SCONUL

The modern library:
technology-enhanced library spaces

Contents

1. Introduction

What does a modern academic library look like? This collection of case studies showcasing technology-enabled library spaces across the UK and Ireland helps to answer that question. The spaces highlighted here are innovative in design and execution, providing access to the latest equipment, hardware and software including green screens, 3D printing, photogrammetry and AR and VR equipment within media labs and makerspaces.

However, this is never innovation for innovation's sake. The development of these spaces are aligned with the pedagogical mission of their institutions, providing new approaches to knowledge creation, nurturing creativity, supporting the digital humanities, and fostering the development of digital literacy skills to support studies, research and future employability.

The evolution of these spaces across the libraries included here have been quite different. For example, the major extension of the Glucksman Library at the University of Limerick was designed to be technology-infused from the outset and now houses a range of spaces under the digital scholarship umbrella "The Edge". By contrast, the University of Edinburgh has been evolving its uCreate services and spaces since 2016 and these spaces and the technologies within them have grown as the interest in taking a more hands-on approach to course work and assessment has developed. While some of the developments have been funded solely from within institutional budgets, some such as Winchester and Birkbeck have benefited from Office for Students funding.

However what unites them all, is that they are all part of a longer-term trend across libraries which sees them move beyond their traditional role of custodians of knowledge and becoming more and more deeply engaged with, and embedded in, the teaching and learning and research missions of their institutions.

We hope these case studies provide a useful resource for those who are planning such spaces in their own library, providing insights into considerations around staffing; equipment choices; future-proofing spaces and managing considerations such as equipment and space booking. We hope too that the spaces highlighted here will provide inspiration to those within and beyond the library community to consider supporting the development of such spaces to maximise the value that the library can bring to the life of the institution.

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2. Background

These case studies were commissioned by the SCONUL Technology and Markets Group as part of its mission to develop and articulate a shared understanding of the development of library infrastructure with the library community and stakeholders based on member needs. This includes the scope for technology-enabled innovation across the sector, spreading innovative practice and supporting early adoption. The group also developed a technology survey which will provide valuable intelligence on the use and perceptions of library technology amongst SCONUL members and which can be found here.

We are very grateful to the project team who have supported the development of these case studies:

- **Birgit Fraser**, Assistant Director: Academic and Content Services, Anglia Ruskin University
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- **Ann Rossiter**, Executive Director, SCONUL
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We are also grateful to all those from our member institutions who contributed to these case studies and to Elizabeth Malone who interviewed the participants and drafted the case studies.

Digital Maker Space and building community at University of Exeter

At a glance...

- Operationalising a service using existing skills and technologies
- Improving the user experience
- Creating a sense of community through creativity

1. Executive summary

The Digital Maker Space (DMS) within the Forum Library at the University of Exeter is a purpose built digital-first teaching space, equipped for hybrid teaching with microphones and speakers, and desks with computers attached to large displays to aid in teaching and following along with teaching materials, as well as allowing distance students to participate more directly in class.

Funded by the Office for Students from their teaching capital fund aimed at the enhancement of STEM teaching, the makerspace was initially launched by the digital learning team whose role is to support staff in the innovative use of technologies and resources to develop new ways of teaching, learning and assessment. The space was launched in 2022 and in 2023 moved to being managed by the library team.

What the library team has been able to bring to the DMS is a focus on operationalising the service and improvement to the customer experience. In doing so, the team has balanced the use of existing technologies to simplify management of the space and equipment alongside upskilling staff to support users. The team is now building on this experience to promote the space further and to feed into future projects.

Creating a sense of community within the university also emerges as a strong theme within this project with the space enabling students and staff to come together for both formal and informal learning, professional development and occasionally social interaction.

2. Origins of the Digital Maker Space

The Digital Maker Space was funded by the Office for Students from their teaching capital fund, focusing on the enhancement of STEM teaching. It is therefore part of the timetabled teaching room offering and usage is centrally programmed by Timetabling.

When it came to finding a location for the DMS, it was easy to persuade the university that the Forum would be a good location as this then brought it alongside the library. As well as being a good physical location at the heart of campus, the library is seen as a trusted partner that isn't going anywhere. Some form of physical library will always be there and currently the Forum is the largest study space on campus, providing students with 1300 study spaces.

It has also helped the library to reinforce the narrative that it's about a much wider range of services than books and journals and has a key role to play in supporting teaching, research and wider university objectives linked to themes such as employability.

3. Introducing the Digital Maker Space to staff and students

The creation of the Digital Maker Space reflected the university of Exeter's strategic priority to invest in the shift to digital teaching. As such, the digital learning team were tasked with

launching the space, introducing it to academic staff and helping them to explore the possibilities offered by the incorporated technologies. Initially usage for timetabled teaching was relatively low but has now reached approximately 50%. Based purely on observations, the library team acknowledge that not all this teaching appears to be fully utilising the technologies on offer.

Outside of this time, the room is available for students to use and has become a popular group workspace with students valuing access to the display screens, particularly for exercises such as gaming and coding.

Digital Maker Space

Group work with shared large screens in action

Technical desks used for more intricate componentry classes

4. Creating a sense of community

The library was very keen to ensure that there were no locked doors within the building. The team feel quite strongly that the library is about community and both students and staff are welcome at all times. Locking off areas and restricting them for specific uses would not have sat well with the library's ethos. Whilst the funding restricted use of the DMS to STEM students and academics, once that initial period had passed the library was keen to ensure that students from all disciplines were welcome in the space. So far the largest users have turned out to be Engineering and Politics students.

Linked to this sense of community, Digital Maker Space has been used for staff development activities that have brought together both academic and professional services staff. This has helped to publicise the space to a wider audience and provided valuable networking opportunities.

The employability team have also embraced this sense of community by using the DMS for its 'Grand Challenges', a week set aside toward the end of each year for students to work in groups taking on, for example global issues, and proposing solutions. Each group is expected to produce a video and/or poster describing their solution and the DMS is able to support this by providing both the space and the kit.

The library also acknowledges that sometimes students just want to be together in a free space to share things. If that means groups gathering to watch the football on the large screens, then so be it, provided this doesn't disturb those trying to study of course.

5. Operational challenges

Two key operational challenges for the Digital Maker Space have demonstrated the advantage of having the space located within the library, enabling the management of the space and associated equipment to become part of the normal service delivery.

Equipment loan

The Digital Maker Space room is complemented by a range of equipment that is available for loan and which is designed to help students elevate their studies. This includes cameras, tripods, and microphone packages, everything a student would need to create audio-visual presentations and interviews. Specialised 360-degree cameras and 3D scanners are also available and can be used in conjunction with other 3D facilities on campus.

Whilst the digital learning team had created an excellent SharePoint page listing the equipment and its potential uses, connecting users to that kit proved a challenge. The digital learning team had limited capacity and prioritising their time meant that their availability to 'issue' equipment was limited to one afternoon a week. This sat at odds within a library building that is open 24/7. To begin with this resulted in a lot of 'informal' loans, challenges in knowing the whereabouts of kit, and

discussions about new booking systems. When responsibility for the space moved to the library in 2023, it became clear that a simple solution would be to loan this kit as part of normal library business. Items have subsequently been added to the library management system and are loaned and returned at the service desk, which has improved the customer experience significantly. This work has been absorbed by the library team as business-as-usual. The longer-term aspiration is for the kit to be visible on the library catalogue so that all staff and students know what is available. This will be possible once the space can move from STEM-only use and become a university-wide facility.

Staffing

The initial support from the digital learning team was limited and time-bound with fixed term posts created to support the space coming to an end in 2023. The digital learning team were able to promote the service and space widely to STEM academics and delivered all the initial training. However, they lacked the capacity to publicise the service more widely and to provide the day-to-day operation needed to utilise the equipment.

It was acknowledged that the library team were in a strong position to pick up the promotional aspects of the service as this was something they were already doing with library-based workshops. The library team therefore took over promoting the service in 2023. Promotion of the DMS isn't a separate exercise but is simply another facility promoted alongside other library activities. Providing instruction to users has, on the other hand, proved far less easy to deliver. Information and use guides on the equipment allow users to get started but the library team doesn't currently have the staffing or expertise to provide specialist assistance. For example, a student approaching the helpdesk asking what equipment and/or software they can use to create a vlog. The team feel this is partly about confidence building as well as skills development and overall capacity within the team.

6. User feedback and measuring impact

In terms of user feedback, this has mainly been observational to date although the team are currently looking at the feedback loop in relation to use of the Digital Maker Space. They receive informal feedback from their regular users and this is helping them to feed into plans for new developments on campus.

7. Lessons learned

Staff skillset

Whilst much has already been done to enable staff to take on the loan of equipment, this could be achieved within the existing library staff skillset. However, the team would like to have the time and knowledge to offer micro-training sessions to ensure users get the best out of the equipment they are using. They also acknowledge that it is important to try to establish what the student is trying to achieve with their project to ensure they are borrowing the appropriate kit. They hope to be able to build this into staff training in the not too distant future.

Self-service

Taking on equipment loan has meant the return to more transactions being 'over the desk'. Unfortunately, when it comes to self-issue and return of equipment, current library self-service machines and returns units are not fit for purpose. However, the team can see potential in the use of lockers along the lines of those found at stations and are currently researching this option as this would have the advantage of improving 'round the clock' service provision as well as releasing staff time which could then have the potential to fulfil the desire to provide students with more training and assistance in using the kit.

Replacement cycle

Ongoing funding for replacing and upgrading equipment replacement needs to be resolved. In particular, the team are aware of the impact that sudden manufacturer changes can have on service provision (for example, the removal of headphone jacks from phones, Apple lightning adaptors no longer the default). Such changes are in danger of impacting on the resilience of the space and service.

Laptops

The current standard laptop image restricts use of all laptops to within the university. Unfortunately, this means that those in the Digital Maker Space cannot loaned and used outside of campus. Whilst Exeter has a 'bring your own device' policy, what the Digital Maker Space has shown is that there is now a different requirement for laptop use as students work across campus and beyond to create project materials.

8. Next time around

Exeter is currently developing a number of new, digitally enhanced spaces and the library team believe their management of the Digital Maker Space has given them a valuable insight into what is required to launch and run these spaces successfully.

Defining the space

Being clear about what the space is for, who can use it and what equipment is available is important to create firm foundations for making the best of new spaces.

Staffing

Launching any new service requires additional time and energy and can't always be subsumed into 'business as usual'. As has been demonstrated by the Digital Maker Space, new spaces also require new skills and the staff training element should be built into the project.

Sharing of equipment

Equipment is often bought for specific projects or areas. A more open approach to sharing equipment across a range of innovative spaces would appear to be a more sustainable approach. In particular, the library team are working closely with

the Head of Space and Design to look at how a suite of makerspaces might be developed and how to avoid a siloed approach to this.

With new university and library strategies recently published, the team at Exeter feel they are well-placed to build on the experience of the Digital Maker Space and can demonstrate the effectiveness of the library managing new technology enhanced spaces.

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Digital Scholarship Studio: University College Cork's journey to support digital literacy and creativity

At a glance...

- Rebalancing space to enhance both digital and physical collections
- Developing digital literacy and graduate attributes
- Supporting knowledge and content creation across campus

1. Executive summary

The Digital Scholarship Studio at University College Cork (UCC) is a technology-rich space that is designed to be flexible. It can be used as an interactive, hands-on teaching space or as a work space when not being used for teaching. It provides access to equipment, hardware and software for creating new knowledge, and provides opportunities for users to develop digital literacy skills to support their studies, research and future employability.

Located within the library, the Digital Scholarship Studio was created as part of a partial refurbishment project and formally opened to students and staff in April 2023.

The Digital Scholarship Studio was born out a library strategy that seeks to balance dynamic, rich collections with technology-infused library spaces that support the teaching, learning and research activities of the university; and to demonstrate how access to rich collections may actually be enhanced by digital media and not threatened by it.

The services provided within the Digital Scholarship Studio are strongly supported by staff focused on understanding the users' requirements, enabling them to use the technology to the best advantage within their project. Collaboration has been key to the success of this space, engaging staff and students across a range of disciplines, as well as colleagues in professional services.

A direct insight into the services provided within the Digital Scholarship Studio may be found on their website: https://libguides.ucc.ie/digitalscholarshipstudio?menu

2. Vision for the Digital Scholarship Studio

The origins of the Digital Scholarship Studio began in 2018 when a new role of Head of Academic Technology was created within the library management team. This was in recognition that a significant review of library spaces was required to make them fit for the future. The newly appointed Head had two key tasks – to make an overall review of the spaces and propose a plan for the future, and to look for some 'quick wins' that would start signposting a new direction for the library. The first of these 'quick wins' was the Creative Zone, a flexible learning space, whilst the second was the Library Studio, a fully automated 'one touch' video recording studio.

These spaces were a 'taster' but did not fulfil the overall vision to create a space that would demonstrate to colleagues more fully how new technology-rich spaces and services would be adopted as part of core library services alongside more refined collections holdings. The vision for the Digital Scholarship Studio was to marry technology and collections, and to enhance access to those collections via digital media. The proposal involved removing the classic layout of print materials surrounded by study spaces and replacing this with a technology rich environment.

Another key aspect of the vision for the Digital Scholarship Studio was service delivery. For the space to work effectively, there was a strong feeling that it needed the right staffing and skills to support its users. This led to the creation of two new

professional library staff roles - a new Digital Learning Specialist to embed technology-rich spaces and services to support teaching, learning and research, and an Academic Technology Coordinator to manage the operations of these spaces, including the new Digital Scholarship Studio.

Digital Scholarship Studio

This vision was also closely tied to the university's strategy which is strongly focused on student success. There were clear connections between the proposed Studio and the student experience, and it also aligned with the university's emphasis on digital transformation sitting alongside a good on-campus experience.

3. Making the case

With the vision presented to and approved by the library management team, the next step was stakeholder engagement. Plans for the new space were circulated widely and received broad support from across the institution. The library had already proved itself to be a good custodian of innovative teaching space and so many academic staff were happy to buy into the new ideas. Inevitably there were some more conservative views to be won over. However, it helped that the project was only looking to transform part of the existing library and not to remove everything that was familiar.

The library management team were in the fortunate position to be able to majority-fund this project from within the existing operational budget. The remainder of the funding was allocated from an additional one-off budget allocation from the university's estates department usually reserved for smaller-scale university-wide estate projects. In terms of making the case for change to their estates team, they were helped by the fact that the existing space was underutilised. The previous approach of providing helpdesks on all floors had been replaced by a consolidated

information point on the ground floor, leaving large physical helpdesks sitting unused. The removal of the helpdesk, combined with previous collection weeding, all helped to free up space to be transformed into the Digital Scholarship Studio.

4. Creating the space

The library team worked very closely with their estates representative and the designs for the Digital Scholarship Studio were finalised in March 2022. Work began in May/June 2022 and was mostly complete by November 2022. The final touches took the longest amount of time and so official opening didn't take place until April 2023 although many services in the Studio were already functioning by this time. Equipment loan is a key element of the service and therefore storage space has been incorporated.

5. What's in the room?

Digital Scholarship Studio

19 Dell Optiplex 5090 PC's with 32' Curved monitors; 11th Gen Intel Core i7 -11700 @ 2.50GHz processor, 32 GB Ram; plus 2 Apple iMacs.

Computers in the Digital Scholarship Studio can be booked for four hours per person per day. These are the only computers that are bookable within the library. When the space launched, the booking period was eight hours, a complete day's work. However, the team discovered this often meant PCs being abandoned for hours at a time when other students could have been using them. Moving to four hours has enabled more students to be able to take advantage of the facilities.

Media Room

A multifunction media room within the Digital Scholarship Studio. Facilities include analogue to digital conversion (VHS, cassette tape, vinyl), interview recording, green screen and 3D Scanning. This room can be configured differently depending on what the user wants to achieve. Specialist software includes the Adobe Creative suite to facilitate video editing, sound editing, 3D rendering, 3D printing and scanning.

3D model

Complementing the physical space is the equipment loan service. This is key part of the whole user experience, enabling students to go out and about to collect content and then to bring it back into the Studio for completion. Loans are managed through LibCal and the more curious among you can check this out in detail on the library's website: Equipment Catalogue - LibCal - UCC Library.

Items can be borrowed for up to a week and are collected from and returned to a staffed desk, enabling the team to check with the user how well they got on with the kit they borrowed. The good news is that the team have had very few problems with broken or lost equipment. Users are careful with what they borrow, respecting that it's a free service.

Since launching, the type of equipment being loaned has expanded based on user feedback and now includes items as diverse as fashion repair kits, colour blind glasses and home energy-saving kits. The library has been very pleased to be able to broaden out the service in this way to support student life in general, not just the academic side.

6. Staffing expertise

Early in the project, the library management team recognised that staffing the Digital Scholarship Studio appropriately would be an important factor in its success. The new roles of Digital Learning Specialist and Academic Technology Coordinator were created, and they had the good fortune to appoint prior to opening the space. This meant that the postholders were able to influence the final stages of the project in terms of specifying the equipment and operational parameters.

Student success is at the heart of what the team is trying to deliver and that includes being able to:

- create sustainable, accessible, inclusive, and connected learning spaces, both physically and digitally
- facilitate and encourage digitally enabled teaching and learning
- enhance the digital literacy of UCC students and staff
- foster creativity, innovation and curiosity.

Looking at the role of the Digital Learning Specialist, it is important to note that it is absolutely not about making equipment work, although there is inevitably an element of this. The majority of their time is divided between advocacy and outreach, training and analysing user requirements. The latter is especially important as it can prevent users wasting time borrowing kit or creating objects that are not fit for purpose and it would be fair to say that the entire library team also plays a key role in this.

No one person could make this space work effectively and the management team at Cork ensured that the Digital Learning Specialist didn't become a 'single point of failure' by creating a team focused on operating the Studio. This includes the Academic Technology Coordinator whose role is focused more

on the operational side and has a strong customer-service ethos. In total five people work within the Digital Scholarship Studio team but has also been upskilling of library staff across the piece to ensure continuity and sustainability of services.

Open workshops and drop-ins also enable students and staff to gain a better understanding of how equipment, software and spaces can be used.

7. Outreach

Like many institutions, Cork has pockets of digital technologies expertise spread across different departments. The team strives to be the partner of choice within University College Cork in how new and emerging technologies and spaces can be used for innovative pedagogy. The team based in the Digital Scholarship Studio offer regular programmes, events and workshops designed to upskill students, staff and researchers in creative digital media and digitally-enhanced scholarly activities. A series of workshops is offered throughout the academic year in the areas such as sound and film editing and production; conversion of analogue media to digital; 3D printing, scanning and designing; and creative design for scholarly publications. The Digital Learning Specialist seeks ways to embed the space and services into the university's curriculum. Additionally, the team based in the Digital Scholarship Studio regularly engage with academic staff to produce artefacts to support object-based teaching and assessment. The Digital Scholarship Studio team also collaborates with other library teams, such as Special Collections and Archives, to deliver cross functional outreach activities to enhance digital access to rare and unique collections.

8. Digital Scholarship Studio in Action

The teaching activities within the Digital Scholarship Studio are wide-ranging and reflect a growing demand for support in digital literacies and digital assessment. As teaching staff explore alternative assessment strategies, there has been a noticeable increase in the demand for help with embedding key digital skills, particularly in creating poster presentations and podcasts.

Podcasting

Digital Arts and Humanities have embraced the space for various activities which are embedded into the curriculum. Their students have used the space to 3D scan and digitise cultural heritage items, as a collaborative workspace, and used a variety of digital tools and technologies to explore the library's special collections and create original outputs.

The Digital Scholarship Studio team have numerous examples of how their facilities are being used across a broad range of disciplines:

- Microbiology: 3D printed large, deconstructed versions of animal cells, T4 Bacteriophages and DNA helix jigsaw puzzles, all of which are used as teaching aids.
- Music: 3D printing to give students hands-on experience of playing unusual instruments.
- Architecture: 3D printing of building models required for teaching and assessment.
- 2D and 3D scanning of cultural heritage items: items from the Butter Museum and a medieval chalice, the latter being a pilot project and enabling staff to refine the service.
- Theatre, Nursing, and Cork University Business School: embedding digital skills in audio and video production.

3D models

As well as teaching and research activities, workshops held within the Studio directly contribute to the library's Digital and Information Literacy Framework which is aligned to UCC's connected curriculum and graduate attributes, aiming to develop students who are:

- creators, evaluators and communicators of knowledge
- independent and creative thinkers
- digitally fluent
- socially responsible

- effective global citizens, who recognise and challenge inequality.

Example workshops include:

- Editing audio using Adobe Audition.
- Video editing using Adobe Premiere Pro.
- Maker Monday Series: Introduction to 3D Design using Tinkercad, Analogue to Digital Conversion, Introduction to 3D Scanning, Advanced 3D Printing Techniques.
- Using the Library Studio for recording videos.
- Using the Rodecaster for recording audio.
- Guide to Library Equipment: How to use the Zoom H4n audio recorder.

9. Measuring impact

It has been important for the team to collect evidence of real impact to demonstrate to the wider university the worth of the Digital Scholarship Studio. Alongside the regular statistics for systems, users are asked to complete an anonymous survey form available via a QR code. They have also been able to employ a student intern to look at the service with a fresh pair of eyes and provide feedback. The intern carried out both observational studies and survey work with both users and non-users of the service. Testimonials and feedback led to the team winning the President's Award for enhancing the student experience.

Digital Scholarship Team winning the President's Award

10. Lessons Learned

As part of UCC Library's new Vision and Plan, a new space master plan vision is being finalised for the space development and library building refurbishment required for the university. This vision would see the expansion of the Digital Scholarship Studio and other technology-rich spaces to the vicinity. The master plan also calls for the creation of a Centre of Excellence for digital and information literacy, which would see the coalescing of other teams and services alongside the Digital Scholarship Studio, in particular the Skills Centre, the library's learning & teaching and research services teams. This would create a more holistic approach to supporting students, staff and researchers at the entire lifecycle of their scholarly activity. Whilst a larger digital

scholarship Studio might have been desirable at the outset, there is more likelihood of it being achieved now that the Studio has proved its worth, and as part of a wider vision for academic support.

11. Sustainability and the future

The Digital Scholarship team are aware of the need to keep refreshing their equipment and software and are in the process of building a legacy plan. They hope that the success of the Studio will lead to further funding moving forward. They also acknowledge that success comes with its own challenges – students would now like to see the kit everywhere. The development of a Creative Lab and an active learning space are in progress right now, hopefully completed by the end of 2025. The direction the library has taken in delivering these creative spaces has opened new avenues for the library, firmly establishing their role on campus at the vanguard of digital transformation and has created lots of new collaborations and partnerships.

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Learning from making and doing: taking the makerspaces to the next level at Maynooth University

At a glance...

- Building on experience to create a bigger and better Makerspace and expanding into Media Lab provision
- Using digital creativity to promote the university to undergraduates and postgraduates
- Selecting and planning space that is fit for purpose

1. Executive summary

What do you do when you already have one makerspace that is well-used and popular? Answer – create an even better one! And then start thinking about what other types of content need to be created and embark on a Media Lab to complement this. This is exactly the journey that Maynooth University is currently embarking on.

From its launch in 2015, the Makerspace developed a well-used 3D printing service which continued up until the pandemic when it had to be put on hold as a library-based service. The recommencement of the service in 2022 coincided with staff moving on and recruitment of new staff giving the impetus to take the services to another level. This has led to a successful bid to create a new, more ambitious makerspace, and as well as opening up new opportunities, the most significant of these to date being the collaboration with the Media Studies department and other interested parties to launch a Media Lab.

Building on their experience the team have been able to make the case for good locations for both the new Makerspace and Media Lab, putting their 'lessons learned' to good use.

Extensive and imaginative use of social media channels has helped to embed the Makerspace within the university conscience and opened up avenues for collaboration. Through the Makerspace, the library has been able to offer creative and practical support to an expanding portfolio of research projects across the university as well as being an active supporter in undergraduate recruitment.

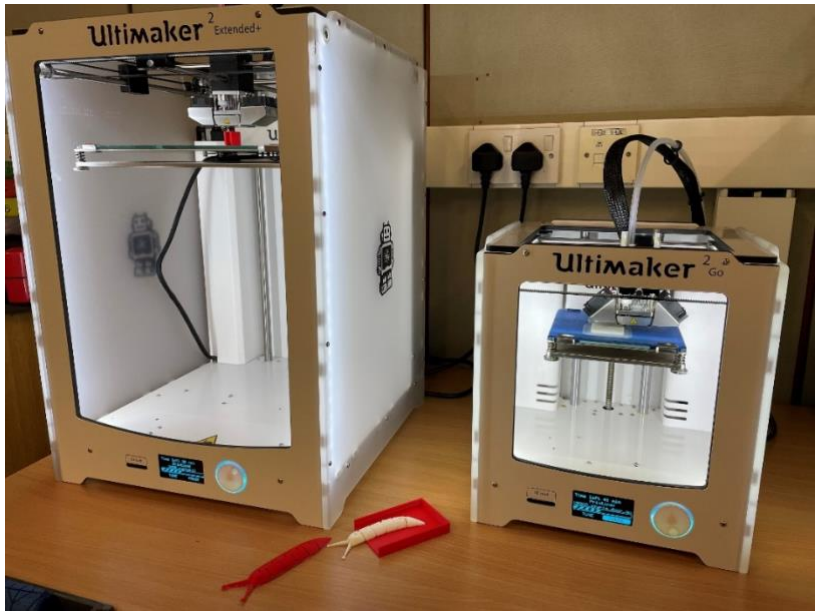
2. Learning from Makerspace no. 1

When the library IT development team at Maynooth University were presented with a library refurbishment plan that included little more than a lick of paint over their existing Makerspace, ideas began to flow about what would make this service so much better.

Initially begun in 2015, the Makerspace was a modest setup located in a small, repurposed room within the library. It primarily offered a limited 3D printing service and provided a meeting space with restricted workshop facilities for specific university departments controlled by swipe-access. The room was situated in the middle of the library building meaning it wasn't easy to find and lacked overall visibility. It was also relatively small meaning that only one activity could really take place at any one time. Like many small rooms in the centre of a building, heating and ventilation left a lot to be desired, especially once anything up to four 3D printers had fired up, increasing the temperature still further. As a workspace, staff found it less than satisfactory.

Since 2022, the Makerspace has undergone significant development. The Makerspace was no longer just the realm of 3D printing but a hub where virtual tours and experiences were being developed, and gaming demonstrations undertaken using a variety of technologies. Noise had become an issue. Contrary

to most library projects, this one wanted to make noise and not stop it. VR gaming was too loud and distracting for everyone working outside in the main library. Noisier activities such as soldering and drilling were also off the agenda.



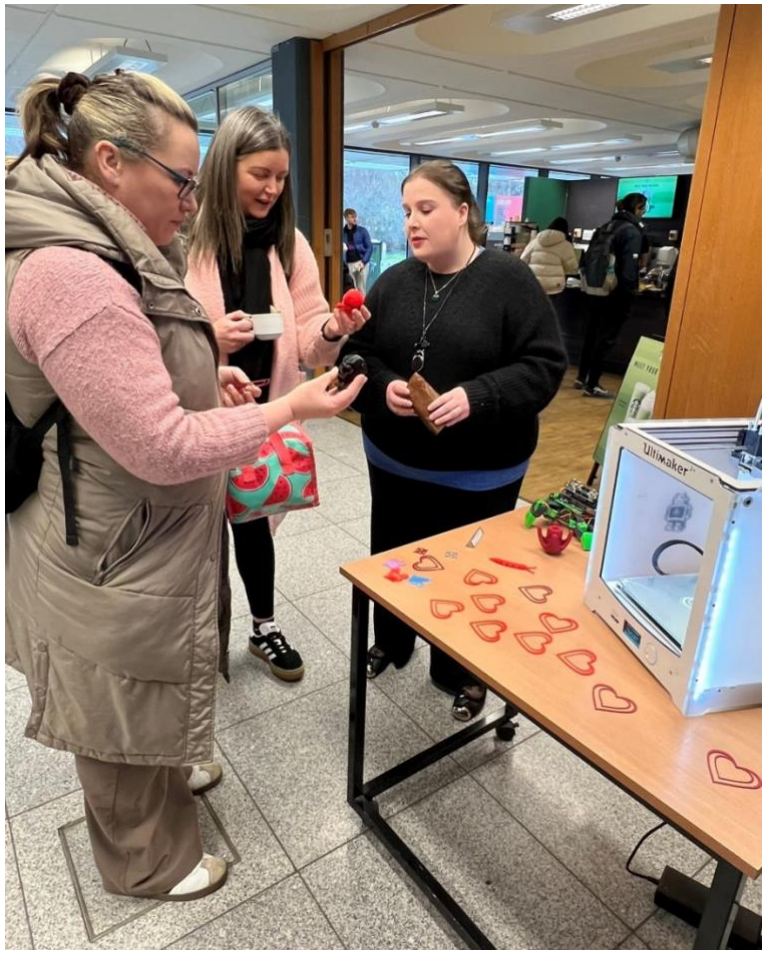
3D printers

The university was already recognising the value of the Makerspace, engaging the team in running demonstrations during open days. However, with the location of the room in the centre of the building, a physical tour wasn't feasible and so the team became practiced at shifting kit downstairs and out of the building to give virtual tours and fun demonstrations such as their claymation figures.

Claymation figures

The popularity of the virtual tours means that they have now extended beyond the library to other areas of the university and are sent out to applicants, helping to make university seem more approachable and accessible, and demonstrating how the library can contribute to the university's recruitment strategy.

These new activities were attracting significantly more users and were a live demonstration of the potential of the Makerspace as a hub for innovation and creativity, opening up the services across the whole university and potentially beyond.



3D printing for Love Data Week

3. Makerspace no. 2 – becoming fit for purpose

When the library IT development team attended the staff consultation on the library refurbishment they saw an opportunity. The case was made to the library senior management team to consider a ground floor accessible location for a future makerspace rather than retaining it in its current location. The rationale of improved accessibility and visibility, better soundproofing, more scope for multiple activities and ease of management of the space was accepted and the revised location included in the refurbishment plans.

To the delight of the team, the new Makerspace is located on the ground floor of the library, immediately increasing its visibility and provoking curiosity and interest from passersby, as well as enabling a public facing access. When it opens (Spring 2025), it will still be past the library turnstiles and be accessible via swipe card access but its location means that staff can easily welcome in visitors when required. The room is lighter, brighter and has improved layout. More importantly, it has been furnished with improved soundproofing, enabling the team to consider the possibility of doing disruptive activities such as drilling. The room is also big enough to facilitate parallel activities and the team are hoping to purchase some room dividers to provide an element of privacy when multiple activities are taking place. However, creating a Makerspace is a journey and not always a smooth one. There are still some activities the team aspire to do, such as soldering, which are currently restricted in terms of health and safety.

The new Makerspace will be equipped with state-of-the-art 3D scanning equipment, new VR equipment and gaming capabilities, allowing for more sophisticated projects and a wider range of

services. Plans include 3D scanning some of the university's special collections in order to create handling objects for classes.

When choosing equipment for the new Makerspace, the team have reached out to staff at other makerspaces for advice on what's working well. For example, what makes a good scanner to hand out to students to take out and experiment with as against a high-quality scanner for research purposes? Networking with other makerspaces has been a very useful exercise.

4. Media Lab – providing new opportunities

Neither the old or new makerspaces would lend themselves to creating audio-visual content and the team could see opportunities in a new collaboration with the Department of Media Studies that would enable the creation of a Media Lab to support this activity. This was not in the original library refurbishment plans and therefore the library and media studies staff needed to join forces to put in a joint bid to gain funding for this. This meant the library contributing to an application by the Department of Media Studies and a number of other departments to the Higher Education Research Equipment Grant (HEREG), an initiative of the Department of Further and Higher Education, Research, Innovation and Science (DFHERIS). The successful bid allowed specialised media lab equipment to be purchased to kit out the space that had been made available in the library. The very process of engaging in cross-departmental/ unit discussions about audiovisual and creative needs helped all parties to identify shared interests, areas of expertise and opportunities for collaboration.

3D printing demonstration for Research Week 2024

The timing for this was neatly aligned with the launch of new strategies for both the university and library. The work of the both the Makerspace and Media Lab fit well with the People and Culture heading with their aim to support research and innovation and, in doing so, to raise the profile of Maynooth as a place to apply for postgraduate study. Creating media rich content, particularly short videos and podcast series, are a key element in the dissemination of research. In particular, this has become a growing institutional requirement at Maynooth since there has

been a recent expansion into PhDs by practice, especially since the signing of a Memorandum of Understanding with IADT (Institute of Art, Design and Technology) and the commencement of PhD co-supervisions, largely in the areas of creative practice.

The new Media Lab, which is currently planned to open in summer 2025, will endeavour to support a variety of digital media projects, providing tools and resources for video production, audio recording, and multimedia editing that will be available during library opening hours. It is also opening up new opportunities such as undertaking engaged research and to cultivate community engagements, most recently by supporting Gaelscoil Ruairí in their undertaking of Irish language oral history interviews with Kildare-based Irish language speakers.

The Media Lab includes on-site space and filming kit for interviews and online content creation (e.g. workshops, teaching videos, etc.); exterior/on location kit for shooting beyond the university; two podcasting studios; editing suite; and an equipment storage space and collection point (staffed by media studies, two hours per week going forward). This collaboration has ensured the creation of a multi-purpose and multi-disciplinary resource that fosters collaboration and encourages creative practice.

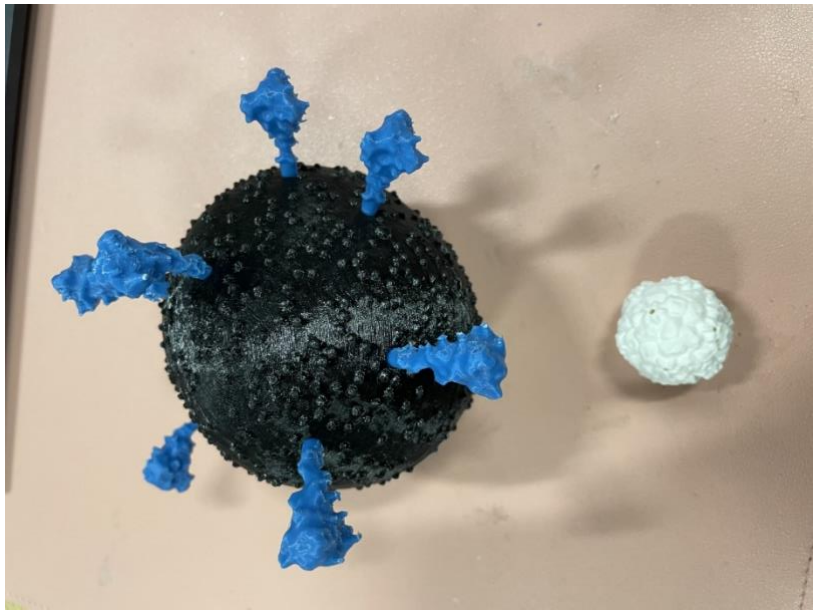
Ironically, the new Media Lab will take advantage of being in a windowless room, with dedicated lighting control. Equipment will include four camera kits, one broadcast standard camera, two high quality camcorders and one Digital Single Lens reflex (DSLR) camera. There are two podcasting studios equipped with Rode bidirectional mics and mixing desks, and soundproofed booths. The intention is that, following a short induction, this facility will effectively become self-service.

The Media Lab complements the Makerspace as a library creative space and the media studies staff are happy to take advantage of the library setting, recognising that it is very accessible to students with its generous opening hours. They also know that students see the library as a safe, approachable space where they won't be judged for not knowing something.

5. Staffing considerations

When the first Makerspace was opened in 2015, there were no dedicated staff at all and the relevant library team simply had to pitch in to assist in providing a service. The creation of new roles in 2022 to develop library technologies, including the makerspaces, clearly enabled the services to move up a level. The three staff within the library IT development team all participate in running the service alongside other activities, with the lead being taken by the Digital Engagement Curator. That said, staff are not permanently based in the room.

During a typical month the team are handling between three and ten 3D printing requests from students and staff, alongside creating promotional materials such as their 3D printed jellyfish and coronavirus model.



Covid-19 and the common cold

The Media Lab will be staffed by the audiovisual tutor from media studies for two hours a week, and they will also manage a booking system for the kit. The AV servicing is managed by the Head of the Department of Media Studies. The AV tutor can provide training and inductions on the AV kit and, if there's interest, offer 'train the trainer' sessions for anyone in the library who'd like to do training sessions in house. This will help to fast-track building expertise across the library team. The library has plenty of reasons for developing its own video content so they think there will be plenty of enthusiasm for this. Within the Media Lab, there will also be a requirement to run health and safety inductions for users and workshops.

The team feel that they are currently managing the workflow but might have to rethink how services operate if this suddenly changed.

6. Sharing the good, the bad and the ugly

Christmas gifts

Social media plays an important part in promoting the service. The team take a very open and honest approach, celebrating their successes on Instagram with their #makermonday and their failures with their #failfriday posts, all of which can be seen @MULibraryMaker on X, Instagram, BlueSky and TikTok. This activity reflects the overall ethos of experimentation within the Makerspaces.

7. The future

Once the Media Lab is launched, the team are anticipating seeing changes starting to be made in using audio and video in assessment. In the new Makerspace, they intend to offer 3D scanning and really want to use this to open up opportunities beyond STEM subjects. The university is also planning a new School of Health and Medicine and the team are anticipating a significant rise in demand for facilities such as VR when this happens.

> *"Our aim is to see a rise in collaborative projects, workshops, and events, fostering a vibrant community of innovators and creators between students, faculty and the wider communities".*
> Heidi Campbell, Digital Engagement Curator, Maynooth University

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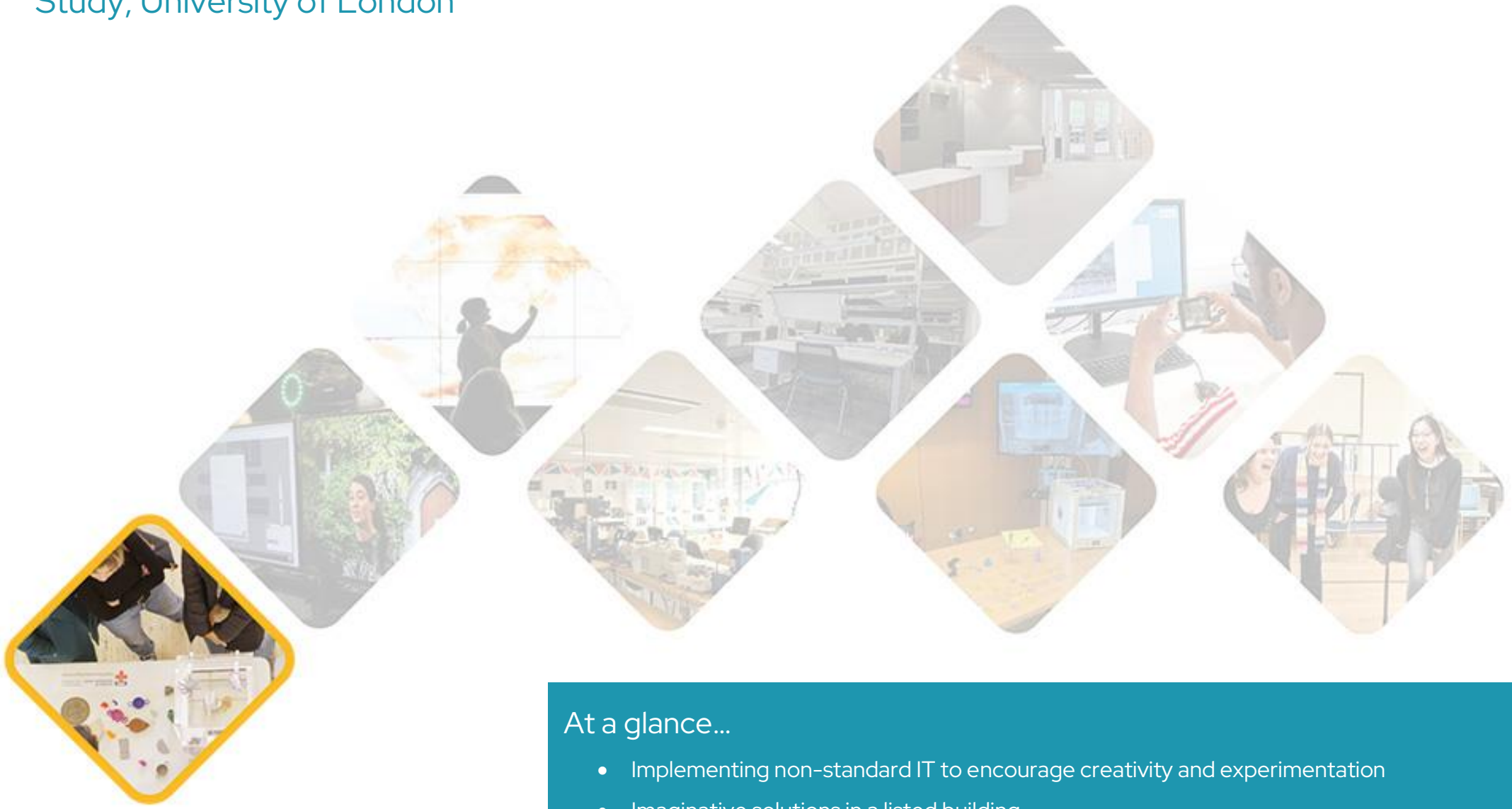
Makerspaces not just for libraries: creativity and collaboration at the School of Advanced Study, University of London



At a glance...

- Implementing non-standard IT to encourage creativity and experimentation
- Imaginative solutions in a listed building
- Demonstrating the opportunities for collaboration and research generated by new technologies that open up the Digital Humanities

1. Executive summary

The MakerSpace established by the School of Advanced Study within the University of London has enabled the Digital Humanities team to explore and experiment with new technologies. Located outside the library, the team has nonetheless worked with library colleagues and others to foster new collaborations that highlight the potential for technologies such as 3D printing, computer-aid design work and photography within disciplines that tend not to have a 'technology first' approach.

The creation of the space has involved relationship building with both the estates and IT teams, reflecting the complexities of trying to establish a technology enhanced space within a listed building and also the need to experiment.

Overall aspirations for the MakerSpace are to use new technologies to generate new research collaborations within the humanities, with the added option of opening up consultancy opportunities.

2. Why establish a Digital Humanities MakerSpace?

The School of Advanced Study within the University of London unites eight internationally renowned institutes in the humanities and a number of centres of research excellence and expertise. The School has a national remit to promote and facilitate humanities research and is based in Senate House – more of which later.

The drive to create this MakerSpace came from a desire to give Digital Humanities an identifiable space where researchers and practitioners could come together. The team had visited the digital humanities lab at the University of Exeter and were impressed by how they utilised their space. It prompted staff to reflect on how they might create a similar space in Senate House, whilst acknowledging constraints around the building which would mean things would need to start in a more low-tech, 'DIY' fashion. However, that didn't mean that they couldn't still enable students and researchers to try things out, be experimental, with no pressure to succeed or judgement if it didn't work out. They also noted the close working relationship that had built up at Exeter between the digital humanities lab and the library and archives team.

This aims and objectives set out in the funding bid were to:

- Establish a Digital Humanities MakerSpace to offer consultancy, collaboration, training and teaching services in the Digital Humanities and heritage sectors.
- Build a reputation for training and expertise in imaging, modelling, 3D capture and heritage collaboration.
- Offer advanced digital and equipment training and experience as part of PhD provision in the School of Advanced Study, as well as research training for the national community.

Funding for the creation of this space came through a competitive, internal funding process intended to strengthen

partnerships within the university and with external partners, promote sustainability, and enhance research culture.

3. The trials and tribulations of creating an innovative space in a listed building

Even if you've never visited, the chances are you will recognise Senate House as the 1930s art deco building that has appeared in many films and on TV. It was designed and built in an era that doesn't naturally lend itself to modern day IT and accessibility requirements – compromises often have to be made and imaginative solutions sought.

Having acquired the funding to establish the MakerSpace, the debate was had as to whether this should be located in the library or elsewhere in Senate House. Access to the library requires a membership card and although external visitors are welcomed for events and exhibitions in the library, it was decided that a space outside the library would provide even easier access to the widest range of users. The space that was identified also had the added benefit of being set slightly apart from other activities meaning that, if events became quite noisy, they wouldn't be disturbing others.

Rather than requesting a huge refurbishment, the team decided to start small and see how things evolved. This wasn't a big estates-led project but the estates team have played a vital role in ensuring its success. Initially their role was in providing some furniture. The Digital Humanities team wanted to prioritise spending on equipment rather than furniture so they approached the estates team to find out if they could re-use some existing tables and chairs. At the very least, they felt these would work for a year and then something more sophisticated could be purchased if it was felt necessary.

After six months of working, the team found themselves calling in estates for advice on the echoey nature of the space. Senate House is full of high ceilings which meant the noise of, for example, a training session made it impossible to have a small side conversation with someone. Estates were able to suggest some sound-proofing materials that were sympathetic to the building and which have helped enormously in facilitating parallel conversations.

As the team began to bring in their equipment, they also realised that there wasn't sufficient power and data in the room. A further appeal to estates led to the drafting in of a specialist contractor with experience of running cabling in a listed building. A novel solution involving running cables through disused heating ducts meant that the space got the necessary sockets required and the integrity of the building was maintained.

It is also worth mentioning that the team have an understanding with estates that they clean their own room. This is because workshops can become quite messy!

4. But that's not 'standard'!

Creating and operating the MakerSpace has also led the Digital Humanities team to develop an understanding relationship with the IT team. Cybersecurity increasingly means locked down desktops and understandable restrictions of what can be plugged into networks. However, this sits at odds with the need to experiment for research purposes, whether that be trying out new kit or software. As a result, the Digital Humanities team has developed a compromise with the IT team – they can purchase whatever they like for the MakerSpace, but equipment is only allowed on the public network. This allows for more rapid experimentation, without impacting security. This means that they take responsibility for all their own updating, maintenance and repairs. Inevitably there are occasions when further discussions are required so that all parties have a clear understanding of what is intended, and much time and effort has been spent on building this relationship and goodwill.

5. Writing the shopping list

When it came to purchasing the initial equipment for the MakerSpace decisions were based on making the space welcoming and easy to use. The team wanted people to come and experiment and not be fearful of breaking something. The space is also about encountering this technology and giving people the confidence to move on to the next steps in their research – it is not about being cutting edge. It was felt that if usage had been proven, something more expensive could always be purchased in future years.

The initial shopping list therefore included:

- two high-end iMac Pros (with excellent graphics engine) and two touchscreen monitors
- a large, wall-mounted display
- photogrammetry equipment including turntables, several small digitial cameras, and tripods
- a professional DSLR camera for doing both photogrammetry and other kinds of digitisation that a book scanner cannot do as well
- several lightweight book scanners
- recording and conferencing equipment (microphone, sound padding, remote controlled camera) to facilitate online training and hybrid events
- 3D printer.

Equipment was also chosen with the potential lifetime and sustainability in mind. Everything was purchased with an initial lifespan of at least five years.

6. Staffing an active space

Whilst the space is overseen by the Hub Manager, the MakerSpace is only one element of this role. Others in the Digital Humanities team also play a crucial role in staffing the space,

including the MakerSpace staff lead that submitted the original bid and the research technical staff in the team. The Manager takes care of stocks, repairs, updates etc, and collaborates with the staff lead in scheduling workshops and regular training activities. Research staff, both within the Digital Humanities team and across the university, have developed a focus on 3D cultural heritage work utilising the space. More recently, two part-time (three hours a week each) postgraduate students have been employed and as they are becoming more familiar with the space, they are starting to help support workshops.

7. Digital Humanities in action

The team are running regular workshops and inviting staff in to explore the space and equipment on offer which is very much in line with their original objective to offer training and teaching services in the Digital Humanities and heritage sectors. The space has already demonstrated how new technologies can open up new insights into humanities research and stimulate new collaborations.

3D Book and Print Lab

This project brings together book historians, people interested in print culture and 3D printing. It explores ways of merging of traditional letter press techniques and with modern, 3D printing approaches. It has brought together colleagues from the library alongside those from the Institute of English Studies and others with an interest in printing.

Clay and the Classics

This workshop involved analogue 3D printing working with clay. Students experimented with making inscriptions in clay, using both carving and 3D. They were also joined by other experts, including a stone mason. This workshop is a good example of how the team is meeting its objective to build a reputation for training and expertise in imaging, modelling, 3D capture and heritage collaboration.

Wayne Hart, a professional letter-carver, typographer and sculptor, demonstrates how to execute a stone inscription.

A staff member demonstrates how to use the 3D printers at a public engagement event.

A miniature 3D-printed printing press

8. Feedback and impact

Feedback from workshop participants and other users has been uniformly positive and confirms that the team are indeed building their expertise and reputation for training within the Digital Humanities. There are so many different ways for researchers to begin using digital tools in their research that it can often be overwhelming, especially for those in the humanities, to know where to start. This space has broken down barriers by enabling people to have a small taste of what can be achieved. Lots of comments have been along the lines of, *"I wouldn't normally do this but it's been nice to come and see how it might work for my research*".

Researchers have also found it useful to be able to experiment and then quote the success of their experimenting with their manager when considering new research bids.

This feedback all goes to show that the effort that has gone into ensuring the space and equipment are fit for purpose has paid off and enabled the team to develop at high quality service that is respected by the research community.

9. Next time – what would you do differently?

The team would like to have brought the student support staff into the project earlier. This would have helped to maintain momentum from workshops and training courses. It was hard for the existing team to find the time to keep promoting events and it would also have been nice to include more 'drop-in' type

activities. These could have been facilitated by student support staff.

When the space opened, 'getting to know you' events were organised. Again, this needs time and, alongside other work, it was difficult to repeat this. Such events need to be run regularly, at least annually, and again it is a time factor.

The accessibility of the space (through numerous heavy art deco doors) isn't ideal. It is possible that the MakerSpace may move elsewhere in the building at some point in the future, which would make it more accessible to users.

10. Evolving the space in the future

A future consideration is revenue generation. At the moment, the amount of usage in the space means any attempts to implement cost-recovery (for example, by charging for 3D printing material) has not been worth the time it would take to manage. In the future, if usage grows, there may be a need to revisit that decision.

As well as a possible alternative, more accessible location, the team would also like to see a closer working relationship with the library. The library team have already approached them to carry out some interesting projects and there is clearly more potential here.

Leila Kassir, Academic Librarian for British, US, Latin American & Anglophone Caribbean Literature at Senate House Library, highlights the value of the MakerSpace:

> *"Working with colleagues from the MakerSpace has been beneficial to library staff in various ways, including: the provision of training on specialist areas such as digital text mining, and collaboration on online exhibitions, allowing us to add alternative content in the form of 3D models".*
> Leila Kassir, Academic Librarian for British, US, Latin American & Anglophone Caribbean Literature, Senate House Library

Argula Rublack, Academic Librarian for History at Senate House Library, also pointed to benefit for training within the library:

> *"Each year we host student placements from Digital Humanities courses in London and the MakerSpace allows us to offer a wider breadth of training with colleagues across the university".*
> Argula Rublack, Academic Librarian for History, Senate House Library

This is literally a case of 'watch this space'.

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Real world learning: how the University of Winchester is creating library space to prepare students for a technology-rich workplace

At a glance...

- A business case that is shifting the library from being a content store to a vibrant, technology-rich learning environment
- Collaborating with estates to make this a reality
- Inclusivity and sustainability embedded into the project and design

1. Executive summary

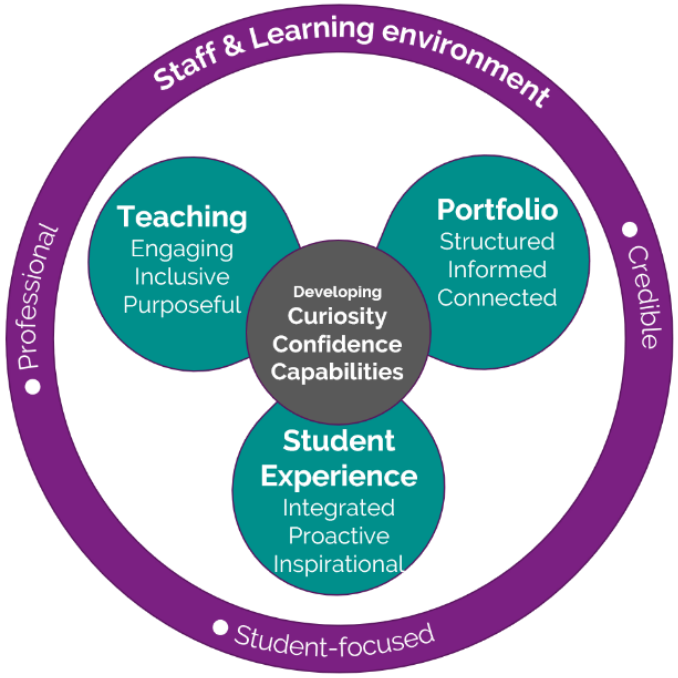
The Martial Rose Library (MRL) at the University of Winchester is currently undergoing a significant refurbishment project that will see its space move from being collection-centric to one that is strongly orientated toward supporting the University's Education and Student Experience (ESE) Strategy.

This, working with other enabling strategies, looks to reframe completely how students are taught, and how to support independent learning, enable creativity and knowledge creation. The vision, and delivery of the Martial Rose Library, sits fully within this strategic framework. In fact what is being achieved in the project has actually shaped some of these strategies.

What sets this refurbishment apart from others is its focus on real world learning. Whilst there is an increase in group study spaces to enable collaboration, there is also the creation of specific spaces that mimic a classroom, an office and meeting space, where students can really get a feel for what it's like to be at work.

2. From collection storage to skills champions

The extensive refurbishment of the Martial Rose Library is in the process of transforming it from an outdated space that was focused on being a place for collection storage and not on the real needs of its students. As Library Director Fiona Grieg has said, *"today we (libraries in general) need to shift from providing space for dormant artifacts and instead play an integrated role in the opportunities that our students have to thrive as independent learners and self-assured, creative, experienced and curious graduates. In doing so, we are installing technology and tools that will allow our academic colleagues to practice and build their own skills to start embedding new ways of delivering teaching and assessment, knowing that there are makerspaces, 3D scanning/printing, immersive learning spaces, large multi-person digital environments for creation and visualisation available to support them. The library is no longer a repository for existing knowledge but now a place that still has that (of course) but more a destination where people can explore the "art of the possible" across all subject areas."*



As this project gives no additional footprint to the space this has meant downsizing the collection, compressing the materials and removing most "librarians" from the library. In its place spaces have been designed to support the current teaching and learning – so more collaborative spaces where students can work together on documents/presentations etc casting to large screens. In addition there will be dedicated "VR experience" booths, spaces designed to emulate various types of post-graduate work environments, including a mock classroom and rooms set-up and designed for online meetings and interviews.

The other key element is the role and responsibility the library (alongside everyone else in the university) has for student wellbeing. Winchester will be providing not just a "self-serve" kitchen but also some "reset rooms" where people can just spend a few moments recentring.

In short, the library at Winchester is now set to emulate what perhaps everyone now aspires to have as their "workplace office".

3. Out with the old

And in with the now not so new! At the beginning of 2020, the Martial Rose Library consisted of two distinct sections - the original building (opened in 1970 which then had a single floor extension added in the 1980s) and an extension constructed in 2000. Effectively the library was a square concrete box with two sections that didn't function as a single building, and with accessibility challenges such as an external metal staircase. Each section had a different building management system leading to the classic problems of one half always being too hot, the other too cold, not helped by single-glazed windows which were both bad for the environment and bad for everyone who had to work in there; and of course, like many buildings of this era the plumbing and sewerage system left much to be desired.

Library learning 1980s style

From a library service perspective, both sections had been designed to house extensive print collections, facilitate the circulation of those collections and to accommodate staff. It was becoming clear that the space and services on offer from the library were increasingly out of step with what was required to support Winchester's approach to learning and teaching which focused on three principal domains:

- Imagination: sparking innovation and creative thinking

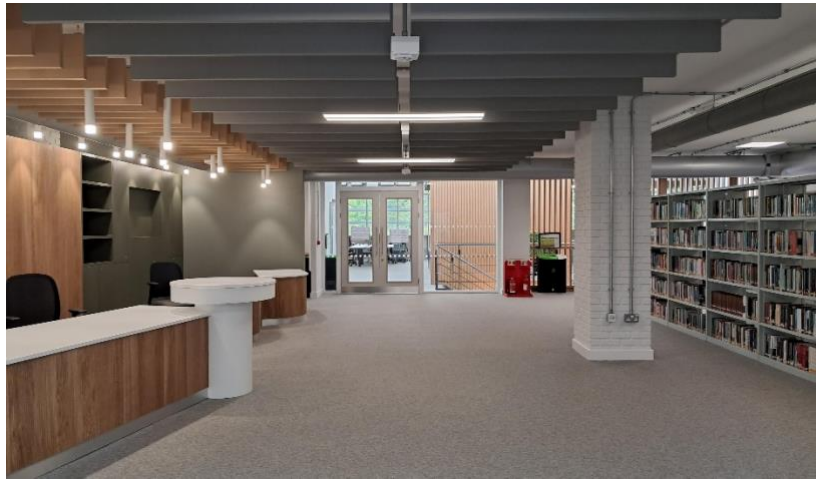
- Expanding Horizons: using innovative, evidence-based practice
- Wider World: giving students the skills to navigate between work and study and preparing them for future employment.

Something different was needed and the arrival of a new library director and the opening of a new building on another part of the campus paved the way for the Martial Rose Library refurbishment.

Collection centric approach of previous decades

4. Elsewhere within the university

A new building at the West Downs Campus which opened in 2021 emphasised the Martial Rose Library faults. However, it also provided the opportunity to test out some ideas. An innovation space was created by stripping out 30 PCs from what was otherwise a boring, grey computer lab type space and replacing these with a Hypervision 3D image display, 2-sided immersion projection wall and a large multi-person touch screen. The room is also big enough to safely accommodate VR experiences. It was designed for student led use and not to be used as a teaching room. This started to feed into the thinking about the Martial Rose Library and how it could be transformed.



Impression of the new front-of-house at Martial Rose Library

5. Initiating the refurbishment – being 'shovel ready'

With the arrival of the new library director, the decision was made to pivot from being a resource store to a student space. This was critical in building a successful business case. The business case needed to reflect the change in teaching portfolio that had happened over the preceding decades, along with changes in the student demographic. In terms of teaching delivery, the emphasis had shifted towards mixed-modal / self-directed learning and new assessment strategies were being explored – the written word was no longer king (at least for many disciplines). On top of all that there was the increasingly urgent requirement to meet sustainability and carbon targets, and above all else the building needed to be future-proofed.

The new library director started opening up conversations with the estates team. Immediate concerns over the leaking flat room, the lift (which no longer conformed to BS standards) and energy wasting attracted an initial internal capital award but there was no way this was going to be transformational. However, the library and estates teams continued to develop ideas and were sufficiently far ahead that when the Office for Students announced its next round of capital funding, Winchester was in the strong position of having a project ready to submit and was successful in gaining £5.8M funding. As the Director would describe it, they were 'shovel ready'.

6. Playing the bidding game

Nearly every single university has buildings in the same situation as the "old" Martial Rose Library. Universities are all facing the downside of the great "boom" of capital projects from the 1960s to the 1980s, and these spaces are all now showing their age. So how does a simple "library" update get almost £6m?

The business case to the OfS stated:

"This project will see a complete overhaul of the existing Martial Rose Library building at the heart of the campus, enabling the university to provide an inspirational, state-of-the art learning and collaboration environment for students and staff. It will support the growth of courses in strategically important subjects such as health and wellbeing, a priority for the university and the NHS regionally. The new building will enable academic staff to reimagine learning, adopting new methodologies and preparing students for the workplace. Students will have access to high-quality and dedicated spaces to discover, collaborate, enrich and create knowledge."

This might all read as rather dry but it's important to note that the word 'library' does not appear in the bid (other than in the title of the existing building).

The "political" environment over the last few years has not been favourable to the stereotype of libraries, nor indeed the disciplines traditionally considered as "bookish". Covid has also made the policy makers believe that most people can work at home, and so the idea of having a place for people sitting quietly

typing away at a laptop … well that's what coffee shops are for, isn't it? Reading the call, it was clear what the Office for Students saw as valuable:

- "high cost" subject areas, focusing on STEM healthcare and technical disciplines. As a traditional "liberal arts" institution the STEM piece was not a match, but Winchester were doing some healthcare and had been successful in getting funding from Health Education England so the bid linked into that.
- Facilities designed to meet specialist needs for employers. This is where an explanation of how the different types of spaces, and the ability for students to build work skills was embedded into the design. Having the local Hospital Trust, as well as Hampshire County Council as key partners in the university and programme delivery was important.
- Facilities that will support development of flexible provision. Again this is an area where the "future proofing" of the spaces is important. Providing students with spaces they can "re-immerse" into things learned in the classroom/placement, where they can work together to create, critique and present, and where they can engage with hybrid and online activities which they may not be able to afford to do were it not for spaces like this.
- Demonstrate value for money and support environmental sustainability. The square meterage that could be "freed-up" from stock and library staff office and turned into high quality and flexible student learning spaces, as well as the basic building improvements were all compelling points for Winchester.

As is always the case with funding, there was not a huge amount of time for partnership and wider engagement, but there was a core group who were responsible for the bid:

> *"To provide the building technical issues and outline costs needed to achieve the physical improvements. To quote all building regulations and requirements".*
> Director of Estates

> *"Tell the story", write the first version of the bid focusing on the benefits and painting the pen pictures of what the investment would achieve. The first job here was to persuade the internal audience that this was a "flyer".*
> Director of Library

> *"The "bean counter" assuring the university processes are in place and providing the "assurance" elements of the bid".*
> Deputy Director of Finance

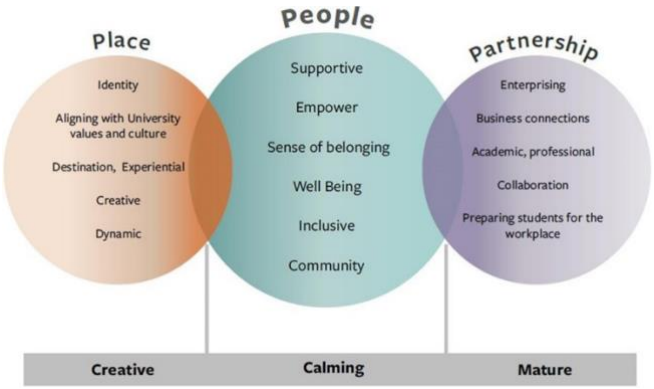
Following the initial draft, the Head of Development (fundraising) was also brought in who then undertook the "top and tailing" and ensuring a consistent "voice" across all areas of the bid.

The addition of the Head of Development to the group came after the Executive Leadership Team approved the initial bid. This then had to be presented to the Board of Governors to approve the application. As the Board had already endorsed the internal refurbishment work this was fairly simple. As the timescales were outside the usual Board sequences, the team worked with the Chair to approve submission.

7. Delivering on the vision

The refurbishment project has been carried out in two phases. The first delivered ready for September 2024 and the second will complete in the early summer of 2025.

The design concept is based on the core values from the university's strategic plan:



It should be clear how each space fits in with these concepts.

Significant new and distinctive areas include – or will include once complete:

- 12 new collaborative spaces
- three large seminar rooms
- two 'retreat' rooms
- dedicated virtual interview rooms
- Makerspace
- Digital Humanities
- self-service kitchen shared by students and library staff.

8. Supporting real-world experiences

Winchester University's strategy is heavily focused on immersive ways of teaching and learning, providing experiences that equip students for the world of work and creating spaces where students can experience this outside of the classroom is at the heart of the Martial Rose Library refurbishment. For example, using makerspaces to create physical artefacts.

Within Phase 1 students are benefitting from a corporate office area with stand-up desks, sofas and individual workstations as well as a Board Room where they can rehearse pitches. A new Makerspace is available which accommodate 3D scanning, printing and visualisation. As of now (June 2025), these spaces have only been operational for one term so it isn't possible to

provide examples of use at this early stage but do watch this space.

9. Inclusive furniture by design

An important feature of the refurbishment project has been to ensure full accessibility. Selecting the right furniture to support students in using the new facilities has been as important as selecting the technology itself. For example, the new Digital Humanities area includes a touch screen on a hoist so that it is fully accessible. Existing relationships with key "AV" providers were scaled up. The activities piloted in the Innovation Space in West Downs had allowed lessons learnt as to what was needed. A successful visit to the BETT show in 2024 allowed a connection with a vendor for PCs which in turn enabled a link to their 3D print offer. The team were also successful in securing the BETT demonstration model of the next generation 3D printer at a very good cost.

As for the other tools in the Makerspace, there will not be a team of specialist staff supporting any of the spaces in the MRL, so the tools were selected for easy skills gain and self-help support. The team will look to build capabilities as part of the already initiated digital skills activities for staff and students.

On each row of workstations there is a sit/stand desk to allow students to determine the height of the desk they want. While supporting students in mobility chairs, it also allows those students with other limitations or preferences to work comfortably. Individual study booths are large enough to use comfortably when a student is in a wheelchair, which was certainly not the case with older furniture. The self-service kitchen coming in 2025 will have a mix of "bench" type seating alongside easily moved chairs to allow any student to sit with a group of their friends to eat as part of the group. Feedback from the Head of Student Support and a team leader for Student Disability has praised the level of detail that has gone into the furniture design and planning, all of it going above and beyond what is often delivered.

Overall, the furniture choices uphold the university's ethos of how students should study:

- Individual but not alone: open areas where groups of students can choose to work together on their own individual work but with their friends, creating a sense of community and belonging.
- Collaborative and creative: individual carrels were removed and replaced with 1400mm desks with high quality task chairs which are easy to adjust. Collaboration booths were added.

10. Coming in 2025

In Phase 2, due to complete in May 2025, students will benefit from:

Mock classroom

Enabling school practice on campus, with cameras to record student's own teaching and relaying this outside to a group feedback area. It will be situated near more traditional teaching resources. This will build student teacher confidence, enabling them to practice in their own time. It will include a touch screen identical to the ones in schools. As well as aiding their assessment, it will mean a student can walk into classroom and feel comfortable and confident.

Meeting room

Simulating an office to enable students to practice difficult conversations. This might sound like a minor addition to the facilities on offer but this encompasses things such as teacher/parent "conferences" around issues with young people, forensic students having to tell police that the evidence that they were hoping for had not been found, and sports coaches having to tell a client that they are not going to be able to continue or do not have the necessary skills or talent to succeed. This is developing vital skills needed for students to succeed in their future careers.

Virtual interview rooms

Set-up to allow plug and play high quality AV lighting and sound to allow students to be interviewed, or indeed to conduct interviews as part of their studies/projects.

Self-service kitchen

Again this will simulate a real-world working environment and, more broadly, simply support students whilst on campus.

Reset room

With reduced lighting, blankets and soundscapes. There will be an automatic flag to the enquiries team if this is in use so that a wellbeing check can be made.

11. Staffing implications

Winchester currently has a converged library and IT team. All roles have been reviewed within the past four years to become fully library/IT skilled. This enabled a seamless project team to be formed from within the department covering the IT and audio-visual requirements alongside the library. This team has formed a close working relationship with the estates team, to the extent that they almost feel honorary members of estates.

Staff office space has been removed from most of the refurbished building, facilitating the consolidation of workspace for staff from both the former library and IT units. Five staff offices and some workrooms have been reduced to a single staff office. Only four staff have roles that mean they have to be permanently located within the building to fulfil their work. The enquiries team has a hot desk base. Overall study spaces will have been increased by 46% when the project completes.

In terms of supporting the new spaces, the digital skills team will be providing a mix of 'how to' and 'what to use' advice for students. The faculty business partners are in a good position to carry out business analysis for proposed projects and to advocate use of the new spaces.

12. Engaging staff

All library and IT staff have been invited to get involved with the refurbishment project. As well as the high-level project team, smaller working groups have been formed focusing on particular topics and facilities eg. The Makerspace, communications, digital arts and humanities. As well as selecting the most appropriate team members to be involved in these they were also open for any "library" colleague to volunteer to be involved in them. Workshops have also been run for staff on the interior design proposals for the building.

13. Measuring impact

Given the project is currently only partially complete, methods for evaluating the impact of the spaces are still evolving. Having now experienced the first semester assessment period, the team has seen a very busy library with the types of spaces used changing as the semester progressed. Two rounds of surveying opinions on the spaces (and specific types of furniture/spaces) have been arranged as well as basic "click" matrix.

The library's digital strategy is all about increasing the digital capabilities of staff and students, and how this can be tied into the new assessment regime which is focused on making assessments real-world, relevant, realistic and robust. If students can practice for their assessment within the library spaces and attainment is good, this will be proof of impact. Current employability rates are good but it is hoped that access to these new, innovative spaces and their associated technologies, will improve this further.

14. Lessons learned

Having a phased project has meant that the team has been able to learn from the first stage of the refurbishment and try to apply these lessons to the second phase. Student engagement with Phase 1 had been minimal, therefore the team increased its efforts for Phase 2, carrying out UX work which will influence the next furniture choices.

The Student Union have been involved with the project since the start but their engagement hasn't been particularly high. They have expressed the view that they trust the library to do the right thing.

Although the team have an excellent working relationship with their estates colleagues, there is still a feeling that there needs to be a better understanding on the part of estates regarding the level of knowledge sitting within the library/IT team.

Most importantly, the team at Winchester have benefitted from being 'shovel ready'. They are already thinking ahead to ensure they have future projects in their back pocket to capitalise on any future funding opportunities.

15. Sustainability and lifetime of the spaces

New double glazing, insulation, ventilation, and lighting throughout the building will make all the spaces more pleasant for study and will create a more energy efficient building overall. It is noticeable that only four feedback/complaints have been received in Semester 1, three of those around temperature (compared to many tens of these by the same point in all previous years). One complaint about the narrowness of the central stairs meant reminding people that the stairs have not changed, they have always been that size. Whilst only a few positive comments have been received, this compares to having none in any previous years which is a welcome change. The comments the team have received during the open days (four since opening) demonstrate that something has been put in place that future students find attractive – and that is while they have to walk through a "building site" to get to the completed spaces.

16. A sustainable approach

The Winchester team endeavour to embed inclusion and sustainability into all they do and a number of decisions taken within this project reflect this.

Docking stations

There are no fixed PCs within the building. Instead there are docking stations throughout, recognising that these have a longer shelf-life than a computer. This also acknowledges that keyboards and mice are always going to have lots of use and therefore have a different lifespan compared to a PC. Laptop loans are available as a backup to personal devices.

This approach has been adopted based on the fact that most students now have their own laptops and prefer using them. The login logs from open access PCs in the library showed that they were only in use less than 30% of the time. In terms of cost, replacing these would have meant around £450 per PC whereas the docking screens cost around £120. This helped to manage the already tight budget. Finally, from a cyber security perspective having so many "open" Ethernet connections in a building which is still community centred is far too dangerous. Removing an easy way to plug something malicious into an open network point is a critical element of cybersecurity.

Large screens

Because the collaborative rooms have all been configured to allow screen casting, it is hoped that these will have a longer lifespan (estimated seven to eight years) than if users were having to plug in cables, encountering the usual hazards of connectors going into the wrong holes.

Furniture

Old furniture has been recycled via a re-love it organisation who also transported the new furniture, thereby saving on transport costs and fuel consumption.

Room naming

And finally, in recognition that the functionality of spaces will change over time, the decision was taken to name rooms and spaces after local Areas of Outstanding Natural Beauty, and local fauna and flora thereby avoiding areas sounding outdated or obsolescent, or having missing numbers or letters.

17. An adaptable future

It is clear from the ambitions of this project that it is the intention for the library space as whole to keep pace with changing styles in learning and teaching, embracing the technology as it develops within the workplace.

What both the Innovation Space and the refurbished Martial Rose Library shows is that libraries have a role to not just support the current needs of students (or the remembrance of what the library should be based on an academics own experiences) but to provision spaces and services where academics can explore and develop their practice.

"As we move forward over the next five years the strategic framework of the Education and Student Experience Strategy, the Digital Strategy and the Estates Strategy all have requirements, actions and expectations from the spaces. The excitement comes as we deliver those, but also start to shape the next strategic window ..... what will we look like by 2035?" .
Fiona Greig, Director of Knowledge & Digital Services

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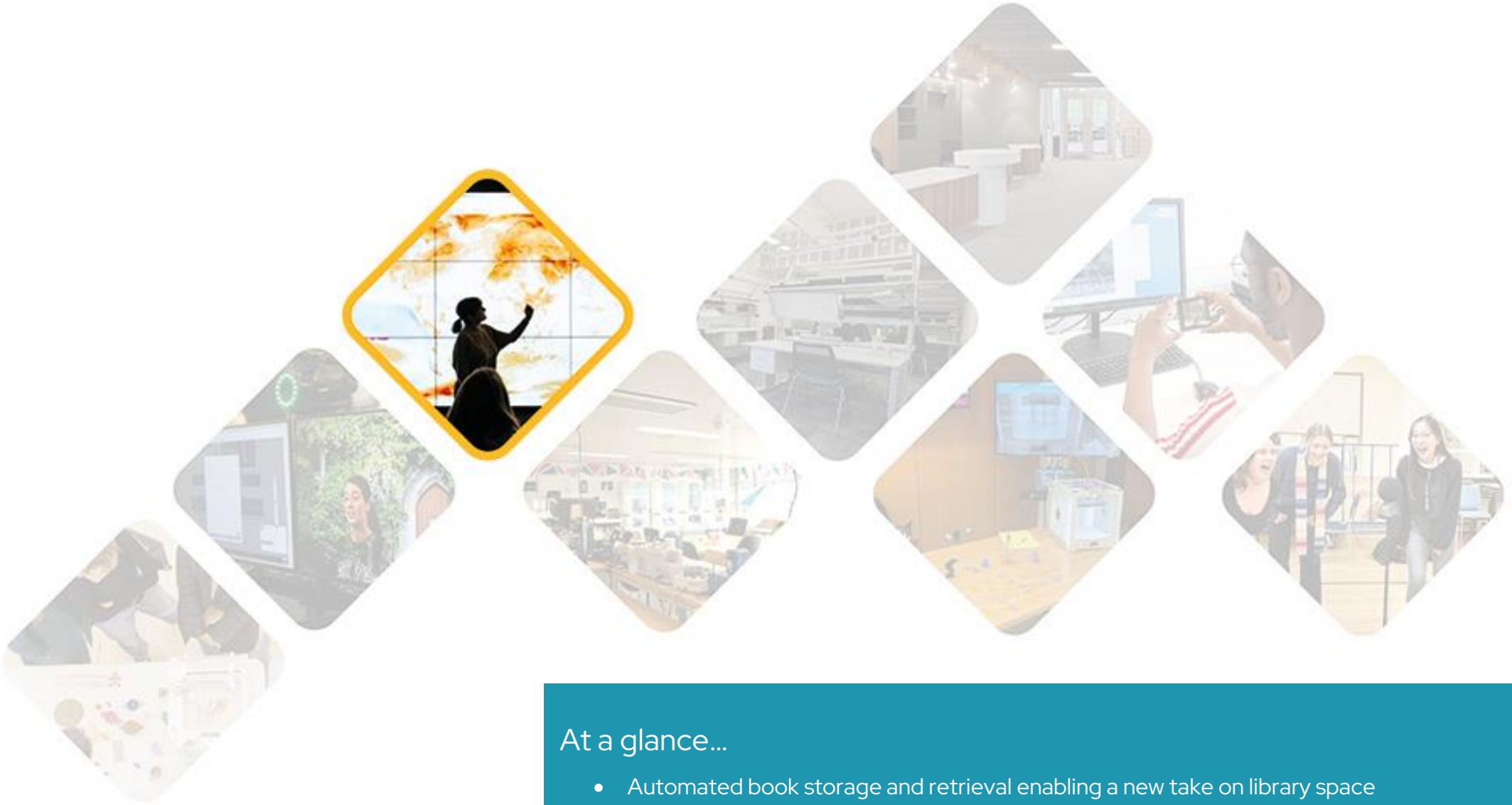
The Edge: Digital Scholarship at the University of Limerick



At a glance...

- Automated book storage and retrieval enabling a new take on library space
- Maintaining momentum – keeping spaces 'cutting edge'
- Learning from international exemplars

1. Executive summary

Opened in 2018, the major extension of the Glucksman Library at the University of Limerick (UL) was designed to be technology-infused from the outset. It now houses a range of spaces under the digital scholarship umbrella, referred to as 'The Edge'. These include a makerspace, greenscreen room, media production labs and a data visualisation lab. PCs with specialised software and double screen monitors are also available for student and researcher use.

More recently the library has introduced wellness technology – energy pods, study bikes and height adjustable desks. The University of Limerick has no intention of standing still in this arena and is currently working on projects to deliver an Immersive Lab, Creative Lab and an active learning space, all of which will be opening during 2025.

Limerick is unique in having the only automated storage and retrieval system onsite in a European library. This should not be underestimated as an enabler, releasing space from traditional book stock and underpinning the creation of flexible and adaptable space in support of digital scholarship.

2. Creating the Edge

Like many new library buildings, the library at Limerick had a long gestation period which can be traced back to 2006 when student numbers had begun to expand significantly. It took a further decade for funding to be aligned but this meant the building was then a priority for the institution. Embracing the idea of storing printed collections differently right from the start opened up the possibility of bringing new, cutting-edge services into the library as well as enabling the critical core need of more study space for users. Installing the automated book retrieval system meant that it was possible to incorporate the media labs, green screen and data visualisation labs into the original design, helping to future proof the transformation of the space. This also created a platform for future additions such as the wellness technology.

If you would like to read more about how Limerick engaged with the idea of the automated storage and retrieval system, Ciara McCaffrey has written a chapter which provides more detail on the inspiration, selection and delivery process which can be found at: http://hdl.handle.net/10344/9369

At the heart of the library's approach to service delivery is equal access for all disciplines and digital equity. Where the library used to loan books, they are now adopting a 'space-as-a-service' model and lending tools for knowledge creation. In helping create this vision, the library leadership acknowledge the international influence in what they have achieved, in particular taking inspiration from libraries in North America.

In terms of identifying spaces for the new facilities, the majority have been located in the new wing opened in 2018 as this offered the most flexible space and can be moulded most easily to establish new services.

Automated book storage and retrieval © University of Limerick

3. Aligning spaces with new modes of learning and teaching

There is a strong link between the technology-enhanced spaces that have been created in the library at Limerick and the university's learning and teaching strategy. There is a distinct feel of the university emerging from the era of didactic teaching to embrace engaged, creative learning, and there is now a high demand for group study space to facilitate the collaboration this engenders. The library is the primary out-of-classroom student learning environment in UL, open seven days a week from early until late, to accommodate students' busy lives.

4. Funding the Edge

As is often the case, funding for these spaces and equipment has come from different sources over time. The original capital funding that enabled the new library to be built was fundamental in providing the funds for the automated book storage and retrieval system, kitting out of the data visualisation lab, green screen room and also the PCs. Funding for the Makerspace and audio labs has subsequently come from annual allocated budget, as have additional PCs, software and other equipment required to maintain the momentum of the technologies in these areas.

5. Joining up expertise

The library team had worked closely with estates throughout the new build project and this enabled them to demonstrate the expertise held by the library staff. This is a key working relationship that has taken time to build but has been fundamental to the ongoing development of the spaces.

A good working relationship with the IT team was also essential, particularly the AV team as much of the equipment going into the teaching rooms required their skills and continued support.

And sometimes it's necessary to vary from the norm. It was important to stress that the library spaces are 'learning' and not 'teaching' spaces. They are not laid out like a classroom. For example, you won't see a podium or projector when you walk into one of these spaces. The kit chosen needed to be easy to use

and robust, ready to be handled by large numbers of students. The majority of AV kit purchased across the university sits in teaching spaces so it was important to be clear about the difference here and source appropriate alternatives.

6. Digital scholarship in action

The Edge offers a range of collaborative and dynamic spaces open to the UL community to support technology-enhanced teaching, learning and the development of digital skills. Whilst specific rooms have dedicated functionality, distributed throughout the Edge are PCs and docking stations with double monitors and specialised software such as Python, R, ArcGIS, Adobe Creative Cloud, Solid Works, Camtasia and other maker/fabrication software.

In terms of the specific individual, collaborative, creative and technology-enhanced learning spaces, examples include:

Media production labs

Providing audio recording and podcasting facilities, extremely popular with a wide range of students especially music and journalism students. In addition to a greenscreen lab where students can create video content adding in a backdrop of their choice, practice presentations or experiment with wireless VR headsets.

Makerspace

Offering free access to 3D printing, laser cutting, a Cricut Maker and heat-press, and high-end PCs. The Makerspace has supported evidence-based practice. Examples include a product design student designing a clip to help manage IV drip tubes going into a patient's arm, and aeronautical students designing and 3D printing rockets that were launched in Scotland, reaching altitudes up to 3km.

Greenscreen lab © University of Limerick

Equipment for loan (at the Makerspace)

Offering a wide variety of media and technology equipment, including gimbals, 360-degree cameras, v-logging kits, voice recorders, tripods and VR headsets. The technology is available

to borrow for free, ensuring that all of the UL campus community have access to experiment with often expensive equipment, and not just those that can afford to buy these technologies.

Makerspace © University of Limerick

Group study

These rooms have a high standard of embedded technology such as digital screens and are used for collaborative group work across a mix of disciplines. They are popular with all students with demand frequently exceeding availability.

Data visualisation

In contrast to the group study rooms, this space was always designed for research students and faculty to interact with, analyse and visualise their data on a large 130 inch screen. The timing of its launch was impacted by Covid and some of the technology is already under review. The space is currently being upgraded to include a VR Station and Learning Glass lightboard.

Data visualisation © University of Limerick

Solo booths

These provide additional flexibility for students who need to attend an online lecture or meeting whilst in the library, as well as a space to take a short break.

Wellness spaces

At an initial glance, facilities within the Edge may all seem quite intense and energetic, so it is interesting to see the integration of technology that is promoting rest and relaxation but also alternative ways to study. The Wellness Spaces include energy

pods, study bikes and adjustable height desks. These have proved popular especially with commuter students, enabling them to recharge and refocus while studying for long periods.

Wellness spaces © University of Limerick

7. Chicken and egg – getting the staffing and skills in place

Staffing and support for these spaces was an operational challenge requiring some creative thinking and, above all, patience. The Edge is now managed by the Library Learning Spaces Manager and there is also a technician role supporting the spaces. There can often be a very 'chicken and egg' situation with staffing, needing to prove the need but not being able to fully develop spaces without those roles.

Support for the Makerspace has been student-led and modelled on international exemplars. With a new placement student starting each year, there has been a training overhead and the potential for variation in the quality of service provided. A review of this has led to the library technician supporting the spaces to move under the management of the Learning Spaces Manager, meaning the team are less reliant on recruiting a new intern annually. However, Limerick is keen to maintain the student input and students will continue to be hired to provide peer-to-peer support. Being able to fine-tune the staffing of these spaces has been key to ensuring their smooth operation year on year.

Both the greenscreen and media production labs have to be self-service and short instructional videos, and an induction have been created to help users get started. The library management team are currently preparing a staffing plan for the next five years and support for technology-enhanced spaces will be a key part of this.

Ensuring the spaces are used appropriately has also been a concern as demand can quickly outstrip supply. For example, group study rooms have a two hour booking period. The library team has also had to draft some principles for use in response to requests from across the university to use the spaces for other purposes.

8. User feedback and measuring impact

User feedback has almost all been positive. The only negative feedback tends to come from students when they see groups and classes in spaces that are then not fully using the technology

available to them, such as students using the greenscreen room not to capture content, but to study in the more traditional group sense.

Statistics show that the usage of all spaces is good and increasing. This is reflected in the bookings for group study rooms which last year exceeded print loans.

> *"The technology that I can borrow is great, I didn't realise that staff had access to such gadgets, and for free".*
> UL Faculty member

> *"The Makerspace is great, it really helps me with my assignments – I borrow equipment I wouldn't get my hands on, on my course".*
> UL student, 2nd year Journalism

> *"The training was such a positive experience, thank you for facilitating the group of MA students".*
> (Information session on technologies available in The Edge)
> Associate Professor in Technical Communication

> *"I adore the Makerspace! Great job with that".*
> UL Student, 4th year Natural Sciences

9. Lessons learned

Reflecting the staffing concerns, if the library management team were approaching another new building project, they would ideally attach a staffing plan to that. That said, as mentioned above, it is very 'chicken and egg' and the worth of these spaces often needs to be proved before university management will support the idea of new staff. Waiting for staff before launching the new services would equally have been a mistake.

The flexibility of space in the new library has been a positive but, in retrospect, the team would prefer the Makerspace to have been larger and would reconsider the space allocated to this service if the opportunity arose. This space has proved very popular and there is a requirement to accommodate more groups within it, and faculty are beginning to embed using these spaces within modules.

Visibility of spaces is also an important consideration, although it's not always easy to predict which are going to become popular. That said, ideally all would be easy to find.

The right balance between group work and individual private space is a difficult one to achieve. The emphasis on group work in teaching means that all the group study rooms are in high demand and there is clearly a need for more open group work

space throughout the library. However, in contrast, the solo pods are also in demand as more students attend online lectures and interviews.

10. Lifetime of the Edge

Whilst the green screen and data visualisation labs were part of the original design, the other technology-enhanced rooms were effectively a blank canvas. In many ways they are the ultimate flexible space which could be repurposed again in the future as new requirements emerge.

In terms of the equipment, fitting high-end technology has often proved overly complicated for the end-user. In both the data visualisation lab and greenscreen room the equipment has been replaced with easier / self-serve options. Wear and tear on the group study rooms means that it won't be long before the digital screens need replacing.

11. Coming up next

The approach taken at the University of Limerick has been to take an international view in developing new spaces and services. In particular, the importance of flexibility in a new building has been demonstrated by the creation of new spaces within the library envelope that can then be refreshed or repurposed to reflect new trends in teaching and research. Staffing remains a priority with the need to match skills to the spaces and services.

The success of The Edge has led to successful bids for university strategic funding to develop an Immersive Lab, Creative Lab and an active learning space. These are all in progress right now, hopefully complete by the end of 2025. The direction the library has taken in delivering these creative spaces has opened new avenues for the library, firmly establishing their role on campus at the vanguard of digital transformation and has created lots of new collaborations and partnerships.

12. References

McCaffrey, C. (2021) 'Planning and implementing an automated storage and retrieval system at the University of Limerick', in Atkinson, J. ed. Technology, Change and the Academic Library. Hull, UK: Chandos Publishing. http://hdl.handle.net/10344/9369

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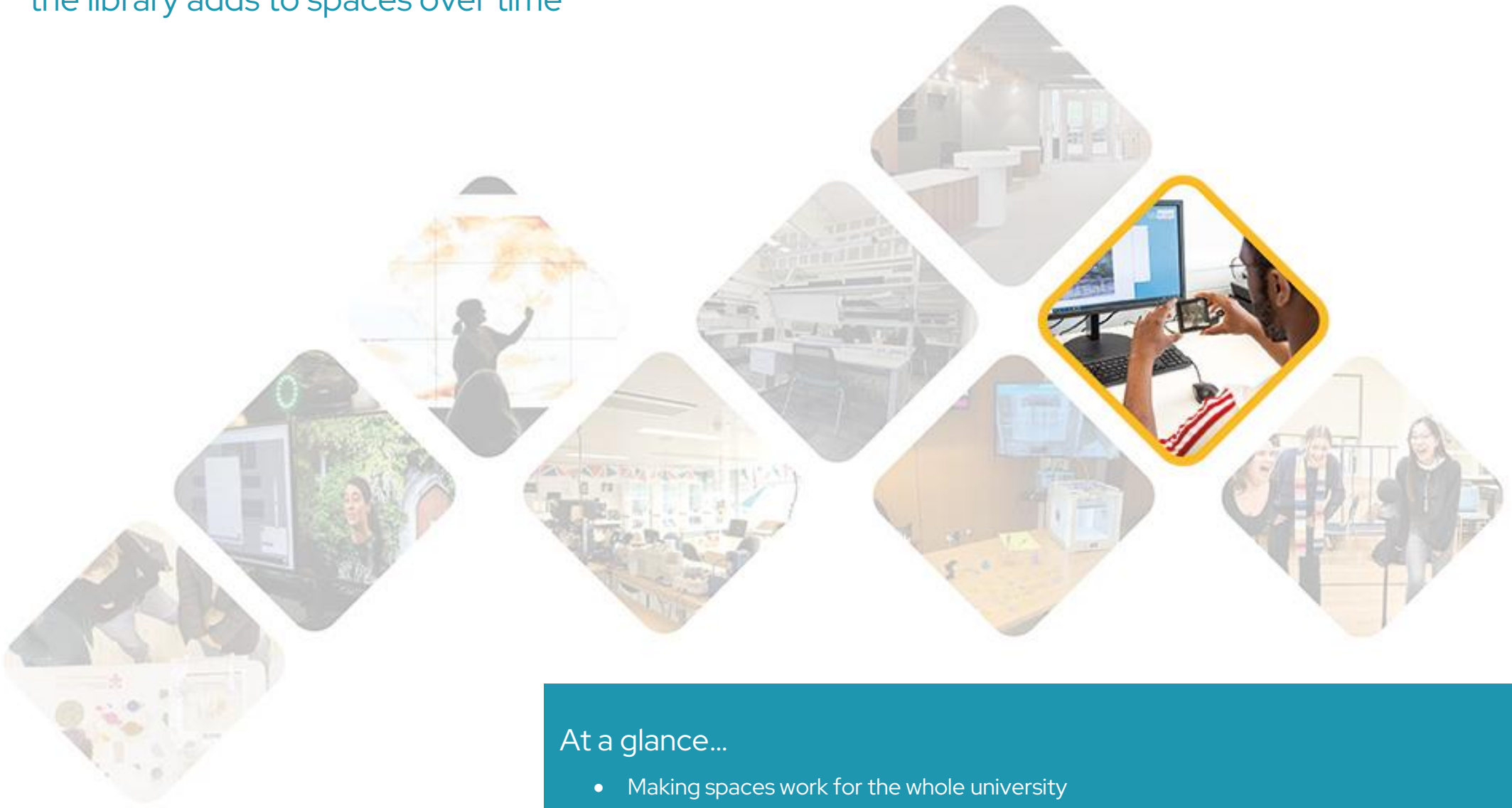
Trusted partner and custodian: Lancaster University are demonstrating the value the library adds to spaces over time



At a glance...

- Making spaces work for the whole university
- Developing staffing models – not all the answers are here!
- A strong vision of a library where there is no division between the digital and physical

1. Executive summary

Not one space but many: this case study from Lancaster University library focuses on how five different technology rich spaces within the library envelope have been created and the lessons learned in terms of their management and operation.

These spaces are:

- research labs, exhibitions and events space – three spaces that can become one
- Archives Research Centre
- video and podcasting suite
- Digital Studio
- plus a technology-enhanced teaching room that provided an early insight into the need for clear management of these spaces and clear definition of purpose.

As a cluster of small projects developed over a period of almost ten years, the Lancaster library team have been able to demonstrate to their colleagues that the library is a trusted partner and custodian of these spaces.

2. What makes technology-enhanced spaces different?

Lancaster University library has essentially good technology throughout the entire building but what makes the spaces in this case study different? The key to this can be found in the library's vision, Towards 2025, which has five key themes. The first of these is "Digital Physical" where the ambition is to:

> *"...position the library where there is no separation between digital and physical, inhabiting and engaging across both spaces."*

This is about ensuring users have a seamless experience regardless of whether they are accessing digital or physical services. Each of the four spaces created since 2020 have delivered on this vision.

The second strategic theme is "Connected Connector":

> *"We will be a thriving, dynamic and people-focused library that brings our communities together to co-curate, co-create and share knowledge that leads to greater understanding, insight and innovation."*

This reflects the library team's desire to broaden out the university community's understanding of what the library is. They

want to make sure the library can connect communities and bring people together, whether that be increasing an undergraduate's sense of belonging, facilitating research collaborations or giving the library and, by default, university a greater presence within the local community. The spaces in this case study tick all these boxes by providing facilities that can be used by students, staff (both academic and professional) and local people. The events space is the most obvious example of this where visitors are invited in to workshops and music events which are run alongside more traditional library services and study space.

Tying in library service development to university strategy is very important to the team at Lancaster. The library's vision is a constant presence throughout planning and is backed up by an annual roadmap, all of which can be seen on the library's website (https://www.lancaster.ac.uk/library/towards-2025/). The vision has been communicated clearly to both library staff leading to them understanding their involvement in its implementation. So despite the technology-enhanced spaces each being described differently and having specific functions, there is an overall sense of cohesive service development.

3. What are the spaces?

The five spaces which the team would describe as 'technology enhanced', as against just having power and data sockets available, are:

- Research labs, exhibitions and events space: these are three adjacent, flexible spaces that are used for a wide variety of activities from conferences and seminars to student wellbeing workshops. The spaces are particularly well suited to hybrid events.
- Archives Research Centre: this is the new home for exploring the Special Collections and Archives (Physical and Digital). The space includes a Microsoft surface screen, visualiser and scanner and will enable the library to extend in-person and digital access to collections.
- Video and podcasting suite: a small video and podcasting suite, initially for use by library staff, and set up to enable creation of digital resources.
- Digital studio: this is a (largely digital) makerspace that includes equipment ranging from VR headsets and 360-degree camera to paper cutter and sewing machine.

In addition, a fifth space, a collaborative teaching room, was one of the first digitally rich spaces to be created and a number of lessons were learned from this initial project.

Creating these spaces has been an evolutionary process with each originating from within broader building projects.

4. New space, new possibilities

The library underwent a significant refurbishment in 2015, enabling the creation of the collaborative teaching space. A

library extension project in 2021 provided the flexibility for the creation of the other new spaces which have evolved as funding has become available.

The library extension that opened in 2021 had principally received approval due to the growth in student numbers. The main parameters set by the university were that the extension needed to deliver increased study space. There was a clear steer to maintain high levels of student satisfaction since the 2015 refurbishment, challenged by increasing student numbers and high levels of demand. The business case was therefore principally data driven.

Once granted, the library team were given a relatively free rein to develop the new extension. The team worked closely with architects and a cross-university team mapped out how the new space would enhance library provision. Above all else, the key thing was to create flexible space that could be repurposed easily as needs changed. The Events space demonstrates this flexibility. The space can be transformed easily from being three separate spaces or one larger space.

5. And seizing the moment

In terms of funding the smaller developments, the Archives Research Centre and the Podcast Suite, this was a case of having ideas ready and seizing the moment when funding opportunities arose. The Archives Research Centre was funded from Research England Research Culture grants. The library was able to propose a project that could be delivered within the timeframe required. The Podcast Studio was funded from JISC project money. It had a relatively small budget but sufficient to purchase kit to make a start in this area.

Why were these funding bids and proposals successful? The team put this down to the library being seen as 'trusted' having already done good things for the university with the space they had already been given. It meant that they were at the forefront of people's minds when these new funding opportunities arose. Having a proven track record in demonstrating the impact for the university of previous investments has been a real winner for the library.

> *"Over the last five years, our library has successfully transitioned from providing a traditional offer to delivering a progressive service, which has developed trusted partnerships with a range of stakeholders, involving themselves in partnerships with researchers, students as well as local arts and cultural organisations – this has completely revitalised the role that our library plays within Lancaster University."*
> Professor Simon Guy, Pro-Vice-Chancellor Global (Digital, International, Sustainability)

6. Spaces in action

Events and research space

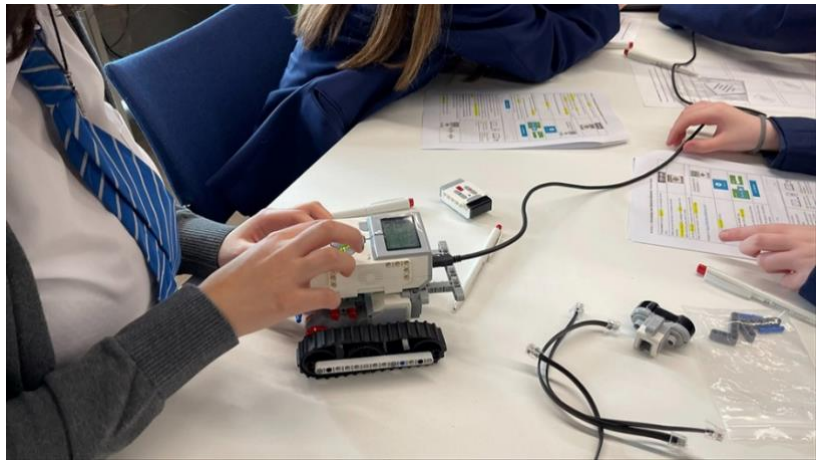
Although often referred to as the 'Events' space, this is in fact three spaces that can be joined into one for large events. The research element comprises a Digital Scholarship Lab and Open Research space. This also means that different teams from across the library are involved in utilising and promoting these spaces.

Managed by the library, the new events space has a regular programme of workshops, events and exhibitions. Events are managed by the library frontline team and, whilst open to the wider university and local community, anyone wishing to run an event is required to demonstrate how their event is aligned to the Towards 2025 vision when they place a booking.

Library website – booking guidance: The library bookable spaces are available to use for university and community-focused events. We particularly welcome proposals for events that bring communities together and support the aspirations and ambitions of our library vision, towards 2025.

There is a calendar of events and the library team and facilities coordinators help with set-up and take-down. As with any event, the unexpected can happen and it can be all hands on deck. Whilst they are line-managed by security, the facilities coordinators now feel more like an extension of the library team. Approximately 20% of events are library events with the other 80% being from across the university or local community but supported by library staff.

Iconography workshop, part of a launch event for the new digital collection, Women's Iconography in the 21st Century, held in the Events space.



Cyber girls event

The technology present enables a wide variety of events to take place from art installations, conferences and more traditional university events such as guest lectures. The high profile of the space within the university was demonstrated clearly when it was chosen by the Vice-Chancellor for the most recent REF outcomes presentation. Equally important was the art exhibition held in celebration of the university's cleaning staff post-Covid. Having an attractive space within the library means that it draws users in from across the university and is often the backdrop for high-profile photo opportunities.

Archives Research Centre

The Archives Research Centre project had a very rapid turnaround with discussions beginning in March 2023 and the space completed by mid-August. Repurposing an existing space by moving the university archive into nearby rolling stacks, the Archives Research Centre was configured to feel comfortable and traditional with repurposed oak tables complemented by high spec automated folding tables which can be use by individuals or small groups. A Microsoft Surface screen, PC, scanner and document reader enable some remote access to the archives and this is supported by guided discovery sessions delivered by archives staff. It has enabled Lancaster to showcase some of its digital collections and also led to a fascinating community outreach project researching the history of the British juke-box in the northwest of England. Students have become community researchers, capturing oral history and creating a new archive.

Archives Research Centre: Visualiser

Archives Research Centre: book launch event

Digital Studio

Whilst this room is not especially technology-rich, it does have some unique pieces of equipment eg. video editing, VR headsets, scanners, cutting devices, cameras, cables and a sewing machine. Unlike the events and research space, further work is needed to fully operationalise the Digital Studio, and some of the equipment is already starting to age.

Digital Studio

Whilst dedicated staffing might be seen as the ideal solution, that isn't going to happen in the current climate. With one member of staff currently acting as a champion of the space, a number of ideas are being considered as to how to spread their knowledge more widely across the team and whether additional support might be found in the form of student ambassadors.

A new Wellcome-funded project on research culture may breathe new life into this space. The project has the potential to create a 'citizen science' collection of equipment which would expand upon existing voice recorders and cameras. It would enable kits to be put together and loaned for student researchers to go out in the field.

Digital Scholarship Lab science event: visualising bumble bees

7. Lessons learned

Each of the spaces has had different operational challenges and there have been a number of lessons learned.

Manage 'your' space

Following the creation of the original collaborative teaching space in 2015, the importance of the library managing its own spaces became clear. Located within the library, there was an assumption that this would become a 'library only' teaching space but this proved not to be the case. As a teaching space, the room became part of central timetabling, resulting in the library team having to book it months in advance for their own skills sessions. This was particularly frustrating when it became clear that many of the regular bookings were not using the technology embedded in the room. The library now manages the bookings for the four newer spaces and has reasonable autonomy in saying 'yes' or 'no' to suggested bookings.

Operationalising and embedding new services

The Digital Studio Space has demonstrated the importance of having a clear pathway towards operationalising and embedding a new area. The team are currently reappraising this space so that a fresh start can be made. Equipment is currently being catalogued and a booking model is under development. And then there is the question of renewal and replacement and the lack of budget currently set aside for this purpose, and of course balancing this against environmental concerns.

8. Measuring impact

Evaluating the impact of these spaces is evolving over time. Initially everyone was quite happy that if an event ran smoothly in the Events space, that was quite sufficient for measuring its success! Now the team is more interested in measuring the numbers of people attending and gathering feedback from event organisers. The library has a good reputation for doing things well but the downside is that it can also be seen as a 'catch all' and can become involved in leading things that would sit more comfortably elsewhere within the university.

More recently they carried out a 360-degree survey of their own staff, staff across the university and the Students Union to find out whether people believe the library is delivering on its vision. A very clear message coming out of this was that the library has a key role in bringing people together. This is certainly reflected in the technology enabled spaces on offer.

9. Sustainability

Lancaster University has very ambitious sustainability targets. The team are aware that it is essential that a refresh-cycle is established for the innovative spaces to remain cutting edge but that in itself has an environmental impact.

The library building as a whole has good technology throughout which makes energy use a major consideration. The 2015 refurbishment was rated BREEAM Excellent and the 2020 extension followed suit. However, the team are now working with the university's Energy Manager to look at how the building management system can be used more effectively to reduce energy use, for example, by changing how the ventilation system works over the summer when there is lower occupancy. This alone saved 26000 kw hrs. This pilot may influence how future spaces are designed and equipped.

10. Future projects

The university's Curriculum Transformation Programme which will relaunch all undergraduate and taught postgraduate programmes in September 2026 will undoubtedly influence what comes next for the library team in terms of developing technology enabled spaces.

The library team are also involved in a social learning space on campus and they would like to work with the IT department to make this work more effectively, sensing an opportunity here to explore different technologies and fill some gaps in provision. For example, the current Podcast Studio is predominantly used by library staff but there is likely to be greater demand from students in the future.

As with the existing spaces, the team will be looking to ensure that future developments are:-

- inclusive
- flexible
- sustainable.

In line with the principles in their Vision:

- Connect
- Innovate
- Include

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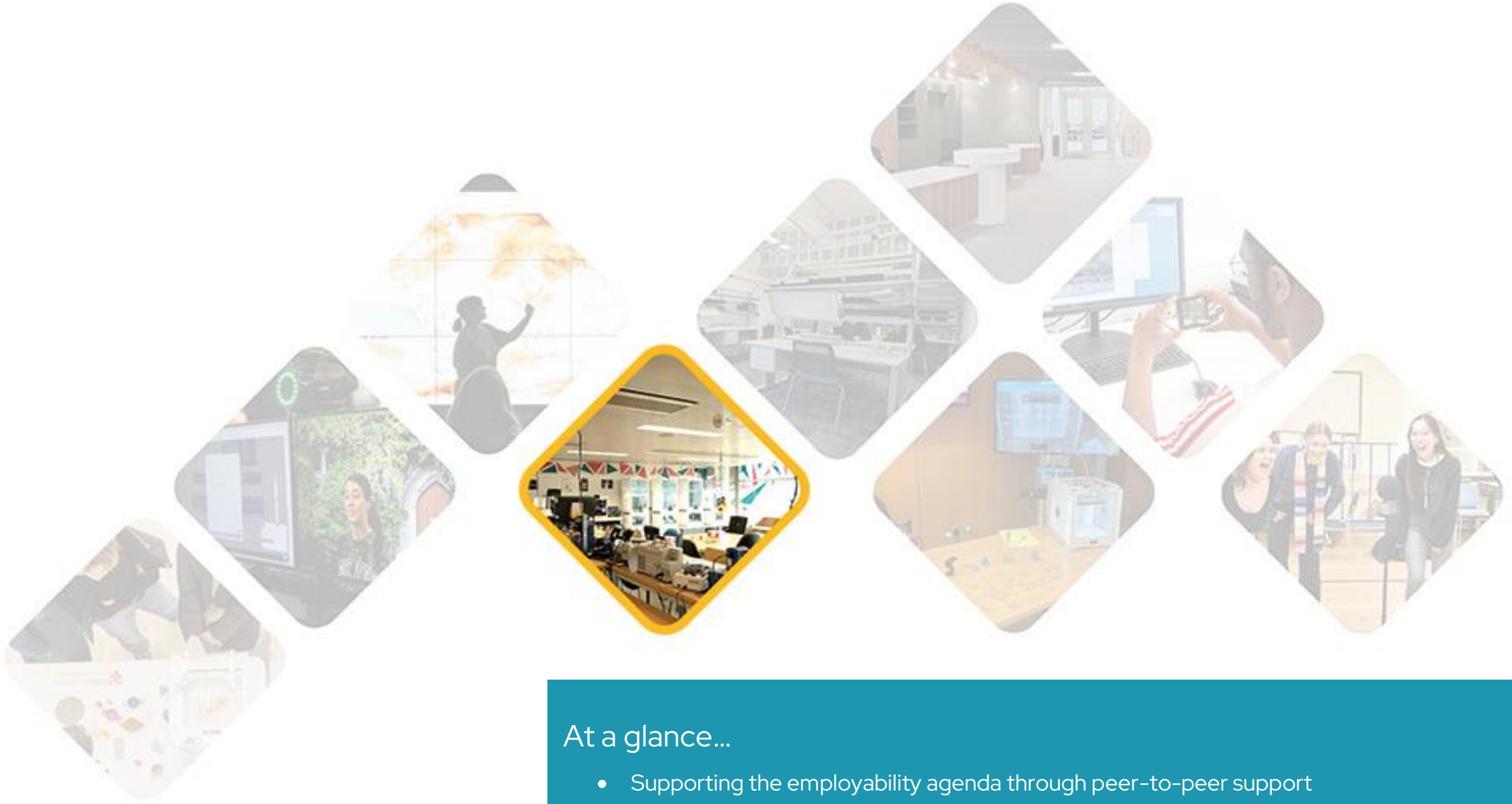
uCreate Studio: making and creating at the University of Edinburgh



At a glance...

- Supporting the employability agenda through peer-to-peer support
- Supplementing traditional library services with digital services and support
- Criteria for evaluating and introducing new services

1. Executive summary

The University of Edinburgh has been evolving its uCreate services and spaces since 2016. These spaces and the technologies within them have grown as the interest in taking a more hands-on approach to course work and assessment has developed. The spaces have a strong emphasis on providing access for all, for both students and staff, and the facilities are used extensively across a wide range of disciplines.

Edinburgh now has the advantage of having evolved the service over time and being able to consider the overarching criteria that should determine the future nature of the spaces and services, something that is less easy to do when first testing the water and trying to gain traction.

uCreate supports the employability agenda by providing students with direct engagement with new technologies and skills and also by employing a team of students to provide peer-to-peer support.

2. Widening participation and employability – key strategies that underpin a makerspace

The origins of the uCreate Makerspace at the University of Edinburgh can be traced back almost ten years. Starting as a pilot project within another directorate in the Information Services Group, the service has evolved into becoming a core part of the library service.

At Edinburgh, the university library sits alongside IT in a much larger Information Services Professional Services Group. Two of the pillars of the university's 2030 Strategy are a commitment to widening participation and better preparation of students for the modern workforce, and uCreate is at the heart of this by providing services that students would either find too expensive or impractical to buy for themselves. This can range from providing access to moderately priced 3D printers through to expensive LIDAR scanners.

The makerspaces enable the library to deliver digital skills and manufacturing training, and connect students to equipment that prepares them for the jobs market. Where once it was access to books that provided this knowledge, it is now the ability to borrow and access kit that helps students to be successful both on their course and on entering their future career.

Related to both the widening participation and employability agendas is the shift away from traditional course work. Essays and tests are gradually being replaced by hands-on projects which provide more opportunities for creativity and collaboration. uCreate is positioned directly to support less traditional assessment methods as these continue to evolve.

3. Makerspaces as a core library service

In many respects the library team see uCreate simply as an extension of what they have traditionally offered. Just as libraries have loaned out books, uCreate now loans out equipment, expanding the traditional library offer of books to other types of loans. Equally, while the library has always provided information skills training, it has now have branched out into delivering training on equipment and software to ensure students get the best out of what is on offer. In line with more traditional library services, almost everything in the makerspaces is free to use, except for poster printing.

For students, they value the library providing these services. uCreate is a neutral space in that it is not affiliated with any school or programme, and its staff are welcoming and non-judgemental of users' pre-existing knowledge (or lack thereof). If a student is struggling to get to grips with something they have been shown in class, they may be reluctant to admit this to faculty technicians, whereas they are more likely to open up to uCreate staff.

4. Developing spaces over time

Sometimes projects simply don't have a master plan and that's the case with the development of the spaces and services that constitute uCreate. Instead, the spaces have developed opportunistically. Where services have proved a success, they have been allowed to develop further. None of the spaces are purpose built and have only received light touch refurbishments, partly reflecting the challenges of operating within a Grade A (Grade 1) listed building. Perhaps unsurprisingly, this has also thrown up challenges around ventilation.

In the main library, uCreate now occupies four areas:

Service point and equipment loans storage

This was created by repurposing a meeting room.

Digital Transformation Suite

This is the most recent addition and includes a curved green screen as a permanent feature and provides access to photogrammetry kit and other digitisation equipment, including an RTI dome.

Digital Transformation Suite

Makerspace

Including 3D printing and scanning and laser cutting. The refurbishment of this room included installing benches of different heights allowing for accessibility. This room also

required significant electrical work to provide dropdown sockets over the benches and cabling to provide network access for equipment.

Digital makerspace room with drop-down sockets

Multimedia computers

Students' own devices are unlikely to have the processing power to cope with video production or 3D rendering so these devices have the appropriate software available. Signposting these so that they are seen as 'special' and not used for general study activity has been important and not always successful!

uCreate also runs a small satellite makerspace and multimedia space in the university's Murray Library for engineering at its King's Buildings campus.

Due to the opportunistic nature of these spaces, funding has mostly come from core operational budget and is supplemented from poster printing income that is reinvested. New services and refresh are tied into the overall university planning round and departmental business case submissions. Business cases for funding new services and staff within these spaces are generally part of a bigger submissions related to digital library projects and service development.

5. How to stock and manage a makerspace

Equipment in the makerspaces was originally agreed by the initial project board. As the service expanded, it was impacted by Covid (which led to the establishment of the loan service), and equipment is now managed by professional staff based on their knowledge of the users of the space and anecdotal feedback from its users. As existing kit comes up for refreshment, staff are also horizon scanning to see what may be coming in the near future. Among the most popular pieces of kit are the 3D print queue and the bookable self-service 3D printers. In the loans service, the most popular pieces of equipment are the drones, LIDAR scanners, and AR/VR headsets. Although much of the kit is available elsewhere on campus, it is only the uCreate kit that is available to all and across extended hours.

Equipment loans, trainings and on-site equipment bookings are now managed via the SISO asset management system, where they previously had used an adapted open-source system for loans and a university booking system for training. Alma, the

library's management platform, was not considered fit for this purpose for a number of reasons, not the least that it can be quite complicated to manage. Using SISO means that all the asset management and training activity and tracking is in one place.

6. Access and support

To access uCreate spaces users must first undergo an induction which serves both to introduce new users to the space, services and equipment provided by uCreate but also underpins all of their health and safety and codes of conduct. It is a 45-minute engaging, in-person overview with the purpose of instilling confidence and safe working practice when working within the makerspace and the technology it supports. After attending an induction, an attendee's ID card will then be updated to give them swipe access. Inductions are also supported by an online knowledge base that provides a refresher on specific pieces of kit. Whilst this seems a good idea, it can get out of date quite quickly and library staff are currently reviewing this to see which pages are used. The team also deliver workshops on specific equipment and tools.

The exceptions to the registered access are 3D printing and use of the multimedia computers. Anyone can send something to the 3D print queue and staff will print it out for them. The print queue is operational 24/7 and this is an extremely popular service. Users also do not need to be registered to print posters, but the service does charge a fee for poster printing based on the size of the poster.

The spaces are staffed from 10.00am until 8.00pm throughout the week but are open in the main library from 8.00am until 1.00am. Library staff have recently received access to swipe card entry data to assist with analysis of how well the spaces are used at certain times. This may help with future planning in relation to space use and opening hours.

Some users arrive knowing precisely what they need but others come in with a research question and are not sure what equipment or software would help them. Answering these enquiries is seen by the library team simply as an updated version of the traditional 'research enquiry' technique librarians have been using for decades.

In terms of staffing, the areas are supported by three full time members of staff – one manager and two senior technicians. In addition, the library has about 2 FTE's worth of student technicians, each working about six hours a week and has a specific area of expertise (ie digital manufacture, AR/VR, etc), all of whom are studying a wide variety of subjects. Employing part time students has worked extremely well. There is some refresh within the team each year as a few graduate and move on but the new recruits then learn from the returners as well as the permanent staff. Students also like being helped by other students and learning from their peers.

"My position at uCreate placed me in an environment where I was surrounded by users and staff who work in and around digital humanities which showed me how the digital arts background could be applied to my academic research. I am now a PhD candidate, using digital visualisation to study Mughal encampment. I now see my technician position at uCreate as a key part of my doctoral training as it allows me to teach, develop my own teaching materials and expand my knowledge of digital arts software."
Student Technician, uCreate

7. Lessons learned

Whilst the organic growth of uCreate has been interesting, it has also come with growing pains. When starting a new service, it is very easy to say 'yes' to everything and then find you are overwhelmed. Without an overarching strategy, a lot of little 'yes's' can balloon into a service that is difficult to support. As the service has matured, the team have begun to develop criteria for evaluating requests for additions. Developing these criteria is still work in progress but includes questions such as:

- What is the impact on staffing?
- Is there space available?
- Does that space have the right power, cabling?
- What is the demand? Are people asking for this?
- What is the training implication?
- Does the team already have expertise in this area?
- Does the proposal complement the other services on offer?

The team hope that this will give them the ability to say 'no' if appropriate.

8. Explore uCreate online

The uCreate website provides a good insight into the services on offer. Why not take a look?
https://www.ucreatestudio.is.ed.ac.uk/

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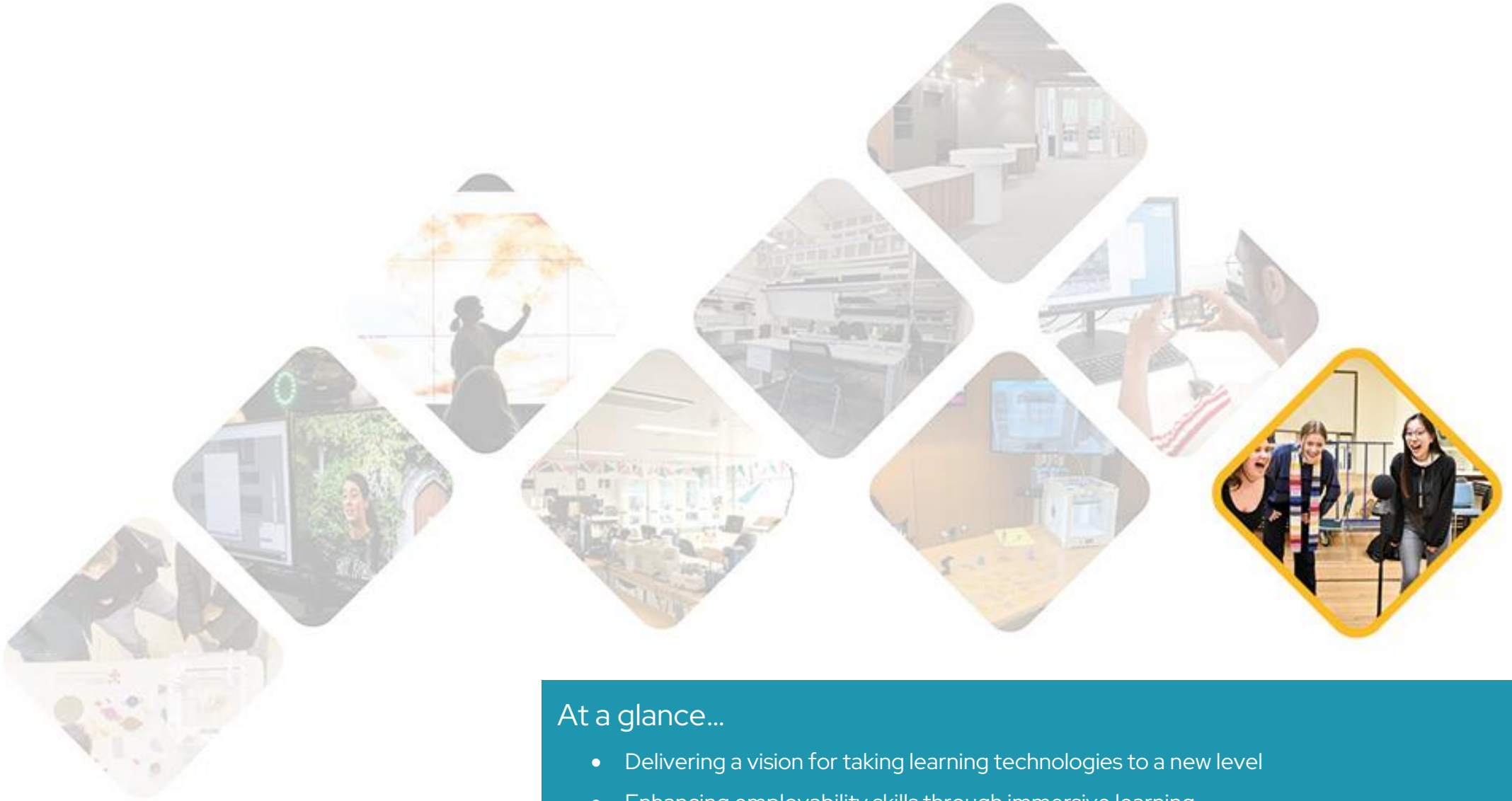
Immersive learning: planning to embrace the virtual at Birkbeck, University of London



At a glance...

- Delivering a vision for taking learning technologies to a new level
- Enhancing employability skills through immersive learning
- Collaborative project with IT to make change happen
- Diversifying the library and embracing new skills

1. Executive summary

By the autumn of 2025, the Immersive Learning Centre (ILC) at Birkbeck, University of London, will be fully functioning. Immersive learning blends augmented reality (AR), virtual reality (VR) and mixed reality (MR) and the aim of the ILC is to introduce students to these technologies, both as consumers and creators of content.

The key aim of the project is to increase access to learning beyond the classroom. This is something, it could be argued, that libraries have always provided. Therefore, it seems fitting that the library has been approached to help deliver the practical elements of the service. Located in rooms both within and near the library, the ILC is a close collaboration between library staff and the specialist Immersive Learning team that will be put in place to support this activity. The ILC is also providing new opportunities for library staff to engage in emerging technologies and to both refresh and enhance more traditional activities, such as library inductions and support for students with disabilities, by delivering them in entirely new ways.

The ILC will be about both teaching delivery and experimentation. Kitted out with equipment such as 3D scanning, 360 audio and video and even Motion Capture suits, and complemented by an equipment loan service operated by the library, the ILC will give students vital contact with these technologies to strengthen their employability skills.

Birkbeck's reputation has been built on delivering undergraduate and postgraduate study on an evening and part-time basis. With the shift in working and study patterns post-pandemic, the ILC is being designed as an exciting and stimulating experience that will draw students onto campus, giving them something unique that cannot be experienced at home or from their office desk.

2. What do we mean by immersive learning?

Immersive learning is not a new concept and has always been a way to provide skills training. However, augmented reality (AR), virtual reality (VR) and mixed reality (MR) are taking this to a new level and providing exciting opportunities for students and staff. These technologies are enabling resources to be shared with everyone within a virtual space, providing participants with in-depth, close-up and interactive ways that couldn't be achieved within a laboratory environment and providing a highly collaborative experience. Students might be examining a 3D model of a fossil or crystal or equally could be taking a VR tour of a museum or gallery.

However, the Immersive Learning Centre at Birkbeck will not just be about consumption, they also plan to incorporate the technology associated with these experiences to enable students and researchers to also become creators. This will include the provision of services and kit such as 3D scanning, 360 audio and video and even Motion Capture suits! The aim is to engage students across a wide range of disciplines, developing their

digital skills as they encounter these new technologies. Once kitted out, the centre will be run by a dedicated Immersive Learning team.

3D scanner

360 camera

360 microphone

VR headset

3. Setting out the strategic vision

Deputy Project Lead James Cull has very clearly set out the vision for why these spaces are being developed. They are to:

- increase access to learning
- develop engaging learning experiences
- support active learning
- develop employability skills
- diversify assessment possibilities
- expand portfolio into new areas
- encourage interdisciplinary collaboration
- develop research opportunities
- develop external partnerships.

With its emphasis on evening and part-time teaching, Birkbeck has always stood out from the crowd. Post-pandemic, the university has seen the shifting working patterns of its students impacting their study pattern and time spent on campus. Investing in these new, exciting technologies will lead to the creation of learning experiences that cannot be replicated online at home or in the office, which the university believes will encourage students to attend on campus, attract students with new offerings and develop skills for them to compete in a digitally integrated job market.

4. Delivering immersive learning in practice

The creation of the Immersive Learning Project has been funded by the Office for Students (OfS) and was a relatively small element of a much larger HyFlex learning bid submitted by Birkbeck. A strong element of the bid was providing access to learning regardless of availability and emphasising the inclusivity that could be delivered by the technology. The project delivery is being led by the Information Services (IS) department who are leading on the purchase of equipment, design and layout of the rooms and the initial staffing. Their choices and decisions have been framed by early pilots which proved the feasibility and paved the way for the build and installation of equipment which is currently underway. The rooms should be ready for a soft launch in summer term 2025 and hard launch in October 2025.

When it came to finding a location for the project, the library was approached when the original chosen area was deemed unsuitable. As is often the case, the library is positioned at the heart of campus activity and is well-used which means that the new centre will be very visible to students. Nervousness amongst the senior team as to how this would be received by staff proved unfounded and library staff saw the excitement in the project and have been discussing ideas with the IS Project Manager about how they might be able to use the facilities themselves.

"This project is a really exciting opportunity for the library to engage with a new set of learning technologies. The fact that the spaces are sited in and near the library mean not only that library staff can help support the implementation and administration of the service, but that more students will be spending time in the space and also engaging with our more traditional services such as book lending".
Steven Ellis, User Services Team Leader

"Having these new facilities in the library presents really exciting opportunities for staff and students to experience new things and develop new skills. I could see these facilities fostering lots of collaboration between different areas of research and teaching at Birkbeck as well as sparking innovative new research opportunities".
Aidan Smith, Assistant Director, Academic Services

The spaces have now been two years in the planning and the team are clearly excited to see all their hard work starting to come to fruition.

The four main facilities in the ILC will be:

- Immersive Learning Classroom: 20 VR workstations with tethered and untethered headsets for dynamic, collaborative experiences that help students deepen their understanding of complex concepts.
- Immersive Learning PC Lab: equipped with 20 high-performance PCs to support digital media courses and provide professional-standard editing capabilities for creating immersive environments.
- Immersive Learning Studio: this space will be used by staff and students to work with 3D scanners, 360 microphones, photogrammetry equipment and Motion Capture (MoCap) suits, creating digital assets that can be turned into immersive experiences or conventional media.
- Immersive Learning Loan Facility: staff and students can borrow VR headsets, 360 cameras, and other production equipment to explore virtual and augmented reality independently and develop immersive learning content.

Due to the sophisticated nature of the equipment being provided, these spaces will only be bookable for teaching and will not be accessible at other times, except inducted students who need to work on their projects in the PC Lab.

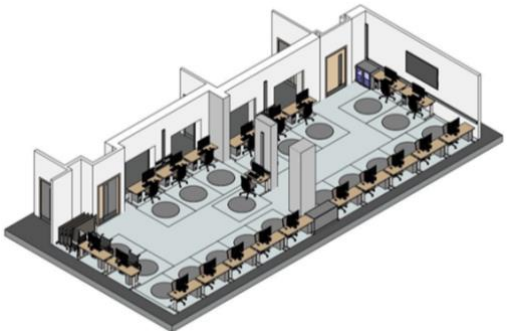
When it is launched, the Centre will be centrally managed by IS, in close collaboration with the digital education team and the library. To start with, there will be two members of staff directly employed to run the centre: the Head of Immersive Learning and the Senior Technologist. The centre will be supported by members of the virtual reality and immersive learning operations team until such time as additional roles are approved.

However, to complement the teaching taking place in the new spaces, and as a key part of the plan to bring employability skills to students and to diversify assessment, the library will be operating the Immersive Learning Loan service alongside existing services. This loan service will involve loaning out 360-degree cameras and audio recording equipment to enable students to create their own work that gives them the opportunity to demonstrate their understanding outside of the traditional essay paradigm.

5. Layout of the rooms

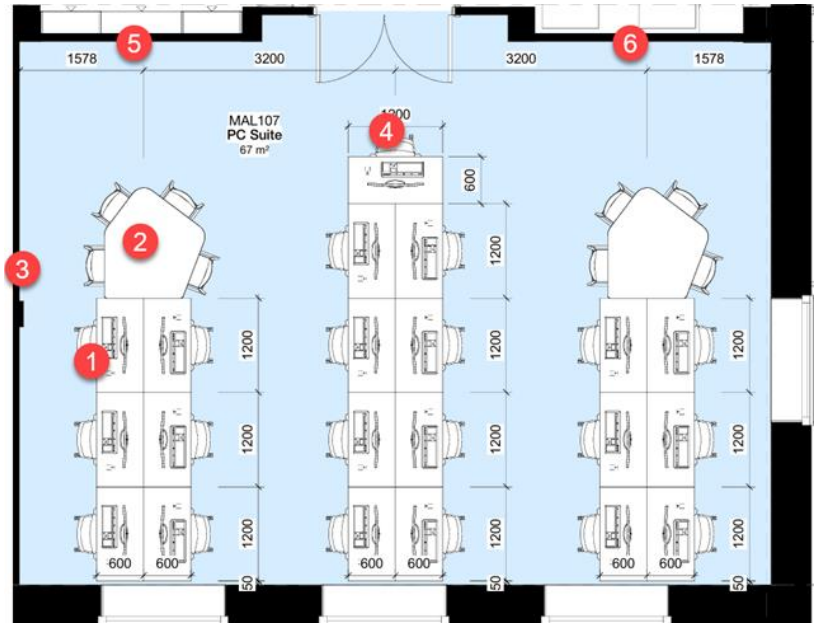
At the time of writing, these rooms are still under development but these plans give an idea of what the spaces will look like when launched.

The Immersive Learning Classroom



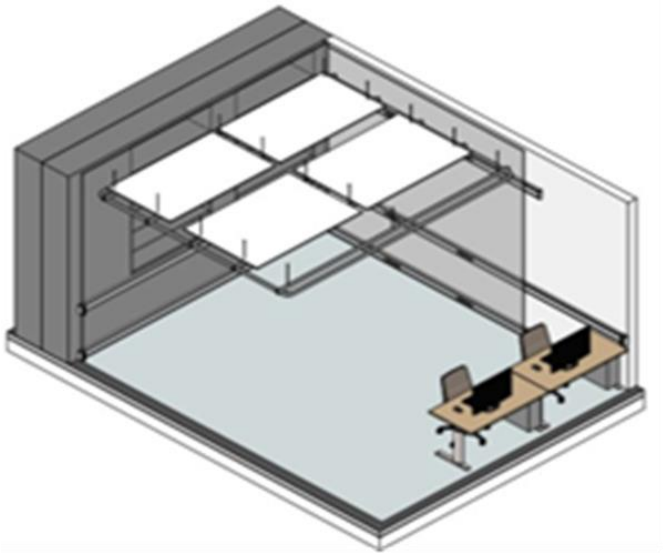
20 workstations with corresponding ‘play areas’ for safe Virtual Reality headset use.

The Immersive Learning PC Lab



20 workstations with high-spec PCs (1), collaboration tables (2), teaching screen (3), height adjustable workstation for a wheelchair user (4) and two collaborative touch screens (5, 6).

Immersive Learning Studio



A green and black curtained space with adjustable lighting and a gantry for recording immersive sound, making incredibly detailed 3D scans and capturing MoCap performances.

6. Potential for immersive learning library projects

One of the pieces of software that is very approachable, applicable in multiple areas and being delivered within these spaces is ThingLink. ThingLink is an interactive, immersive hotspot platform where students can explore images, videos and interactive PDFs to gain a deeper understanding of a concept, a service or a virtual field trip. The library staff have been quick to embrace this and already have a number of projects under

consideration for collaboration with the Immersive Learning team including:

- An enhanced virtual tour of the library for new users that embeds existing and new guidance in an engaging 'walkable' 360 tour around the library spaces to help students familiarise themselves with services before attending.
- Supplementary guidance for students with disabilities to help them identify extra spaces and services to which they have access – e.g. the study support rooms and some of the features of those spaces (adjustable lighting, particular furniture or equipment etc).
- Interactive PDFs to help deepen the connection between physical and digital collections which would enable students to make better use of the full range of services on offer.
- Exploration of an AR guide on how to use equipment, e.g. printers.

7. The Immersive Learning project in a nutshell

Fundamentally, the creation of the ILC is about the creation of opportunities. Providing students and staff with hands-on experiences of the latest technologies that have the potential to enhance their learning, teaching, research and employability skills. As the ILC has yet to launch, it is too early to talk about lessons learned or impact but clearly these will be important in the future for ensuring the ILC remains on course to deliver on its vision.

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The modern library: technology-enhanced library spaces

June 2025