themes were identified.

24 [Insert table 1 here]

1 **Results and Discussion**

2 In our data we identified two central themes that explored (1) how and why
3 lecture capturing enhanced student learning experiences, and (2) how lecture capture
4 enabled students to work and learn strategically.

5

6 ***Theme 1: Enhancing learning experiences***

7 Across three sub-themes students showed: (a) how lecture capturing highlighted
8 the cognitive demands of lectures, exaggerated lectures as a negative learning
9 experience, and attenuated cognitive demands whilst also providing a safety net; (b) that
10 despite the availability of lecture capturing, lectures were the preferred learning
11 environment as a result of a perceived social and traditional learning benefits in
12 attending lectures as part of a typical student experience; and (c) that lecture capture
13 provided a means of support.

14

15 ***Increasing and assisting cognitive demands***

16 Students showed consensus that lectures were cognitively demanding and that
17 utilising recorded lectures highlighted factors that negatively influence their learning
18 experiences. For example, students emphasised in particular that sources of frustration
19 and anxiety during lectures were the speed of delivery by lecturer, which affected clarity
20 of notes and in comprehending the content. Students, therefore, used recorded lectures
21 to attenuate these scenarios, specifically to develop their notes:

22

23 “...I got very frustrated whenever the lecturer went so fast that I couldn’t
24 get a quarter of the notes on the slide that I ought to have made (...) I sort

1 of put the pen down and gave up on those notes and thought ‘ok, I’ll get
2 them off the video later’, which evolved into ‘I’m not going to bother
3 taking any notes’ because I am having to focus a lot harder to keep up (...)
4 I’m not really taking it all in”.

5
6 The lecture environment, we conclude, challenges students’ ability to listen and
7 understand, but lecture capturing provided a source of control through facilitating post-
8 lecture engagement to fill in missing, and make sense of, unclear notes, reducing
9 academic related anxiety.

10 Our students also came to expect lecture capturing in all lectures, but some
11 academic staff chose not to deploy it in team taught modules. As such, those students
12 who experienced an inconsistent use in their modules further highlighted the positive
13 value of having lecture capturing available, such as perceived attainment, but also
14 dissatisfaction with a lecture when it was not available:

15
16 “I really dislike that it isn’t in every module I study and you really feel the
17 difference [in terms of the pressure to keep up] of not having it in modules
18 that don’t; the difference is really pronounced, so I’d say you need it in all
19 modules for it to be a real success for students to do consistently well”.

20
21 Students also acknowledged their individual contribution in their learning during
22 lectures. For example, students’ motivations and concentration fluctuated daily, and
23 lectures times did not always fit well with their motivation to learn. Recorded lectures

1 facilitated students to review the lecture when they felt in a more positive and motivated
2 state of mind.

3

4 “Lots of times in lectures you don’t feel like learning, you’re not in the right
5 mind, but when you’re watching these [recorded lectures] back you’re kind
6 of willing to learn, that’s the whole purpose of watching them back, so I
7 definitely think you pick up more”.

8

9

10

11 *The social learning environment*

12 Although students initially described a negative overview about lecture
13 environments, students frequently contradicted their initial critical views about lectures.

14 When asked what the added value in continuing to attend lectures was if recorded
15 lectures were a positive source of attainment, students outlined two recurring reasons
16 for attending lectures that emphasised a) lecture capturing not being a sufficient source
17 for sole information, and b) it allowed the building of rapport with the lecturer.

18 Although students differed in their opinion about the exact benefits of lectures, their
19 responses typically recast lectures in a more positive light, while downplaying lecture
20 capturing as a supportive tool. When prompted to develop their experiences of lectures
21 as a positive learning experience, students tended to further devalue post-lecture
22 learning via recorded lectures in favour of emphasising the social benefits in attending
23 lectures. In emphasising the social benefits, students typically referenced lecturer-

1 student interaction as a positive benefit in their learning experiences, and was a main
2 detraction from solely relying on lecture capturing.

3

4 “it [pre-recorded lectures] takes away the whole idea of being at university
5 doesn’t it if you start having to get a computer to do your learning, so you’re
6 coming to a place, but you’re not learning here really, you’re learning on the
7 Internet (...) you pay a lot of money to listen, and have someone point at a
8 board and ask you questions, and that’s the best way of doing it”.

9

10 “You get to know the lecturers in lectures, too (...) they can really make
11 learning stuff interesting, and that (...) you can ask questions and stuff
12 which you can’t do with these [lecture recordings] (...) so it’s good to have
13 the lecturers there in the first place”.

14

15 Although other reasons existed for attending, for example, receiving hand-outs,
16 hearing content first-hand, and participating in entertaining lectures, there was little
17 consensus between participants. Lecture capturing, then, was not an ideal substitution
18 as it removed the social and additional advantages in attending lectures.

19

20 ***Providing pastoral support***

21 Students also acknowledged lecture capturing’s ability to support students in
22 their learning where there extenuating circumstances or additional learning needs. The
23 most recurring theme that demonstrated a perception of support through recorded
24 lectures was regarding its pastoral benefits for international students and those on long-

1 term illness. Although students from the UK used recorded lectures to understand and
2 learn technical jargon, most students in our data recognised the benefits of recorded
3 lectures in developing international students' linguistic skills:

4

5 “...if I'd just come to Britain it [lecture capturing] would be really useful to
6 understand better, but now I don't really have any problems with
7 understanding (...) thinking about other international students, I think that
8 might be a really helpful way for them to listen to the lecture again, pause,
9 check the word in the dictionary and listen to it again...”.

10

11 Although the extract above emphasises international students, our students – to a
12 lesser extent – identified those with dyslexia, in particular, as being able to benefit from
13 lecture capturing availability. In addition, one mature student noted its benefits to them
14 in facilitating flexible child-care, which was their reason for non-attendance. Students
15 also identified that another core pastoral feature of lecture capture was during periods of
16 genuine illness or when experiencing family problems where lecture capturing was a
17 prominent feature in the way that they had caught up. Instead of using peers' notes and
18 hand-outs to make sense of each topic, they could now listen to the whole lecture:

19

20 “...quite comfortable [if I went off again ill for 3 to 4 weeks now], because
21 even though you're ill, like say you've had 3 or 4 weeks off, and you come
22 back without this [lecture capturing] you'd have to catch up on everyone
23 else's notes, in like a 3 or 4 day period [...] you can catch up on it [lecture

1 capturing] an hour after the lecture has been, so you can keep control of all
2 your work load”.

3

4 In summary, theme 1 evidenced students’ perceptions of how lecture capture
5 helped to enhance their learning and learning experience. Theme 2 explores this notion
6 further, but in the context of using lecture capture strategically, as a way to manage
7 workloads and learn more efficiently.

8

9 **Theme 2: Working and learning strategically**

10 In their talk students constructed themselves, and particularly others, as
11 strategic users of lecture capture, to the extent that some held the belief that
12 individuals could be advantaged by the technology more than others. Through
13 four sub-themes, students showed that lecture capture: (a) helped students to
14 prioritise their workloads; (b) enabled students to extend their learning; (c) was
15 used to reconstruct learning spaces in environments where they felt more
16 motivated and could learn more efficiently; and (d) gave students an unfair
17 advantage to students who did not attend.

18

19 ***Prioritising workloads***

20 Students provided a consensus that their decision to attend lectures was
21 unrelated to lecture capturing being available. Rather, self-selected attendance was
22 attributed to external events, such as part-time work, workload and deadlines whereby
23 their attendance at lectures typically decreased. Lecture capturing, therefore, was
24 utilised as part of their overall decision making strategy for how best to prioritise tasks,

1 rather than as the main reason for non-attendance. Lecturing capturing in these instances
2 not only influenced how they caught up with the missed work, but was also seen as an
3 enabler in facilitating continued study:

4

5 “... with art there’s a lot of coursework to be in for a deadline and obviously
6 when it’s things like painting it takes quite a long time to get it done, so I
7 think if I had a deadline or something and then I was close to finishing it,
8 but if I went to the lecture then I wouldn’t be able to [finish the assignment].
9 I think I might be tempted to skip it if I knew it [lecture capturing] was
10 going to be up later.”

11

12 “I know a lot of my course mates don’t turn up to go to lectures whether
13 they’re being recorded or not, just because they have a busy time of
14 assignments, so I think it [lecture capturing] would be useful and I think it
15 would be used to say ‘I can catch up on that later, so I won’t go, I need to
16 get this assignment done’.”

17

18 Students experience conflict between attendance and coursework priorities, but
19 recognise that attendance at lectures ‘should’ be an expectation of being a student.
20 However, in these instances, the decision not to attend lectures was not indicative of
21 poor motivation to do well or to learn, rather, they presented a strategic rationale for
22 their decision making which meant they could focus on other competing course
23 requirements.

1 Although it appears to be used ‘intelligently’ by our students in providing more
2 control over their time management, lecture capturing may also be preventing students
3 from developing their time management skills for use when they graduate; lecture
4 capturing will not always be available to them. Furthermore, there were also instances
5 where students chose not to attend regardless of lecture capturing being available:

6
7 “The lectures I had missed (...) I probably still would have missed them
8 anyway, it’s [lecture capturing] just affected how I’ve caught up. I would
9 have felt slightly less bad if I’d known that they [lecture captures] were
10 there.”

11

12 As educators we need to consider whether utilising lecture capturing is helping or
13 preventing our students in learning life skills, but also whether removing access to
14 recorded lectures for non-attending students should be used punitively to prevent them
15 from benefitting from the technology.

16

17 ***Embellishing learning***

18 Students elaborated upon how lecture capturing enhanced their learning
19 experience beyond acting as a safety net for unclear notes. Students identified how
20 lecture capturing further enhanced their learning experience through (a)
21 developing their independent and post-lecture study, and (b) providing an
22 opportunity to learn in more comfortable learning environments.

23 Although students reported using recorded lectures to maintain clearer notes, as
24 discussed earlier, it was also important as a catalyst to engage with supplemental

1 reading. Increasing clarification in their notes, as well as contextualised content
2 enhanced their self-efficacy in handling more advanced reading in journal articles, but
3 also providing control over the material and their knowledge:

4

5 “...sometimes the way you write your notes down, don’t give you an idea of
6 the actual context in which it was set, so if you listen to them the way they
7 talk about the information, seems to make more sense (...) I read some of
8 his [the lecturer] papers after, and I have done the lecture capture; reading it
9 [the journal article] made it so much easier ...”.

10

11 The other main use in facilitating supplemental reading showed how recorded
12 lectures can provide a simple memory refresh during revision periods. These students
13 who had unsuccessfully attempted to consolidate the supplemental reading and material
14 simply reviewed the lectures during revision periods to aide recall in order to return to
15 the reading.

16

17 “...when you go back to revise [from recorded lectures] then it’s good to
18 have a starting point (...) because if you can’t remember what’s happened in
19 a lecture and you jump straight into a book, sometimes it goes straight off
20 your head”.

21

22 Here, lecture capturing was seen as a stepping stone and motivating factor in post-
23 lecture study, rather than a replacement for further reading. It appears to provide

1 students with the perception that they are learning more efficiently, but also providing
2 confidence in the initial stages of revision in particular.

3

4 ***Reconstructing learning spaces***

5 Students also emphasised the role of ‘learning on the go’, that is, how lecture
6 capture facilitated mobile learning such as revising in an environment of their choosing
7 that was perceived to be effective, but also one where they were motivated to learn. As
8 described earlier, some students found concentrating to be difficult during lectures, but
9 the ability to download and reconstruct space for learning provided students with a
10 sense of being productive:

11

12 “...it’s [lecture capturing] not a resource you have to use, the fact that
13 someone’s even watching it [anywhere] is a success, it’s showing that they
14 obviously want to listen to it. They’ve gone out of their way to download it,
15 so I think you’re not going to sit down and watch it somewhere you don’t
16 think you’re going to get much out of it. I have a 9 hour train journey home
17 so I can sit down and go through lectures I want to catch up on or want to do
18 a piece of coursework”.

19

20 Other students had described using coffee shops, making audio podcasts with the
21 download, listening to them at the gym, or watching them with their parents. As such,
22 we concluded that despite conflicting with their earlier views about lectures being a
23 contested learning space, students wanted to learn in environments that were more
24 comfortable for them. These are environments that might not normally be considered

1 good learning environments by academics, particularly as some of these environments
2 are full of distractions, but they do seem to be as passively social in nature as lecture
3 theatres i.e. limited interaction with those around you. In this sub-theme lecture capture
4 appears to be promoting post-lecture studying, but that the evidence suggests that it is
5 not independent of preferred learning spaces.

6

7 ***Resenting non-attending students***

8 Although the students in this study indicated that they used lecture capturing
9 strategically, and facilitated non-attendance at specific times in the year, they also
10 developed resentment towards regular non-attending peers. There was consensus in a
11 sense of injustice with non-attending peers achieving similar grades to more ‘strategic’
12 students as a result of having lecture capturing available:

13

14 “I find it more the fact that I’m putting in the time to go to lectures and
15 actually getting up at 9am to go and they’re not and they’re still going to be
16 getting the same degree, maybe, out of it. Kind of a little bit annoying but
17 then I wouldn’t want to take away the opportunity of it.”

18

19 “I find it [lecture capturing] helps me a lot, but then at the same time I’m
20 thinking, those people are making a big advantage out of it, even bigger than
21 I have.”

22

23 In the extracts above, we see resentment towards non-attending peers, but also
24 the assumption that these same students are accessing recorded lectures. Students

1 questioned the efficacy in attending lectures on their attainment if their peers were
2 achieving the same outcomes. Despite this, however, resentment was reconstructed into
3 acceptance. Specifically, students saw their peers as autonomous individuals responsible
4 for their learning, and that lecture capturing could facilitate their learning choices and
5 habits as it did for them when choosing to prioritise coursework:

6

7 “As long as they understand the material and they do the exams or whatever
8 I don’t think it makes a difference [if they attend]. As long as they’re up to
9 standard with everyone else it doesn’t matter how they learnt it really”.

10

11 “When it comes down to it, it’s their education so it’s what they want out of
12 it and if they want to give the least amount that they can do their studies. I
13 don’t think that hindering [through penalising attending students by
14 removing lecture capturing] other people that want to get the best out for
15 their degree should stand in the way”

16

17 In summary, theme 2 explored students’ strategic use of lecture capture in a way
18 that enabled them to take control of their learning. The advantages to this, however,
19 were viewed favourably as well as unfavourably when the technology could be seen to
20 be to be manipulated to the benefit others, resulting in some students feeling that their
21 own performance and effort was undermined.

22

23

24 **General discussion**

1 A key outcome to emerge from our data was how students contextualised lecture
2 capturing as a learning event that contrasted with lectures as the primary learning event.
3 On the one hand, lecture capturing was an independent learning experience, but on the
4 other, it could not be understood independently of the lecture learning environment. In
5 general, participant responses from all groups about lecture capturing were positive in
6 terms of a learning enhancement tool. Specifically, lecture capturing provided an
7 opportunity to control their learning experiences, habits (e.g., time management), and
8 learning environment leading, therefore, to a perceived enriched learning experience.
9 These benefits were exaggerated in their talk when contrasted with didactic lecture
10 environments where they felt they had less control over their learning experiences.
11 However, they recognised lecture capturing should not be the sole source of learning,
12 although recognised it could be (e.g., for those who were ill, or strategically decide to
13 not attend), as well as acknowledging that lectures provided the best learning experience
14 primarily as a result of the perceived social benefits.

15 In relation to lecture capturing, our data has contributed to the literature in
16 several ways. First, our data corroborate quantitative data that has shown students
17 engage with lecture capturing to attenuate cognitive demands in lectures and improve
18 attainment, and that it clarifies complex information and unclear notes (Bongey et al.,
19 2006; McKinney et al., 2009). Additionally, however, this study also develops the
20 existing literature by providing evidence that suggests that having well developed notes
21 facilitated more contextualised and potentially productive supplementary reading.
22 Consequently, we believe lecture capture motivated and structured post-lecture study,
23 despite focussing around note-taking in the first instance. In general, post-lecture
24 engagement has broadly been found to have a more significant impact upon attainment

1 than attendance to lectures (Stinebrickner & Stinebrickner, 2004; 2008). Second, we
2 develop the literature by providing evidence that, during the formal periods of learning,
3 students felt that they were learning more effectively when their mind-set was more
4 positive towards learning content; this was due to being able to transform when and
5 where they learned and took notes with lecture capturing. These included
6 unconventional learning environments when they felt more positive about learning
7 material.

8 Third, our data corroborates the literature (e.g., Leadbeater, Shuttleworth,
9 Couperthwaite, & Nightingale's, 2013) in terms of lecture capture's benefits in
10 providing pastoral support to specific student populations (e.g., international students,
11 those with dyslexia) by being able to review lectures and develop vocabulary and note-
12 taking skills. Lecture capture facilitated retention of students with long-term illness,
13 specifically, lecture capturing in this instance made an important contribution in how
14 students – who might have otherwise unnecessarily dropped out – actually caught up
15 with the course content. However, this further emphasises the ability of lecture
16 capturing to act as a main learning source rather than enhance lecture attendance and the
17 ability to obtain a degree through recorded lectures.

18 Fourth, our data show that lecture capturing did not influence our students'
19 decisions to attend lectures, corroborating some of the literature about lecture capturing
20 and its impact upon attendance (e.g., Toppin, 2011; Wall et al., 2010; Wang et al., 2010).
21 Rather, our data developed the literature by showing that external factors influenced
22 decisions to attend lectures. We conducted a brief literature review related to external
23 factors influencing lecture attendance and found several studies that support this
24 assertion. Briefly, Hitchens & Lister (2009) showed that reduced attendance to lectures

1 was influenced by poor timetabling practices, while Massingham & Herrington (2006)
2 showed that the alignment of lectures with assessments influenced attendance.
3 Moreover, Newman-Ford, Fitzgibbon, Lloyd and Thomas (2008) showed that part-time
4 work, being a mature student with children, and workload periods influenced
5 attendance. Subsequently, we learn that students use lecture capturing more strategically
6 than has been reported in the literature to facilitate work load and time management.

7 Fifth, our data documents that students, like academics, are concerned about
8 non-attending students learning solely through recorded lectures. These ‘strategic’
9 students showed resentment to frequent non-attendees who were perceived as being
10 given an unfair opportunity to do as well in their degree. Of course, this could happen
11 anyway, but what our students were highlighting was that they believed it is possible to
12 obtain a degree by relying solely on lecture capturing, contradicting their earlier beliefs
13 about the impact of attending lectures on attainment. However, it was recognised that
14 non-attending students were equally as strategic and autonomous for their learning.
15 Lecture capturing, therefore was one tool that facilitated strategic learning decisions as
16 it had done with students who decided to not attend during busy periods.

17 Sixth, despite the strategic decisions in attendance our data develops the
18 literature regarding the value of lecture attendance within the context of lecture
19 capturing availability. As reported by Wang et al., (2010) students perceived attendance
20 to lectures as a source of satisfaction; students preferred attending lecture environments
21 for a variety of social reasons, but also that attendance was an expectation of their role
22 as a student, as well as gaining perceived value for tuition fees. Data suggest that
23 lecturing capturing potentially detracts from the student experience, in general, if
24 lectures were to replace didactic lectures. Our students still preferred lectures as the

1 main source of information and that recorded lectures were not the most effective
2 method of learning. Finally, our data suggest that the satisfaction in attending lectures is
3 in constant conflict with the frustration and anxiety experienced during the actual
4 learning experience in lectures.

5

6 ***Conclusion***

7 Overall, the benefits of lecture capturing are primarily to attenuate challenging
8 aspects of lecture environments, and provide more flexible learning opportunities post-
9 lecture that include note-taking and the ability to catch up after missing lectures. In
10 doing so, students perceived to be learning more effectively and in a manner where they
11 felt more attentive and experienced a more positive learning environment.
12 Consequently, students' motivation to attend may still be questioned in future, but their
13 motivation to learn is less questionable. Lecture capturing, while perhaps not directly
14 enhancing their attainment, is supporting students in experiencing a more gratifying
15 learning experience that they perceive to be beneficial to their learning.

16 In utilising qualitative methods our study has corroborated, amplified, and
17 developed the literature about lecture capturing and its impact in Higher Education. In
18 doing so, we have presented richer data than generally survey methods can produce on
19 their own. Specifically, we have learnt that that there are contested accounts over the
20 advantages and disadvantages of lecture capturing availability, but at the same time
21 have learnt more about students' studying practices and experiences with lecture
22 capturing in several ways. Practically, Universities might be able to use this knowledge
23 to facilitate retention particularly at vulnerable periods, such as the transitional period
24 from college to university, for example. This might become a larger issue as widening

1 participation schemes attract broader demographic populations to University who may
2 require further pastoral support. Ultimately, however, the needs of the students and the
3 staff should be considered equally and simultaneously in order to experience the full
4 benefit of this technology.

5

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