

# *Library Technology and Innovation as a Force for Public Good*

## *A Case study from UCL Library Services*

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**Abstract**—*Whilst there have been many innovations and new technology deployed in academic libraries around the world over the past ten years, as digital libraries have grown massively and physical library space has been reconfigured to meet student needs, few of these developments have had a profound impact outside of the university campus. This paper sets out the journey of UCL Library Services over the past 10 years. In line with UCL’s radical tradition and drawing from Jeremy Bentham’s utilitarian principle of “the greatest happiness of the greatest number”, the library is playing a key role in opening access to education and research. First, the paper establishes how the library’s role is being extended, as libraries become providers of excellent customer service, focused on providing an outstanding user experience. As students are seen increasingly as partners, their participation within the university is growing, and education, research and public engagement are intertwining as components of the student experience. The Connected Curriculum at UCL provides a framework for this (r)evolution in higher education. The library’s use of Open Access tools, particularly with UCL Press, helps to connect high-quality science and student outputs with a wide public, enabling this research to be accessed and utilised on a global scale. Finally, the paper looks at innovative approaches to public engagement, leveraging social science and technology to deliver benefits to local communities, particularly in East London. Libraries should work together, across sectors, to address the current need for evidence-based information, and to provide opportunities for citizens to acquire transferable research skills.*

**Keywords**— *Future library; Open Access; Customer Service; Public Engagement; Partnership*

### I. INTRODUCTION

The advent of social media has brought a surfeit of information and misinformation, even disinformation, into the public eye. How can our academic libraries harness new technologies to make a difference, not only to the communities they serve locally to the highest standards, but also to the wider public? Traditionally, libraries have a role as custodians of scientific outputs and as guides towards pertinent information. This paper will start by establishing

how the library’s role is being extended, as libraries become providers of excellent customer service, with a strong focus on providing an outstanding user experience. The paper will then explore the Connected Curriculum, a pedagogical model where education, research and public engagement are convergent components of the university’s role and intrinsic parts of the student experience. The library has a part to play in delivering this joined-up vision, whereby the research and student outputs from the university are disseminated to an audience. What tools are available to ensure that high-quality science is shared to a public which can utilise the information and push the boundaries of knowledge? Finally, the paper looks at innovative approaches to public engagement, leveraging social science and technology to deliver benefits to local communities which would otherwise feel unable to participate in the life of a research university. This paper sets out the journey of Library Services over the past 10 years. In line with UCL’s radical tradition and drawing from Jeremy Bentham’s utilitarian principle of “the greatest happiness of the greatest number”, the library is playing a key role in opening access to education and research to those who were excluded from it.

### II. CONTEXT

#### A. Key challenges for libraries in a time of change

Sandhu (2015) sets out the context of flux for academic libraries, in terms of political, economic, social, technological, legal and environmental factors affecting higher education and specifically research libraries [1]. Sandhu identifies a number of challenges for library services to address in order to transform and succeed in the fast-changing current environment, with the following key issues:

- Libraries need leaders equipped with vision, an overarching understanding of the emerging trends and technologies, who can “dare to dream big ideas and motivate and inspire to dream big ideas too.”

- Embracing change is a necessity and “staying ahead of the curve is a necessity, not a luxury”
- Libraries must establish robust governance and leadership, including cross-institutional partnerships with faculties and service departments
- Libraries need to define their long-term vision and strategies
- Learning space has to be redesigned in order to deliver new modes of teaching and learning, as well as improving student satisfaction
- Roles within libraries are being redefined, with greater variety and new specialisms emerging. Libraries should develop a lifelong learning culture and build expertise to support sectoral shifts, such as the ongoing transformation of scholarly communications

This paper provides a case study for how the library has been tackling these challenges at UCL, and taking the institutional mission as London’s Global University. The paper will set out the academic library’s role and responsibilities in advocating for open science and leading on public engagement. It will reference new learning and research hubs, and also the development of UCL Press as the first fully open access university press in the UK.

#### *B. About UCL and UCL Library Services*

UCL is London’s leading multidisciplinary university, with over 11,000 staff and 38,000 students from 150 different countries. Founded in 1826 in the heart of London, UCL was the first university in England to welcome students of any religion. It was also the first to welcome women on equal terms with men. UCL Library Services consists of 18 libraries and learning spaces located across London, covering a wide range of specialist subjects ranging from biomedicine and science to arts, architecture and archaeology. Over 300 Library Services staff manage these sites, as well as UCL’s digital library, teaching & learning support and UCL Special Collections.

In 2015, around the same time as UCL launched its institutional strategy, UCL 2034, the UCL Library Services Strategy was published. The Library’s vision as set out was to “empower UCL in its mission to engage with and change the world” [2]. The strategy itself is articulated around 6 Key Performance Areas (KPA’s), which echo the UCL 2034 “Key Enablers”:

- User experience
- Staff, equality and diversity
- Finance, management information and value for money
- Systems and processes
- Sustainable estate
- Communication, Open Access and outreach

Each KPA is coordinated by a KPA Leader, who is accountable for the objectives underpinning each strategic

theme. Delivery of the strategy is overseen by the Leadership Team which brings together the KPA Leaders and senior staff from across Library Services and is chaired by Dr Paul Ayriss as Pro Vice-Provost (Library Services). Many of the examples from UCL referenced in this paper are the product of collaboration between different sections within the library and partners from professional services as well as faculty.

#### III. THE LIBRARY AS A CUSTOMER SERVICE PROVIDER – BENEFITS AND LIMITATIONS OF THE CONCEPT

In February 2017, following a 3-year programme to roll out RFID self-service across the entire family of 18 UCL Library Services’ sites, UCL celebrated the completion of this important project, which was led centrally by a Project Board and Implementation Group, with local managers involved in implementation at each site. The outcome has enabled users to borrow books as long as the library is open (24 hours in a number of larger UCL libraries). 80% of all transactions are now performed via self-service (89% including web renewals). The goals of the project were also to reduce queues at library desks, which has allowed staff to move away from routine transactions and focus on answering queries, providing value-added front-line help. Whiten and Meunier (2015) observed significant improvements enabled by the introduction of RFID self-service and the associated new approaches to face-to-face service: “by implementing this new way of working we have helped to establish the libraries as supportive environments. It is important for students to know that the library is a safe place to study and that they can get help whenever and wherever they need, given that for some it is the first time they have lived away from home, lived in London or in a foreign country. [...] Through this project we have managed to adopt [...] good practice and replicate it with larger teams of staff, library space and customer numbers, creating a more personalised, individual and consistent service across UCL” [3].

The rationale for the academic library’s transformation to enhance its relevance to users online and in physical spaces is outlined in Ross and Sennyey (2008), due to competition from other providers, “academic librarianship needs to fundamentally revise its practices to become competitive in a digital environment” [4]. Furthermore, efforts to become a destination on campus for both learning and socialising, as well as specialist support, IT facilities, print resources, other types of space (maker space) is well documented around the world [5, 6]. However, to see the library of the future as merely a high-quality digitally-enabled learning space where customer-friendly staff can expertly direct users to a range of appropriate resources, is to miss the point. Libraries have a lot more to offer, and whilst customer service excellence is a necessary pre-requisite to ensure that users are engaged, it forms only part of the recipe for success.

Woo (2015) illustrates the achievements of Hong Kong University Library’s holistic approach and identifies the next challenge, beyond providing high quality spaces or excellent customer service: “our future will not simply rely on our prestigious collections, user-friendly and efficient technology,

increasing amount and variety of facilities, or high-quality service. Like a stage performance, it is the combined experience that counts. How to put on a great performance with an engaged team will be our mission in the coming decade or century” [7].

The main limitation with the notion of the library as a service provider, and the user as customer, lies in the transactional implications of the terminology. The library user is not a passive recipient of a service they pay for, nor is the library akin to a high-end hotel, able to cater to every need for every user: higher education’s resources are ever-stretched and to deliver an outstanding student experience, we need to be creative. As we progress in developing better understanding and relationships with our users, so we must expect and indeed demand that our users seek to understand our services and help the library to help them. Within UCL Library Services, a Service Charter sets out a set of six commitments from the library to users, matched by reciprocal undertakings from users developed in partnership with the Students’ Union and student focus groups [8]. This notion of students as partners echoes the growing sense of businesses treating staff and customers as partners, creating a shared sense of ownership and responsibility for the quality of the interaction. The same principles apply as in the commercial sector, outlined by Jaffe (2011) “It’s about continuing the conversation and building lasting relationships that are predicated on trust, humanity, and reciprocal value” [9].

Indeed, the shift from resource-provider to service-provider to engaging partner is a journey which many academic libraries are already undertaking. The library has to deliver on its potential to offer an excellent user experience to visitors, particularly students and academic users, but it must go beyond this in order to fulfil its mission as a driving force for knowledge dissemination. As libraries develop, both in the physical and the digital world, they are becoming hubs connecting the university to the wider world. “The library as a place should form a focal point for the university campus and the city: this is where the innovation and knowledge exchange between academia and society can happen, in a living laboratory”, as described by Meunier & Eigenbrodt (2014) [10]. It is worth considering how this evolution fits in the wider context of higher education developments.

#### IV. BRINGING TOGETHER LEARNING, RESEARCH AND PUBLIC ENGAGEMENT

##### A. *New modes of pedagogy*

Universities in the 21<sup>st</sup> century cannot afford to be ivory towers or walled gardens. Political and economic factors are driving competition in the sector, and higher education is seen by many governments as a vital element for developing a skilled workforce to contribute in the global economy. In the UK, the advent of tuition fees brought in following the 2010 Browne Review led to a rise in student expectations and a sharp focus on the quality of teaching across all universities in the UK [11]. This focus has now crystallised in the form of the Teaching Excellence Framework (TEF) introduced in 2015 by

the Minister for Universities, Jo Johnson, with the following key aims [12]:

- to ensure all students receive an excellent teaching experience that encourages original thinking, drives up engagement and prepares them for the world of work
- to build a culture where teaching has equal status with research
- to stimulate a diverse HE market and provide students with the information they need to judge teaching quality
- to recognise those institutions that do the most to welcome students from a range of backgrounds and support their retention and progression to further study or a graduate job

In this context, research-intensive universities within the Russell Group, including UCL, have been addressing the perceived imbalance between research and teaching at an institutional level. UCL 2034 set out very clearly UCL’s vision of a “research-based education”, where the strengths of the university’s research would form part of the strengths of the educational experience for students, and students would be enabled to participate in research from the outset of their programme of study. Fung (2017) describes the radical approach to education which UCL has adopted, styled as the Connected Curriculum [13]. This initiative encourages individuals and teams within each discipline to think deeply about the nature and practices of their own research, and to engage students in the research process, from undergraduate to research postgraduate level.

The emphasis and the distinctive nature of the Connected Curriculum lies in taking a holistic view of what students’ educational experience should comprise. It encourages collaborative enquiry, peer to peer teamwork and dialogue between students and academics, equipping students with the skills required to solve complex challenges and the confidence and ethical standards to contribute positively in a professional environment. The development of learning spaces within our libraries, to offer a wider range of spaces and particularly more social learning and group working space, enables this type of learning to happen on campus. The library can do more, and one of the six strands of the Connected Curriculum is for students to produce outputs aimed at an audience. This ambition to display students’ works to a public beyond the university, is one where the library can help by harnessing technology and innovative approaches in a digital, open access environment.

##### B. *Making an impact from the library*

Open Access (OA) is now a worldwide phenomenon in scholarly communication, enabling new research outputs to be accessed and utilised with minimal barriers. UCL has been a leading advocate in Europe for OA to provide publicly-funded research to the public without incurring further licensing costs. Ayris et al. (2014) illustrate how academic libraries in major institutions can go beyond implementing new technologies by taking calculated risks and piloting new models based on the

fundamental role of the library as a broker of knowledge [14]. “UCL sees OA as an opportunity, not a threat. True to its history of radical innovation, UCL has embraced OA and is using it to support researchers and to maximise the visibility of the institution on a global stage.” Since the Finch Report in 2012, moves towards OA for scholarly research have been further reinforced by funder mandates, such as that by HEFCE for journal articles for REF 2021. To illustrate the scale of the OA activity managed by the library, since the institutional repository UCL Discovery was launched, there have been around 11 million downloads of deposited research outputs, including doctoral theses which feature amongst the most-downloaded items. For example, in October 2016, four of the top 10 downloads were theses on subjects ranging from marketing in the construction industry to machine learning for financial market prediction, alongside academic papers on engineering.

Year					Total
	Q1	Q2	Q3	Q4	
2016	617,917	592,371	497,542	502,738	2,210,568
Lifetime downloads (Feb. 2008-Dec 2016)					<b>10,996,473</b>

Fig. 1. UCL Discovery downloads for 2016 and lifetime

As illustrated above, UCL Discovery provides access to articles produced within UCL, both by academic staff and research postgraduate students. Building on this foundation, and in order to address the challenges of OA monograph publishing, UCL took the radical step of setting up an OA university press, to publish scholarly research and disseminate it freely online. UCL was the first UK university fully to adopt this model, and since launching in June 2015, UCL Press has published 40 books and seven academic journals, with over 50 more books planned.

UCL Press typifies how, as London’s Global University, UCL is leading the UK in the Open Science arena by harnessing world-leading research and cutting-edge technology to create impact via Open Access publishing. Using leading-edge digital technologies and platforms, UCL Press disseminates OA monographs globally, accessing previously untapped audiences. UCL Press books are free to download from the UCL Press website (stored in UCL Discovery, UCL’s repository), and distributed on global platforms such as JSTOR, which launched its open access monograph platform in October 2016, OAPEN, Ingenta and Worldreader. Books are available in PDF, HTML and epub formats, making them accessible to readers worldwide. UCL Press has also developed an innovative browser-based platform with award-winning digital agency Armadillo, which pushes the boundaries of scholarly publishing by developing multi-media books with enhanced functionalities. The Press also hosts digital OA student journals: three of the journal currently hosted are student-led and cover History of Art, Law

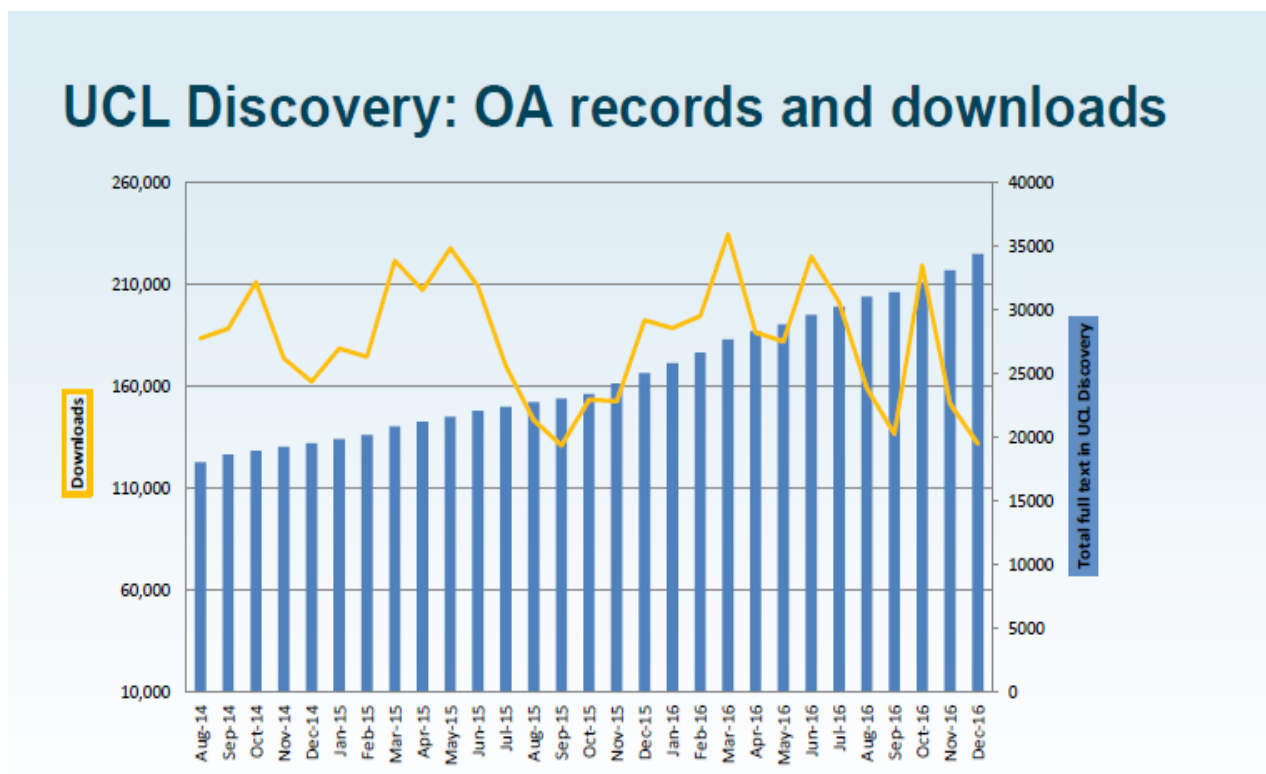


Fig. 2. Deposits and Downloads in UCL Discovery, UCL’s Open Access repository The yellow tracking line shows numbers of downloads from UCL Discovery; the blue bars the number of full-text deposits.

and Jurisprudence, and Russian & East European affairs. This is a major enabler of the Connected Curriculum, giving

students the power to publish inter-disciplinary journals and disseminating their own research on a high-profile digital platform.

No other Higher Education institution in the UK has undertaken such an extensive OA publishing venture, and the results have exceeded expectations. UCL Press books and journals have been downloaded over 480,000 times in over 200 countries. This exceeds sales figures typically reported by traditional scholarly publishers, of 300-500 print copies globally in a book’s lifetime [15]. Such widespread distribution has brought significant benefits for both authors and institution, including profile raising and global brand extension. Other forms of impact have also resulted, including the production of a massive open online course (MOOC) for Futurelearn, a number of REF Impact case studies in preparation, two Philip Leverhulme awards, and extensive media coverage.

The Press was initiated at senior level as a flagship addition to UCL’s existing OA services, and its model challenges current scholarly publishing paradigms. UCL Press shows that with strong leadership and vision it is possible to create an OA university press that delivers an institution’s strategic objectives, creates impact and attracts authors and readers in large numbers. Future plans for UCL Press include an OA megajournal platform with open peer review, and further OA textbook publishing as part of UCL’s OER (open educational resources) strategy.

UCL has been a leader in OA advocacy in Europe for 10 years. Its financial investment in UCL Press supports its Global Engagement strategy, bringing UCL outputs to users in over 200 countries, thus adding value to the institution’s research. In order to help develop this model to benefit other institutions, UCL Press can offer consultancy and hosting services – to allow other universities to follow the UCL Press publishing model, or to use UCL Press infrastructure for their OA publishing, branded as their own university press.

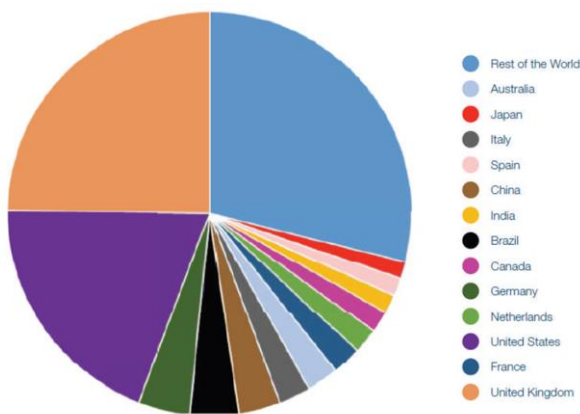


Fig. 3. Countries where UCL Press books have been downloaded

In spring 2016, UCL Press joined Worldreader, a non-profit organization whose mission is to bring digital books to every child and their family, so that they can improve their lives [16]. All UCL Press titles are made available on Worldreader’s platform, which delivers free ebooks and free e-readers to the Global South, in partnership with leading publishers.

With UCL Press and the growing number of OA publishers around the world, high quality, socially-relevant content is being produced and made accessible for free. Yet, paradoxically, there is a current which is pushing back against evidence-based research in many countries, including the UK, where at the time justice secretary Michael Gove stated that “people in this country have had enough of experts” [17]. In professional fields such as planning, Rivero (2017) comments on the apparent failure of academics to articulate the evidential basis for decision-making, and the need to train future students better to engage with viewpoints from outside the academic environment, and to train the public: “The increasingly fractured political landscape results from a collective failure to produce a competent democratic public and to establish a shared epistemic foundation upon which expertise can stand. Having reoriented our profession toward collaborative public engagement, we as planners bear partial responsibility for that failure” [18]. In the age of “fake news” where authorities purport the existence of “alternative facts”, there is an acute need for libraries to radiate data-driven research in a way which can reach citizens. Recent research by the Pew Center in the US found that 78% of Americans surveyed felt that their local library helped them find trustworthy and reliable information [19]. There is hope, then, and a genuine opportunity for libraries to help connect people and authentic information, in line with our collective mission. What is needed is for us to extend the notion of library users as partners described above, to work in partnership across sectors and to engage with communities.

#### V. PUBLIC GOOD BEYOND THE UNIVERSITY CAMPUS

UCL has initiated a major development to establish a new campus on the Queen Elizabeth Olympic Park by 2022, as part of London’s Cultural and Education District [20]. As part of this initiative, Library Services is progressing plans to open a Research and Learning Hub which will deliver innovative study spaces, providing first-class research and learning facilities for students studying at or living on the QEOP campus. From this Hub, students and staff will move round to attend lectures or other academic activities. The Hub will be open 24x365 throughout the year. For those students living at Stratford, the UCL East Hub will provide a focus for research, learning and collaborative academic work outside their immediate living environment. Thus, the Hub will act as the heart of UCL for all UCL staff and students based at QEOP.

The UCL East Hub will be founded as a beacon for Outreach, inviting local communities and international visitors to the Olympic Park with study facilities and cultural



exhibitions from multiple institutions. In partnership with academics in the Faculties of Social & Historical Sciences and The Bartlett (Faculty of the Built Environment), a London Memory Archive will be created, which will enable members of the public to contribute their own perspectives on the history of London. The Hub will also host displays and object-based teaching with artefacts from UCL's Special Collections and Museums, spanning centuries of migration into London.

The London Memory Archive is envisaged as a unique space which will act as a hub for oral history teaching, research and public engagement. Recording booths will form part of the facility, to allow London residents to record their stories of life in London today and in living memory (in oral form and as digital images or videos); which can be compiled into a living digital archive held in UCL Special Collections and accessible to UCL students for project working. This digital oral history hub will be an expansive resource to researchers for generations to come. Hands-on teaching space for the London Memory Archive will also be sited within this facility, enabling ready access to digital collections for students. Students and staff working on UCL East will have an unrivalled opportunity to experience community history-making at the heart of all their activities. With access to a publically-developed and growing corpus London's local and global histories, students at UCL will be able to transcend more traditional class room bound models of teaching and learning about engaging with the past in the present by realising the exciting synergies of fully integrating public history practice and research into their UCL East learning experience. This outward looking, public facing London Memory Archive will offer rich possibilities for interacting with collections in many and varied creative ways, co-curating new collection development, exhibitions and history-making activities with diverse communities from across East London and beyond and in so doing developing a strong suite of career enhancing skills.

UCL 2034 sets out two principal themes which the Hub and London Memory Archive will embody:

- London's Global University: "We recognise our role in making London a better place to live and work in for all, and in promoting and contributing to social equity and environmental sustainability in our capital city." and
- Being an accessible, publicly-engaged organisation (fostering a lifelong community).

The site of UCL East on QEOP adjoins the London Borough of Newham, which is historically one of the most deprived areas in the UK, although official statistics indicate that it is becoming relatively less deprived [21]. UCL Library Services has been in contact with the London Borough of Newham, and it is anticipated that residents in the local communities will benefit from access to learning spaces, although this may vary at different times of year. Access to library services is a concept which is easy to convey to members of the public with no experience of engaging with

higher education, there are benefits both for the library and local audiences by interacting on UCL's campus. Skills training provision and particularly support for e-learning would empower local communities to (re-)engage with training and continuous development, creating a truly diverse community of learners on campus rather than an exclusive facility which can be glimpsed from the outside, but is not open.

In order to set the scene and help familiarise partners within the university and local communities, there have been a growing number of shared projects and exhibitions which the local borough and Library Services have been involved in. Most recently, Newham Libraries and Archive and UCL Special Collections have launched a collaborative project bringing together both organisations' collections in a shared touring exhibition. We are also running several workshops for community groups to engage with the exhibition content and to record their oral histories (with the help of student volunteers), as a pilot for the London Memory Archive. The exhibition was installed in October 2017 and the main bulk of workshops will take place as part of Newham Heritage Week. The exhibition will then tour all 10 of Newham's public libraries and further joint workshops will be run in the borough. By building links with local communities and playing an active role as a member of the area, the academic library can re-connect with its environment and become better attuned to the needs and expectations of the society it serves. A natural extension of the work which is being initiated in East London would be to develop crowd-sourced science projects, such as the successful Bentham Project which has accelerated the publication of Bentham's papers thanks to an ingenious approach whereby UCL Library Services' digitised manuscripts were made available to be transcribed by members of the public [22].

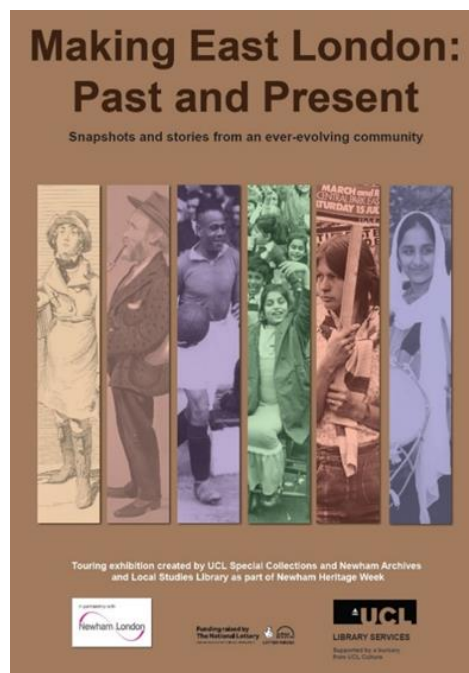


Fig. 4. Promotional poster for touring exhibition



Fig. 5. Poetry workshop in Stratford Library on Saturday 7<sup>th</sup> October 2017

## VI. CONCLUSION

Library services have a responsibility to advance Open Science as part of the research library's role as a trusted guide to knowledge, making the most current and relevant research available. As Sandhu explained, in order to fulfil their mission and affirm their role in 21st century, libraries have to be bold, and set out with compelling vision. UCL's approach is just one example where a long-term strategy aligned with the university's own has helped to enhance the experience of library users on campus and to promote use of academic staff and students' research outputs. In an uncertain world, it is necessary to take measured risks and the launch of UCL Press might provide a blueprint for other academic libraries.

More work is needed for academic libraries' voice to be heard when misinformation finds its way into the mainstream. Not just academic libraries, in fact, but academic and public libraries should be encouraged to work in partnership and develop a better understanding of the landscape and communities we serve. From the experience of working between a research library and a network of public libraries in East London, there are clear mutual benefits in this type of partnership at a time when libraries across all sectors have re-invented themselves in different ways. The common denominator seems to be a resolve to place the user at the centre of what the library does. That is absolutely the right start, and it should mean that the library of the future will be attentive to shifts in user needs and expectations. It is important, though, to remember the responsibility of librarians to create an environment, both physical and digital, which exceeds user expectations and generates inspiration. The challenge for the future is not how to please current library users, but how to draw in those who would benefit from library services but don't yet know it.

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