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The effects of the COVID-19 'lockdown' on teaching and engagement in UK business schools

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Abstract

The global outbreak of Covid-19 led to a rapid shift to Working from Home (WFH). In Universities and other of the education sector, on-line teaching and assessment becoming mandatory. We use research from a representative large-scale (n=2,287) survey of business, management and economics academics in the UK to examine how prior on-line experience, learning during the 'lockdown', and work engagement, impacted their perceptions of on-line education. Results show that:

1. experience of on-line activity *prior* to the lockdown was substantially positively related to perceptions of working virtually, though perceptions differed by seniority;
2. While experience of working on-line *during* lockdown did not enhance academic's views of on-line delivery or any bias against on-line delivery, it did increase positive attitudes towards on-line marking;
3. Those able to maintain mental resilience and energy are considerably more likely to perceive on-line activity positively; but being more 'dedicated' or more 'ensconced in work' did not play a role.

We explore the implications of these findings for the future of on-line work.

Introduction

One effect of the Covid-19 pandemic that hit most of the world in 2020 was the 'lockdown' of businesses and a rapid, sometimes overnight, shift of work from the 'office' to 'home'. For many people, of course, working from home (WFH) is not possible – houses cannot be built, roads cannot be maintained, care home residents cannot be looked after, people cannot have medical operations, and waste cannot be cleared by people working at home. But for most

office workers, and for many other people, WFH has been a technological possibility for decades. The fact that it had not been taken up reflects to some degree the fact that work is a social activity (some work is done better in groups; and people enjoy meeting colleagues, customers, and others); but probably mainly reflects the view of many managers that they need to be able to see or to visit their workers if they are to control them. The pandemic accelerated WFH hugely.

One area of work, with important implications for societies, businesses and individuals, is education and, in particular our focus here, university education. Our example is taken from the UK: at societal level, higher education employs almost half a million people, generating annual revenues of over £47.0 billion (HESA, 2021), educating future leaders and housing important research, including laboratories that created the vaccines needed to overcome COVID-19. At the business level, universities provide the skilled and knowledgeable workers needed by businesses and provide work for many organizations that interact with the university. At the individual level, universities influence the life chances and futures of around half the UK population.

Although on-line education has been widely available for decades, and has many purported advantages, it has not been diffused as much as some scholars had anticipated (de Menezes & Kelliher, 2011; Felstead & Henseke, 2017; Kingma, 2018). The pandemic led to an immediate change for educators across the globe. Even in locations where the pandemic did not take hold, academics were often required to be prepared for on-line delivery given uncertainties about when the pandemic would lead policy makers to enact lockdowns or other restrictive measures.

While the advantages of working from home (WFH) can translate into large productivity gains (Laker & Routlet, 2019), some academics did partially work from home before, often on research, most teaching and administration was done *in loco*. Pandemic

containment measures created a context where WFH became mandatory almost instantaneously with little or no planning. Although many academics had experience of implementing on-line or blended learning programmes (Times Higher Education, 2020b), for the majority it is still a novel form of delivery. Greenberg and Hibbert (2020) argue that the initial shock has the potential to result in professional and personal trauma.

A growing literature has examined the role of instructors in on-line teaching and learning (Marshall, 2018, Williamson, 2020; Watermeyer et al., 2021). Indeed, there is a substantial literature highlighting the efficacy of on-line provision (see Castro & Tumibay, 2021) leading some scholars to argue that there is a bias against on-line learning (Redpath, 2012). However, there are several plausible rationales in the literature to explain why academics may be less disposed towards on-line teaching and assessment. For example, it has been argued that on-line delivery may be problematic, compared to face-to-face delivery, since there are fewer visual clues and less immediacy of responses to questions, creating difficulties for the students (Ahmed, 2010). We know that developing on-line material is more time-consuming than more traditional methods (McKinney, 2018; Yang and Cornelius, 2005). In general, individuals seek to obtain, retain, and protect resources and that stress occurs when resources are threatened with loss or lost or when individuals fail to gain resources after substantive resource investment (Hobfall, 2002).

Given the impact of the pandemic, and the uncertainty, the global health crisis disrupted academics' work, careers, and their identities as never before (Greenberg and Hibbert, 2020). While the literature provides some useful guidance as to how academics perceive on-line work prior to the pandemic, it is less clear that prior work which examines individuals who have opted into online work can be relied upon in the context of coping with a pandemic where WFM became suddenly mandatory. While the literature suggests well-designed on-line provision course can reach learning objectives (Castro and Tumibay, 2021),

careful design and implementation of on-line programmes is a time-consuming process and did not align to the rapid need to migrate deliver on-line materials. So, in the context of the pandemic and its relation to WFH, the way that different academics experience on-line provision is an open question.

We address these issues using social cognitive theory (Bandura, 1986). We argue that the intersection between remote teaching, social cognitive theory and self-efficacy advances our understanding of possible antecedents of academics' perceptions in response to the move on-line and working from home. Self-efficacy beliefs shape individuals' functioning through cognitive, motivational, affective and decisional processes (Benight and Bandura, 2004). We argue that people's past experiences affect whether they think in self-enhancing or self-debilitating ways; how well they motivate themselves and persevere in the face of difficulties and radical changes which was the case due to the pandemic, but particularly in the context of on-line activities given the majority had no experience of on-line delivery (Bandura, 1997).

Further, we explore how the shift to WFH, and on-line delivery has affected academics' work engagement, a critical factor impacting upon the productivity and well-being of staff in the short-term. The immediate reliance on virtual delivery and assessment, and its potential relevance in the longer-term, makes the issue of engagement particularly relevant. There is a substantial literature on engagement and quality of working life in higher education (Barkhuizen, Rothmann & van de Vijver, 2014; Fontinha, Van Laar & Easton, 2018), as well as some research into its opposite: burnout and exhaustion in the context of teaching (Watts & Robertson, 2011). Recent literature (Kniffin et al., 2020) suggests that the pandemic may have worsened working conditions for many employees, with greater risk of exhaustion and burnout, including permanent feelings of disengagement. Changes in the working conditions have been associated with resource depletion, such as job losses or

underemployment. Individuals navigate traumatic events such as disasters (Freedy et al., 1994) or workplace burnout (Grandey & Cropanzano, 1999; Lee & Ashforth, 1996) by seeking to maintain status quo. To date, there is little work on academic engagement, burnout and overall occupational health in the context of on-line delivery and assessment (an exception is McCann & Holt, 2009).

This raises questions such as: *Given the dramatic nature of the 2020 pandemic lockdown, does **prior** experience of on-line working determine academics' coping choices? How is the experience of on-line teaching **during** the crisis related to perceptions of on-line teaching and assessment? To what extent does the ability to remain engaged in work influence how on-line activities are viewed?* and *do potentially important contextual issues, like job insecurity, impact upon views of on-line teaching and assessment?*

To answer these questions, we developed and implemented a survey instrument capturing the perceptions of a large representative sample of academics employed in UK business schools and economics departments during the lockdown. While there is extensive ongoing research on the implications of remote work and teaching, most of these studies target individuals indiscriminately, often via snowball sampling. The fact that we had a previously constructed sampling frame allowed us to target all business, management and economics' academics in the UK and ultimately retrieve a sample representative of different types of individuals, institutions, and disciplines.

We make two significant contributions. First, using social cognitive theory, we explore how prior experience conditioned how individuals were able to cope, and how they perceived the mandatory shift to on-line delivery. We show that, in stark contrast to those who has had prior experience of on-line delivery, the vast majority who were 'new' to on-line delivery perceived the experience significantly less favourably, suggesting that the experience of on-line delivery during the pandemic is unlikely to have broken down barriers

with staff who are not positively inclined towards on-line delivery (Marshall, 2018, Redpath, 2012, Williamson, 2020; Watermeyer et al., 2021). Second, we show that not all conceptions of engagement are equally relevant. In particularly, we show that while 'mental resilience and energy' played a significant role in influencing individual's perceptions other elements of engagement such as the degree individuals were 'dedicated' to their work, or their ability to remain 'ensconced in their work'.

Theoretical Background and Hypotheses Development

Experience and perceptions of on-line teaching and marking

For the vast majority of academics in the UK the lockdown meant going 'overnight' from teaching face-to-face in the classroom to grappling with unfamiliar technology and teaching platforms. Advocates of on-line teaching and assessment see virtual delivery as 'the future' for higher education, arguing that it enhances levels of thinking and problem-solving skills (Henderson, Selwyn & Aston, 2017; Politis & Politis, 2016) or improves learning and communication (Alavi & Gallupe, 2003). However, Sohn and Romal (2015) conducted a meta-analysis of existing studies to compare student performance between on-line and traditional classroom environments among undergraduate economics courses in the USA and showed that students initially performed better in face-to-face settings. Academics' satisfaction with online teaching is largely influenced by job-related features and the institutional support they receive (Marasi, Jones & Parker, 2020).

Social Cognitive Theory (Bandura, 1986) examines how a person's past experiences impact the way they acquire and maintain behaviour: individuals' expectations, beliefs, emotional preferences and cognitive competencies are developed and modified by social influences that convey information and activate emotional reactions through modelling, instruction, and social persuasion. This ultimately affects their perceived self-efficacy

(Bandura, 1986) which, in turn, affects their approach to potential threats and how they are perceived and cognitively processed (Benight & Bandura, 2004). Academics who have in the past experienced on-line or blended learning, and engaged in on-line social interactions, might be better able to develop coping strategies that alleviate the strain associated with remote teaching and learning. By extension, social cognitive theory suggests that the relative degree of complexity, and stressful social interactions, will differ between different forms of on-line activity. In particular, on-line delivery has a greater degree of potential interact with students in what was a novel, disorienting setting. In contrast, on-line marking does not have the same degree of social interaction and a change to marking on-line can be more easily assimilated and coped with.

As experience of these forms of learning progressively increases throughout the lockdown, academics' views are likely to become more positive. Hence:

*Hypothesis 1a. Experience of on-line activity **prior** to the lockdown will have a positive impact on academics' attitudes towards on-line work.*

*Hypothesis 1b. Experience of on-line activity **during** the lockdown will have a positive impact on academics' attitudes towards on-line work and this will differ by on-line activity.*

The role of work engagement

Work engagement is defined as "a positive, fulfilling, work-related state of mind that is characterized by vigour, dedication, and absorption" (Schaufeli, Salanova, González-Romá, & Bakker, 2002, p. 74). It consists of *Vigour*, capturing the amount of energy and mental resilience that is maintained whilst working; *Dedication*, reflecting the degree of enthusiasm, pride and significance that individuals feel about their work; and *Absorption*, or the extent that an individual is able to remain ensconced in their work. Work engagement has been linked to performance, creativity, and health (Bakker, 2008).

Engagement has also been associated with the way individuals perceive job demands. When demands are appraised as hindrances they tend to be negatively related to engagement, but when they are perceived as challenges this relationship is positive (Crawford, Le Pine & Rich, 2010). Demands associated with online delivery during the lockdown are likely to be perceived as hindrances. We make this assumption based on previous research on remote working demonstrating that it is associated with higher organisational commitment, job satisfaction and job-related well-being, but that these benefits come at the cost of work intensification and a greater inability to switch-off (Crawford, Maccalman & Jackson, 2011; Felstead & Henseke, 2017). With the Covid-19 lockdown, remote work in academia became mandatory and may have, for some, have been accompanied by increased caring responsibilities at home, and/or health concerns, which are likely to make academics perceive remote work as a hindrance.

While engagement is often perceived as an outcome of working practices, there is evidence of reversed causation in which engagement positively influences the way employees perceive work (de Lange, de Witte & Notelaers, 2008). Similarly, we expect that higher levels of engagement among academics are likely to influence their perceptions about the new demands associated with on-line teaching and marking. Hence:

Hypothesis 2 - Individuals who are either:

a). more 'dedicated' to their work, or,
b). who are able maintain the levels of 'mental resilience and energy' or,
c). able to remain 'ensconced in their work'
during the lockdown are more likely to perceive on-line activity positively.

Methods

Data and Sample

Our study is based on a comprehensive survey of academic business, management and economics' scholars. The choice of sample reflects the fact that UK business schools, where economics remains the largest sub-discipline, have traditionally engaged extensively with post-experience students, and have been developing on-line delivery methods for decades (Times Higher Education, 2020b) although on-line delivery is increasingly common across the sector. Our research approach combines information from (1) university websites, (2) data on university and business school/economics departments, and (3) a large-scale survey. The initial stage of the data collection involved capturing data from universities' websites, including gender and academic rank. Our database contains two overlapping sets of scholars: all those working in business schools in the UK, including economists; and also economists working outside business schools in stand-alone economics departments, or in other departments (education, agriculture, etc.).

The development of the survey took an iterative approach, with the initial survey being piloted on two occasions with eight scholars each time. The on-line questionnaire was launched less than a month after the first national lock-down and the immediate switch to WFH and on-line teaching. Recipients were sent an email in April explaining the purpose of the study, inviting them to participate and including a link to the survey. The survey was sent out in two batches so we could examine whether there were any changes over the course of the data collection period. The first wave of the survey was concluded after three weeks; the second wave ran from then for another three weeks.

We linked the survey data with public information from websites, following a multi-stage protocol to ensure the de-identification of the data, explained to respondents on the project website. We ensuring that survey data and other personal information used for analysis contained no personal identifying information.

The total population of this second of universities in the UK was 13,048. We received

2,660 responses, for an overall response rate of more than 20%. Of that response, 2,287 (17% of the total) provided usable responses. From this sample, we omitted those who were on research-intensive contracts, and those who were on teaching and research contracts who indicated that they were not teaching that year (due to extended maternity leave or being on sabbatical).

To check the representativeness of our response pool, we undertook tests of the respondent population, looking for sources of bias in our final sample. We compared the academic hierarchy titles (e.g. ranks such as 'lecturer' and 'professor') of those completing the survey against those in the overall sample and we checked whether our sample matched the distribution of type of institution, distinguishing between more research focused institutions and others: in both cases the sample was consistent with the original population.

Measures

Dependent variables

A central concern of the study is to examine how individual academics viewed on-line activities relating to teaching and assessment. Discussions with faculty, both experienced and inexperienced in on-line delivery, highlighted distinct perspectives influencing academics' views and experiences of on-line delivery. Second, developing on-line material is often cited as involving more time. Where courses are taught on multiple occasions using similar materials or recordings, then the sunk cost of preparation on-line may be more easily spread. A potential flip-side of the time devoted to preparing on-line material is that it may require a more structured discussion of the topic: it "enables me to plan my delivery more carefully and provide a better teaching experience" (Benson et al., 2011). It is also possible that, without the advantages associated with face-to-face teaching, such as being able to react to student's visual clues and responses, 'over planning' of on-line teaching leads to a more

restricted experience. Therefore, we asked whether participants consider on-line development ‘more time-consuming to prepare’ (Yang and Cornelius, 2005; Redpath, 2012).

We take an analogous approach to assessment where we examine three distinct arguments. The first relates to whether faculty consider that marking on-line is more time-consuming than marking hard copy and feeds into an established debate in the literature (Redpath, 2012). Second, we examined whether on-line marking on screens is more tiring (McKinney, 2018, pp. 236). Finally, we investigated whether on-line assessment ‘enables (faculty) to provide better and more considered feedback’ (Evans, 2013; Nicol, 2010).

In Table 1 the top panel shows participants’ perceptions of on-line teaching while the lower one details perception of marking. 78% of respondents agree that teaching on-line ‘makes it difficult to know whether the students understand what is being taught’. Table 1 shows more individuals agreeing than disagreeing that it was ‘more tiring’; and a similar proportion of participants agreeing rather than disagreeing that marking on-line is more ‘time consuming’. A third of respondents think that on-line marking enhances the quality of their feedback. The correlations between the explanatory variables are not distinctly high with all variables, but that between the first two teaching dependent variables (0.72), and between the three engagement variables (0.60-0.81), being below 0.4.

<**Table 1. Perceptions of on-line teaching and assessment** ABOUT HERE>

Key independent variables

Experience of on-line delivery was measured by responses to the questions ‘Do you typically teach on-line or remotely?’ and ‘Do you typically mark on-line or remotely?’. The impact of the lockdown on delivery was measured by responses to the questions ‘Have you been involved in on-line delivery because of the Covid-19 lockdown?’ and ‘Have you been involved in on-line marking because of the Covid-19 lockdown?’. To measure engagement, we used the nine-item Utrecht work engagement scale (Schaufeli et al., 2006), structured in a

seven-point Likert scale. We captured perceptions of job insecurity through two variables measured on five-point Likert scales asking the extent to which participants agreed with the following statements: ‘I feel insecure about the future of my job’ and ‘I feel that if I lose this job, I would easily find a better job’. Based on information gathered from the websites, we created a dummy variable to capture academic rank, distinguishing between the three most common ranks of: Professors/ Chairs; Associate Professor/ Reader/ Senior Lecture/ Principal Lecturer; and Lecturer/ Assistant Professor. We also included options for Research Fellow; Senior Research Fellow; Teaching Fellow; Senior Teaching Fellow; and ‘Other’ titles, used by 13% of the respondents. We aggregated the research-intensive Research Fellow and Senior Research Fellow roles and teaching-intensive Teaching Fellow and Senior Teaching Fellow roles.

We also included other additional variables. Based on information gathered from websites, we created a dummy variable to capture gender (53% of the sample are men: Appendix Table 1). We derived five further variables that capture different activities that compete for the time available for academics to devote to teaching and assessment. We captured childcare commitments through two variables: whether the individual had children under 5 or not; and change in proportion of time devoted to childcare, calculated as ‘hours you spend on childcare during the Covid-19 lockdown each week’ divided by ‘hours you typically spent on childcare per week (prior to the Covid-19 lockdown)’ multiplied by 100. To capture the amount of time devoted to research we used information on the proportion of time allocated to research over the lockdown period as a percentage of total activity. Finally, we asked about involvement in administrative activities, ‘how would you characterise your administrative workload since measures were taken in response to the Covid-19 Lockdown’ on a 5-point scale (‘decreased significantly’, ‘decreased’, ‘did not increase nor decrease’, ‘increased’, ‘increased significantly’).

Control variables

There is considerable variety among universities in the UK. We distinguished between 'pre-1992' universities that tend to have a strong orientation towards research (e.g. Oxford and Cambridge), and the post-1992 ones, that are generally more teaching- or industry-orientated (e.g. Sheffield Hallam and Gloucester). What has been clear, even prior to the lockdown (Guardian, 2020), is that the UK government policy of leaving the European Union means that UK universities' exposure to the international student market is likely to be adversely affected and impact finances significantly (Guardian, 2020). The extent to which different institutions were able to potentially absorb the effect of reduced numbers is conditioned by their financial status and the extent to which they are exposed to the post-graduate market. To capture these effects, we include a variable depicting the number of post-graduate students; the surplus/ deficit of (each) institution and its total income levels (all in 2018/19 terms. Source: Higher Education Statistics Agency (HESA)).[1]

We included field dummies to consider any field-specific heterogeneity. This information was based on a question asking respondents to indicate their primary area of expertise using the subject classifications in the *Academic Journal Guide 2018* which is widely used in the UK (Walker et al., 2019) and includes 22 disciplinary areas. We also controlled for whether economists in the sample worked in business schools, in economics departments, or in other parts of their institutions. Finally, we controlled for which wave of the survey individuals were located in, and which week each individual completed the survey – this allows the verification of potential different patterns of response as activities such as marking may have been more intensive at later stages of the survey being on-line.

Results

[1] HESA data was taken from https://www.hesa.ac.uk/data-and-analysis.

Descriptive findings

Table 2 provides summary statistics and shows that 18% of participants had had prior experience of teaching on-line but 77% had had prior experience of on-line marking. Table 2 also shows that of the three components of engagement *vigour* was substantially lower than *dedication* and *absorption*. A significant proportion of the sample was concerned about their jobs. While the negative impacts of low levels of perceived job security can be buffered by high employability levels (Silla et al., 2009), that is not likely the case here, given the context of the lockdown, with 43.9% feeling insecure. Few (8.6%) feel trading up to another position is possible.

< **Table 2. Summary statistics for key independent variables** ABOUT HERE>

As an initial look at the relationship between teaching and marking and experience and learning, Table 3 summarises the mean impact across the key independent variables, cross-tabulated against positive and negative views. The variable is a 5-point scale: thus, Table 3 suggests that seasoned on-line teachers (Column 2) are likely to be more positive than colleagues for whom such activities are novel in both teaching and marking. The majority of experienced teachers consider that preparation time for teaching on-line was higher than for face-to-face delivery (mean of 3.8 in Column 2), and they also considered that teaching on-line is likely to reduce student understanding (3.6). Differences in teaching between academics who had taught on-line (Column 3) and those who did not teach on-line (Column 1) were small. However, it seems that those who had been suddenly forced to mark on-line, while not as positive as those who had marked on-line previously, were considerably more positive than those who did not mark on-line, suggesting that experience reduced the perceived amount of work associated with marking.

< **Table 3. Difference in mean responses of individuals who marked prior, and those that marked during, the Covid lockdown** ABOUT HERE>

Analysis

These descriptive tables highlight the differences in academics' experiences in relation to their teaching, as opposed to marking. Given these differences, we examined each survey question as a dependent variable in a series of separate estimations. We present results in Table 4. To ease interpretation, odds ratios (ORs) are calculated and reported throughout. Coefficients bigger than 1 indicate a positive relationship between the independent variables and the dependent variable, while coefficients less than 1 indicate a negative relationship.

While there are some differences across variables, the findings are consistent for many of the key hypotheses. We find that experience of on-line activity had a strong positive impact on coping choices, supporting Hypothesis 1a. Those who have had on-line teaching experience prior to the lockdown were 0.53 times less likely to consider that on-line teaching is perceived to reduce understanding compared to those who have not. Experienced on-line teachers are more than twice as likely to consider that working on-line enhances their planning, with respondents experienced on-line teaching being about 1.30 times more likely to consider that preparation time is greater. This enhanced requirement for preparation will plausibly be beneficial to learning, but at the cost of greater demands on instructors' time. We found no indication that experience of on-line activity during the lockdown is positively related to perceptions of working virtually (i.e., Hypothesis 1b was not supported with respect to teaching).

< **Table 4. Ordered Logit Estimates (odds ratios reported) - Dependent variables: Views of on-line teaching and assessment** ABOUT HERE>

The findings are even stronger for marking, with experienced on-line markers being 1.77 times more likely to consider on-line marking to be more time-consuming compared to those who had no experience. However, experienced on-line markers were around three times more likely to consider the quality of feedback to be beneficial. These findings provide strong support for Hypothesis 1a. While responses to the questions directed towards virtual teaching did not indicate any learning effects, the results support the hypothesis that experience of on-line activity during the lockdown is positively related to perceptions of marking virtually (hence Hypothesis 1b was supported with respect to marking). It is noteworthy that the learning-by-doing associated with experience in marking is 'incomplete', in the sense that the difference between those with previous experience and those who obtained that experience during it were much greater that the differentials between those who got their experience during the pandemic and those who had no such experience (a differential of 1.78).

We then examine Hypotheses 2a-2c. We find strong evidence that when academics are struggling to maintain their resilience and energy levels (*vigour*), this is negatively associated with their views of on-line teaching and assessment and marking (supporting Hypothesis 2b). However, we found little evidence to support a relationship between the other two facets of engagement: *dedication* or *absorption* (Hypotheses 2a and 2b are not supported).[2] Academics with higher levels of dedication and those who are able to remain ensconced in their work were no more nor less likely to have a preference for on-line delivery.

[2] As noted, when defining the independent variables, the engagement variables were the only ones that exhibited higher levels of collinearity, most particular between the dedication and absorption variables at (0.8). We tested whether multicollinearity was driving the 'non-results', omitting each of these variables in turn, and found that the coefficients were still not well determined (below the conventional 5% level of statistical significance).

A number of the additional variables are also determinants of perceptions of WFH. Job insecurity plays a significant role in how faculty view the on-line experience, being a robust determinant across teaching and marking. Of the variables that relate to academic's time, we find that administration is the most robust determinant.

The only institutional variable that was significant in relation to assessment is the number of post-graduate students. Of the control variables, we found that nine of the 132 field variables were significant at the 5% level and there are no discernible patterns across any particular field. We did not find any significant difference between economists working inside or outside business schools. Nor did we find that the second-wave or week effects had a significant impact, perhaps implying that there are no short-run learning effects, beyond those identified directly in relation to marking, which partially refutes Hypothesis 1b.

We also examined whether the different academic groupings made a difference, finding that relative to the reference group of teaching-intensive ranks, all other groups have fewer positive perceptions of on-line delivery. Lecturers and professors are more enthusiastic than associate professors: for example, professors have 0.41 lower likelihood of perceiving that on-line teaching reduces understanding while lecturers have a 0.61 lower likelihood than associate professors. Experienced professors are 2.30 times more likely than their peers to consider teaching on-line enhances planning, lecturers are 2.11 times more likely than associate professors to consider teaching on-line and enhanced planning, while associate professors were 1.88 times more likely than their peers to consider teaching on-line enhanced planning.

< **Table 5. Ordered Logit Estimates (odds ratios reported) - Dependent variables: Views of on-line teaching and assessment – Rank differences** ABOUT HERE>

For time invested, there are no differences between hierarchical positions with respect to teaching, but this was not the case for marking, with professors with experience of on-line

marking have a 68% lower likelihood of perceiving on-line marking to be more time-consuming than those with without experience, while lectures had an even lower likelihood (83% lower). This suggests that even with more experience in the short run, marking on-line may have a more negative effect on junior faculty time than it does on professors.

Some groups, such as parents with young children, are disproportionately affected, reflecting increased difficulty in balancing teaching and childcare commitments. This becomes particularly difficult when synchronous teaching assignments conflict with feeding or caring times of babies and young children. Women respondents reported higher workloads associated with household chores and childcare.

Concluding discussion

We plan future research to assess whether the pandemic and the associated lockdown in the UK - and similar policies across the world - accelerated the use of WFH and how far working patterns will revert to the *status quo ante*. In the higher education sector, there is an expectation amongst business school and economic academics that the lockdown has increased the likelihood of universities moving towards 'blended learning' and extensions of on-line assessment. This will have significant implications for the roles that universities can play in society, for students and the student experience and, as explored here, for academics.

On-line delivery in HE has been touted as a potential panacea which can enable scaled delivery (Davis et al., 2018). In this respect, evidence that the vast majority of those involved agree that on-line teaching is 'a lot more time-consuming to prepare' is sobering, particularly given that online courses would normally be developed over longer time horizons, not in the space of weeks. Our results imply that a profound sense of self-efficacy is necessary to effectively manage remote teaching and learning. It requires time and space to build a resilient sense of efficacy (Benight & Bandura, 2004) and to manage effectively a new form of working and teaching. Academics can draw strength from their experiences

during the lockdown. The overnight move to on-line teaching and marking provided an opportunity to gain new skills and competencies (Greenberg & Hibbert, 2020).

The fact that the amount of work involved in on-line teaching and marking is being perceived as being underestimated raises concerns for academics, many of whom are already under pressure at home, and also have research and administrative responsibilities. It should also concern universities, who are facing reduced income at a time when there is going to be, for most, more on-line work (Redpath, 2012) and an increase in distance learning.

Unlike teaching, marking is a less contested and well developed space that may provide clues for how learning may occur in the future. Indeed, a majority of academics in UK business schools find on-line marking requires at least as much time as, and is more tiring than, marking physical copy, consistent with McKinney (2018, pp. 236). However, positive views of such marking increase with experience, and experienced markers feel able to provide higher quality feedback on-line, suggesting potential for productivity gains as faculty continue to adapt to the on-line world.

Overall, the findings suggest that most academics continue to prefer face-to-face delivery but appreciate the benefits of enhanced planning of course material required by on-line work. This leaves open the possibility that there may be benefits in 'cherry-picking' on-line and face-to-face elements via blended learning. Certainly, but partly by necessity, some institutions have shown a preference for blended learning (Time Higher Education, 2020a), particularly in business schools where many of them have gained wisdom from decades of experience of offering distance and digital learning to students (Times Higher Education, 2020b). Our finding that only a minority of business school academics had previous on-line teaching experience, in the UK's highly internationally focused market, suggests that there is scope for further diffusion of on-line activities. However, unlike in the marking domain, experience did not enhance academic's perceptions of the value of on-line delivery. A

plausible reason for this is that considerable time and training is necessary to become proficient and confident in the on-line arena. Additionally, the short onset period of the lockdown led to faculty having to move on-line in a very constricted time period. This view is consistent with the finding that on-line marking was embraced, suggesting that 'learning-by-doing' leads to faculty becoming more comfortable and better able to appreciate the pedagogical benefits of on-line work, and less negative about it (Redpath, 2012).

While there is a large literature that argues the same learning outcomes can be achieved via on-line delivery this literature. Teaching outcomes are not the only outcome that drives the endogenous preferences to be taught online or *in situ*, indeed the underwhelming take up of MOOCs (Reich, J. and Ruipérez-Valiente, 2019) suggests that other factors are at play for students as well as instructors and is reflected in a significant minority arguing for refunds (Guardian, 2021).

This is despite there being potentially more 'good will' toward online delivery due it being necessity over the pandemic. The larger question then arises what is a university for? If networking, social interaction, signalling quality and other elements of the student experiences cannot be necessarily replicated online, or at least in ways that are aligned to preferences, it suggests there may be a substantial over investment in online development. Indeed, at the other extreme, given the widespread shift to online and blended teaching, it may be that institutions who invest more in instructors and quality face-to-face delivery will actually have an advantage over their digital driven competitors. While this may be an extreme base certainly not providing students with what they want, nor instructor's formats that align to their capabilities or preferences through 'one fits all' blended learning package, may backfire on those institutions who do not have the capability to compete head-to-head in the on-line arena. It is worth noting that the doyen of on-line delivery in the UK, the Open University, faced financial issues prior to the pandemic suggesting (Times Higher Education,

2018).

In UK business schools, faculty who were unable to maintain their energy levels were less likely to focus on the positive elements of the on-line experience, confirming previous evidence that lower levels of engagement negatively affect individual's perceptions of job demands (de Lange et al., 2008). However, we found that other elements of engagement - being more 'dedicated' or more 'ensconced in work'– did not play a role in influencing the views of scholars, which is good news for scholars and managers in and of itself, but also because while raising levels of dedication and the degree to which individuals are involved in their work are difficult elements to adjust, it may be more feasible to provide guidance to help faculty maintain energy levels.

Like most recent literature (Kniffin et al., 2020), our study supports the notion that organizational support for academics' professional development and personal well-being during the crisis will lead to sustainable and fruitful working environments. Women and family status have a considerable impact on how the pandemic affected individual's life and work with the overlapping categories of women and people with young children being significantly negatively affected (Kniffin et al., 2020). Consequently, the impact of Covid-19 pandemic on academics also advances our understanding gender equality. For example, women were almost equally affected by WFH, but their career progression might be more significantly affected than their male counterparts as women had to accommodate greater childcare responsibility.

Labour market uncertainty is another potentially significant hindrance to on-line teaching and assessment. Although we did not find those with good alternative external options were any less positive about on-line delivery or assessment, insecure staff will see little point in developing on-line materials for the university they currently work for. There are fewer outside options available to staff in a recession (Peiró et al., 2012) and job

insecurity is higher among non-white academics. Hence, HE institutions should consider providing differential resources and opportunities to create more inclusive working environments and to minimise discrimination towards minorities (Bapuji, Ertug and Shaw, 2020). While organizations do contribute to increasing inequalities in society, the Covid-19 pandemic creates a new momentum to reduce these very same inequalities. Organizations in general and HE institutions in particular, should intensify their efforts to address equality-related concerns, by for example, improving pay and working conditions for ethnic minorities.

Furthermore, job insecurity is positively related to productivity, but negatively related to creativity (Probst *et al.,* 2007), which should be a key concern in the higher education sector. Job insecurity has detrimental consequences for employees (Schumacher, et al., 2016); and the opposite, being confident about the outside options available, makes individuals more positively disposed toward the view that on-line teaching leads to enhanced planning (Silla et al., 2009). Overall, the findings suggest that the effects of job insecurity have a more pronounced and well-defined impact on perceptions than ability to benefit from outside options; a plausible finding in a context of high job insecurity (Peiró et al., 2012).

Line managers, and their institutions, will need to be sensitive to staff needs, supporting them in developing necessary skills and keeping them from falling into mere presenteeism, since the quality of on-line learning may be a determinant for the survival of many UK HE institutions in an environment where satisfaction with on-line provision has fallen compared to before the pandemic lockdown (Times Higher Education, 2020b). Thus, the expansion of management support for all workers would be a very welcome step in the right direction in tackling some of the inequalities caused by the pandemic. Expanding flexible working arrangements for all workers can also reduce some of the existing stigma against flexible working, and the career drawbacks associated with it van der Lippe and

Lippényi, 2020). Post pandemic, organizational support (e.g., providing time and space) is critical to ensure continued professional and personal growth (Greenberg and Hibbert, 2020).

There are some limitations, and hence further research opportunities, to our research approach. First, our study is based on a survey of business, management, and economics' academics in a single country, which limits the generalizability of our findings. We did not find that there was a difference between economists working in economics departments and economist in other departments suggesting that our finding may be generalised within the social sciences. Further research in this sector in other countries and further research into working at home in other sectors would help to set this study in context.

Second, while we focus on the significant group of academics in terms of teaching and learning, it would be useful to match their views and experience with those of students. We suspect that doing so would be particularly valuable in better understanding which elements of virtual and face-to-face teaching could best be blended to obtain the best possible learning outcomes. It would be useful to take a more rounded view by also looking at components relating to learning development and the social and networking elements of education.

Third, our survey studies academics over a short time horizon. Having a solid representative database of all academics in business schools enabled us to act quickly and to carry out research much closer to real time than is normal in the scholarly field, we can credibly compare the effect of events prior to and during the lockdown - and we are able to test whether views changed over the 6-week period when the study ran. However, such research does not allow us to comment on whether the learning effects we observed will translate into future teaching, nor whether academics will wish to move to on-line delivery more extensively following the lockdown. Addressing this issue is an important one for future research.

Finally, there is scope for further work on engagement of higher education faculty in the new situation. Although our cross-sectional data does not allow us to test causality, our findings suggest that low levels of vigour are associated with more negative perceptions of job demands due to on-line learning. These could potentially then have negative implications for individual performance (Bakker, 2008). Such low levels of vigour may also be due to contextual factors, such as living with others, having limited space to work and, most of all, parenting responsibilities towards young children (particularly for mothers).

Our findings relating to the negative effects of engagement and associations with on-line delivery suggest that while there is a potential that learning-by-doing associated with enforced on-line delivery may help to breakdown instructor bias, this is contingent on environmental factors. Individuals and managers will need to find means and interventions to be able to sustain their engagement, which can include personal and practical resource building, job resource building, leadership training and health promotion activities (Knight, Patterson, and Dawson, 2017). While there is research evidence that on-line learning is just as effective as classroom learning, a bias toward face-to-face delivery exists Marshall, 2018, Redpath, 2012, Williamson, 2020; Watermeyer et al., 2021. The lockdown experience may have the potential to enhance the shift to on-line delivery our findings do not suggest that academics were enamoured with the experience which may lead to greater resistance to on-line delivery in the absence of investment and adequate resourcing institutions could lead to lower quality outcomes, undermining the confidence of students and academics.

There is much in this research then, that not only informs understanding of the views of university faculty in coping with the immediate changes wrought by the pandemic but has practical implications for university policy and university management. We suggest that many of these lessons are likely to be extendable to other educational sectors and, indeed, possibly to other sectors where there is a similar mix of highly qualified human resource and

skill dependency and maybe beyond into other sectors where working from home became a necessity. We look forward to further research on the sustainability of working from home and the effects of the pandemic on patterns of work more generally.

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Table 1. Perceptions of on-line teaching and assessment (proportion of responses on a 5-point scale)

	Disagree/Strongly Disagree	Sometimes	Agree/Strongly Agree
Teaching			
* Enables me to plan my delivery more carefully and provide a better teaching experience	54.9	24.5	20.6
* Makes it difficult to understand whether the students understand what is being taught	11.4	10.6	78.0
* is a lot more time consuming to prepare	10.6	13.9	75.5
Marking			
* Is more time consuming than marking hard copy	38.7	22.2	39.1
* Is more tiring	28.7	20.1	51.1
* Enables me to provide better and more considered feedback	26.2	39.1	34.8

Note: Five-point scale has been simplified into three groups for expositional purposes.

Table 2. Summary statistics for key independent variables

		Mean	Std. Dev.	Min	Max
Teaching & marking prior to or during the pandemic	Experience in on-line delivery	0.18	0.38	0	1
	Teaching on-line due to pandemic	0.76	0.22	0	1
	Experience in on-line marking	0.77	0.42	0	1
	Marking on-line due to pandemic	0.73	0.33	0	1
Engagement	Dedication	5.04	1.15	1	7
	Vigour	4.10	1.16	1	7
	Absorption	4.98	1.06	1	7
Job insecurity	Job insecurity	3.21	1.18	1	5
	Confident about outside work options	2.29	0.97	1	5
Academic Rank	Professor	0.20	0.40	0	1
	Associate Professor	0.36	0.48	0	1
	Lecturer	0.31	0.46	0	1
	Research Fellow/ Senior Research Fellow	0.03	0.16	0	1
	Teaching Intensive Role	0.09	0.28	0	1
	Other	0.02	0.14	0	1

Notes: Text describes the variables.

Table 3. Difference in mean responses of individuals who marked prior, and those that marked during, the Covid lockdown

	Experience		
	Do not normally Teach/Mark online	Normally Teach/Mark online	Teach/Mark online due to pandemic
Teaching			
* Enables me to plan my delivery more carefully and provide a better teaching experience	2.4	2.9	2.4
* Makes it difficult to understand whether the students understand what is being taught	4.1	3.6	4.0
* is a lot more time consuming to prepare	4.1	3.8	4.1
Marking			
* Is more time consuming than marking hard copy	4.1	2.8	3.2
* Is more tiring	4.2	3.2	3.5
* Enables me to provide better and more considered feedback	2.4	3.2	3.0

Table 4. Ordered Logit Estimates (odds ratios reported)- Dependent variables: Views of on-line teaching and assessment

		Reduces understanding		Enhances Planning		Increases Prepartion Time		More time consuming		Can lead to more considered feedback		Is more tiring	
		Coeff	z-stat	Coeff	zstat	Coeff	z-stat	Coeff	z-stat	Coeff	z-stat	Coeff	z-stat
Teaching & marking	Experience in on-line delivery	0.462 ***	(5.80)	2.144 ***	(5.80)	0.684 ***	(2.83)						
experience	Experience in on-line marking							0.223 ***	(10.21)	3.053 ***	(7.76)	0.295 ***	(8.29)
	Activity on-line due to pandemic	0.750	(1.27)	1.342	(1.26)	0.738	(1.34)	0.798 **	(2.15)	1.265 **	(2.18)	0.766 ***	(2.53)
Work	Dedication	1.066	(0.76)	1.145 *	(1.69)	0.991	(0.10)	0.935	(0.85)	1.069	(0.84)	0.916	(1.10)
engagement	Vigour	0.661 ***	(6.32)	1.345 ***	(4.69)	0.839 **	(2.75)	0.873 **	(2.21)	1.076	(1.17)	0.807 **	(3.46)
	Absorption	1.068	(0.78)	1.032	(0.39)	1.036	(0.42)	1.079	(0.96)	1.011	(0.14)	1.160 *	(1.84)
Job insecurity	Insecure about job	1.185 ***	(3.77)	0.906 **	(2.27)	1.152 ***	(3.17)	1.169 ***	(3.55)	0.925 *	(1.78)	1.222 ***	(4.61)
	Confident about outside work options	0.945	(1.05)	1.122 *	(2.20)	0.965	(0.65)	0.980	(0.40)	0.953	(0.92)	0.978	(0.43)
Academic Rank	Professor	0.598 **	(2.31)	0.617 *	(2.23)	1.052	(0.22)	1.464 *	(1.77)	0.659 *	(1.90)	1.565 **	(2.07)
(Ref. Teaching	Associate Professor	0.690 *	(1.84)	0.737	(1.57)	0.910	(0.46)	1.277	(1.27)	0.590 **	(2.68)	1.395 *	(1.72)
Intensive roles)	Lecturer	1.003	(0.02)	0.816	(1.06)	1.013	(0.06)	1.228	(1.07)	0.652 **	(2.18)	1.261	(1.20)
	Research Fellow/ Senior Research Fellow	0.560 *	(1.68)	0.669	(1.24)	0.877	(0.37)	1.222	(0.60)	0.581	(1.58)	0.980	(0.06)
	Other	0.786	(0.60)	0.463 *	(1.92)	0.636	(1.13)	1.032	(0.08)	0.358 **	(2.38)	1.248	(0.58)
Demographic	Gender	1.217 **	(2.28)	0.947	(0.64)	0.925	(0.85)	1.009	(0.10)	0.942	(0.71)	0.895	(1.33)
	Child under the age of 4	1.090	(0.62)	0.835	(1.43)	0.808	(1.57)	0.837	(1.38)	0.972	(0.23)	0.801 *	(1.73)
Non-teaching	Involvement in administrative activities	0.865 **	(2.51)	1.127 **	(2.14)	0.682 ***	(6.66)	0.802 **	(4.07)	1.024	(0.43)	0.726 ***	(5.84)
activities	Proportion of time devoted to research (%)	1.004	(1.53)	0.998	(0.97)	0.992 ***	(3.37)	0.997	(1.37)	1.003	(1.32)	0.998	(0.83)
	Change in the prop of time devoted to child care (%)	1.004	(1.19)	0.996	(1.28)	1.006 *	(1.76)	1.000	(0.09)	1.004	(1.12)	1.002	(0.64)
Institutional	Surplus of deficit of institution (% of total income)	1.271	(1.53)	0.866	(0.96)	1.126	(0.77)	0.880	(0.84)	1.280	(1.61)	0.918	(0.56)
environment	No. Post-Graduate Students (000s)	1.011 *	(1.88)	1.003	(0.61)	1.000	(0.05)	0.992	(1.42)	0.996	(0.79)	0.992	(1.37)
	Total Income (£000s)	1.000	(1.48)	1.000	(0.00)	1.000	(0.20)	1.052 **	(1.96)	-0.952 *	(1.78)	1.053 **	(2.00)
	Total Income	1.000	(1.54)	1.000	(0.46)	1.000	(0.77)	1.000	(1.12)	1.000	(0.20)	1.000	(1.21)
	Teaching Excellent Framework (TEF)	0.919	(0.47)	1.243	(1.25)	1.183	(0.92)	0.934	(0.39)	1.288	(1.42)	1.060	(0.33)
	Non-participant in TEF	1.142	(1.20)	0.885	(1.15)	1.066	(0.58)	0.941	(0.58)	1.082	(0.75)	0.914	(0.85)
Week effects (Ref: Week 1)		YES		YES		YES		YES		YES		YES	
Wave (Ref: Wave 1)		YES		YES		YES		YES		YES		YES	
Field fixed effects		YES		YES		YES		YES		YES		YES	
N		1,537		1,537		1,537		1,542		1,542		1,542	
Log likelihood		-1855.1		-2142.9		-1913.6		-2324.7		-2183.2		-2301.5	

Notes: z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1. Odds ratios reported.

Table 5. Ordered Logit Estimates (odds ratios reported)- Dependent variables: Differing views of on-line teaching and assessment of differing ranks

		Reduces understanding		Enhances Planning		Increases Prepartion Time		More time consuming		Can lead to more considered feedback		Is more tiring	
		Coeff	zstat	Coeff	zstat	Coeff	zstat	Coeff	zstat	Coeff	zstat	Coeff	zstat
Teaching & Marking	Experience in on-line activity (Professor)	0.589 **	(1.91)	2.297 ***	(2.85)	0.864	(0.49)	0.325 ***	(4.23)	3.854 ***	(4.98)	0.354 ***	(3.77)
Experience	Experience in on-line activity (Associate Professor)	0.392 ***	(4.07)	1.883 ***	(2.84)	0.616 **	(2.08)	0.244 ***	(5.83)	2.637 ***	(4.19)	0.338 ***	(4.53)
	Experience in on-line activity (Lecturer)	0.499 ***	(3.17)	2.105 ***	(3.42)	0.771	(1.21)	0.164 ***	(7.25)	4.608 ***	(6.44)	0.260 ***	(5.48)
	Experience in on-line activity (Other)	0.386 ***	(2.97)	2.691 ***	(3.23)	0.479 **	(2.28)	0.177 ***	(4.50)	0.994	(0.02)	0.200 ***	(4.07)
	On-line due to pandemic	0.747	(1.28)	1.315	(1.17)	0.749	(1.26)	0.794 ***	(2.20)	1.261 **	(2.15)	0.764 ***	(2.55)
Work	Dedication	1.067	(0.77)	1.142	(1.65)	0.993	(0.08)	0.933	(0.88)	1.062	(0.76)	0.916	(1.11)
engagement	Vigour	0.658 ***	(6.36)	1.349 ***	(4.72)	0.836 **	(2.82)	0.868 **	(2.28)	1.073	(1.13)	0.805 **	(3.50)
	Absorption	1.069	(0.79)	1.035	(0.43)	1.035	(0.41)	1.081	(0.98)	1.013	(0.16)	1.161 *	(1.86)
Job insecurity	Insecure about job	1.183 ***	(3.73)	0.905 **	(2.30)	1.152 ***	(3.16)	1.168 ***	(3.53)	0.923 *	(1.82)	1.222 ***	(4.61)
	Confident about outside work options	0.945	(1.05)	1.119 **	(2.15)	0.966	(0.64)	0.973	(0.53)	0.949	(0.99)	0.974	(0.49)
Academic Rank	Professor	0.547 **	(2.49)	0.643 *	(1.90)	0.931	(0.29)	0.894	(0.25)	0.213 ***	(3.54)	0.968	(0.07)
(Ref. Teaching	Associate Professor	0.654 *	(1.94)	0.780	(1.19)	0.819	(0.89)	0.969	(0.07)	0.257 **	(3.22)	0.887	(0.27)
Intensive roles)	Lecturer	0.994	(0.03)	0.882	(0.60)	0.948	(0.24)	1.311	(0.63)	0.179 **	(4.11)	1.007	(0.02)
	Research Fellow/ Senior Research Fellow	0.563	(1.66)	0.671	(1.23)	0.887	(0.34)	1.231	(0.62)	0.597	(1.50)	0.992	(0.02)
	Other	0.782	(0.61)	0.466 *	(1.91)	0.620	(1.18)	1.038	(0.10)	0.379 *	(2.25)	1.265	(0.61)
Demographic	Gender	1.223 **	(2.33)	0.949	(0.61)	0.925	(0.85)	1.015	(0.16)	0.942	(0.70)	0.898	(1.29)
	Child under the age of 4	1.091	(0.62)	0.835	(1.43)	0.806	(1.59)	0.833	(1.42)	0.976	(0.19)	0.800 *	(1.75)
Non-teaching	Involvement in administrative activities	0.867 **	(2.47)	1.127 **	(2.14)	0.683 ***	(6.63)	0.805 **	(4.01)	1.017	(0.30)	0.726 ***	(5.83)
activities	Proportion of time devoted to research (%)	1.004	(1.50)	0.998	(0.98)	0.991 **	(3.39)	0.997	(1.29)	1.003	(1.42)	0.998	(0.77)
	Change in the prop of time devoted to child care (%)	1.004	(1.11)	0.996	(1.30)	1.005 *	(1.69)	1.000	(0.05)	1.003	(0.97)	1.002	(0.74)
Institutional	"New" universities	1.279	(1.58)	0.866	(0.96)	1.135	(0.82)	0.874	(0.89)	1.272	(1.56)	0.915	(0.58)
environment	Surplus of deficit of institution (% of total income)	1.011 *	(1.81)	1.003	(0.57)	1.000	(0.05)	0.992	(1.40)	0.996	(0.70)	0.993	(1.34)
	No. Post-Graduate Students (000s)	1.000	(1.45)	1.000	(0.03)	1.000	(0.23)	1.000 *	(1.90)	1.000 *	(1.75)	1.000 *	(1.95)
	Total Income (£000s)	1.000	(1.57)	1.000	(0.47)	1.000	(0.81)	1.000	(1.02)	1.000	(0.22)	1.000	(1.17)
	Teaching Excellent Framework (TEF)	0.913	(0.50)	1.251	(1.28)	1.168	(0.85)	0.938	(0.36)	1.295	(1.45)	1.058	(0.32)
	Non-participant in TEF	1.139	(1.18)	0.886	(1.14)	1.063	(0.55)	0.947	(0.52)	1.074	(0.68)	0.919	(0.81)
Week effects		YES		YES		YES		YES		YES		YES	
Wave (Ref. wave 1)		YES		YES		YES		YES		YES		YES	
Field fixed effects		YES		YES		YES		YES		YES		YES	
N		1,537		1,537		1,537		1,542		1,542		1,542	
Log likelihood		-1866.6		-2142.9		-1913.6		-2324.7		-2187.3		-2301.5	

Notes: z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1. Odds ratios reported.