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Covid-19 and the future of the digital shift amongst research libraries: an RLUK perspective in context

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Covid-19 and the Future of the Digital Shift amongst Research Libraries: An RLUK Perspective in Context

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ABSTRACT

Research Libraries UK is a consortium of 37 of the UK and Ireland's largest research libraries with the purpose of convening its members around the key issues that affect them, to represent their collective voice, to support them as they face shared challenges, and to be an effective advocate on their behalf. In fulfilment of these roles, RLUK launched its digital shift manifesto in May 2020, which provides a vision for the research library of 2030 - in relation to the digital shift occurring within research library collections, services, operations, and audience interactions. Centred around the four strands of skills, spaces, scholarship, and stakeholders, the manifesto provides a shared vision of the future and a tangible programme of activities through which this can be achieved. This article will explore how the Covid-19 pandemic has witnessed the digital shift in action. Combining the reflections of individual academic and research libraries, and using RLUK's previous research into the impact of Covid-19 as a foundation, this article will reflect on how realistic and future looking the manifesto was. It will explore the collective experiences of libraries regarding the digital shift, will consider progress made in the implementation of the manifesto against this rapidly changing backdrop, and will provide a series of reflections for the future.

KEYWORDS

Academic libraries; digital shift; Covid-19 pandemic; library space; library services

Introduction

In May 2020, Research Libraries UK launched its manifesto for the digital shift in research libraries (RLUK, 2020a). The manifesto provides a ten-year vision

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for the digital shift occurring within research library collections, services, operations, and audience interactions. Instead of focussing on a simplistic transition from analogue to digital, it outlined some of the increasingly varied digitally-driven transformations in libraries, including the diversification of digital scholarship processes and techniques and the arrival of artificial intelligence amongst a proliferation of new technologies. The manifesto considered the extent to which these transitions were underway, the experience of research libraries in navigating them, and what would be required to fully embed and benefit from the shift. In looking ahead to 2030, the manifesto was designed to be a statement of intent for RLUK, a rallying cry to the wider information community and as a roadmap of activity through which its vision could be realised.

The creation of the manifesto was led by a dedicated working group, formed of representatives of RLUK's five member networks, and put together through a series of member workshops and discussions across the summer and autumn of 2019. As a result, the manifesto, its vision and ambitions, and the associated delivery plan, all predated the onset of the Covid-19 pandemic. In this article, members of RLUK's digital shift working group will consider how the manifesto's vision has been tested by the experiences of the Covid-19 pandemic. Informed by a series of case studies, from within and beyond the RLUK membership, it will offer an assessment of how the repeated lockdown witnessed the 'digital shift in action' amongst research and academic libraries and what lessons might be drawn from these experiences. The article will conclude with reflections regarding the collective opportunities and challenges of the digital shift as revealed by the Covid-19 pandemic, and how these might be seized by the research and academic library community.

The 2020 manifesto was built on an understanding of the digital shift not as a simple transition or replacement from analogue to digital but rather as an ongoing transformation and blending of both. The members of RLUK's digital shift working group postulated that the underlying mission of libraries itself would remain, but that the ways in which they enable access to knowledge would continue to change. Instead of being concerned about possible changes to library operations, the manifesto saw the digital shift as an opportunity for libraries to define how they can continue to make a meaningful difference to the communities they serve. The manifesto outlined an ambitious and wide-ranging vision for the research library of 2030, including around its role in the local and global knowledge environment, the interoperability of its physical and digital systems, and the recognition of its staff as experts in digital research methods, including around emerging technologies and techniques (RLUK, 2020a).

The manifesto's vision was underpinned by four pillars relating to scholarship and collections, the use and design of library spaces, the diversification of library skills and leadership, and the leveraging of stakeholder relationships to advocate for the changing role of the library. In the following sections, this article will explore the implications of the pandemic on the digital shift through the prism of these four pillars and through the experiences of eight research and academic libraries in the UK, Belgium, and France. This article will conclude with a series of reflections regarding the future of the digital shift beyond the Covid-19 pandemic and the possibilities of institutional and collective change. Before doing so, it will consider how the Covid-19 pandemic witnessed the digital shift 'in action' in order to provide a foundation for its subsequent discussions.

Covid-19 and the digital shift in action

For decades, research libraries have been making the transition from analogue to digital. Many have long pursued 'e-first' policies for the purchasing of content, have undertaken the large-scale digitisation of collections, and have developed publication and data repositories. These services and collections complement a digital offer within the library building and the creation of hybrid spaces including digital scholarship labs and maker spaces.

The arrival of the Covid-19 pandemic saw the rapid realignment of library collections, services, and operations online as physical library buildings were closed across the UK from March 2020 (Greenhall, 2020a). With a particular emphasis on making content available electronically, library staff worked tirelessly to identify e-content for reading lists, upload pre-digitised material to websites, and move face-to-face services online. Assessments were undertaken regarding the ability of staff to work remotely, additional hardware was purchased, and new tools and systems were rolled out, especially to enable remote working. This rapid realignment demonstrated the ability of research libraries to adapt quickly and effectively to unprecedented circumstances. It also reflected that many of these initiatives and transitions were already underway before the Covid-19 pandemic, and that Covid often acted as a catalyst for pre-existing change rather than a cause of the change itself (Greenhall, 2020b; Dempsey, 2020).

The responses of research libraries to the pandemic did, however, expose variations regarding the extent and nature of the digital shift. Variations were revealed in the adoption of e-content amongst disciplines, that the digitisation of archival and special collections content had often been piecemeal, and that significant elements of libraries' digital infrastructure were site specific and dependent on physical access to spaces and terminals. The pandemic also drew attention to significant weaknesses in the UK's

copyright and licensing regimes. Whilst technologies might have shifted, the legal frameworks in which they operated and were governed, had not. These issues surrounding the adoption and use of digital collections, the physical dependence of some digital infrastructure, and the limitations of overarching frameworks predated the pandemic, but were brought into sharp focus by the experience of national lockdowns across 2020.

The closure of library buildings also revealed that the library continued to be perceived as "a physical building, offering physical services" amongst some users. Overcoming these perceptions still poses a significant challenge. The need to work remotely also exposed varying degrees of digital inequality amongst research library users and staff. Unreliable internet connections and poor connectivity, varying levels of digital literacy, and a lack of suitable devices all questioned the reach and accessibility of digital collections and services, not only within research libraries, but right across higher education and society as a whole (Office for Students, 2020b). The exposure of levels of digital poverty amongst library users and communities highlighted the potential of the digital shift to leave many people behind.

The arrival of the Covid-19 pandemic also exposed variations in the experience, nature and extent of the digital shift - amongst collections, services, and staff, and between disciplines, between institutions, and amongst users. The remainder of this article will explore these variations and how the experiences can shape the future of the digital shift as seen through the contents of RLUK's digital shift manifesto and its four overarching pillars: skills and leadership, scholarship and collections, space, and stakeholders and advocacy.

Skills and leadership

The onset of the pandemic required a step change in the pace and extent of the digital shift amongst research and academic library services, operations, and collections. Many library staff quickly moved to remote working; services and support went wholly online while buildings were closed; and the take-up of new platforms and digital tools were accelerated. The pace of change further highlighted how critical digital skills are for library staff and the important role of leadership during a crisis. The move from a model typically founded on "presenteeism" to one focussed more on outcomes required a new working culture, especially when seen as an opportunity to support staff resilience and flexibility.

Many institutions used some of the initial lockdown period to support Continuing Professional Development (CPD) opportunities, including developing staff and empowering their use of platforms like Microsoft Teams as a core part of their service delivery (Castle, 2021; Greenhall, 2020b).

As collaborative tools became embedded within research and academic libraries, a shift was witnessed from competency in the new platforms to broader issues such as ethical approaches to information. There was also a recognition that those working within libraries required 'anchor points'[1] which would help colleagues to support and maintain their professional values and practice - and ensure that these can be developed in tandem with more technical skills (Chowdhury, 2021). Building from a bedrock of core skills provided a solid foundation to support digital skills.

In addition to individual institutional experiences, wider sectoral opportunities to level up and to create shared digital skills strategies were revealed. These could include capacity building for libraries in areas like data science, artificial intelligence and textual analysis and the investment in new tools and services. Those institutions which had begun these digital transformations were ideally placed to benefit from and support their digital shift and to be exemplars for the wider RLUK and academic library community.

These technical skills came alongside a need for libraries to continue to develop their skills and confidence around partnership and collaboration, as research leaders and pioneers. A major scoping study was undertaken by Research Libraries UK and the Arts and Humanities Research Council (AHRC) between January-June 2021 which explicitly explored the role of research and academic library staff as partners in, and leaders of, academic and scholarly research (RLUK, 2021a). The study highlighted the diversity of skills held within research libraries, their complementarity to those held by members of the academic community, and that these extended beyond expertise of the collection, to include an increasing array of technical skills (Evidence Base, 2021). The need for a combination of skills, the wealth of experience and expertise held within institutions, and the need to share these across the research library community will sit at the heart of an emerging digital shift workforce development strategy being led by members of RLUK's Associate Directors' Network (ADN) due for publication in late 2021.

The need to better share skills and expertise between libraries was heightened by the fact that many institutions experienced a recruitment freeze over 2020 and 2021. Staff who did join institutions often did so remotely and in many cases were not physically on campus or in the library building for some time, if at all for short-term contracts. Although sometimes challenging, online induction and team building offered greater flexibility in scheduling, had a greater reach in terms of their engagement, and enabled the mixing and matching of delivery styles. Libraries which

[1]This includes the regulatory environment such as information and intellectual property legislation, but also a re-reading of relevant professional codes of ethics.

made this work were better positioned for future remote working. University libraries therefore had the potential to recruit from a broader pool of candidates from across the UK and internationally, and were no longer limited to those who could only be physically based at the institution. This provided scope for new skills, diversity and innovation in a way which pre-Covid would, for most, not have been an option. The growth of remote and hybrid working presents new leadership challenges in managing a geographically dispersed workforce, and meeting these challenges will be critical to the success of the Digital Shift.

The need for flexibility and agility across teams was seen in the way the University of Reading's Special Collections and Museum of English Rural Life team responded to gaps in their provision of new digital scholarship services (Baxter, 2021). The team's ability to embrace change, and to build on previous efforts to introduce agile methodologies and a positive digital culture fed into the delivery of a new virtual reading room (VRR) in September 2020 (Baxter, 2021).[2] The VRR enabled controlled access to high resolution content online and reduced the transactional workload for digital access in time for a second lockdown. By February 2021, the team began to extend the VRR's functionality to support the e-licensing of content and print-on-demand, further reducing the burden of transactional work. The success of the VRR highlighted how the team combined strong specialist approaches, a firm user focus and an openness to cross-domain collaboration. Leadership to empower and support such a complex and rapid digital shift was not straightforward and in a small department there was no time or space for disputes over professional boundaries, or for excessive caution.

Libraries, and by association their directors, have perhaps never been as exposed or had such a high profile in their institutions as during the pandemic. In many institutions the library building (and physical study space) was one of the few or only student-facing buildings open on campus. Library directors led teams through lockdowns, re-openings and ever-shifting government guidance balancing health and safety with service needs. As their teams worked both on campus and remotely throughout, it was essential for directors to combine new remote leadership skills with the more traditional values of trust, transparency and integrity. The challenges of working throughout the pandemic for individual staff and the impact on their well-being has become more critical and has required a shift away from previous forms of engagement between staff, peers and the wider university community.

[2]Varying applications of the term 'Virtual Reading Room' have emerged during the pandemic. The University of Reading uses the term Virtual Reading Room to refer to its digitised content platform, which is accessed through a registration wall (University of Reading, n.d.).

As libraries focus on a wider return to campus, there is a need to review library services to understand how they remain relevant for users. How best can libraries adapt but also lead this shift in flexible working practices (and related skills) to support a more blended and flexible approach? What choices will need to be made, and in turn what skills will libraries require to deliver these changes? RLUK's Digital Shift manifesto can provide a focus for synthesising and sharing the lessons, as libraries review and assess what has worked and what hasn't during a period of rapid change and realignment.

Looking ahead, research and institutional strategies will be crucial to build on the initial shifts to digital catalysed by the pandemic, and to invest and commit to a greater variety of digital skills for staff aligned with the library. While ongoing CPD can support digital literacy and upskilling for staff, more targeted recruitment, creativity, and empowering leadership will be necessary to further foster new flexible working environments and staff skills. Can research libraries find the time - while continuing to operate demanding services - to do the kind of reimagining that may be needed? Will they be able to do this against the backdrop of budgetary constraint and contraction? Especially when national Covid recovery funding for the cultural sector sometimes excludes libraries and varies geographically. The need for continued innovation and skills development amongst research and academic libraries underlines the importance of collaboration and collective action, as outlined in the manifesto. It also reflects that the pandemic revealed new opportunities for scholarship and the use of collections, which further changes the role and remit of research and academic libraries and the skills needs of their staff.

Scholarship and collections

The pandemic and associated lockdowns made physical research collections inaccessible, and the research and scholarship that depended upon them became impossible almost overnight. Print based collections, particularly in archives and special collections libraries that had always seemed secure, accessible and reliable were suddenly locked away in closed buildings. Different libraries reacted to these changes in different ways, and physical access resumed at different times and in different ways for institutions.

Libraries responded in new and innovative ways and were able to move at great speed. The Law Library at KU Leuven, for example, massively accelerated a journal digitisation programme, moving from a small-scale project with four journal titles to providing fully open access to the backfiles of around 70 titles.

'Separately negotiating 70 times with editorial boards and publishers about how this would be done and where it would be hosted seemed complicated and contradictory to the speed with which the Law Library wanted to progress in the face of COVID-19. As a result, it was decided to treat every journal in the same way with a new interface operated by the Law Library itself, with a short and recognisable URL (rechtsreeks.be) and a standardised workflow for scanning. This way, discussions with copyright holders were simplified, since intentions could be presented clearly and illustrated' (Malliet & Verbeke, 2021).

Despite the challenge of providing access to such a large number of titles, one of the key learning points from the project was that many of the barriers were not as insurmountable as previously thought. These experiences challenged previous mindsets and cultures that such projects were too challenging or complex to be practical. It revealed that simplified workflows and negotiations with copyright holders could potentially be permanently embedded into working practices.

'In the first months of scanning, we learned two things. First, the mass digitisation of this material is, to a large extent, a piece of cake (securing sustainable availability and long-term preservation are another matter of course). In the short run, all we needed was a good paper cutting machine, a fast scanner, cheap OCR-software and some server space. All of these were already present in the Law Faculty. Second, legal publishers are actually surprisingly cooperative to make issues of "their" journals older than 20 years available in OA (other publishers might be another matter)' (Malliet & Verbeke, 2021).

This rapid acceleration of digital collections was also seen at the University of Manchester Library. They prioritised the scaling up of their newly established digital collections platform that had only launched a few months previously:

'Manchester Digital Collections (University of Manchester, 2020) was launched in January 2020 with five sets of digitised materials from the world-class collections of the University of Manchester Library, Whitworth Gallery and Manchester Museum. We aimed to provide a platform of IIIF images and TEI metadata for researchers to share their work on collections and to encourage digital scholarship activities. Within two months, the pandemic and lockdowns forced a reassessment of priorities. To continue providing access to collections, we worked intensively to increase the range and depth of digital collections on MDC. A year later, there are 21 collections available, with 15,000 unique page views of collections to date: an average of 1000 per month' (Gallagher, Gifford, Hoare, & Kirkwood, 2021).

Manchester found that the pandemic, and the rapid move online, brought a range of logistical, technical and human challenges while encouraging innovative solutions.

'There were also challenges in aligning the work of different teams and reconciling collections with different physical formats, descriptive standards and levels of metadata. The Papyrus to Print collection, developed to support the teaching of two MA courses (Palaeography and the History of the Book) exemplified this challenge and its benefits. As a result of intensive, cross-team work, the collection was successfully used as part of a blended approach to teach the courses alongside livestreamed sessions. Tutors described these as 'almost as good as being in the room' with the material and curator, the traditional method being impossible to deliver during the pandemic' (Gallagher, Gifford, Hoare, & Kirkwood, 2021).

In this instance the move to remote working further facilitated cross team working through online collaboration and communication. There was a collective desire that these ways of collaborative working across teams were maintained once library buildings were reopened and that the physical separation of teams did not become a barrier to continued innovation.

Other institutions, such as the University of Reading, dealt with increased demand for engagement with digital services by relying on extensive existing digitised collections. Initially Reading noted that their collections-based teaching had a modest increase in demand, but a much greater need for staffing as '176 students attended sessions in the Autumn term (compared to 151 the previous year) but the staff hours committed trebled (from 49 to 169)' (Baxter, 2021). Baxter noted that this was due to 'greater complexity and the demands of digitising over 500 items.' Like other institutions, Reading sought technological solutions 'procuring a virtual reading room (VRR) in September 2020 to enable controlled access to high resolution content online'. They found that this both 'reduced the transactional workload for digital access' while increasing access, running more sessions and bringing in additional functionality (Baxter, 2021).

The users' demand for unique digital content has grown, but not their understanding of the challenge of providing it. Institutions are now increasingly looking at their own unique content in order to provide material for hybrid teaching, and more importantly, to enable research to continue (Greenhall, 2021). Just as there are challenges with providing more digital teaching resources from publishers, so there are a range of challenges in providing unique content. Quite often, there is a cost in both time and money for rights clearance above and beyond the costs of digitisation and asset management. An example from the University of Reading highlights this particular challenge. 'Archive motion picture films can be made available on-site at dedicated digital terminals under statutory exemption (CDPA s40B) but the due diligence required to clear rights for online access or supply of copies is massive, even under orphan works arrangements' (Martinez and Terras, 2019). This is not easy to grasp for stakeholders whose research depends on viewing

large quantities of archival footage. Therefore, the effect of the digital shift is felt disproportionately by those who depend on particular formats.

There are important questions for research libraries to consider for the future. A great deal of additional digital content has been created during the pandemic and libraries need to understand what the reach and awareness is of these new digital resources, how they are being used by researchers and their impact. Academic and research libraries need to engage with stakeholders as partners to understand which collections institutions should be prioritised in the future for digital access and what tools are needed by researchers to address new research questions on these collections. The profile of many libraries has been increased during the pandemic, but what do colleagues need to do now to bring about a permanent shift in the perception of libraries and librarians as partners in research and scholarship? Finally, during this pandemic each institution largely worked independently as they each had their own unique set of challenges to deal with. Moving beyond the immediate period of the pandemic, it will be important for research libraries to work across institutional boundaries to develop collaborative digital collections that offer enhanced opportunities for discovery and high-quality research outcomes.

Space

The closure of library buildings had both a significant physical and psychological effect on their users and surrounding communities. With the coming of the pandemic, some of the key and celebrated features of library spaces were now seen as potential vulnerabilities (Greenhall, 2020a). The library as a home of multifaceted services serving multiple user groups, the centrality of high-density study spaces to many library buildings, and the presence of high-volume communal and collaborative spaces had pivoted from key assets to spaces of potential infection. Although the blanket closure of the majority of library buildings during the first series of UK national lockdowns (March 2020) was relatively uniform, the opening up of library spaces was more varied following the lifting of lockdown restrictions. This was particularly the case for multi-use, multi-audience library spaces which serve several communities simultaneously and which found themselves having to adhere to different national guidelines. As Europe's first integrated public and university library, the Worcester Hive, had to implement:

'… two discrete sets of government guidance [during the November 2020 and January-February 2021 lockdowns], simultaneously keeping our services as open as possible for students (including bookable study spaces and collections browsing) and limiting access to the public (essential, pre-

booked PC use and collection of pre-reserved items only)' (Jones & Pittaway, 2021).

The lifting of lockdown restrictions required the wholesale revision of library space management. Until the pandemic, many research and academic libraries were operating at, or significantly above, their design capacity. High-density and volume spaces aimed at satisfying the maximum number of users had to be replaced by socially-distanced arrangements to minimise human contact. Tight restrictions were placed on user occupancy and a strict delineation of spaces was required. The closure of library spaces highlighted the psychological and cognitive importance of studying in a communal area. The recreation of the ambience of communal study through the 'sounds of the library' recordings by a number of libraries represented an attempt to offer the aural experience of a communal learning environment online, when the psychological need for such was at its highest during periods of lockdown and isolation (The University of Oxford, n.d.; The University of York, n.d.).

The limitation of the number of library users also led to the emergence of hybrid spaces which went some way to enabling seamless interaction between the digital and physical, a key ambition of RLUK's digital shift manifesto. Foremost amongst these have been the creation of virtual reading rooms (VRRs) and virtual teaching spaces (VTSs) within physical reading rooms (Greenhall, 2021).[3] These enable remote users to gain human-mediated access to archives and special collections through an internet connection and a ceiling mounted or mobile visualiser (e.g., University of Manchester, 2021). Initially a pragmatic response to lockdown, these facilities have grown in their number and have an increasingly diverse user base: from university students and researchers, to school students and community groups. Their application has also expanded beyond archive and special collections, to museum and 3D objects. Virtual reading rooms and classrooms within library spaces - particularly when situated within physical reading rooms - represent the emergence of a significant hybrid digital-physical space in response to the pandemic. They demonstrate the ability of libraries to create adaptable spaces that enable experimentation, adjust to changing user needs, and to enable a wider range of activities than was previously on offer (Greenhall, 2020b; Greenhall, 2021).

The creation of hybrid digital-physical spaces provides new methodological and research possibilities, yet also present spatial and ergonomic challenges. Virtual reading rooms require visualisers, adequate and

[3]Various definitions of Virtual Reading Rooms and Virtual Teaching Spaces have emerged during the pandemic. In this instance, VRRs and VTSs refer to the use of visualisers and live streaming between a member of library staff and a researcher/teacher to 'provide human-mediated remote digital access to collections which do not depend on digitisation'. (Greenhall, 2021)

adjustable lighting, and adaptable viewing areas. Their operation requires human intervention, which can be disruptive to other readers if a virtual reading room is situated within an open study space. Virtual reading rooms, and other hybrid spaces, also require a degree of digital literacy and proficiency that is not uniform across users (Greenhall, 2021). It has been acknowledged that the pandemic has revealed significant variations in the level and extent of digital literacy and capability amongst library users and staff (Jones and Pittaway, 2021). Digital poverty, varying levels of digital literacy and a lack of digital confidence, all affected users' ability to engage with digital content and services. The Worcester Hive reflected that whereas 'student support moved online with relative ease…. The public digital offer was only in its fledgling stages' during the first lockdown and that 'this [public] service revealed the low digital literacy of many of our public users' (Jones and Pittaway, 2021).

'Where many of our students have quite nuanced digital requests around accessing digital resources, many members of the public need much more basic support in setting up email accounts or printing off forms. Their digital space is smaller' (Jones and Pittaway, 2021).

With the increasingly multifaceted nature of academic and research library audiences, the creation of hybrid spaces to meet their changing needs, and a stronger shift to online service delivery, the provision of digital skills and spaces will be intertwined.

The potential impact of the pandemic on long-term library design is still unclear and libraries continue to closely monitor the use of their spaces. Although the long-term use of space is an issue for all libraries, it is a key consideration for those institutions undertaking major capital building projects which were interrupted by the pandemic. Colleagues at Lille University Libraries have been engaged in a €44 million renovation programme of the university's 17,000 m humanities library, which is due to reopen in 2026 (Delrue, 2021). As with many research libraries, the project is designed to develop multi-use, cross-audience spaces to enable collaboration, support early-career researchers, and deliver cross-community events and exhibitions. The pandemic raised significant questions during the design process including the potential permanence of staff working from home, and the need for a greater emphasis on air quality and ventilation (Delrue, 2021). As a result of the ongoing experience of Covid-19, extensive user surveying, and the threat of future pandemics the project has placed a greater emphasis on the creation of multifaceted and mixed-use spaces which are flexible and adaptable in their use and design. As is the case across many UK research and academic libraries,

'…the pandemic has changed the concept of staff offices, reinforcing the collaborative and social aspects of the project, stressing the need for digital

flexibility in the way the library supports its patrons, and re-imagining the interplay between the physical and digital use of our services and collection' (Delrue, 2021).

The twin strands of adaptability and hybridity sit at the heart of research and academic library responses to the pandemic in terms of their physical, digital, and hybrid spaces. These two strands are central facets of RLUK's digital shift manifesto and emphasise the need to embrace experimentation and for agility to be a key design feature of library spaces. These should enable the seamless interaction between the digital and physical realms, create inclusive environments that support the wellbeing of larger numbers of people, from more diverse backgrounds, and are responsive to user needs, informed by the ethical collection of real time data. For these ambitions to be realised, academic and research libraries will need to work together to challenge the issues of digital poverty, literacy and confidence amongst our users as brought into sharp focus by the pandemic (Universities UK, Jisc, GuildHE, and UCISA, 2021; Office for Students, 2020b). In addition to being urgent ethical and societal concerns, issues of digital poverty and exclusion across large portions of our users and communities will hamper and restrict the inclusivity of our digital and hybrid spaces. These issues will require libraries to work closely with a wide variety of stakeholders and to advocate for the role of the library in meeting both these institutional and societal challenges.

Stakeholders and advocacy

Libraries have a wide range of stakeholders with a variety of expectations. During the pandemic, some of these expectations shifted as the realities of the digital shift brought with them challenges and new demands on services that stakeholders did not always understand or appreciate.

Anecdotal evidence suggested that it was assumed by many that Higher Education would find the switch to digital provision relatively easy – after all students were surely mainly digital natives. However, as was quickly highlighted, 'a mostly digital student experience drives demand for physical space, the inequalities that the digital shift brings intensifies and the disparities between disciplines' (Beattie, 2021). As the experience at King's College London and many other universities showed, the switch to digital did not just require laptops and wi-fi but also new demands for physical space as many students 'do not have access to the quiet, private space with stable wi-fi that is required for online learning' (Beattie, 2021).

In fact, libraries themselves struggled to provide these types of spaces as their design had become driven by accommodating large volumes of users. For many stakeholders, the library was the only facility that was regularly

open and provided a range of services to support study and the ability to securely access digital services through stable wi-fi. For some it is that "third space".

The pandemic brought to light another issue. While there was already a shift from purchasing print to digital, Covid 19 meant it was essential to accelerate this. As of 2020, within the UK, the split between print books and digital is 50/50 (NAG, 2020). However, the pandemic also highlighted another issue that '… librarians have known for a long time, that e-book provision is much better across the STEM subjects and that physical collections are still required in many subjects' (Beattie, 2021). While many libraries have been moving towards a digital first purchasing policy, some disciples, especially within humanities subjects, were less well served by e-content. Anecdotally the gatekeepers within the disciplines where print was stronger, had not embraced the switch to using e-content, often because, in areas such as History of Art, they had reasons to think physical media were more appropriate. Until restrictions eased in the UK and libraries pivoted to offer 'click and collect' services, students, researchers and academics struggled to get access.

In addition to disciplinary variation, the pricing of e-book content in general has long been identified as an issue for research and academic libraries, both within and beyond the UK. The pandemic further exposed and highlighted the inequitable and unsustainable levels of ebook pricing and the restrictiveness of licences (RLUK & SCONUL, 2021). As a result, during the pandemic a crisis of cost became one of access for many institutions regarding econtent. In the short-term, this was partly mitigated by the provision of time-limited and reduced-cost access to e-content by publishers. However, this relaxation only served to demonstrate that pricing and licensing conditions remained key impediments to the digital shift in collections and are unsustainable.

As new or extended 'scanning' services began to be delivered to support students in the hybrid landscape (taking advantage of such things as the CLA licence in the UK), it became apparent that neither academics nor students understood the complex landscape of e-content, especially copyright. Library users required help with skills around provenance of content, access rights to content, and copyright applying to content. During the pandemic, institutions focussed on providing digital access to their own staff and students. Outside researchers found this an additional barrier, in addition to not being able to travel to view in person. They also found that there was a lack of uniformity in how institutions dealt with access to unique collections, and in how the rules to opening up access were applied. Different rules applied between Scotland, England, Wales, and Northern Ireland (within the UK), and the Republic of Ireland, with different timelines and conditions applying to the lifting of restrictions.[4] This meant that

researchers experienced a complex and changing picture across 2020–2021 in terms of gaining access to unique collections, further driving demand for digital access.

The rapid shift to online also created demand from stakeholders for other online content, not just for digital catalogues with digitised collections, but also for online events and exhibitions. Many organisations had a planned programme of exhibitions in their libraries and decided to pivot at short notice to delivering online. At the start of the pandemic there was a significant increase in users looking for galleries, libraries, archives and museums content partially to support home learning. During the pandemic these institutions faced another challenge with the significant rise in users wanting online tours as they moved from looking to visit in person to digitally. While popular for a short period, the virtual tour soon lessened in appeal (Davies, 2020; Unitt, 2020). However, for institutions the online delivery of exhibitions became an important means of engaging with users. Unfortunately, many institutions lacked systems to provide this type of output and created digital versions with the tools that they had to hand or could procure quickly. Some institutions, such as the University of Edinburgh, had been transforming their digital service provision but were in the middle of this work and could not accelerate the pace to deliver at such short notice (Lingstadt, 2021).

Audiences for such digital exhibitions have changed their expectations and no longer are engaged by images and text online but are looking for a more rewarding experience which will engage them in different ways (Haseldine, 2020). Libraries are still adjusting to these types of engagements with their users and need time to absorb the new thinking that was begun in museums and galleries. This is an area where museums and galleries have traditionally led as their collections could not be lent directly to the user. This highlights issues in relation to user expectations around access to the collections within libraries. Users and institutions must deal with evolving government regulations and significant restrictions on borrowing of physical items. This also applies to the unique content, which is dealt with differently depending on how it is classified. Reading rooms are sometimes counted as student-focussed spaces and therefore opened in line with these resources while in other institutions are deemed part of research, so open in line with 'research laboratories'. Other questions emerged: Should research demand from beyond the institution, beyond UK HE, and beyond the academy be treated the same? Previously, this was easy as physical access was 'free at the point of use'. However, the provision of this material in digital format requires significantly more effort from the library in digitising, rights management, and online access platforms. What should be the

[4]RLUK is a consortium of 37 research libraries in the UK and Ireland.

pricing model for the digitisation on demand from the wider community when the alternative of physical access cannot be offered? How should libraries prioritise what they digitise?

Libraries have always been central to universities, but during the pandemic, they have become vital to their operation. Stakeholders look to them to provide physical and digital material, and also a physical space in which to work and use secure wi-fi. In recognition of this, many libraries have been designated as research facilities or laboratories. This status meant that libraries and special collections centres in particular with unique collections were encouraged to re-open in line with science laboratories in order to support researchers in their work (Office For Students, 2020a). The University of Edinburgh's Centre for Research Collections was designated a research laboratory and therefore opened in line with science laboratories to enable research to continue.

Skills and leadership

As library buildings fell silent in March 2020, the activity of staff shifted online. New, often cloud-based collaboration tools were tested and rolled out as communication and workflows had to become fully digital. On the positive side, organisations and staff realised that they could work quite effectively in a remote setting. Many colleagues cherished the greater flexibility and control over their time. Others struggled. Some found that their home environment did not allow them to work effectively, for example due to lack of (suitable) space, equipment or reliable internet connection. Others felt isolated in a digital environment that could not replicate the personal work environment that motivated them to get through the day, or because they struggled with tools that were either not fully fit for the task at hand or because they lacked training.

The digital shift manifesto rightly drew attention to the need to invest in skills, but in retrospect the focus may have been too much on 'advanced' skills such as digital scholarship or data analysis. These will continue to be important, but in order to overcome a much broader digital divide within libraries, organisations will have to continue to invest in tools, equipment and training that allow staff to fully participate in digital and blended work environments. Workplace culture has to equally enable digital specialists and those in roles that have previously been considered analogue. Organisational culture will have to evolve to achieve this.

Part of the solution will have to be a culture that balances remote, hybrid and onsite working, through an approach focussed on wellbeing and trust. Do libraries expect those who can effectively work from home to still be in the office, and if so how often and why? What level of physical interactions do teams require to be effective? If libraries give remote and digitally

working staff more (actual or perceived) freedom and control over their work, how do they show staff onsite the same appreciation and use technology to give them more control over their work too?

Libraries will also need to consider how much they will want to use the flexibility of remote working in recruitment. Once a role is designated as fully remote, do staff have to reside in the UK? The legal issues that Brexit has created for access to a large labour market in similar time zones highlights the need to consider technology, organisational culture and legal frameworks jointly. To overcome these challenges, libraries require both strategic workforce planning and leadership that can articulate a new organisational culture and lead the change.

Library leaders will also have to look from their own teams to their role within their wider organisations. During the pandemic, libraries within universities took on the critical role of providing access to information, collections and services via a blended environment. In some universities there was the recognition that the library is an integral part of the research cycle awarding it 'laboratory' status.

Perhaps even more than with library staff, the sudden reliance on digital has sharply exposed the corresponding digital divide across society including students, highlighting the need for key resources including laptop loans, digital skills, and provision of stable wi-fi and study space (Office for Students, 2020b). The cost and inadequacy of internet provision across all areas of the UK has become a national issue, as access to the internet has become a basic necessity rather than a luxury. Student surveys often identified access to wi-fi as the most important factor and the pandemic has intensified this need as it emerged that '52% of students said their learning was impacted by slow or unreliable internet connection, with 8% severely' affected (Office for Students, 2020b).

In addition, the assumption that student accommodation would be adequate for study and participation for online learning proved wrong and led to new demands on libraries and study spaces to accommodate a greater variety of activities, from study through participation in online tutorials and classes, to hosting online exams. All of these require different conditions. To deal with all these challenges, leaders in libraries require a strategic understanding of the potential of digital technology, especially how it can be utilised and support activities as well as transform work and lead to new types of engagement in a world that is increasingly hybrid.

Scholarship and collections

The pandemic has increased demand for digital content in all forms. While the focus was at first on e-content to support learning, it quickly moved to

online delivery. This raised both the issue of the complexity of the costing models and of a lack of understanding of the current e-publishing model among academics and students. The demand for digital first content has proved challenging not just for licensed content but open content, for example, for more unique collections to be digitised. This content can be made available openly if the institution so decides, but is not quick and easy to create. There are considerable costs in its creation, from conservation to digitisation, as well as metadata creation and rights clearance, plus finally ensuring that content is available through appropriate online platforms.

While there was a period where funders actively supported digitisation activities, in more recent years this has not been the case. Leaving aside some smaller scale activities funded as part of research projects, digitisation is now either driven by commercial interests or through donations, in addition to what small budgets institutions themselves may have. The question of prioritisation has come under increased scrutiny in light of a recognisable bias in online collections. This bias is around what is digitised and what institutions decide is of value to copy and have available digitally as well as the bias around what has been collected and what survives (Kizhner, Terras et al 2019). Although commercial programmes such as Google Books have immeasurably assisted the digitisation effort and have highlighted the different ways in which content can be utilised once this work is carried out, they come with their own agenda.

Moving from a strategic to a more opportunistic approach is increasing bias in digital collections, and risks not meeting strategic objectives as well as only supporting influential and well-funded stakeholder groups. The increased demand for digital content paired with the issues around digital poverty highlighted by the pandemic have shown the need for a refreshed strategic approach to digitisation. Universities, national bodies, and funders need to see this not as an operational question for libraries, but as a societal mission that requires debate and coordination across stakeholders, as well as appropriate resources.

A more strategic approach to collections also needs to consider how libraries can best enable scholars to use them. Currently, libraries are seeing a growing emphasis on data-driven research in the humanities and social sciences utilising computational methodologies and collections-as-data. This necessitates collections not just being digitised, but also turned into data which can be worked with computationally. A number of additional steps are required to enable this. This is a significant change in emphasis from just digitising for online viewing to providing an infrastructure which allows for use and analysis as well as discovery. It also requires new tools such as text and data mining and computational power in a way that

libraries have not required previously. The library in turn requires new skills and capabilities in order to support all this. While this was true prior to the pandemic there is an increased sense of urgency to achieve these goals.

Spaces

Even before the pandemic, physical library spaces were in much demand as evidenced by the number of extensions, refurbishments and new builds taking place across the UK and beyond. The subsequent lockdowns have confirmed the importance of libraries not just as learning but also as social spaces. In particular from a student perspective, research libraries can rightly claim to be at the heart of an institution. Lack of access to suitable spaces has impacted both library users and staff as well as the wider communities in which universities are located. This provides an opportunity for libraries to re-think both the physical and digital space needs as well as better understanding the needs and expectations of not one but several audiences.

From a staffing perspective, open plan offices have been a leading paradigm of space planning. While this approach has its drawbacks, it has been effective with regards to maximising desk space. With more staff working remotely or in a hybrid model, demand for flexible space designs will increase (Felstead and Reuschke, 2020). Many institutions are developing remote working policies, and universities, who often lag behind the private sector, need to ensure that they do not lose sight of the benefits which have been derived through the pandemic. Adopting a virtual first model based on a set of principles which allow for the greatest amount of flexibility may be a unique selling point for some e.g., to assist with recruitment (WIRED, n.d.). The implementation of this model will require institutions to rethink their physical spaces and ensure a digital ecosystem to support it, allowing for both individual and collaborative work spaces which offer seamless digital integrations. Digital poverty and mental and physical wellbeing do not only affect students, they also apply to library staff.

The distinction and change from home working to remote working is an important signal that staff can work remotely from anywhere (including on campus or in community hubs) (Buxton, 2020). A meeting will no longer be a reason to get people in the same room and managers and leaders will be required to understand the difference between asynchronous and synchronous work as well as articulate when and what work requires staff to be physically together. As individual digital work can, in principle, be done from anywhere, the emphasis for space use will likely shift to enabling different modes of work and collaboration. This may require breaking up

larger open plan offices into different zones, ideally with effective ventilation to make these spaces more viable during a new pandemic. This will likely be a key principle for future building design, together with improving the use of space through a more networked building. The increase in remote working may also result in library staff being located in office hubs across campus rather than in the physical library thereby increasing the amount of space on offer to students.

The pandemic has allowed libraries to think about space holistically and consider how they can enable seamless movement between physical to digital. Teaching within institutions is likely to remain hybrid, requiring providers to re-think how they create immersive spaces that support and enhance learning. With the increase in remote working many institutions may decide to "shrink" their physical space as many private firms are doing (BBC, 2020). This may provide libraries with opportunities to increase their own physical footprint in new and exciting ways where they can experiment with technology-enabled. The importance of libraries as communal learning spaces and as a "third space" should not be underestimated. It is a space, both physical and digital, to come together, whether for an individual or a shared learning endeavour.

Stakeholders and advocacy

The increased reliance on digital solutions has highlighted some key issues around the infrastructure of libraries. While provision, discovery and access to e-content is possible, though limited by budgets and pricing structures, the infrastructure for unique content is not there. In particular, the Arts and Humanities for whom the library is the research laboratory struggled. This long-standing situation results from different systems which, while they can connect, require additional resources to connect effectively and seamlessly. There is no single way to search across the nation's collections, something recognised by the AHRC's funding programme 'Towards a National Collection' (AHRC, n.d). This investment comes alongside the AHRC's increasing support of infrastructure across the arts and humanities, in which libraries have a cruicial role. However, the question remains; can the Arts and Humanities across the different collection holders – National, Local, Higher Education and other - come together and collaborate to deliver?

User expectations are set by the likes of Google and Amazon, and thus were already ahead of what most libraries provide. The pandemic has simply made users less tolerant of this lag. They expect a small number of integrated solutions, but typically must navigate several commercial systems in the same institution. Libraries with unique collections may even have

different platforms for different collections, with no single point of access, and online learning environments often don't provide seamless access to online resources. In general, libraries struggle to provide a unified digital ecosystem to meet key user expectations.

As pandemics are not going to go away it is better to plan based on pessimistic assumptions than to risk being caught out when another wave, or a new virus, comes along. In particular, the undergraduate experience typically lasts 3-4 years and many masters students are only with an institution for a year. What is a short disruption from an institutional point of view, may have a significant impact on individual students. Ethics aside, this may create a negative impression, resulting in reputational damage to the institution. This will require universities and libraries to rethink their provision. Digital will continue to play a significant part of delivery, but there must be the built-in flexibility to switch between physical on-campus services and online-only ones. This requires a more flexible and agile workforce who can respond quickly to changing circumstances.

RLUK's digital shift manifesto delivered

The onset of the Covid-19 pandemic necessitated the adaptation of the manifesto's ambitious delivery plan in order to capture and disseminate the emerging experiences of RLUK members. It increased the importance of knowledge sharing between RLUK members and the wider academic library sector, and the usefulness of institutional and collective benchmarking.

RLUK's five member networks convened regular meetings to discuss their ongoing experiences of the pandemic and their possible long-term implications. RLUK launched its Capturing Covid-19 programme in March 2020, consisting of reports, open letters and resources, and undertook a specific piece of research regarding the emerging impact of the pandemic on perceptions and experiences of the digital shift.

Informed by a series of detailed member interviews, events, and surveys, Covid-19 and the digital shift in action (Greenhall, 2020b) established the ongoing experiences of RLUK members in the first months of the pandemic and made a series of recommendations for the future of RLUK's work in light of these. It reaffirmed the relevance and importance of the manifesto and its ambitions, the need to create cross-sector channels through which knowledge could be shared, and the importance of developing a collective vision for digital leadership. It highlighted opportunities to develop institutional systems and practices, the limitations of our collective digital infrastructure, and that national frameworks, such as those for copyright and licensing, were not always fit for purpose in enabling remote access to collections and services.

In addition to this research, and in response to these findings, RLUK prioritised three areas of activity under the manifesto: the creation of a cross-sector online space to enable knowledge sharing, the facilitation of skills development opportunities, and the creation of a digital workforce development strategy for its members. Launched in October 2020, RLUK's Digital Shift Forum was created as an international, cross-disciplinary forum, to enable discussion and identify areas of cross-sector collaboration (RLUK, 2021b). Its first season of seminars (October 2020–July 2021) featured 25 speakers and attracted over 3,300 registrants from more than fifty countries, demonstrating the appetite for cross-border, multi-disciplinary discussion and collaboration between sectors and communities. RLUK also worked to develop more bespoke knowledge sharing opportunities between individual colleagues. Digital skills exchange programmes were developed between RLUK and its international counterparts, bringing together significant portions of the information and research communities to consider emerging and pressing skills needs and how these might be met collectively (RLUK, 2021b).

In addition to these pragmatic responses to digital skills development, a working group was convened from amongst members of RLUK's Associate Directors Network to lead the creation of a digital skills workforce development strategy for the research library community (for launch in late 2021). In doing so, RLUK tailored the delivery of the manifesto between a pragmatic response to the pressing needs of the pandemic, with wider strategic opportunities for medium-long term change.

RLUK is committed to delivering on the ambitions of the digital shift manifesto and to support its members as they navigate the medium-long term implications of the Covid-19 pandemic The experience of the pandemic has brought a number of long-standing issues into sharp focus which have further revealed the intersection of local practices, national frameworks, and wider trends. Central to these has been providing sustainable and equitable access to content, which meets changing needs of library users, is adaptable and flexible in facing future challenges, and is financially and institutionally sustainable. It will be around these issues that RLUK will continue to dedicate much of its work as outlined in its 2021–2024 strategy.

As demonstrated within this article, the manifesto's priorities remain relevant in underlining the importance of digital transformation for libraries and the need for them to remain pertinent and valued in a post-pandemic world. The pandemic has exposed that digital transformation can act as a form of risk mitigation for institutions and communities, in helping research and academic libraries prepare for periods of continued uncertainty, enabling them to respond to emerging technologies and means of

scholarship, and face unexpected challenges. These are all issues that are central to the manifesto and RLUK's work throughout much of the Covid-19 pandemic. RLUK will continue to work to deliver on the ambitions of its digital shift manifesto and to learn from the collective experience of its members throughout the pandemic. Flexibility and adaptability will be key to this, as will working in collaboration with individuals and organisations across the information, research, and cultural sectors.

Conclusion

Over the last year, the contents and ambitions of RLUK's digital shift manifesto have remained relevant, despite the unplanned and accelerated digital shift experienced in response to Covid-19. The response to coronavirus exposed that the shift to digital had not been uniform across academic and research library collections, services, and operations, or as embedded as sometimes assumed before the pandemic. The closure of library buildings demonstrated the significant impact that the lack of access to physical collections could have on library users and their activities, despite years of e-first and e-only purchasing, digitisation, and the development of online services. Significant variations were witnessed across disciplines in terms of their embracing of e-content and the physical and site-specific dependencies of large elements of the sector's digital infrastructure. Although these experiences varied between institutions, at a national level, the frameworks under which academic and research libraries operated and provided access to materials, especially around copyright and licensing, were found wanting. Wider societal issues, including the significance of digital poverty amongst library users, communities, and staff, also exposed limitations in the reach of digital services and collections amongst significant segments of society. The response of academic and research libraries to the pandemic were therefore governed by the complex intersection of institutional, disciplinary, legislative, and societal variables.

Despite these challenges, the Covid-19 pandemic often did not represent a departure in the digital shift, but a catalyst for existing projects and processes. Overall, it constituted a quickening in the development and delivery of initiatives which were already under development. It did, however, witness and encourage innovation and revealed the possibilities of new services and technologies, such as virtual reading rooms and virtual teaching spaces. It exposed new means of teaching and online engagement, triggered new conversations about what constituted a digital or hybrid service or presence, and underlined the importance of agility, and the ability to 'digitally pivot' services and collections at speed. The hastened development of digital services, promotion and expansion of digital collections, and the

demonstration of the role of libraries in online and virtual teaching and learning environments, all helped challenge the perception of libraries as only 'buildings with books'.

Research libraries will need to continue to promote and advocate for their digital collections and services after the pandemic and to capitalise on the contribution they can make to their institutions. Yet, the coronavirus has also underlined the popularity, affection, and desire of users for physical study spaces and library buildings. Often one of the few open study spaces on campuses, challenges exist regarding how libraries can maintain this heightened profile after the period of immediate crisis has passed. As cited above, the crisis has provided opportunities for research libraries to rethink the design of their buildings and spaces. In the short term, this has reflected the needs for social distancing, but new ways of working, particularly amongst staff, are likely to have an impact on the apportionment of space over the medium- long-term.

At a time of contracting budgets, the threat of future pandemics, and heightened expectations of library users and their wider institutions, flexibility will be central to the future success of the digital shift amongst research and academic libraries. The pandemic has demonstrated that libraries can adapt at speed and the resilience of systems, staff, and collections to rapid change. Whereas during the crisis, meeting the institutional needs was paramount, the post-pandemic period will require libraries to work in collaboration: to advocate for change in copyright and licensing frameworks, challenge the inequitable practice in e-content pricing, and combat wider societal challenges including digital poverty. RLUK's manifesto for the digital shift provides a route through which collaboration between research and academic libraries can be encouraged, facilitated and achieved.

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References

Baxter, G. (2021, March). *Case study: University of Reading - skills and leadership*. Research Libraries UK. Retrieved from https://www.rluk.ac.uk/university-of-reading-case-study-skills-and-leadership.

BBC. (2020, October 8), Covid: City firms look to cut office space amid pandemic. *BBC News website*. Retrieved from https://www.bbc.co.uk/news/business-54461218.

Beattie, G. (2021, March). *Case study: Digital - some are more equal than others*. Research Libraries UK. Retrieved from https://www.rluk.ac.uk/kings-college-london-digital-some-are-more-equal-than-others.

Buxton, P. (2020, May 22), Rethink: Working miracles, office design revolution. *RIBA Journal*. Retrieved from https://www.ribaj.com/intelligence/post-pandemic-design-offices-bco-alexi-marmot-cushman-and-wakefield-hassell.

Castle, J. (2021, March). *Case study: UWS Libraries response to Covid-19 and the digital shift*. Research Libraries UK. Retrieved from https://www.rluk.ac.uk/uws-libraries-response-to-covid-19-and-the-digital-shift-and-looking-to-the-future.

Chowdhury, G. (2021, February). *Data and information for sustainable living and the future*. Research Libraries UK, Digital Shift Forum [video]. Retrieved from https://www.rluk.ac.uk/dsf-on-demand/#DSFGC.

Davies, B. (2020, December). In a year when many were stuck indoors, google says 'Virtual Museum Tours' was among its most popular search terms. Retrieved from https://news.artnet.com/art-world/virtual-museum-tours-1930875.

Delrue, L. (2021, March). *Case study: Lille University - redesigning a humanities library during lockdown*. Research Libraries UK. Retrieved from https://www.rluk.ac.uk/lille-university-libraries-case-study-redesigning-a-humanities-library-during-lockdown.

Dempsey, L. (2020, October). *Pandemic effects and collection directions*. Research Libraries UK Digital Shift Forum [video]. Retrieved from https://www.rluk.ac.uk/dsf-on-demand/#DSFLD.

Evidence Base. (2021). *The role of academic and research libraries as active participants and leaders in the production of scholarly research*. A Report for Research Libraries UK. Retrieved from https://www.rluk.ac.uk/wp-content/uploads/2021/07/RLUK-Scoping-Study-Report.pdf.

Felstead, A., & Reuschke, D. (2020, August). *Homeworking in the UK: Before and during the 2020 lockdown*. Wales Institute of Social and Economic Research and Data (WISERD). Retrieved from https://wiserd.ac.uk/publications/homeworking-uk-and-during-2020-lockdown.

Gallagher, J., Gifford, I., Hoare, C., & Kirkwood, R. (2021, March). *Case study: Manchester digital collections*. Research Libraries UK. Retrieved from https://www.rluk.ac.uk/case-study-scholarship-and-collections-manchester-digital-collections.

Greenhall, M. (2020a). *The initial response of RLUK members to the Covid-19 crisis*. Research Libraries UK. Retrieved from https://www.rluk.ac.uk/wp-content/uploads/2020/06/Summary-the-response-of-RLUK-members-to-Covid-19.pdf.

Greenhall, M. (2020b). *Covid-19 and the digital shift in action*. Research Libraries UK. Retrieved from https://www.rluk.ac.uk/wp-content/uploads/2020/06/Covid19-and-the-digital-shift-in-action-report-FINAL.pdf.

Greenhall, M. (2021). *New frontiers of digital access: The development and delivery of virtual reading rooms and virtual teaching spaces amongst collection-holding institutions*. Research Libraries UK. Retrieved from https://www.rluk.ac.uk/libraries-archives-and-museums-enable-new-forms-of-remote-access-in-response-to-covid-19-pandemic/

Haseldine, G. (2020, June 9). *The virtues and vices of virtual museum tours*. Apollo: The International Art Magazine. Retrived from https://www.apollo-magazine.com/virtal-museum-tours-lockdown/.

Jones, S., & Pittaway, S. (2021, March). *Case study: Spaces and stakeholders in The Hive during Covid-19*. Research Libraries UK. Retrieved from https://www.rluk.ac.uk/case-study-spaces-and-stakeholders-in-the-hive-during-covid-19.

Kizhner, I., Terras, M., Rumyantsev, M., Khokhlova, V., & Demeshkova, E. (2019). Measuring bias in aggregated digitised content: A case study on Google arts and culture. In *Digital Humanities 2019*. Utrecht: Alliance of Digital Humanities Organisations. Retrieved from https://core.ac.uk/download/pdf/224804274.pdf.

Lingstadt, K. (2021, March). *Case study: University of Edinburgh - Timing is everything!* Research Libraries UK. Retrieved from https://www.rluk.ac.uk/university-of-edinburgh-timing-is-everything.

Malliet, C., & Verbeke, D. (2021, March). *Case study: KU Leuven Libraries - Law Library*. Research Libraries UK. Retrieved from https://www.rluk.ac.uk/case-study-ku-leuven-libraries-law-library/.

Martinez, M., & Terras, M. (2019). 'Not adopted': The UK orphan works licensing scheme and how the crisis of copyright in the cultural heritage sector restricts access to digital content. *Open Library of Humanities*, *5*(1), 36. doi:10.16995/olh.335

NAG. (2020). eTextbooks post-Covid? De Montfort University's experience with the UAA model [Video]. Retrieved from https://nag.org.uk/etextbooks-webinar-with-bibliu-discussing-uaa/.

Office for Students. (2020a, June 11). *Coronavirus briefing note*. Office for Students. Retrieved from https://www.officeforstudents.org.uk/publications/coronavirus-briefing-note-postgraduate-research-students/.

Office for Students. (2020b, September 3). *'Digital poverty' risks leaving students behind*. Office for Students. Retrieved from https://www.officeforstudents.org.uk/news-blog-and-events/press-and-media/digital-poverty-risks-leaving-students-behind/.

RLUK. (2020a, March 17). *A manifesto for the digital shift in research libraries*. RLUK. Retrieved from https://www.rluk.ac.uk/digital-shift-manifesto/.

RLUK. (2020b, September). *Digital shift forum*. Research Libraries UK. Retrieved from www.rluk.ac.uk/dsf/.

RLUK. (2021a, January 11). *Scoping study: The role of academic and research libraries as active participants and leaders in the production of scholarly research*. Research Libraries UK. Retrieved from https://www.rluk.ac.uk/ahrc-rluk-scoping-study/.

RLUK. (2021b, May 18). *Building a transatlantic digital scholarship skills exchange for research libraries*. Research Libraries UK. Retrieved from https://www.rluk.ac.uk/building-a-transatlantic-digital-scholarship-skills-exchange-for-research-libraries/.

RLUK & SCONUL. (2021, February 5). *An open letter to the Publishers Association to review their support of UK HEIs, RLUK & SCONUL*. Retrieved from https://www.rluk.ac.uk/sconul-and-rluk-issue-an-open-letter-to-the-publishers-association-to-review-their-support-of-uk-heis/.

Unitt, C. (2020, May 7). *Actually yes, people do want virtual museum tours*. Retrieved from https://www.chrisunitt.co.uk/2020/05/actually-yes-people-do-want-virtual-museum-tours/.

University of Manchester. (2021, March 17). The virtual reading room: Remote reading and teaching at the John Rylands Research Institute and Library. *YouTube*. Retrieved from, https://www.youtube.com/watch?v=e0g2Qd4wKmk. (minute 1–11).

University of Manchester. (2020, January). *Manchester digital collections*. Retrieved from https://www.digitalcollections.manchester.ac.uk.

University of Oxford. (n.d.). *Sounds of the Bodleian*. Retrieved from https://www.ox.ac.uk/soundsofthebodleian/#radcam.

University of Reading. (n.d.). *Virtual reading room*. University of Reading. Retrieved from https://vrr.reading.ac.uk.

Universities UK, Jisc, GuildHE, and UCISA. (2021, January 15). *Letter to ministers, jisc, repository*. Retrieved from https://repository.jisc.ac.uk/8268/1/letter-to-ministers-january-2021.pdf.

University of York. (n.d.). *York's Library Home from Home*. Retrieved from https://www.york.ac.uk/library/home-from-home/.

WIRED. (n.d.). *Why Dropbox's 'Virtual First' model could be the future of work*. WIRED. Retrieved from https://www.wired.co.uk/article/bc/dropbox-virtual-first.