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A Reflective Account of the Changes due to the Covid-19 Pandemic on Teaching and Digital Education within an HEI

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Abstract

The coronavirus epidemic was declared a pandemic by the World Health Organization on the 11th of March 2020. Two days later, King's College London enacted plans to encourage all staff and students to teach online. This created a unique opportunity to both review and assess how teaching has changed in this institutional context. This report provides an overview of what has been done in institutions more broadly, the reaction to online learning, and gives feedback from users and from other data sources on the perceived impact on teaching. This research is novel in that it is one of the first largely reflective narrative accounts of how, and in what manner, changes to digital higher education were conducted and perceived during the COVID-19 pandemic.

Keywords: COVID, digital education, innovation, online learning, pedagogy, virtual learning environment

1. Introduction

The purpose of this paper is to review the impact of the COVID-19 pandemic on aspects of King's College London teaching and digital education. The coronavirus epidemic was declared a pandemic by the World Health Organization on the 11th of March 2020 (Cucinotta & Vanelli, 2020). Two days later, King's enacted plans to encourage all staff and students to teach online. Investigating how teaching has changed will help anticipate the support that educators and students need. This research aims to answer questions around how education has changed, how educators have adapted, and perceptions about success and effectiveness.

There is an emerging body of literature around how education has been most affected by the pandemic. Merrill (2020) talked about a mindset needed for educators to get through the Coronavirus crisis, highlighting ideas such as how overwhelming it can feel, and the importance of not striving for perfection. There is also literature on the impact of Coronavirus on education, and this creating institutional-level impact. Those such as Goh et al. (2020) have also discussed the future possible challenges and benefits that will emerge in education as a result of this crisis, looking through the lens of medical education. It must also be noted that this is not the first-time higher education has had to be suspended and adapt because of the medical situation; in China, in 2003, this had to happen as a result of the SARS epidemic, as discussed by Hung (2003).

2. Literature

An overview of the international response to the pandemic in an educational sense was provided by Crawford et al. (2020), reviewing 172 sources and gaining a sense of different countries' approaches. As perhaps one might expect, there was a diverse array of approaches, with developed countries in particular tending towards fully online learning. Fully online learning was reported throughout Singapore, UAE, UK, the US, and a range of other developed states, particularly as this has the potential to reduce the spread of the virus.

Di Pietro et al. (2020) argues that one of the keys to the successful implementation of digital learning during the pandemic would be appropriate use of a Virtual Learning Environment (VLE), and King's is like most UK institutions in using a well-established and beneficial VLE. It is also worth noting the importance of preparation for online learning as Dhawan (2020, p.17) states: "Educational institutions must build resilience in their systems to ensure and prioritize the presence of these skills in their students."

The value of evaluating this approach (teaching online during a pandemic) has been debated in the literature. Zimmerman (2020, p.1) claimed this situation provided an opportunity to "determine what our students actually learn

online"; whereas, by contrast Tobin (2020, p. 1), has argued: "good online teaching requires training, prep, and support. The current crisis provides none of that." These positions can provide a false binary as both can be correct simultaneously - it might well be true that online teaching in the pandemic provides inadequate planning time. This doesn't mean, however, that the evaluation of what there was time to implement does not provide any valuable insights.

Challenges and benefits of teaching online during a pandemic

There is some existing literature on the effect of learning online during the pandemic. Botturi (2020, p. 930) argues that, for successful learning during the pandemic, the most important things are "accessibility (having the proper devices/connection/software) and autonomy (i.e. ability to set goals, manage time, avoid distractions)." A common concern is how educators can adapt to these new circumstances, and whether they have appropriate skills to do so. In general, there is a feeling, noted by Ertmer et al. (2010, p. 261), that those who teach online can see themselves as "perpetual novices", and we hoped to investigate if this was a feeling shared by educators in the present circumstance.

There is evidence that well-structured teaching online is highly valued by students. A study by Clinefelter et al. (2019) found that 89% of students felt online learning was as good as, or better than, face to face to learning, although we should caveat this by saying this was prior to the pandemic. With any change in education, results can be varied, and a study of 458 students in Spain by Gonzalez et al. (2020, p. 1) showed a "significant positive effect of the COVID-19 confinement on student performance." This suggests that there can be benefits to the lack of distractions that this environment could bring. A positive note was also struck by Robbins et al. (2020, p. 1), arguing that this has created a massive drive for "innovative working approaches" which has "resulted in remarkable advances", which they call a new digital dawn. Delgado (2021) builds on this by showing how digital education can work well during the pandemic from a discipline-specific situation, namely physics. Furthermore, looking at the UK generally, there is evidence to show that 80% of students were confident learning online during the pandemic (Barber, 2021).

But there are others who are more sceptical of the benefits of the online learning approach. Martín et al. (2021, p. 1) reviewed the impact of the pandemic on the use of digital education and found a great degree of student dissatisfaction, both general about their educational situation, and also about the involvement of their lecturers. Further, they argued that lecturers felt they "do not have the appropriate knowledge" about digital tools. A report from the Edge Foundation (2020) noted the uncertainty COVID placed on the entire UK HE sector, particularly on how, and in what manner, students would attend, and the burdens this would place on them. Overall, it is clear that, while online learning can work well in an ideal environment, the pandemic created new challenges for both staff and students, and it is worth being cognizant of the environment when considering this further.

3. Background

To set the scene in our institution we should understand how the university in question prepared for, and adapted to, the new circumstances. While the pandemic was not declared until March of 2020, and the UK national pandemic lockdown didn't occur until April, planning for the pandemic started months before this and there was a strategy in place to ensure that there would be a continuation of teaching via fully remote learning. These plans were put into place when the university decided to switch to fully remote distance learning in March, primarily using Teams (a collaboration, discussion and videoconferencing solution) and continuing to use the institutional virtual learning environment, KEATS. There was substantial effort by both central Technology-enhanced learning (TEL) teams and local TEL teams, in addition to both academic and professional service teams, to ensure things were going as smoothly as they could be.

Over the summer, a great deal of work was placed into ensuring that there were additional resources, training and guidance provided to academics across the university, including on topics such as the principles of online learning, and how to use specific digital tools. This was in order to ready everyone for additional changes such as all lectures being delivered asynchronously online. Those such as Clinefelter et al. (2019) were among those who showed the potential value of this as an approach.

An additional project aimed to ensure that students can have flexibility in attending seminars online or in person, and that the teaching could be provided synchronously to a group of students, half online and half in person. This system was known as HyFlex and allowed one cohort of students to learn together even if part of the group was learning online from home. This was successfully prototyped over the summer and training guidance was written ready for a September start. The 2020 autumn term started with the university still open, and a range of measures put in place to help reduce the danger of COVID transmission. Lectures continued fully online synchronously or asynchronously, and seminars were delivered either fully online or via HyFlex, an approach outlined by Raes (2019).

There was a second wave of the coronavirus which started around October with a national lockdown announced to begin on 5th November. The exemption for educational purposes meant that the University remained open, although it did impact on both staff and student attendance, and a number of courses stayed fully online. A third national lockdown

was declared in January 2021, and this had a much more sweeping effect in universities in that nearly all face-to-face teaching was stopped, and nearly all teaching was online, as Lockee (2021) discusses. This all set the background for an educational system dealing with a move to online learning with quickly changing circumstances.

Objectives

Before we start to review the subject matter, we should consider the manner in which we should analyse it. Brinkley-Etzkorn (2018) has conducted some useful research looking at how to evaluate technological and pedagogical change following an external driver - in their research this related to positive intervention via planned faculty development training, whereas this is primarily in response to dealing with a crisis, but still some useful points of comparison arise.

It is worth also reflecting on what conceptual lens we will use to analyse the data. We will be considering a number of appropriate frameworks, including the TPACK Framework (Mishra, 2019), recognizing the importance of technology, pedagogy and content knowledge, Laurillard's (2012) writings on learning approaches, and also considering learner engagement. The TPACK Framework - recognizing the importance of Technology, Pedagogy, and Content Knowledge gives a useful overview of how to approach teaching online

Aims

The first part of the research aimed to analyse overall usage levels for the King's website, KEATS virtual learning environment (VLE), the Kaltura video platform, and Turnitin, the plagiarism checking software used for all online assessment submissions, by King's students, and compare them in order to gauge levels of digital education tool use since the start of the pandemic. This part of the research aimed to look at the types of devices used for these platforms and the implications of this for staff and student preferences and convenience. The second part of the research then aimed to interview staff about their perceptions of teaching changes due to the pandemic and which aspects of their roles, and the student experience, were most affected.

4. Methodology

The research was to be conducted using mixed methods, both qualitative and quantitative, with online tool usage data metrics reviewed and then lecturer staff interview transcribed and analysed. The participants interviewed were all teaching staff, either lecturers, senior lecturers or GTAs.

There were a number of research questions to consider, specifically:

1. How has teaching adapted, and how effective is this?
2. What are staff self-reported learning and instructional changes?
3. What are staff perceptions of the positives and negatives of the changes?

The recordings and transcripts were then thematically analysed via the identification of major positive and negative themes and sub-themes (Aronson, 1995) as per inductive content analysis category groupings based on the content in combination with the surrounding wording of the participant quotes as indications of the specific context being referred to (Elo & Kyngäs, 2008). In the end, three focus groups lasting 1-1.5 hours were held, with a total of fifteen participants. The focus group memberships were allocated randomly after staff member participants from all faculties were invited, both academic staff and Graduate Teaching Assistant staff, via internal email, and they signed up to take part with no additional incentives offered.

Limitations

We focused on usage data from four sources - the university website, virtual learning environment (VLE), video recording platform and plagiarism checker - to reach conclusions on student overall online tool usage levels and patterns during the pandemic period for the quantitative part of this study. This focus on what we thought would be the most popular software, as opposed to other online educational tools that were available, such as the online library archive etc., may have skewed the insights that were gained from this information.

Regarding the qualitative follow-up part in this mixed methods study, we acknowledge that members of staff self-selected to be included in our sample. This may have led to inevitable self-selection bias in the responses provided by participants, leading to a tendency to emphasise negative experiences rather positive ones. Furthermore, the sample was modest with only 15 staff, this meaning that potentially key insights from the experiences of staff in other faculties were missed out.

5. Results

5.1 Numerical Results

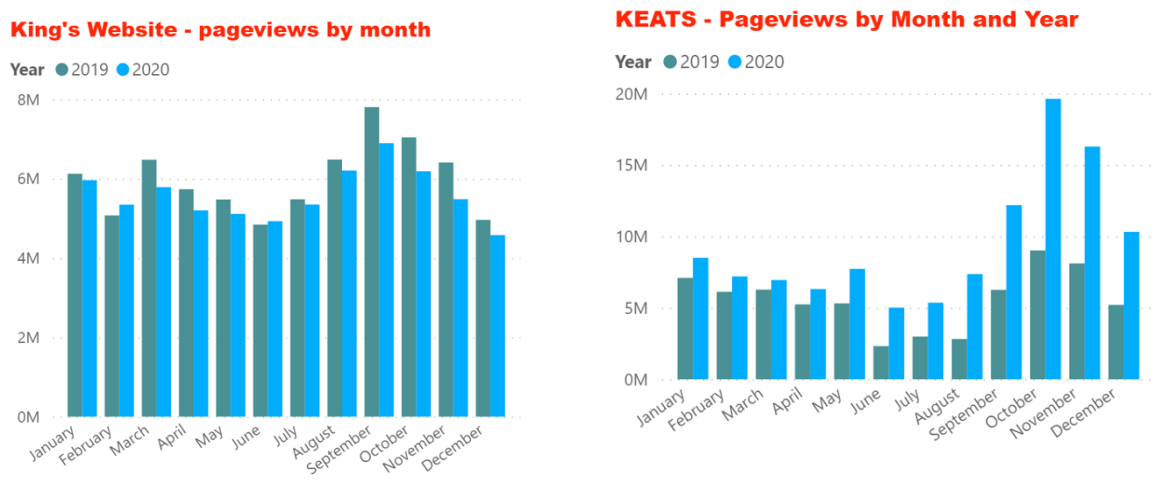

Figure 1. KEATS use compared to university page views by month over the pandemic

There was an obvious spike in usage at the start of the Autumn term (September/October), but what is clear is the difference between 2019 (pre-COVID) and 2020 (after COVID) in terms of the use of KEATS. Whereas the King's website in general had near identical usage in both years, KEATS usage increased massively in 2020, building in momentum from Spring to the Autumn.

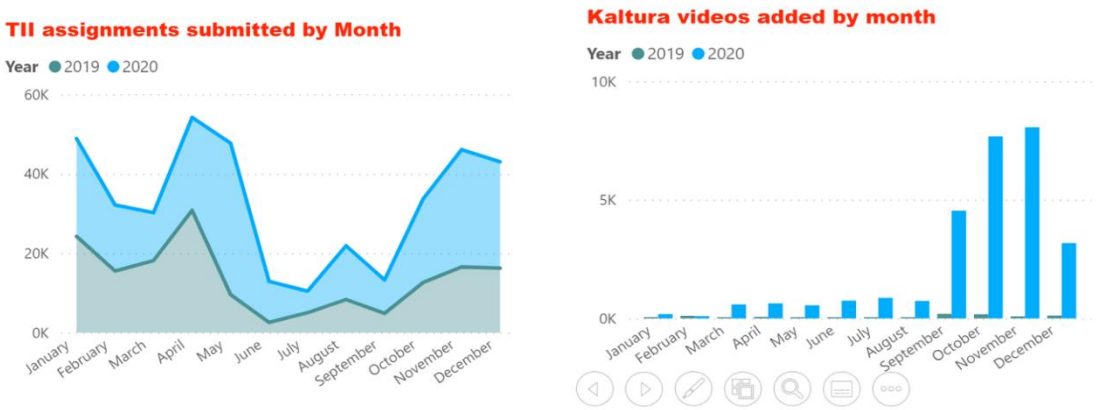

Figure 2. Other digital tool use (2a Turnitin assignments, and 2b Kaltura video)

Other digital tools also spiked in usage over the same period, with both Kaltura and Turnitin showing a dramatic increase compared to the previous year (2019).

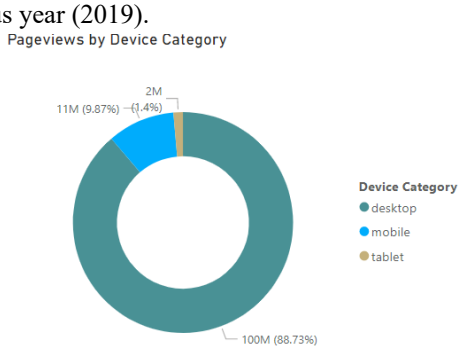

Figure 3. Student device use categories during the pandemic

Data showed that, overwhelmingly, standard desktop versions were being used the most by students, although there was some mobile use as well. Notably, the VLE used (KEATS) has a very responsive design, which means it was able to adapt to both use cases.

5.2 Major Themes

From responses to the following questions in the 3 focus groups, these key themes emerged:

Major negative themes (sub-themes displayed in table are of equal importance)

Theme 1. Teaching/Instructional Adaptation

Practicals/lab/fieldtrips cancelled	Quality of teaching decrease, more didactic	Seminars have become more transmissive/like a lecture	No question time after lectures
Asynchronous learning time increase	Teaching staff forced to turn seminars into lectures by lack of engagement, falling back on presentation format	Hard to refer to several different resources on different devices	Can't observe student discussion easily

Theme 2. Student Assessment & Workload Adaptation

Student concerns over assessment	Students have increased preparation needs/workload	Unsure how to gauge student understanding	Concerns about grade inflation and assessments changed to prevent cheating
Decreased quality of student results	No consensus on conceptual grasp from staff	Students struggling to cope with pressure & isolation	

Theme 3. Student Experience Adaptation

Social isolation from peers/lecturers	Life skills and peer learning decline	No class community and informal discussion before classes	Not level from socio-economic POV (cohabiting, Wi-Fi and IT equipment access)

Theme 4. Student Engagement Adaptation

Student engagement compared to face-to-face teaching	Student interaction decrease due to informality of online mode (cameras off, location etc.), requested student guidelines on Teams behaviour expectations	Live sessions need more structuring	Student engagement harder to rescue
Engagement difficult in discussion-based classes	Student understanding not possible to gauge due to cameras off, weak internet, unsuitable environment, no chat, no Teams photo	Requires extra staff encouragement	Attendance still low despite increased overall numbers for vocational programmes

Theme 5. Staff Responsibility & Roles Adaptation

Increased staff workload	Social isolation	Back problems/DSE issues	Resistance to change
Mostly admin tasks	KEATS cross-department standardisation concerns	Staff confidence and energy decrease	Mentally tiring preparation
Not as rewarding and energizing	Work-life balance	Internet connection/Kaltura use issues	Learning tech skills frustrating, took time to learn Kaltura and Teams

Theme 6. Support Staff Adaptation

Teaching staff discussed pedagogy with colleagues due to CTEL/King's Academy training [1]	IT/CTEL/King's Academy have been helpful	IT emergency support needs to continue to be made available	Staff to be more aware of faculty TEL

Theme 7. University Responsibility To Adaptation

Some departments better prepared initially	MS Teams rollout without college-level direction		

Major positive themes (sub-themes displayed in table are of equal importance)

Theme 1. Teaching/Instructional Adaptation

3 staff confirmed able to provide good online teaching to majority of students	Lecturers able to make transition to online rapidly and felt prepared	Adapted flipped classroom, foundational knowledge and added discursive classes	Classes shortened and content streamlined
Staff using Teams polls and forums, breakout rooms and chat, showing physical objects via smartphones	Some choosing not to use breakout rooms due to quiet/small sessions	PowerPoint, Padlet, Poll Everywhere, KEATS, Kaltura and Teams used	More scaffolding and structure for students
Staff members agreed students would benefit from having more in-room face to face teaching rather than online only, regardless of pandemic	Staff considering computer room redesign to circular desks to improve student experience	Teams live captions useful for international students	Staff class prep shift

[1] CTEL = Centre for Technology Enhanced Learning. CTEL and King's Academy provide guidance, induction and resources; both look at technology and pedagogy and technology, but the first has more of a focus on the former and vice versa.

Theme 2. Student Assessment & Workload Adaptation

Assessment/progress tests replaced with quizzes/formative assessments etc., will remain post-pandemic	Assessment change due to time pressure	Student assessment results and exam prep better over time	Staff adapting to more marked assessments to encourage more ongoing engagement

Theme 3. Student Experience Adaptation

Student flexibility in how and when	International students/students not in London have easy access	More people can attend and no commute/travel	Access for non-traditional learners such as distance learners, part-time learners, those with learning and language difficulties etc.

Theme 4. Student Engagement Adaptation

Student class size increase, some engagement and interaction	Staff use reactions, chat and forums for measuring engagement	Most engaged student numbers same offline and online	Great Q&A's with students, numbers of most active similar

Theme 5. Staff Responsibility & Roles Adaptation

Pedagogy discussed more	More interaction with colleagues in department for consistency	Learnt new tech and flipped classroom skills	Local leaders assisting others via peer-support, more educationalist support encouraged
More time adapting to different module requirements and starting positions in department	Staff adapted discursive sessions	Staff reached consensus on thinking 'shift'	Increased flexibility and convenience for when staff can record lectures

Theme 6. Support Staff Adaptation

Teaching staff discussed pedagogy with colleagues due to CTEL/King's Academy training	IT/CTEL/King's Academy have been helpful	IT emergency support needs to continue to be made available	Staff to be more aware of Faculty TEL

Theme 7. University Responsibility To Adaptation

Some departments had flipped classroom in place already	Education leads discussing pedagogy changes more actively	Department leaders advocating for change at higher levels	

5.3 Thematic Analysis

In terms of staff self-reported learning and instructional changes, we can see that a number of themes emerge. There have been novel approaches, or the greater adoption of relatively novel approaches and software, such as Kaltura for

recording and sharing lectures, or the MS Teams chat and screen share functions for engaging students.

Key emergent sub-theme: Staff adapting to using new software teaching tools

For example, several participants emphasised how lectures and seminars have been adapted to use, and often combine, certain software tools to achieve learning objectives for their classes over others, and the advantages of this, in the focus groups:

"With pre-recorded lectures and then a Q&A, or we've had anonymous Padlets for questions as well as live Q&As."

"And the purpose of lectures is mainly to give students information, to introduce this topic, to explain things to them. And I've been recording those lectures on Kaltura and posting them onto KEATS."

However, this process was not always successful immediately and some staff experienced certain setbacks and had to test out what would work best for their particular class needs, this requiring increased staff hours to be spent and the testing of different technologies to find the most effective option:

"One of the academics wanted some pre-recorded PowerPoint introductions, which we did. And then the lecturer got them uploaded to Kaltura into KEATS, but we learned that we probably should have created them in Kaltura to start with, so that was a learning experience."

Key emergent sub-theme: Staff adapting work environment to suit new technology needs

Others experienced barriers such as needing to adapt their home-working environments to fit the software needs:

"I had to change my Internet connection to make Kaltura work because the upload times were so horrible […] so there are certain obstacles and there's a price you have to pay to overcome them."

And several participants commented on the negative impact of this on work-life balance:

"The problem is that the online has certainly encroached into the personal."

Key emergent sub-theme: Staff adapting existing use of Microsoft Teams communication platform

Especially in small group settings, staff reported on the various aspects of Microsoft Teams, in particular, such as the chat, breakout room function, polls and quizzes, that they began using in order to better engage and assess students and their progress once they grew more confident with using the software:

"I do think that their breakout room discussions are really fruitful, they come back with great ideas. I think they like being left alone, students who are quieter in the big group chat in the breakout rooms."

"We've utilised a few of the features of Teams, the polls, in a very simplistic way."

Use of the Teams chat has been particularly effective in engaging the quieter students:

"A lot of how I've got engagement from the shyer students has been through the chat, actually asking for substantive things in the chat. It's a way of getting absolutely everyone to say something."

Some participants also pointed out the technological challenges to being dependent on Teams as King's choice of communication platform for teaching:

"Sometimes I get a thing where I can't see the chat, and I think other staff have had this, as well."

"I find Teams doesn't work as well. I mean, it's a meeting platform and it feels like a meeting platform, perhaps, rather than a classroom."

Key emergent sub-theme: Staff affected by MS Teams software limitations

An issue that was raised several times was the single meeting organiser limitation of the software at the time which meant that breakout rooms could not be managed by multiple staff members on one Teams call; this affected staff with Graduate Teaching Assistants supporting them, and those using the workshop teaching format, the most:

"You might have a seminar where you have several people helping you, like GTAs, and they can't do anything."

However, staff also spoke of some unexpected benefits of their use of the platform, compared to in-class teaching, giving them more time mid-lesson to reflect on their teaching, for instance:

"Using breakout rooms on Teams, or Zoom, or however you're teaching, it is good, because, again, you've got 10 minutes in the middle of a seminar."

Others noted the usefulness of the Teams platform for specific teaching formats such as the analysis of texts as a group:

"The Teams online software makes it quite easy to do that, it quite lends itself to that – sharing a screen, looking together at a text, everyone's got the same thing in front of them."

Key emergent sub-theme: Adapting teaching to use additional Padlet and Poll Everywhere tools to a greater extent

In terms of their use of other software, and the combination of software, when adapting their teaching, Padlet and Poll Everywhere were also mentioned by several focus group participants:

"Things like Padlet… it isn't great for everything, it's good for some things. Poll Everywhere isn't great for everything, it's good for some things. Sometimes a PowerPoint is the right thing, sometimes you need a forum, sometimes you need to have screen time. That means you have to be quite critical of what you're doing, to suit the format, not suit the content."

Some staff mentioned peer learning and sharing of these technologies as one advantage of their use:

"We've used lots of new tools, and we've brought new tools to other people's attention, because of the way we've been working."

Key emergent sub-theme: Some relatively novel approaches increased

A flipped approach (which has been discussed by O'Flaherty & Phillips, 2015) has been used for the past few years, and recent events seem to have acted as a catalyst to gain greater traction.

Many focus group participants referred to the advantages of this approach:

"One of the things I think it has done for lots of my colleagues is bring them in touch with the ideas of a flipped classroom delivery. Now everybody knows what this thing is about, and everybody's got some experience with this."

Key emergent sub-theme: Staff more comfortable with online teaching

Others spoke about witnessing the impact of this dramatic change in colleagues as well as themselves, especially in comparison to previous years:

"Most of my colleagues […] are now quite comfortable with being online, whereas in the past that was very much not true."

"I've seen a lot of colleagues, many of whom I would have expected to struggle, take to online learning, online teaching and learning, quite well."

Some participants also pointed to how this has encouraged peer learning and pedagogical knowledge sharing among colleagues, with some clearly emerging as leaders in supporting others in their faculties:

"The opportunities we've had for peer support have been second to none, and I think we've all benefited from having colleagues who know what they're doing."

Not all university faculties and departments found this approach to be entirely novel, however, and some actually found the introduction of new flipped classroom methods to be a step back from them from an educationalist perspective, as established ways of thinking about, and implementing this method, had to quickly be replaced to adapt in line with colleagues in other departments:

"We didn't start from a position where we were unhappy being flipped classrooms, or not doing that. […]

Starting from there, this has been a really retrograde step for us and our department, because we already had flipped classrooms and online interaction and complicated group work and world cafes."

Additionally, there have been benefits that may well be long term. As a participants said:

"It's truly changed our delivery for the better, our teaching for the better. And I think it will continue to do that when we go back to in-person, teach more in-person teaching."

Key emergent sub-theme: Staff focusing on concise teaching structuring and further discussion opportunities for students

There were comments by a number of lecturers about the desire for concision online and how this may impact student comprehension. This has taken the form of shortening classes, streamlining content, or adding new opportunities for discussion outside class time to engage with learning, as explained by several participants:

"We've also had to cut things out, because we're going for a shorter session, than we would have done in the classroom."

"To make things as simple and as clear as they could be for the students."

A clear advantage of this is that it has led to more careful planning of classes in line with making students more aware of learning objectives and assessment needs:

"We've looked for every opportunity to go through our learning objectives and work out how we're going to achieve

those under the current circumstances."

"People are talking about open book exams and changing assessments to make it more applied."

Participants anticipated that this would have a long-term impact beyond the pandemic and affect their planning of in-room classes in the future as well:

"We've been thinking about how to redesign computer rooms, for instance, away from flat banks of forward-facing students."

Key emergent sub-theme: Teaching has become more didactic but also more structured at the same time

Overall, while there are changes that are similar to those outlined by Brinkley-Etzkorn (2018) in terms of greater adoption and use, it is hard to make the definitive claim that pedagogy has overall been enhanced compared to face to face teaching, although there are certainly benefits.

In particular, many participants mentioned that their teaching has become more didactic although 75% of staff attending this focus group confirmed that they were able to provide online teaching to the majority of their students despite this:

"One of the things that all my colleagues have commented on is that we've had to become more didactic."

However, not all staff agreed that this was necessarily negative in all cases, pointing to the advantage of more structure and scaffolding for students as a result of going back to a simpler, more traditional teaching style:

"I think becoming more didactic is, actually, a good thing, in that we provide more structure and more scaffolding for our students."

Key emergent sub-theme: Students reported to have found online teaching more flexible and convenient

In addition, another positive often mentioned was the flexibility and convenience for students which is in line with the findings of Stone et al. (2019), especially for international students and those not familiar with navigating the university campuses such as first years:

"It's increased flexibility in terms of access, the ability to have the kind of students you would think of as non-traditional, like distance learners, part-time learners."

"I can see that there are advantages to the fact that students can watch the lecture in their own time, they can watch it again if they want to."

A number of staff mentioned that students have at times become more self-directed in their learning, (e.g. making more effort to seek out learning objectives), which connects to the research of Botturi (2020) on learner autonomy:

"Students, probably, are better, now, at scheduling their time, because they know where all the different pieces are, and they have to figure out how to do it themselves."

Key emergent sub-theme: Some staff reported student engagement affected

Significantly, this, in combination with the resultant lesser contact hours, has not, however, lead to better assessment results for students, with multiple focus group participants pointing out that student understanding as shown via marked assessments has decreased compared to previous years when teaching was conducted in person:

"The actual contact hours with our students, the face-to-face time, even if it was online, has been reduced dramatically, while increasing a lot of the asynchronous learning time of students […] big surprise, now, all of a sudden, we see that in their assignment, that assessment, they are not as strong as last year."

Another key reason for this, as suggested by focus group participants, was the dangers of the different approach students were now taking to assessment preparation:

"And there's going to be some students that will just flunk completely, because they are not engaged. They don't even understand what the lecture is about, and they can't sit and watch 48 hours of videos in a 24-hour period and try to understand it at the last-minute."

Key emergent sub-theme: Staff structuring learning opportunities differently

The advantages of having more time in online teaching in a different way were also mentioned by other staff – both students being able to have more opportunities at the end of lectures for asking questions, and staff having the chance to set students more work in preparation for classes to consolidate their learning:

"You actually have a dedicated time to ask loads of questions, it's not just however much time is left at the end of the lecture. Actually, students seem to quite like that, it allows them to have that processing speed and then not have to worry about when to ask a question and who'd ask the question, too. […] They felt like it gave them better connection with the lecturer."

Key emergent sub-theme: Increase in social isolation for staff and students

Another negative aspect identified by several staff members includes the increase in social isolation for both staff and students, the online teaching mode only exacerbating the negative aspect of this already felt by them in their lives outside of the university context during to the pandemic:

"I think the online format doesn't really allow for as much of a community and those sorts of connections to be established, so students feel very isolated in their learning as well as in their lives."

To a greater extent, student engagement was identified as an almost universal negative in all of the focus groups, with all four staff members in one focus group confirming this was a key concern for them in terms of how it affected their teaching quality, compared with teaching in person:

"What I have been doing with seminars is, actually, I've ended up having to teach them more like lectures, because of the lack of student engagement, because students aren't really discussing. When you don't want to be giving a lecture in your seminar… The whole point is it's meant to be interactive and it's a bit more student-led."

This required staff to adapt teaching practices both during and prior to classes in an attempt to resolve the situation, and many expressed feeling frustration and disappointment as a result, especially with live teaching:

"We don't have that same feedback mechanism alive in the room. It took some time for us to realise, "Oh wait, there's a lot more front-end work than we've traditionally been used to".

"It has often been quite a difficult thing for a lot of people to accept, the idea that you might fail, and that not being an earth-shattering demerit on your permanent record."

Key emergent sub-theme: Staff adapting teaching and technology use to improve student engagement

However, this has also encouraged staff to adapt and come up with creative strategies in order to combat this, and use functions of the software such as the chat to a greater extent:

"I've been encouraging them to put their cameras on, even if it's just briefly to say "Hi" at the beginning, because, as a teacher, it's so much easier just to have a sense of who's there in the room."

Student feedback on online teaching in the focus groups was reported to be positive to a large extent, with one staff member crediting this to clear expectation-setting from the university at the start of online teaching:

"The university has given a lot of interesting messages about what they're getting, what they're not getting, what the rules are, but I think from a school and departmental level, being fairly careful."

Key emergent sub-theme: Insufficient staff central decision-maker and training support

The lack of consistency and slow speed in the provision of support from central university decision-makers and the TEL teams across faculties and departments, IT and CTEL, as well as how they felt that decisions were being made quickly and without pedagogy being prioritised, was also raised as a concern several times:

"A lot of the support services […] have been playing catch up rather than leading. Especially when it comes to Microsoft Teams."

"It would seem that we have had different advice from the technology teams in terms of how to use our KEATS pages and do lectures."

Several staff noted issues with the training and resource support that was being provided by professional staff, and how ineffective this was in helping them due to time limitations:

"I have this information overload. I teach on several platforms, I've had so many different sets of instructions at each place."

"We've had to just teach ourselves everything, based on some great resources. But it's just trying to do several jobs at once, which doesn't work that well."

Key emergent sub-theme: Some staff technology training and peer support opportunities

However, many more staff members emphasised how useful they found the speedy support and training they had received for online teaching from professional services staff from the King's Academy, TEL teams in their faculties and departments, IT and CTEL, so there was disagreement on this:

"All the King's Academy and CTEL training felt like it surfaced that whole conversation about thinking about what you're trying to do, and why and how, before you just do it."

"King's Academy and CTEL have done an incredible job with very little resource."

One staff member shared that their faculty took the initiative to set up regular online teaching training sessions with King's Academy to support staff to an even greater extent and recommended that a similar arrangement be made for other faculties:

"It's a little different in (redacted), where we actually have set up a regular, I think it's meant to be weekly, session where we actually get people from King's Academy […] People, actually, present stuff that that they've tried out, or somebody presents on a particular educational idea etc."

6. Discussion

Overall, the results give the impression of staff members working hard and adapting in a major way to deliver teaching despite the challenges thrown at them. Looking at the first research focus group question about how has teaching adapted, and how effective this was, a number of themes emerge. These include the varied responses about how effective student engagement has been. Some lecturers reported excellent engagement, but there are others who reported that this was a real challenge, especially in terms of getting students to simply turn on cameras or engage at all. Other staff reported that looking at, and reporting on, the mode of engagement is also important – in particular, students may choose to engage well, but only through written text such as the chat function, rather than through facial expressions or speaking. There is evidence that a lot of staff have this sense of feeling like newcomers to teaching online, which is in line with previous research by, for example, Ertmer et al. (2010).

Key themes which have emerged from the staff focus group, including ideas for improvement and what has worked particularly well, include:

- Teaching/instructional adaptation (in line with findings on redesign of course syllabi in online teaching from Brinkley-Etzkorn (2018));
- Student assessment and workload adaptation;
- Student experience adaptation;
- Student engagement adaptation;
- Staff responsibility and roles adaptation;
- Support staff adaptation;
- University responsibility to adaptation.

In analysing the responses and focus group insights in light of the TPACK Framework (Mishra, 2019), we can see that, while content knowledge was already established by lecturers, relevant technological knowledge was not well established for all staff; and, additionally, new pedagogical and institutional decision-maker practices needed to be adopted. This became clear when we narrowed our focus down to looking at the level of technological knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK) staff realistically possessed when the pandemic began - the framework elements which form the TPACK mode for considering the learning and pedagogy needs for teaching in a particular instance.

Nonetheless, staff took to adopting (what was to many) novel technological approaches and adapted reasonably well despite time challenges. It is clear that staff recognised the value of each part of the TPACK even if they did not articulate it explicitly. As mentioned previously, Tobin (2020) stated that good online teaching needs training, preparation and support, although he also argued there was no opportunity for this in the context of the Covid pandemic. While there was a rush to provide teaching online due to the nature of the pandemic emergency, structures for support and help were only built up over time. While we should be cognizant of the challenges experienced here, we should also be mindful, in particular, of some of the new benefits that emerged from the technology used, such as making learning easier for students for whom English is not a first language via the live caption feature available on MS Teams.

In terms of insights from the first part of the research, we can also reflect on what the data tells us about how much students have used key digital tools. The numerical data shows a clear shift and increase in the usage of online digital resources. In particular, page views on the institutional VLE increased dramatically since the start of the autumn 2020 term, compared to the equivalent time the previous year. This clearly shows greater numeric engagement by students with the online learning resources. Similarly, the number of online lecture videos also increased dramatically, and the number of online assignments submitted increased. This was all in line with expectations given the overall shift in learning.

Another key observation is that, whatever teaching challenges emerged during the pandemic, the overall educational infrastructure proved remarkably adaptable and resilient. This is in line with work by Dhawan, S. (2020), who emphasized the importance of building in resilience. This research also builds on the work of Clinefelter et al. (2019) in

that it provides additional evidence from an educator's perspectives on student digital learning preference and engagement.

Limitations of the research emerge from the specific nature of where it was conducted – a small sample of staff from a London-based university in a specific time period. The largest focus group involved only six participants, and the total sample small. Further, the research focused on data, and focus groups with staff only, rather than with students, so a clear way of extending the research for future researchers would be via student interviews.

As one focus group participant stated: "It's just a shame I can't know what the student side of it is, and what their experience is, and how they're finding it."

7. Conclusion

In conclusion, the results seem to show that there has been a tectonic change in the way teaching is conducted. There are both challenges and benefits to the approach adopted, but given the nature of the challenge, the university has shown great resilience in continuing high-quality educational provision for its students. We shouldn't ignore the challenges faced by both staff and students in adapting to new approaches, including low student engagement and social isolation. If we were to return to the TPACK mode for considering the learning and pedagogy needs and impacts for teaching in a particular instance, a key insight from this study is that, by the end of the study period, it became clear that staff technological knowledge (TK) levels at the start of the pandemic directly impacted on their ability to adapt their pedagogical knowledge (PK) to the content knowledge (CK) needs of their seminars and lecturers. There are some ways to address some of these issues. For example, with learner engagement it can be useful to remind academics of other forms of synchronous engagement (chat, collaborative documents etc.) that may help colleagues. These could help address concerns about student engagement and assessment quality issues and students not feeling as supported with preparation for assessments.

There are a number of suggested recommendations that have come from this research. Additional staff support with technology would be of use. Staff mentioned peer support as a really useful resource, as well as being able to discuss issues and consistent ground rules with a knowledgeable colleague or university decision-makers – additional resourcing in learning technologists and more opportunities to present views to key faculty and university decision-makers could assist with this. As one focus group participant summarized: "We need to invest as much thought and resources into the training of our staff, in terms of educational technology, and its uses, as we invest, or as we request to be invested, into the training of our students." We should also be mindful that student engagement was mentioned as a key challenge by many participants and consider approaches to address this. Two specific digital tools that increased collaboration or interactivity were Padlet and Poll Everywhere, as evidenced by this paper and previous research (e.g. Hunsu et al., 2016), and we recommend the use of these tools to other institutions in the novel online and hybrid educational situation we are now in.

However, as several lecturers pointed out, the desire to continue using new skills, assessment methods and technologies as part of their future teaching, regardless of the continued progress of the COVID-19 pandemic, implies that the impact of this is likely to be more long-term than previously anticipated. As one focus group participant explained, "I'm really proud of my department, and we have invented new ideas of teaching."

Finally, the voice of the educator could be listened to more at senior university level, as this would likely improve the quality of teaching provision and provide greater reassurance and support for both teaching staff and students in these uncertain times.

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