



UCL

**UCL
Grand
Challenges**

**Developing
solutions**

Forewords

The UK, and the world beyond, is afflicted with multiple social, economic and spatial inequalities. Colleagues from many parts of UCL have been undertaking ground-breaking research across the different dimensions of housing, employment, education and health inequality. A great many fruitful collaborations, within the institution and beyond it, are helping to bring new evidence to the attention of policy makers. The value added offered by UCL Grand Challenges is to provide a context for making new connections, to seed-corn new partnerships and projects, and – in collaboration with UCL Public Policy – to bring together research expertise with a public policy focus. That is a short-hand description of my own recent experience with the Exploring Inequalities project. Led by Siobhan Morris and involving both the Resolution Foundation and UCL Public Policy, that work provides an excellent example of the critical role the Grand Challenges plays in brokering partnerships and facilitating real world impact. Working with a long list of organisations – government departments, external research centres and key charities – the project was able to assemble many of the lessons that researchers and policymakers ought to consider when thinking about how to better approach the study and treatment of structural inequalities, wherever they arise. Understanding the scars those inequalities leave on individuals, communities and society as a whole will remain critically important in the years ahead. Our research has a huge contribution to make as we (hopefully) emerge from the current Brexit stagnation.

As a member of two UCL Grand Challenges working groups – Justice & Equality and Sustainable Cities – I have been able to connect with colleagues from across UCL, escape from my housing bunker, and see first-hand the value of all of the above. UCL Grand Challenges are well worth getting involved with.

Professor Nick Gallent, The Bartlett School of Planning

The Global Disability Innovation Hub is challenging assumptions about disability and the design of assistive technology. The GDI Hub takes an inclusive approach that draws on the expertise of disabled people, practitioners, academics and the local community. London 2012 promised to be ‘the most inclusive Olympics ever’ and legacy planning for the games included ambitions for increasing disability equality. In 2016 the GDI Hub built on this Olympic and Paralympic legacy with a series of ‘Pop-Ups’ funded by the Grand Challenges. This pilot version of the Hub brought together a range of partners and stakeholders to push inter-disciplinary boundaries and explore new ways of thinking about disability.

“The GDI Hub was made possible by the Paralympic legacy and support from the Grand Challenges”

Dr Cathy Holloway, Academic Director, GDI Hub

This week-long series of discussions and workshops provided a crucial testing-ground for new approaches and methodologies to create new dialogues on disability innovation. The event was followed by the approval of a new master’s programme, MSc ‘Disability, Design and Innovation’ - led and awarded by UCL with input from London College of Fashion and Loughborough University London - and the inaugural Disability Innovation Summit in July 2017 featuring 300 delegates from around the world and across sectors. In 2018, the GDI Hub was awarded £10m from the Department for International Development (DFID) to widen access to assistive technology for disabled people by running a three-year, multi-partner programme called, ‘AT:2030 – Life Changing Assistive Technology for All’.

The GDI Hub is building a movement to accelerate disability innovation for a fairer world, with an innovation hub to be set up in East Africa, led by UCL in partnership with the University of Nairobi and Government of Kenya, and in collaboration with the Tokyo Olympic Games Committee to support their thinking around a legacy from the Paralympic Games in Japan.

The UCL Grand Challenges served as a catalyst for the creation and impressive growth of the GDI hub, now a global organisation driving disability inclusion and social justice by disrupting current practice to create changes internationally. We are grateful for the financial support from UCL Grand Challenges that made this innovative project possible, and look forward to seeing it grow in the future.

Dr Youngjun Cho, GDI Hub & UCL Interaction Centre

Where can the Grand Challenges take you?

Publishing new papers

Strong relationships fostered by the Grand Challenges allow inter or cross-disciplinary journal papers to be published, for example in Nature Sustainability and The Lancet.

Policy impact

Grand Challenges work can contain recommendations or ideas for policymakers. The Lancet Commissions, kickstarted by the Grand Challenges, have put pressure on global governments in the fields of climate change, health and migration.

Spreading the word

The results of Grand Challenges work can lead to media appearances, not least on our own podcast series, YouTube channel and blog.

New institute or research centre

Grand Challenges helped catalyse research centres including the UCL Centre for Behaviour Change and the UCL Africa Studies Research Centre to take shape in the last few years.

Major funding

Some Grand Challenges projects have since gone on to secure major funding for further research. Following the Digital Ethics Forum, which was held in May 2019 and funded by a Transformative Technology small grant award, the project team has since received EPSRC IAA funding to develop a series of workshops and produce a UCL Digital Ethics Strategy Report.

Public engagement event

Events can bring the work we support into the public eye, for example the India Voices and Africa Voices series, which included film screenings, music and dance displays, lectures and panel discussions.

Pilot study

Small grants often lead to pilot studies, like one done by Dr Gabriella Conti (Institute of Education) and Professor Pasco Fearon (UCL Brain Sciences) into the effects of meditation in schools, carried out in 2018

Small grants

The programme has made 109 awards through the past six annual rounds of the small grants scheme, to a total value of £447,800. This funding sows the seeds for larger projects to take root.

Building the network

Grand Challenges brings academics, researchers and interested parties from across the UCL community together, meeting like minds at events, roundtables, workshops and discussions.

UCL Grand Challenges Our highlights

Structural Inequalities

In October, together with UCL Public Policy and Resolution Foundation, the UCL Grand Challenge of Justice & Equality published *Structurally Unsound – Exploring Inequalities: Igniting research to better inform UK policy*. The report sets out approaches for researchers and policymakers to adopt when considering how to approach the study and treatment of structural inequalities in the UK.

Key findings: *Structurally Unsound* finds that women, working class, ethnic minority and disabled groups often face multiple disadvantages affecting their educational outcomes, employment prospects, home ownership, health and life expectancy.

The report notes: “Structural inequalities emerge before birth and accumulate throughout an individual’s life. To understand the nature of inequality and its effects over the life-course, we need to adopt an intersectional perspective to identify and plug gaps in understanding.

“Research and policy should be developed with and not on the individuals that experience disadvantage. Securing change in society can only be achieved by changing who designs our policies.”

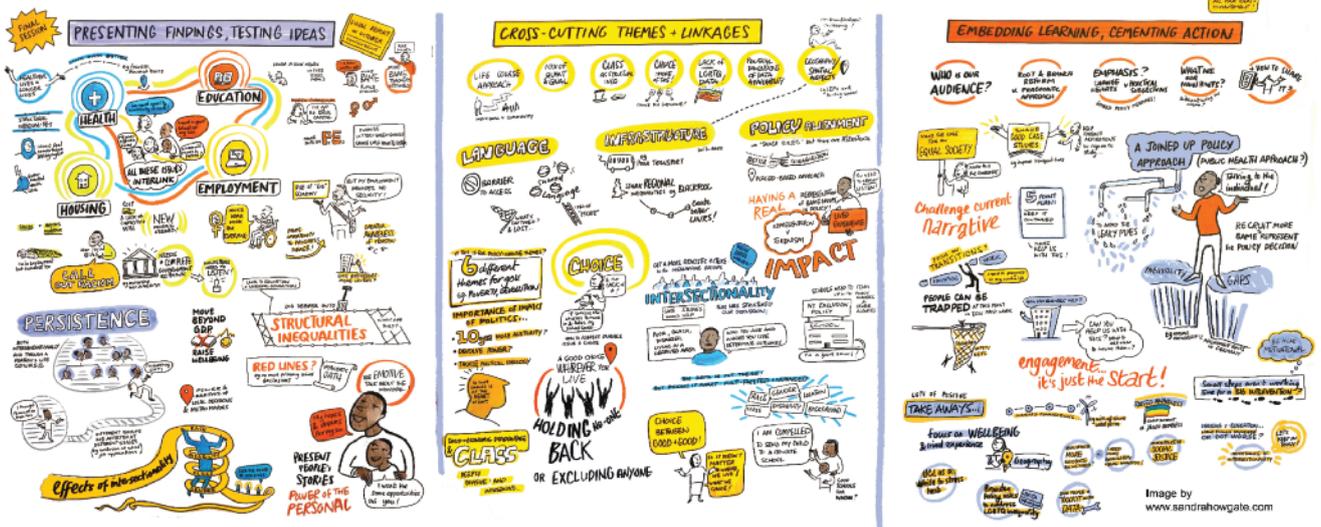
The report is structured around five cross-cutting themes:

- Language
- Opportunity
- Understanding evidence
- Voice
- Place

Over the past year, the project convened a series of roundtables and in-depth interviews with experts in research, policy, third sector organisations, business, and government. The report and accompanying action notes combine research and evidence on inequalities across the UK, as well as outlining key evidence gaps, and listing the lessons learned. In this way, the report aims to spread best practice and help plug the gaps in understanding that our expert engagement identified.

Exploring Inequalities - Igniting research to better inform UK policy

UCL Resolution Foundation 16 July 2024



■ Grand Challenges support the launch of UCL Collaborative Centre for Inclusion Health

Earlier this year, the UCL Collaborative Centre for Inclusion Health (CCIH) was set up by a multidisciplinary team of researchers, experts with lived experience and frontline professionals who are dedicated to reducing health inequity.

In June, the centre ran a launch event – run in partnership with the UCL Centre for Co-Production in Health Research, and made possible by funding from UCL Grand Challenges (awarded to Chantal Edge and Niccola Hutchison-Pascal through the Grand Challenge of Justice & Equality's Embedded Inequalities initiative) to bring together a wide range of experts to shape the agenda and co-produce research and advocacy priorities for the next five years.

Over 100 representatives from the voluntary sector, policy, academia, healthcare and a wide range of experts by experience worked together to tackle three key areas – preventing exclusion, improving services for those who are excluded, and escaping exclusion. Through a series of presentations, workshops, democratic voting and 'dream-boarding', information on where best to start was collected and collated. Consultation and analysis are on-going, and the evidence will be used to inform and influence research and advocacy priorities for funders and help ensure that current and future research projects tackle established priorities.

■ UCL Lancet Lecture 2019

In this year's UCL Lancet Lecture, guest speaker Dr Rachel Nugent of RTI International reiterated the need for urgent global action to prevent Non-Communicable Diseases (NCDs). She equated NCDs to a "global emergency" on the same level as the climate crisis, as both are universal, preventable, and require a multisectoral response. Dr Nugent highlighted the political and cognitive barriers that we are facing, and potential solutions.

The UCL Lancet Lecture is an annual global health event open to the public and free of charge. Please visit our website for upcoming editions, or visit the UCL YouTube channel to watch the 2019 lecture.



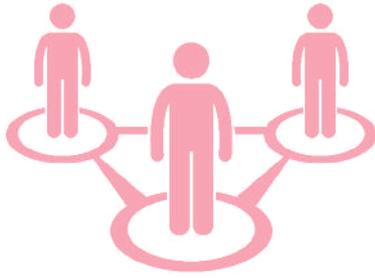
■ Grand Challenges Super-Ageing Society Symposium at the 2019 JANET Forum

This year's Japan Academic Network in Europe (JANET) Forum took place in London from the 4th – 5th of November, with sessions held at both UCL and the Japanese Embassy across the two days.

Under the theme of "Demographic Change and Higher Education in the Global Context", the event focused on the implications for research, research funding and higher education strategy posed by the super-ageing society – now an existential concern to society in Japan and to its government. Societal ageing has been a priority theme of the Grand Challenge of Human Wellbeing since its launch in 2010, and is expected to become an issue of increasing urgency in the UK and around the world.

On day two of the JANET Forum, Professor Graeme Reid (Chair of Science & Research Policy, UCL Office of the Vice-Provost Research) and Dr Ian Scott (Director, UCL Grand Challenges & Cross-Disciplinary Development) moderated panels, with Dr Scott moderating a series of presentations and discussion in a special symposium entitled 'Research Development & Innovative Knowledge Transfer to Super-Ageing Society'.

Based on the symposium's topics, and the insights gained from the event, the Grand Challenges programme plans to announce a £30,000 seed-corn stimulus for UCL-Japan collaboration relating to the super-ageing society.



Grand Challenge of Cultural Understanding

CU

Legitimacy in a time of constitutional crisis

In a survey of 3,000 voters, Professor Christina Pagel (UCL Department of Mathematics) and Christabel Cooper (Sensible Analytics) with fieldwork by YouGov, found that the UK is evenly split between those who think it is acceptable for the Prime Minister to take measures such as suspending Parliament in order to deliver a “no deal” outcome, and those who do not. But importantly, the research also found that reminding people that these measures cut both ways and could, in different circumstances, deliver an outcome they don’t want, had an impact on their views. The survey asked a representative sample of 3,000 voters whether it would be acceptable for the Prime Minister to either suspend Parliament or refuse to resign immediately after a Vote of No Confidence, if MPs tried to block the UK’s departure without a deal. To test whether attitudes to the role of parliament and to traditional constitutional norms were always dependent on outcomes, the researchers also asked respondents to imagine the reverse scenario.

The survey revealed a country united in its worries about democracy but apparently divided over which aspects of democracy are in danger. This research suggests that the often peddled narrative of “People vs Parliament” is not so clear cut; although the researchers only provided a brief reminder that the conventional constitutional practices do not just stop your own side from doing whatever they want, but also prevent your opponents from imposing outcomes that you object to, this was enough to make a significant number of Leavers think again. On the constitutional issues at least, it turns out that people can be persuaded that Parliament might have its uses after all.



CU

Exploring the dynamics of globalisation in coastal communities

As part of UCL Grand Challenge of Cultural Understanding’s *Dynamics of Globalisation initiative*, Dr Avril Keating (UCL Department of Education, Practice and Society) and Professor Claire Cameron (UCL Department of Social Science)’s innovative research project was awarded support to identify research methods and cross-disciplinary intersections that give greater insight into how the dynamics of globalisation are shaping youth aspirations and attitudes towards mobility and migration.

Through conducting a series of workshops in schools, the project team asked *How do young people feel about their seaside town?* Results identified young people in coastal towns in England have low levels of geographical mobility, even within their own town. Most of the young people focused on the micro-scale, and the (very) local environment. The dynamics of globalisation mean that, for this generation of young people, geographical and social mobility are closely intertwined.



Grand Challenge of Global Health



GH

Can Big Data help migration research?

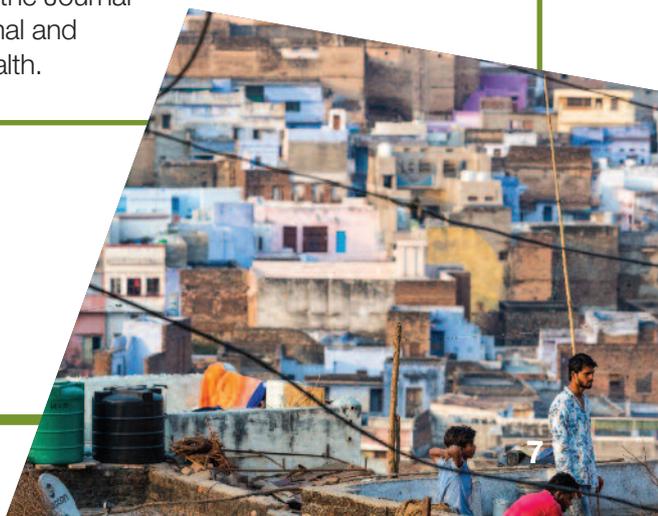
The 2018 UCL-Lancet Commission on Migration and Health has issued a global mandate for better data on the drivers and impacts of migration on health. To address this need, Dr Lydia Franklinos (UCL Department of Genetics, Evolution and Environment) and Rebecca Parrish (UCL Institute for Global Health) held an investigative workshop in summer 2019 on the use of big data for migration research.

The workshop consisted of presentations, expert panels and round-table discussions across a variety of themes including migration and healthcare, environmental drivers, migration and conflict, and data security and ethics. It was attended by 50 people from across academia, intergovernmental organisations, NGOs, members of the public, the private sector, and students. Discussions were diverse and thought-provoking, and the group generated many ideas which will be pursued through various ongoing and upcoming projects. Lydia and Rebecca are working on a follow-up questionnaire to measure the long-term impacts of the workshop.

GH

Childhood infections and pollutions

Dr Logan Manikam (UCL Department of Epidemiology and Public Health) and Dr Hector Altamirano (UCL Institute for Environmental Design and Engineering) collaboratively developed a rapid household survey and implemented it within 15 households across three slum sites in Jaipur. They analysed the findings to determine common individual and household risk factors for infections in children under five, as well as informing the development of the larger CHIP project. The Grand Challenges Small Grant award was also used for the first CHIP Consortia Workshop in Jaipur, which brought together members from six different countries representing academic institutions, government bodies, and NGOs. The workshop introduced partners to experts across different sectors (such as engineering, epidemiology, social sciences, and medicine) allowing participants to benefit from the wealth of knowledge and ensuring comprehensive outputs. The team used collaborative expertise to refine and develop CHIP methodology, as well as undertake slum site visits. The workshop strengthened relationships with UCL department and India partners to ensure contextualised and appropriate actions for the CHIP project moving forward. Since then, the team have submitted an article to the Journal of Maternal and Child Health.



Grand Challenge of Human Wellbeing



HW

Non-Clinical Art Interventions for Wellbeing and Belonging among refugee, asylum seeker and displaced migrant populations

Dr Humera Iqbal (UCL Department of Social Science) and Professor Helen Chatterjee (UCL Department of Genetics, Evolution and Environment) brought together people who have overcome adversity and experience trauma as a result of migration & displacement. Group members were taught ceramic techniques by artist Julie Nelson, and used the therapeutic medium of clay to create a community of birds and engage in mindful practice, exploring the themes of migration, displacement, belonging, and community. Participants reported that the workshops helped alleviate their mental and physical pain: 'When I am bird-making I am very very happy. I'm busy I forget anything everything I forget stress, I forget flashbacks, I forget problems, I forget my pain because I have to do some work'.

Photos from the workshops were exhibited at various locations, including the V&A during Refugee Week in June 2019. The cross-disciplinary team is currently further analysing the data to assess the effectiveness of non-clinical art interventions (creating a flock of ceramic birds) on members the grounding community project for refugee, asylum seekers and displaced people.

HW

Boosting positive development in adolescence: a pilot study on meditation in school

Dr Gabriela Conti (UCL Department of Economics) and Professor Pasco Fearon (UCL Division of Psychology and Language Sciences) implemented a pilot study of the "Quiet Time" (QT) meditation intervention in the



Atwood primary school based in London. Children in the treated group (year 6) received the QT course of four one-hour meditation lessons over four consecutive days offered through the David Lynch Foundation UK. Children in the control group (year 5) continued business as usual. It has to be noted that children in year 5 regularly practiced another form of meditation, through the use of the Head Space App.

Findings show that the practice of QT improves memory and self-control, especially for girls, who also displayed enhanced reactionary qualities. In line with these developments, examination of exam results in different subjects reveals that scores in English writing improve for females. Their male peers, however, experience deterioration in English writing as well as maths test scores, alongside reduced attention. The team at UCL is planning on implementing a larger trial with other schools, but so far they have learnt that the implementation of the programme requires a daily time commitment, and works better if the habit is formed from the beginning of the academic year.



Grand Challenge of Justice & Equality

JE

Trans Studies, Trans Lives

UCL's first interdisciplinary trans symposium, *Trans Studies, Trans Lives: Past, Present and Future*, brought together international researchers on trans studies with trans artists and writers to tackle intellectual misunderstandings about trans people and provide an informed perspective about the identities, lives, and rights of trans people in the UK.

Organised by Dr Christine (Xine) Yao (UCL Department of English Language & Literature), Dr Ella Metcalfe (UCL Faculty of Mathematics & Physical Sciences), and Dr Ezra Horbury (British Academy Postdoctoral Research Fellow) and funded by the UCL Grand Challenges programme, the Institute for Academic Studies, and the UCL Office for Equality, Diversity and Inclusion, the symposium highlighted a combination of multidisciplinary research and personal storytelling. Funded by the UCL Grand Challenges programme, the Institute for Academic Studies, and the UCL Office for Equality, Diversity and Inclusion, the symposium highlighted a combination of multi-disciplinary research and personal storytelling. Papers were presented on a broad range of topics including medieval art and literature, sci-fi and fantasy, law, and lived experience, providing a centrepiece for further discussion on the theme of trans studies and lives; the creative work presented included audio art pieces and a short film. As one young person remarked at the end of the event, whilst they aren't yet in university, this symposium showed them that people like them can be in academia and that topics like this matter.



JE

Police response to runaway adolescents on Mumbai's rail network

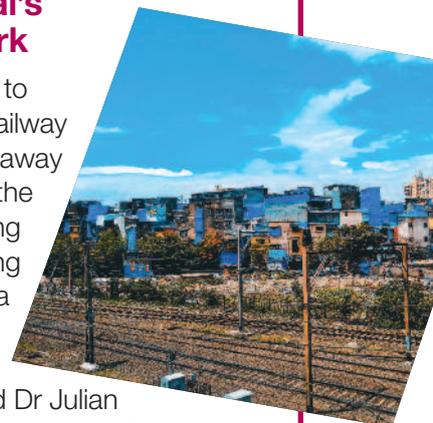
This project was set up to study the response of railway police in Mumbai to runaway adolescents, exploring the transition from preserving public order to protecting child rights. Dr Kartikeya Tripathi (UCL

Department of Security and Crime Science) and Dr Julian Walker (The Bartlett Development Planning Unit), conducted a range of interviews with key stakeholders from the police, child welfare officials and NGOs working in the field, and visited police stations, child care homes and railway stations where the runaway children came in contact with the authorities.

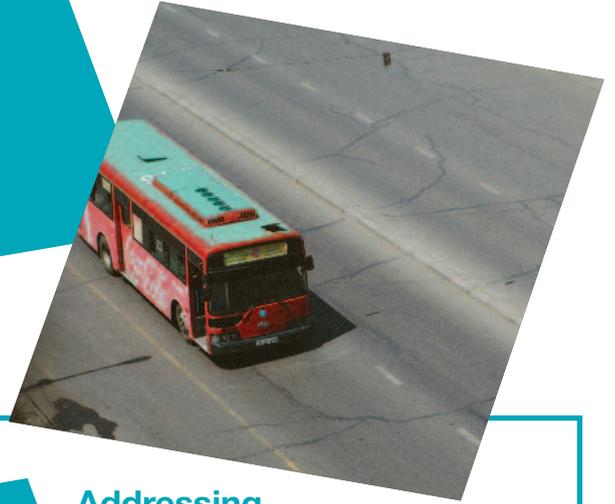
The team found that the stakeholders sometimes disagreed on whether it was always in the best interests of a runaway child to be reunited with their family. Additionally, it is often difficult to keep track of the children once they have entered into state's care which causes delays in reuniting them with their families.

Preliminary results were presented at the prestigious World Conference for Transport Studies Research. The research project was also covered in India's largest newspaper, *The Times of India*.

The project helped Dr Tripathi strengthen his relationship with police in Mumbai, and has formed the basis of two further funding applications. The UCL team, in conjunction with Mumbai police and child welfare committee, are now developing an app to keep track of missing children.



Grand Challenge of Sustainable Cities



sc

Mobility and social equity in urban settlements: Ulaanbaatar's ger districts

Dr Iqbal Hamiduddin (The Bartlett School of Planning) with Dr Rebekah Plueckhahn (UCL Anthropology), conducted a pilot study on mobility and accessibility constraints in the semi-formal ger districts of Ulaanbaatar, Mongolia's capital city. Aimed at providing data on residents' patterns of life in the face of difficulties in travel and access, they formed a rare collaboration between anthropology and urban planning in a part of the world where crucial data of this kind was lacking.

Establishing a network of academics, NGO workers and organisations operating within the ger districts, they identified a research site in which to conduct their fieldwork by collecting quantitative and spatial data characterising overall travel patterns and shortcomings. The research was cross-disciplinary by including qualitative ethnographic study, successfully creating a mixed-methods research approach to capturing travel behaviour and experiences in the ger district. Their findings will be exhibited in a new community centre within the research site in December 2019.

Their findings revealed long journey times, with public transport users experiencing a journey time 60% greater than that of car users, and point to specific neighbourhood measures that would improve access to the public transport network for residents. The team have planned for two articles to be published following the end of their fieldwork, and the now strong network established between the investigators, community NGOs and colleagues at the National University of Mongolia will lead to further funding applications to scale-up the work into other areas of the city.



sc

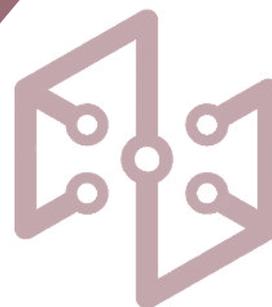
Addressing Lebanon's 'double crisis': film in and as research

Using participatory filmmaking techniques with host and refugee community members, Dr Hanna Baumann (UCL Institute for Global Prosperity), and Hannah Sender (The Bartlett Development Planning Unit), were able to raise awareness of the interrelated challenges posed by migration and displacement, amidst infrastructural and environmental concerns in Lebanon.

This project showcased the impact of co-designed local solutions that address both infrastructural and refugee needs by bringing together UCL trained Citizen Scientists for a weeklong film making training workshop in collaboration with local NG Salam Ya Sham and CatalyticAction charity and design studio. Three short video documentaries were produced along with 'behind the scenes' film that documents the process of learning and producing the films.

These films, reports and diaries improved the team's understanding of infrastructural issues and how these relate to the protracted displacement of people from Syria, and have since been shared at the It's All Academic Festival. The project also developed their external collaborators' understanding of the application of film as a research tool, whilst expanding their network in Lebanon to conduct further projects.

Grand Challenge of Transformative Technology



TT

An exploration of teachers and doctors' trust in AI: Impacts of an AI frame on the perceived credibility of research evidence

Dr Mutlu Cukurova (UCL Department of Culture, Communication & Media) and Dr Amitava Banerjee (UCL Institute of Health Informatics), studied the perception of research evidence framed within AI to see how its credibility was perceived in comparison to when framed within neuroscience or another research domain – the first study of its kind. Using an online survey platform they were able to reach over a thousand public participants, with data on participants' demographic, education levels, familiarity with the subject domain etc. The findings have allowed them to investigate public perceptions of AI domain's prestige including its adherence to scientific methods and credibility of findings. They discovered that when education research evidence is framed within AI, it is considered less credible than when the same evidence is framed within neuroscience or educational psychology.

By exploring the phenomenon of people's lack of credit in AI framed research, they bring a better understanding of people's lack of trust in AI and algorithms leading to a journal article published in the International Journal of Artificial Intelligence in Education titled "Impact of an AI research frame on the perceived credibility of educational research evidence". The team are next hoping to produce further news articles and blogs, and have submitted a proposal for further funding. Their impactful work will also inform and prepare medical professionals of the promise and pitfalls of AI in healthcare, as well as provide recommendations for curriculum change in medical schools and within medical education in AI.

TT

Digital Ethics Forum: coordinating UCL's interdisciplinary strengths

Dr Zeynep Engin (UCL Department of Computer Science) and Dr Ine Steenmans (UCL Department of Science, Technology, Engineering and Public Policy) established a senior UCL advisory committee to conduct a mapping exercise and collate relevant academics across UCL faculties on the theme of Digital Ethics. This led to a Digital Ethics Forum held in May 2019 which produced high-level and cross-disciplinary conversation on strategic Digital Ethics research areas for UCL, and a series of blog articles written by workshop attendees available at govtechlab.org.

The meeting engaged a diverse group of relevant senior, mid-level and junior academics, enabling UCL to develop their joint vision on Digital Ethics that will allow the project to identify strategic partners for future endeavours. The team have since secured UCL EPSRC IAA funding to expand the discussion in to a series of workshops and produce a UCL Digital Ethics Strategy Report. They will therefore be working with different UCL departments and units to further develop this important conversation, and create a productive and sustainable environment to jointly identify and address critical ethical challenges in an increasingly data and algorithm driven society.

About us

UCL Grand Challenges programme, now in its eleventh year, is a key part of UCL's Research Strategy. The Grand Challenges convene and cultivate cross-disciplinary collaborations that explore interconnected solutions in six areas related to matters of pressing societal concern: Cultural Understanding, Global Health, Human Wellbeing, Justice and Equality, Sustainable Cities and Transformative Technology.

UCL Grand Challenges aims to bring researchers together at our university and set the agenda for future research, while building bridges with many external partners.

We do this by awarding small grants to UCL researchers, funding major projects and supporting events led by our academics.

Contact us

This booklet was published in December 2019. On the Grand Challenges website you'll find the latest examples of how the programme works, what we have done and how researchers at UCL can propose and get involved in cross-disciplinary initiatives.

 @UCL_GC

 ucl.ac.uk/grand-challenges

 www.soundcloud.com/uclsound/

 www.blogs.ucl.ac.uk/grand-challenges/

Get in touch with the programme director, Dr Ian Scott.
Email ian.scott@ucl.ac.uk

