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The impact of digital transformation on academic work

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ABSTRACT

In recent years, the digital transformation of Higher Education (HE) has had a significant impact on educators and teaching practices across the sector. New ways of working have led to teachers experiencing more pressure to develop technical expertise while simultaneously supporting students through a labyrinth of change. This small-scale explorative study investigates educators' experiences of working and teaching online in a teaching-focused institution through the lens of Leavitt's Diamond Model (1964). The data collected consists of six semi-structured interviews with teachers working in a teaching-focused university. The study indicates that many participants have experienced a significant increase in workload since the Covid-19 pandemic, with some exhibiting signs of technostress associated with online working (Panisoara et al., 2021). This seemed especially prevalent with more senior academics as policies and digital infrastructure appear to have led to additional administrative burdens. Despite these findings, the research suggests that Information Communication Technology (ICT) may not be the sole cause for this, but rather, it is a symptom of a more complex phenomenon. It has been further suggested that as the HE landscape evolved, little emphasis has been placed on how organisational initiatives influenced the structure, work tasks, technology, and teachers' experiences. Due to the limited scope of this study, it is unclear if this is an isolated situation within the school or a more extensive sector-wide issue. Nevertheless, Higher Education managers and policymakers may benefit from applying integrated change strategies if they are to better support teachers and adopt a more balanced work environment post Covid-19.

Keywords: academic staff; digital transformation; Leavitt's Diamond Model; organisational structures; post-pandemic; working and teaching online

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1. Introduction

This paper will explore the experiences of educators working in a teaching-focused university in the UK through the lens of Leavitt's Diamond Model. It will look specifically at how the wider organisational system impacts educators' experience of teaching and working online post-pandemic. Covid-19 has brought about significant changes to UK Higher Education (HE), and over the last few years, the role of the teacher has been greatly transformed. Despite an impetus for universities to return to face-2-face teaching, much online teaching has remained, especially with postgraduate students or when working with overseas partners. This, combined with more staff working from home and the ongoing move to online systems, has led to university educators using Information Communication Technology (ICT) and working in front of a computer screen more than ever before. This change has created opportunities for more flexibility in the way we work (Meske and Junglas, 2021), but also in how we teach, and the way many institutions engage with students.

At the university where I work, teachers regularly complain that they are tired of looking at screens and feel overwhelmed by the speed at which online teaching apps are thrust at them (Voet and De Wever, 2017). They have also expressed a general sense of exhaustion and technology fatigue (Panisoara et al., 2021). Many have commented that the constant need to complete online tasks, which were once done by administrators, has led them to work long hours (Ryttberg and Geschwind, 2021), with some going so far as to question their competence and teaching abilities. Others talked about poor IT infrastructure, stating that administrative software does not sync, leaving educators to manually input the same data into several different student databases. They also complain about wasted hours liaising with technical support due to hardware and software issues (Li and Wang, 2021). Despite these concerns, educators have highlighted some positives such as the freedom and flexibility that working online provides.

To some extent, colleague concerns around these issues have been mixed, suggesting that there is a lack of consistency across the school. It appeared that educators' roles and responsibilities may affect their experiences as many expressed somewhat complex organisational issues. This seemed to be especially true for lecturer and senior lecturer grade staff. Pearlson et al. (2005, p. 77) state that "organisations are moving away from organisation structures built around particular jobs to settings in which a person is defined in terms of what needs to be done". This approach seems to have taken hold in Higher Education Institutions (HEIs) with the centralisation of support staff, a changing labour culture and teachers moving online (Ryttberg and Geschwind, 2021). Wang et al. (2008) argue that organisations that are heavily centralised have higher instances of technostress, which is defined as a "type of stress experienced in organizations by technology end users as a result of their inability to cope with the demands of organizational computer usage" (Rutkowski and Sanders, 2019, p. 140). Educators who experience technostress may feel that they are being pressured to change the way they teach or increase their use of educational technology despite it contradicting their pedagogical beliefs (Syvänen, 2016). However, Penado-Abilleira et al.'s (2021) research findings on technostress and online universities in Spain contradicted this, arguing that centralisation and technostress do not necessarily go together. Recently, the 2021 UCU Workload Survey reported that increased levels of online working combined with additional duties and administrative tasks and rising student numbers have contributed to unsustainable workloads. This has led to a belief that this situation may not necessarily be straightforward or solely a matter of the use of ICT, but rather about organisational management and the digital transformation of Higher Education that has been perpetuated by the Covid-19 pandemic.

An overview of scholarly work suggests that research around these issues is somewhat limited, with the focus primarily on a macro level (Meke & Junglas, 2021). It has been highlighted by Farquharson et al. (2018) that research on digital transformation in Higher Education appears to be relatively underdeveloped, stating that there is no "clear research framework set in the distinctive culture of HE" (p.150). It seems that despite the HE sector becoming more entwined with technology, there appears to be insufficient research on the impact of organisational structures or how the digital strategies in place affect academic staff experience. This is not surprising, as there seems to be insufficient literature on the way new technologies impact "organisational

structures and processes" (Meske & Junglas, 2021, p.1120. In general, most of the scholarship in this area focuses on the business sector.

Therefore, this paper will address some of the shortcomings in the literature around university teachers' online experiences and the organisational structure through the lens of Leavitt's Diamond Model. It argues that we should not examine teachers' experiences in isolation, but rather in the context of the institution system in which they work. Therefore, this classical framework can be a useful tool when examining the interplay between the experiences of educators working in a teaching-focused university and the use of ICT.

1.1 Research questions

- *Research question 1:* What are teachers' experiences of working and teaching online in a teaching-focused university in the UK after Covid-19?
- *Research question 2:* How does the wider organisational system impact educators' experience of teaching and working online in UK Higher Education after the pandemic?

2. Literature review

2.1 HE structure and work

As far back as 1978, Tushman and Nadler explored overload and an organisation's inability to deal with the uncertainty surrounding workload, which is especially important when implementing a digital strategy in an evolving Higher Education sector. Van Knippenberg et al. (2015) point out in a recent study that employees spend less than half their time completing the tasks they were hired to do, and this appears to be especially true within UK HEI. In fact, many administrator jobs in the UK sector have been cut or the role has been centralised, with universities citing the need to reduce costs by eliminating "unnecessary duplication of support activities in academic units" (Ryttberg and Geschwind, 2021, p. 49). However, as research has pointed out, with digitisation many of the tasks which were once carried out by support staff are "now self-administrated by academic staff" (p.54). For many colleagues, this approach has led to a significant increase in workload and a decline in job satisfaction. Berge (2008) highlights that with the increase in online teaching, students are more likely to expect their teachers to support them with technical issues, which may be beyond an educator's skill set, and respond to their questions outside of normal work hours, both of which are not factored into academic workloads.

The literature further suggests that despite centralisation becoming more commonplace, it may be a somewhat short-sighted approach to change management. Wang et al. (2008) highlight that technostress is more likely to be reported when an institution is characterised by high levels of centralisation and ICT. This seems especially true for academic staff running highly specialised online programmes such as the English for Academic Purposes Pre-sessional. An administrator without any specific training on the intricacies of this type of programme would not be of any real value and could add additional strain on the teaching staff. Ryttberg and

Geschwind (2021) findings align with this, suggesting a reason against centralising support staff is that they may have a limited understanding of specific departments and academic tasks. They advised that institutions should have an "IT expertise situated locally, with knowledge about the local and possibly disciplinary context, who could give instant support" (p.54). Simon (1997) also found that when dealing with ICT the more effective solution could be to apply a decentralised approach. Andrews et al. (2017) argue that centralisation of the public sector is not necessarily appropriate, further advocating that HE institutions would benefit from employing more staff in support roles. Nevertheless, this does not seem to be the approach taken by many institutions. Instead, academic staff are increasingly fulfilling the role of admin staff in addition to their primary responsibilities of teaching and conducting research. For many, this means that research is done outside of working hours.

2.2 Teachers and technology

Studies suggest that leadership and organisational structure can impact a teacher's experience with technology. Magnaye–Laylo's (2020) research observed that organisational performance is linked to the efficiency of technological management in HEIs. Nograšek and Vintar (2011) highlight that a lack of leadership combined with limited staff competence can negatively affect ICT utilisation. Panisoara et al. (2021) further explored teacher technostress and burnout. They pointed out that organisational factors such as demanding workloads associated with online teaching, leadership style and work culture can affect teachers' mental health. However, this is not surprising or novel information for people working in HE. As far back as 1981, Bobbitt & Behling argue that institutions "need to anticipate the possible negative impacts that such technological changes may bring" (p.34), yet in many institutions, this seems to ignore this. It is as if the context is unimportant, with a view that people and technology are interchangeable as opposed to part of the same dynamic system.

Penado-Abilleira et al.'s (2021) study on online universities found that teachers experience increased levels of stress when institutional resources are limited. They maintain that if the demand of the institution exceeded a teacher's skill set or the teacher does not have the ICT skills needed to meet expectations, they experience technostrain. This is defined as anxiety or fatigue caused by the use of technology. For instance, a person who experiences this may feel they do not have enough time in the day to "respond to the amount of digital data they receive" (p.2), or they may have a negative attitude toward ICT because they lack the knowledge or skills to use the equipment.

Donner's (2022) research explored factors that are needed to successfully implement research data management (RDM) in HEI. They emphasise that if institutions are to utilise new technology, there is an increased need for "organizational solutions such as the development of support services" and to "develop and maintain an adequate IT infrastructure" (p.1). Li and Wang (2021) explored the impact of technostress on teacher performance in HE, and their findings also suggested that institutions need to develop strategies for effective ICT integration.

3. Theoretical framework: Leavitt's Diamond Model

In 1958, Leavitt developed a multivariate system that could be used to critically evaluate organisational change and is considered to be entwined with Social Technical Theory (Nograšek and Vintar, 2011). The model focused on four key areas of an organisation: management tasks, people, structure and technology (Leavitt, 1964). It is believed that an organisation can be distinguished by a range of sociocultural constructs (Draft, 2013) and that any action or change in behaviour of a construct, such as the way they respond to a perceived problem, can impact the three other components (Leavitt, 1964). In addition, the response to a change or action will have an impact on other components as well as on the group who made the original change, and the knock-on effect will continue. Therefore, as it is interdependent, it has been suggested that to maintain a balance between the groups, all four components should be in alignment (Donner, 2022, p. 3). Thus, change is needed in all areas (Blumberg et al., 2019; El Sawy, 2001) of an organisation.

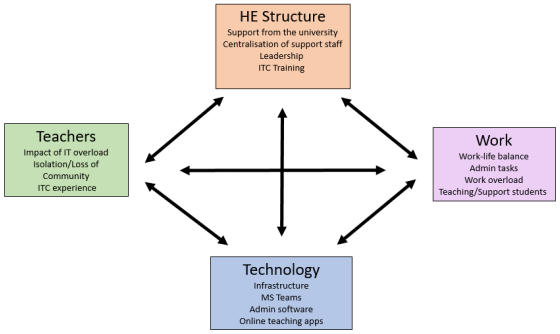

Figure 1: Adapted from Leavitt's Diamond Model (1964)

Leavitt's framework provides a useful ontological lens to view digital transformation. It is flexible and well-defined and allows the researcher to consider the impact of context and human behaviour (Gong et al, 2020; Quint, 2017). Many previous studies on digital transformation have ignored the effects of institutional change, instead looking at them from isolated perspectives (Gong et al., 2020). However, I was interested in applying a theoretical lens that acknowledges the interconnectivity between different aspects of an organisation as this research identified complex factors that affected educators' experiences of teaching and working online that needed to be addressed. Nograšek and Vintar (2014) argue that although Leavitt's model has been around for almost 60 years, it can provide a robust framework for examining the relationship between the intricate structures of public sector institutions and their use of technology.

Magnaye–Laylo (2020) explored the relationship between organisational performance and technological management at a university in the Philippines. She argues that Leavitt's framework is useful "for understanding the connection between the key factors in an organization to build an integrated change strategy" (p.35). Despite her research using surveys, the theory could be used effectively with a qualitative research approach as it could help to provide a better understanding of individual teacher experiences of ICT. Norton and Ellis

(1992) asserted that the impact on a structure and the people working within it should be taken into consideration when implementing any changes to technology or services. Quint (2017, p. 34) reinforces this, stating that employee behaviour and organisational structure can be affected by the implementation of new technology and that with this, there can be “unintended and unanticipated consequences”. Furthermore, Rutkowski and Saunders (2016) successfully use Leavitt’s Diamond model to explain IT-related overload and internet addiction. Though their research specifically focuses on business at the organisational level, it could be applied to an HE context as it has been suggested that similar issues can be identified.

Despite the usefulness of Leavitt’s Diamond model, several limitations have been highlighted. Firstly, Hoff and Scheele (2014, p.252) point out that the framework fails to demonstrate the connectivity between the four components other than by stating that "everything affects everything else”. Secondly, they argue that it implies that “technology can change actors” and that by giving technology agency it can lead to “technological determinism” (p.252). However, this critical view may ignore “self-determination” (Meske and Junglas, 2021, p.1121) and underestimate the power of “human agency” in the sector (Kirkwood, 2014, p. 208). The third issue focuses on goal setting. Bobbitt & Behling (1981) argue that the model does not acknowledge external factors, pointing out that an organisations’ goals are not solely linked to internal objectives but are driven by elements outside of the environment. This is a noteworthy consideration that may impact the way digital transformation is implemented within an organisation; however, the scope of this project was limited to teachers’ experiences in a specific school and was not particularly aimed at identifying external issues outside the institution. It may be advantageous in future research to use a theory that acknowledges the wider external factors at play that impact teachers’ experiences. An alternative lens could be Engeström’s cultural-historical activity theory (CHAT) as it would allow for the research to explore contradictions and external influences within the system.

4. Methodological considerations

This qualitative study aimed to gain insight into the experiences of teachers working and teaching online at a university in the UK and to explore how the wider organisational system impacts their experience post-pandemic. Semi-structured interviews were used to ensure that the six participants had a uniform set of questions while allowing the more outspoken participants to discuss their thoughts and experiences (Panke, 2018). There was some apprehension around interviewing colleagues as they are aware of my research interests and could unintentionally respond to questions in a way that they believed would help me with the project. This is where the semi-structured interviews worked well as they allowed me to address specific topics while letting me step back and give more control to the participants so that they could speak at length about their own individual experiences (Panke, 2018; Rabionet, 2011). In addition, Maxwell (2013) highlighted that researchers need to have an awareness of the assumptions that they bring to the study. As a teacher, I had my own experience with technology, so I was aware that my beliefs have been “embedded in the research from the outset” (Roulston and Shelton, 2015, p. 339). I was concerned that this has the potential to impact data

collection and analysis. Therefore, by using this approach I hoped to reduce my influence in the relationship, and consequently over what was shared by the participants.

Prior to the interviews, the six participants consented to be recorded using Microsoft Teams. During the interview process, I repeated and rephrased questions and probed for additional information. One of the added benefits of using semi-structured interviews is that it gives the researcher the freedom to explore issues in more depth (Pathak and Intratat, 2012). After each interview, but prior to the data analysis, I used my interview notes to write up a short synopsis of what the participant said and the emotions that were expressed as I believed this would aid me in the analysis process. The exchanges were transcribed and then saved in a password-protected secure location. Maxwell (2013) argues that data analysis needs to begin immediately after the first interview, so once that was complete, I began to review the transcripts and highlighted common themes that arose from the interview. He also suggests that the researchers need to go beyond the use of coding and thematic analysis, advocating for the use of additional strategies such as reviewing interview notes and documents written during the analysis stage. During the writing-up stage, I found this information particularly helpful.

Thurmond (2001) highlighted that data triangulation could be useful in qualitative research. Panke (2018, p.230) also emphasises that it “increases the validity of social science research” and that it can be useful when conducting semi-structured interviews. Thus, I decided to expand my document corpus by using my field notes alongside the literature when interviewing the participants. I was keenly aware of the amount of data this could generate and that this could result in false interpretations (Porter 1989). However, I decided as the sample was small, I did not believe there would be any significant consequences.

4.1 Research participants

There were six academic staff members interviewed in this study (Table 1). All the participants have permanent or long-term fixed contracts and teach in the school.

Participants	Role	Gender
Participant 1	Senior Lecturer	Female
Participant 2	Senior Lecturer	Female
Participant 3	Lecturer	Male
Participant 4	Lecturer	Female
Participant 5	Lecturer	Female
Participant 6	Tutor	Male

Table 1: Participants in the study

4.2 Analysis

The semi-structured interviews were thematically analysed. The initial inductive codes were based on the data corpus which consisted of the interviews, my field notes, the theoretical framework and the literature. Seven themes were then generated from the code (see Table 2).

Themes
1. Work-life balance/workload
2. Leadership
3. Centralisation of support staff/division of labour
4. Previous ICT experience
5. Teaching/supporting students
6. ICT training and support
7. Isolation and sense of community

Table 2: Themes

5. Findings

My findings are based on six semi-structured interviews, two male and four female. Each interview was between forty-five minutes and an hour in length. My results have been grouped into four key areas identified in Leavitt's framework. There are also seven sub-headings that link to the previously identified themes in Table 2.

5.1 HE structure

5.1.1 Centralisation of staff

In general, the findings suggest that centralisation and the division of labour have affected teachers' experience of working online. This can be seen across all levels of staff, though it seems more apparent with teaching staff in senior roles. All participants highlighted concerns about the number of online administrative tasks they were expected to do. This included tasks such as inputting marks into Grade Entry, enrolling students in modules and manually adding student attendance in the Student Attendance Monitoring System (SAM).

It was pointed out repeatedly that the amount has increased significantly since the pandemic. One senior teacher stated that 80% of their work is now admin. However, the participant did not clarify how this number was calculated:

> For the admin for courses to run and for students to get through their programs, the admin is being shifted onto our shoulders. Whereas before it might have been undertaken by admin staff... (Participant 2)
>
> ... a lot of universities used to have a department with the admin staff for that department and the academics would ask the admin staff to do the admin tasks, right. Seems simple enough to me. But no... universities have wanted to restructure... Think will save money and cut costs. So, they've created all these platforms and now it's like, do it yourself. So, the admin staff have been cut. Their jobs are now different, and you're supposed to do things as an academic..... you're supposed to do all the admin things yourself and nearly everything you do yourself is on a platform. (Participant 1)

Others highlighted that as centralised staff do not always understand the intricacies of the programmes, their support is not always effective. This results in the task being repeated by academic staff, compounding their workloads.

5.1.2 IT training and support

Participants throughout this study repeatedly talked about the limited support and training they received from their institution. Many explained that they have been asked to use admin databases without any support. Participant 5 stated "I basically put my foot down about Banner [student database]. I think it's an admin database and I haven't had any training on it".

Participant 4 described the Learning and Information Services (LIS) as being "overworked and the team was too small to be able to assist everyone". Another member of staff described how pleased he was about getting such good support until he realised that it was not from the university, but from other teaching colleagues who were not responsible for this and received no hours for it in their workloads.

5.1.3 Leadership

There was limited discussion around specific leadership as the teachers seemed to focus more on the way institutional decisions impacted their work. Many of the participants suggested that there has been little acknowledgement from management regarding the challenges of working online, as no additional time has been provided in staff workloads to deal with the increase in administrative tasks, or the software used to perform these tasks. They also complained that there was limited recognition of the way increasing student numbers and staff redundancies were affecting their jobs. The participants described a situation where there were constant changes, and the institution seems to be moving more readily to a self-service model where teaching staff have increased duties and reduced support.

5.2 Work

5.2.1 Work-life balance

The majority of the participants spoke positively about the freedom of home working, with many highlighting that they appreciated that they did not need to commute to campus every day. However, this seems like a double-edged sword, as many stated that the time saved was replaced with additional work. Even participants who spoke positively about their experiences of teaching and working online commented that their workloads had increased significantly over the last few years.

There appears to be a correlation between workload and grade, with more senior staff seeming to report more instances of "work overload" (Rutkowski and Saunders, 2016, p. 82). Many described situations where they felt compelled to work long hours in front of a computer because they were unable to keep up with their responsibilities during the normal workday, therefore working into the evening. For example:

> It just keeps building... I used to spend a day a week maybe on admin just catching up on stuff and it seems to creep more and more into the rest of the week … and I'd say it is probably close to being half my week now is admin... And since I have been course leader and year tutor all the other stuff that they [management] keep asking me to do that it's more admin related (Participant 5).

There was also a sense that not only did their workload increase because of added administrative tasks associated with working online but it was difficult to establish boundaries between work and home:

> Staff cutting has increased, there's more work to set things up online, so there's more work to do, and I, in terms of my own self-management, I think, uh... I find it quite difficult to stop. You know... it's 8:00 o'clock at night and I'm still [here].... Funny about work because I'm here anyway, and I'm at the computer anyway, and I just want to get it done. And so, you know, before I would never have done that. I wouldn't have come home from work at 6:00 o'clock and then started again until eight usually, you know. So... I think... well work-life balance has gone to pot. Really... Yeah... And that's mainly because of working online. (Participant 1)

5.2.2 Supporting students

Several of the participants discussed their online teaching experiences with the students. Interestingly, the data was mixed. For instance, some teachers felt the quality of the online tutorials was inferior, and at times, stressful compared to face-to-face, while others felt that it improved the experience and that the students were more engaged in the online environment. One reason for this variation could be the type of students, such as undergraduate or postgraduate. Another reason could be how comfortable the teacher is in the online environment, as I noted that teachers who were more confident with ICT seemed to have better experiences.

Others described feelings of guilt about not being available to students in what feels like a 24/7 online learning environment that seemed to encourage more frequent contact with their teachers:

> Students come to you a lot more with their work when it's online... a lot more than if they were doing face-to-face classes, which is great for the students because you know... they feel like they can just like send me stuff to kind of look at and I think this is valuable to them.... but it does increase my workload quite a lot. So you have to be kind of... you have to make a choice. (Participant 6)

5.3 Technology

All six participants stated that the use of ICT has impacted on their workloads. For instance, they highlighted the lack of integrated systems architecture. This did not allow for shared data points, meaning there was no single source of truth. Those who were responsible for year groups or whole programmes described situations of task switching, where they had to work with several different platforms simultaneously when completing administrative duties. This took up time that was not accounted for in their workload and created opportunities for human error as information needed to be put into multiple databases.

Participant 5 expressed frustration at this, stating:

> I am not putting it in two places 'cause that's way more workload than I have... and this used to be done by an admin team and I refuse to take on more work.

Some also describe a sense of feeling overwhelmed as they did not use certain software often enough to feel competent. This seemed to be especially relevant when teachers referred to administrative databases, but also software that was linked to inclusive support and online teaching apps. In contrast, others explained that they enjoyed creating online materials. However, they complained that they did not have time in their workloads to explore and develop their skills as management did not seem to understand the amount of time it takes to create resources.

Other teachers expressed concerns about cognitive overload as staff redundancies meant that they were now working in multiple departments and having more online meetings. They highlighted that it was difficult to focus on so many different tasks and that the back-to-back online meetings do not allow for the processing of information. One participant explained that breaks may be provided during a long meeting; however, it does not necessarily mean a person will have breaks between meetings when working across multiple teams. They reiterated that workloads are quite individual, and line managers do not have a clear understanding of teachers' obligations. It was suggested that this was conveyed more easily when staff were in the office, but as many teachers work at home and take on more administrative duties and are shared across departments due to staff shortages and redundancies, they are more likely to find themselves in this situation.

5.4 Teachers

Many of the participants seemed to exhibit signs of technostress, describing instances where they felt exhausted from the demands of institutional computer usage. All of them stated that they were working long hours, though this did not seem to affect staff equally as senior lecturers appeared to talk about this more

readily and showed more signs of technostrain and burnout. One stated that the increased use of ICT in her role has had a negative impact on her confidence:

> I'm getting worse at everything, and I think it's just this sense of being overwhelmed by all the different programmes. I've got to be using this, that and the other [that] I've got to understand and the proportion of that taking over from the thing that I enjoy doing and why I do the job, which is the teaching element. It gets squeezed out. (Participant 2)

The finds further suggest that female teachers were more likely to experience technostress and technostrain than their male counterparts.

5.4.1 Isolation and a sense of community

The responses here have been mixed. Some teachers seemed to enjoy working from home, but not online, whereas others were somewhat ambivalent. In contrast, a few described working online with somewhat negative language that could be associated with burnout, using words such as "isolating", "solitary" and "loss of community" to portray their experiences.

5.4.2 Previous IT experience

The findings suggest that teachers who were more confident with ICT or had more experience with working and teaching online seem to have a more positive experience. One participant stated that they prefer to work online from home despite the challenges and discussed the importance of setting clear boundaries which seems to help them manage their time and workload.

6. Discussion

The purpose of this study was to explore teachers' experiences of working and teaching online in an HEI through the lens of Leavitt's Diamond Model. In doing this, the research looked at how the wider organisational structure, work tasks and the use of technology affected these experiences post Covid-19. At first glance, it is easy to assume that ICT is the driving force behind this. However, from the research, it seems that technology is more of a vehicle or at least a co-collaborator in the digital transformation of UK Higher Education.

Over the last several years there have been substantial changes in UK HEI. When looking through the lens of Leavitt's Diamond theory, it could be suggested that these changes have been made with limited consideration for the four interdependent components of structure, work, technology and teachers. Initially, it seemed that the teachers' frustration was associated with the use of ICT. This was especially apparent with the senior academic staff who seemed to exhibit more signs of stress (Panisoara et al., 2021). However, evidence suggests that ICT is intrinsically linked with underlying issues around organisational structure and work tasks, with online working being the method used to complete an increasing number of administrative duties. This suggests that

decisions on workloads and the reduction of support staff were not self-contained, nor were the decisions around the purchase and implantation of software, as they had a knock-on effect on teachers' experience with educational technology. This could imply that changes were not considered across all departments, which can contribute to misalignment.

In addition, support and training were highlighted in this study. The literature indicates that ICT training in the workplace is crucial as reduced levels of technostress are linked to higher levels of IT competence (Syvanen, 2016). Despite this, training alone cannot resolve issues such as poor digital infrastructure or the additional workload that comes with the use of ICT. If institutions focus too heavily on this aspect, it could put the responsibility (and potentially the blame) on the teacher, disregarding other fundamental challenges, such as time for training in an already unsustainable workload. Li and Wang (2021) argue that it is not only necessary for institutions to think about the impact of training, but ongoing technical support and maintaining adequate infrastructure, so that software works effectively, and time is not wasted. Scholars (Marsh et al., 2022; Attaran et al., 2020; Hamburg, 2019) have reiterated this, calling for more leadership support and a clear digital strategy. However, this could be a challenging request, especially when some decision-makers may have their own agendas combined with a limited understanding of technology and the complexity of working and teaching online.

This research further suggests that a top-down approach is not an effective way to achieve a successful digital transformation in UK HEI. If management lacks awareness or understanding of contextual factors and the onerous task of dealing with them, all four components of Leavitt's model could be influenced in an uncontrolled and untenable way. A common theme in the research was that teachers repeatedly described situations where their responsibilities had altered and increased with online working. Frequent instances of technostress and work overload were highlighted (Rutkowski and Saunders, 2016) with the implementation of a self-service mode. As no senior managers were interviewed in this study, the intentions behind decision-making were unclear, however, what is significant is that individual decisions around one facet of the university can influence the whole organisational structure. Each change or workaround used to deal with a system's failure, or a breakdown of communication can have an impact on other aspects of the institution.

The modern university work environment is complex, with more at play than the implementation of digital technology, it involves organisational culture. Staff, students and management all have very different needs. Gathering these requirements and ensuring the system meets the needs of all users is difficult, especially if the senior managers and software implementors are not educators. If leadership misunderstands the challenges of staff and students or misinterprets the causes of the challenges, it can have a detrimental effect on teaching and learning. However, a digital transformation does not have to lead to a negative outcome. Evidence suggests that effective leadership can have a positive impact on the implementation of technology in an institution and has the potential to reduce technostrain on teachers (Marsh et al, 2022; Salanova et al., 2013).

Therefore, ICT may not be the cause, but rather a symptom of a larger phenomenon. By drawing on the literature and the research, it could be concluded that without incorporating integrated change strategies, decisions can have unintended consequences on the HE structure, teachers, work and technology. We cannot afford to view the changing digital landscape in isolation as "unintended impacts of change continue to reverberate" (Quint, 2017, p. 36), potentially offsetting any benefits and negatively impacting members of staff. Digital transformation requires a holistic approach where we consider the needs and experiences of teachers and students, taking into account how decisions impact sociocultural constructs within the institution. That included having a shared vision of how the digital initiative will be implemented (Rodrigues, 2017).

7. Next steps

This paper is a glimpse into a phenomenon from a school within a single teaching-focused institution. It would be interesting to investigate if educators working at research-focused universities have a similar experience to the one in this study. In addition, as senior female academics expressed higher levels of stress around ICT and administrative tasks in this research, it could be useful to further explore their experiences.

About the author

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References

Attaran, M., Attaran, S., & Kirkland, D. (2020). Technology and organizational change: harnessing the power of digital workplace. In *Handbook of research on social and organizational dynamics in the digital era* (pp. 383-408). IGI Global.

Andrews, R., Boyne, G., & Mostafa, A. M. S. (2017). When bureaucracy matters for organizational performance: Exploring the benefits of administrative intensity in big and complex organizations. *Public Administration*, *95*(1), 115-139.

Al-Fudail, M., & Mellar, H. (2008). Investigating teacher stress when using technology. *Computers & Education*, *51*(3), 1103-1110.

Berge, Z. L. (2008). Changing instructor's roles in virtual worlds. *Quarterly Review of Distance Education*, *9*(4), 407-414.

Blumberg, M., Cater-Steel, A., Rajaeian, M. M., & Soar, J. (2019). Effective organisational change to achieve successful ITIL implementation: Lessons learned from a multiple case study of large Australian firms. *Journal of Enterprise Information Management*.

Bobbitt Jr, H. R., & Behling, O. C. (1981). Organizational behavior: A review of the literature. *The Journal of Higher Education*, *52*(1), 29-44.

Draft, R.L. (2013). *Organization Theory and Design*. St. Paul: West Publishing.

Donner, E. K. (2022). Research data management systems and the organization of universities and research institutes: A systematic literature review. *Journal of Librarianship and Information Science*, 09610006211070282.

Drever, E. (1995). *Using Semi-Structured Interviews in Small-Scale Research. A Teacher's Guide*.

El Sawy, O. (2001), *Redesigning Enterprise Processes for e-Business*. Irwin/McGraw-Hill, New York, NY.

Farquharson, L., Sinha, T., & Clarke, S. (2018). Researching organisational change in higher education: A holistic tripartite approach. *Electronic Journal of Business Research Methods*, *16*(3), 150-161.

Gong, Y., Yang, J., & Shi, X. (2020). Towards a comprehensive understanding of digital transformation in government: Analysis of flexibility and enterprise architecture. *Government Information Quarterly*, *37*(3), 101487.

Hamburg, I. (2019). Implementation of a digital workplace strategy to drive behavior change and improve competencies. *Strategy and Behaviors in the Digital Economy*.

Hoff, J., & Scheele, C. E. (2014). Theoretical approaches to digital services and digital democracy: The merits of the contextual new medium theory model. *Policy & Internet*, *6*(3), 241-267.

Kirkwood, A. (2014). Teaching and learning with technology in higher education: blended and distance education needs 'joined-up thinking' rather than technological determinism. *Open Learning: The Journal of Open, Distance and e-Learning*, *29*(3), 206-221.

Leavitt, H. J. (1964). *Managerial psychology: An introduction to individuals, pairs and groups in organizations*. Chicago: University of Chicago Press.

Li, L., & Wang, X. (2021). Technostress inhibitors and creators and their impacts on university teachers' work performance in higher education. *Cognition, Technology & Work*, *23*(2), 315-330.

Maxwell, J. A. (2013). *Qualitative research design: An interactive approach*. Sage publications.

Meske, C., & Junglas, I. (2021). Investigating the elicitation of employees' support towards digital workplace transformation. *Behaviour & Information Technology*, *40*(11), 1120-1136.

Nograšek, J., & Vintar, M. (2014). E-government and organisational transformation of government: Black box revisited?. *Government Information Quarterly*, *31*(1), 108-118. https://doi.org/10.1016/j.giq.2013.07.006

Nograšek, J., & Vintar, M. (2011, August). Technology as the key driver of organizational transformation in the eGovernment period: Towards a new formal framework. In *International Conference on Electronic Government* (pp. 453-464). Springer, Berlin, Heidelberg.

Pathak, A., & Intratat, C. (2012). Use of semi-structured interviews to investigate teacher perceptions of student collaboration. *Malaysian Journal of ELT Research*, *8*(1), 1.

Panke, D. (2018). *Research Design and Method Selection: Making good choices in the social sciences*. London: Sage.

Penado Abilleira, M., Rodicio-García, M. L., Ríos-de Deus, M. P., & Mosquera-González, M. J. (2021). Technostress in Spanish university teachers during the COVID-19 pandemic. *Frontiers in Psychology*, *12*, 496.

Porter, E. J. (1989). The qualitative-quantitative dualism. *Image: The Journal of Nursing Scholarship*, *21*(2), 98-102.

Quint, S. (2017). The SEAM four-leaf clover, revisited. *The Theory and Practice of Socio-Economic Management, 2(*1).

Rabionet, S. E. (2011). How I learned to design and conduct semi-structured interviews: an ongoing and continuous journey. *Qualitative Report*, *16*(2), 563-566.

Rodrigues, L. S. (2017). Challenges of digital transformation in higher education institutions: A brief discussion. In *Proceedings of 30th IBIMA Conference*.

Roulston, K., & Shelton, S. A. (2015). Reconceptualizing bias in teaching qualitative research methods. *Qualitative Inquiry*, *21*(4), 332-342.

Rutkowski, A. F., & Saunders, C. S. (2018). *Emotional and Cognitive Overload: The dark side of information technology*. Routledge.

Ryttberg, M. (2021). Organising professional support staff at higher education institutions: A multidimensional, continuous balancing act. *Tertiary Education and Management.*, *27*(1), 47-58.

Salanova, M., Llorens, S., & Cifre, E. (2013). The dark side of technologies: Technostress among users of information and communication technologies. *International Journal of Psychology*, *48*(3), 422-436.

Simon, H. A. (1997). *Administrative behavior: A study of decision-making*. New York: Simon and Schuster.

Smith, C., Norton, B., & Ellis, D. (1992). Leavitt′s diamond and the flatter library: a case study in organizational change. *Library Management*.

Syvänen, A., Mäkiniemi, J. P., Syrjä, S., Heikkilä-Tammi, K., & Viteli, J. (2016, November). When does the educational use of ICT become a source of technostress for Finnish teachers?. *Seminar.net*, 12(2).

Thurmond, V. A. (2001). The point of triangulation. *Journal of Nursing Scholarship*, *33*(3), 253-258.

Van Knippenberg, D., Dahlander, L., Haas, M. R., & George, G. (2015). Information, attention, and decision making. *Academy of Management Journal*, *58*(3), 649-657.

Voet, M., & De Wever, B. (2017). Towards a differentiated and domain-specific view of educational technology: An exploratory study of history teachers' technology use. *British Journal of Educational Technology*, *48*(6), 1402-1413.

Wang, K., Shu, Q., & Tu, Q. (2008). Technostress under different organizational environments: An empirical investigation. *Computers in Human Behavior*, *24*(6), 3002-3013.

Tushman, M. L., & Nadler, D. A. (1978). Information processing as an integrating concept in organizational design. *Academy of Management Review*, *3*(3), 613-624.